LAKE JENNINGS MARKETPLACE
TRAFFIC IMPACT STUDY

July 29, 2015

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GLOSSARY OF TERMS AND ACRONYMS

Acronyms	**Definitions**
AASHTO	American Association of State Highway and Transportation Officials
ADA	Americans with Disabilities Act
ADT	Average Daily Traffic
APE	Area of Potential Effect
AWSC	All-way Stop-Controlled
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CMP	Congestion Management Program
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
FEIR	Final Environmental Impact Report
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
GIS	Geographic Information Systems
HCM	2000 Highway Capacity Manual
HUD	U.S. Department of Housing and Urban Development
ILV	Intersecting Lane Volume
ITS	Intelligent Transportation Systems
LOS	Level of Service
MHPA	Multi-Habitat Planning Area
MOA	Memorandum of Agreement
MOE	Measure of Effectiveness
MOU	Memorandum of Understanding
mph	miles per hour
MTDB	Metropolitan Transit Development Board
NOC	Notice of Completion
NOP	Notice of Preparation
PCE	Passenger Car Equivalent
pcphgpl	passenger cars per hour of green per lane
PeMS	Performance Measurement Systems
RTP	Regional Transportation Plan
SANDAG	San Diego Association of Governments
SANTEC	San Diego Traffic Engineers' Council
sf	Square feet
SR	State Route
TIF	Transportation Impact Fee
TIS	Traffic Impact Study
TWSC	Two-way Stop Controlled
V/C	Volume-to-Capacity ratio

EXECUTIVE SUMMARY

This traffic impact analysis has been prepared for the proposed Lake Jennings Marketplace project, and it consists of 76,100 square feet of neighborhood commercial use including an auto fueling facility of 12 fueling positions. The proposed development is located in the Lakeside Community of the unincorporated County of San Diego on the south side of Interstate 8 near the Lake Jennings Park Road Interchange. The project site is located south of Olde Highway 80 between Lake Jennings Park Road and the future northerly extension of Rios Canyon Road. Interstate 8 provides regional access to the project site at the Lake Jennings Park Road.

The traffic study is prepared in accordance with the *County of San Diego Report Format and Content Requirements (Transportation and Traffic)* and the *County of San Diego Guidelines for Determining Significance (Transportation and Traffic, August, 2011).*

Traffic counts for the project were taken in January of 2014. The project is anticipated to generate an overall 10,992 daily trips with 514 AM peak hour trips and 1,080 PM peak hour trips. For a commercial project, “passer-by” and “diverted” trips are considered in addition to the “primary” amount of trips. In essence, there are an overall 10,992 daily trips at the project’s driveways and lesser amount further away at the off-site locations with the reduction of the passer-by and diverted trips. The project’s primary trips at the off-site analysis locations include 4,683 daily trips with 203 AM peak hour trips and 464 PM peak hour trips, based on the adjustments of the passer-by and diverted trip reduction. The trip generation rates used in this analysis are determined based on rates contained in the *(SANDAG) (Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region* (2002). This manual provides standards and recommendations for the probable traffic generation of various land uses based upon local, regional and nationwide studies of existing developments in comparable settings.

Trip distribution and assignment is the process of identifying the probable destinations, directions and traffic routes that project related traffic will likely affect. The trip distribution and assignment for this project is based on SANDAG’s computerized travel forecast model (Series 12 Select Zone analysis).

The project is evaluated for potential direct and cumulative impacts as well as conformance with the adopted General Plan. The traffic study indicates that the project will cause several direct impacts to Olde Highway 80 and Lake Jennings Park Road, and there are cumulative impacts as well. The project would make the fronting improvements along Olde Highway 80 and the off-site improvements proposed for Lake Jennings Park Road between Olde Highway 80 and Harritt Road. The recommended roadway improvements are shown in Appendix D. All of the impacted roadway segments and intersections would be mitigated to avoid direct impacts with the recommended roadway improvements. The segment of Lake Jennings Park Road from Jack Oak Road to Harritt Road, segment will experience LOS E for Cumulative With Project conditions, however, we would observe that this portion of roadway does not really conform to the normal list of facilities given the availability of a climbing lane southbound and southerly from El Monte Road, and the practical capacity is indeed something greater than the values used in the tables for making our assessment of adequacy. Therefore, the improvements being proposed by the applicant to that portion of Lake Jennings Park Road between Harritt Road and Olde Highway 80 are a reasonable and proportional contribution to the project’s effects throughout this area.

CHAPTER 1
THE PROJECT

This traffic impact analysis has been prepared for the proposed Lake Jennings Marketplace project. The proposed development is located in the Lakeside Community of the unincorporated County of San Diego on the south side of Interstate 8 near the Lake Jennings Park Road Interchange. The project site is located south of Olde Highway 80 between Lake Jennings Park Road and the future northerly extension of Rios Canyon Road. Interstate 8 provides regional access to the project site at the Lake Jennings Park Road. Figure 1-1 shows the project vicinity and study area.

This property has been the subject of earlier studies both as a neighborhood commercial center and as a residential project for which it was approved previously by the County. At this time the proposal is to return to a commercial center project. Since the last time the project was analyzed there have been changes in existing background traffic conditions on County roadways, procedures and guidelines for the preparation of studies, SANDAG's modeling system upon which the distribution is based, and the project itself has reduced in its size from 93,000 square feet to 76,100 square feet since last studied as a commercial center.

1.1 PROJECT LOCATION AND DESCRIPTION

Project Location

The project is located in east San Diego County near the community of Lakeside in East San Diego County, south of Olde Highway 80, and east of Lake Jennings Park Road (Figures 1-1 and 1-2).

Project Description

The proposed project is a commercial shopping center located on an existing vacated site. Work to be done includes supporting infrastructure such as sewer, road improvements and utilities, the vacation of an existing paved road, and dedication of a biological open space easement on an approximately 13.10 acre site.

Commercial Shopping Center

The project proposes to construct a commercial shopping center with 76,100 square feet (sf) of building area. The project would include six structures, all of which will be located on individual lots. The development will include the following:

1. Market Building (Building A – 43,000 sf) located along the east side of the project site.
2. Financial Building with drive through (Building B – 4,500 sf) located on the northeast intersection of Olde Highway 80 and the proposed signalized project entrance on Olde Highway 80.
3. Restaurant with drive through (Building C – 3,500 sf) located on the northwest intersection of Olde Highway 80 and the proposed signalized project entrance on Olde Highway 80.
4. Restaurant-Retail Building (Building D – 9,600 sf) located along the southern boundary of the project's developed area. (Site plan includes a 500 sf outdoor dining area for a total of 10,100 sf)
5. Gas Station with convenience store and car wash (43,000 sf pad) at the intersection of Olde Highway 80 and Ridge Hill Road, and Commercial Building (Building E – 3,000 sf) located directly south of the gas station.

6. Restaurant-Retail Building (Building F – 12,500 sf) located along the southern boundary of the project's developed area. Building F shares a common wall with Building D.

Trail Component

The project will construct a multi-use trail suitable for pedestrians and equestrian users. The trail will be 10 feet wide and constructed of decomposed granite material. The trail segments adjacent to the two public streets are proposed as standard trail pathways per the County's Community Trails Master Plan (CTMP). The trail segment within the open space lot will run along the southern edge of the development area (immediately north of the proposed open space area) within a 20 foot wide trail easement and will include a 10 foot wide treadway.

Access

The project requires four access points; one from Ridge Hill Road located on the west side of the project, and three others located along Olde Highway 80; a right-in (only) approximately 200 feet east of the intersection of Olde Highway 80 and Lake Jennings Park Road, a full signalized project entry half way along the project frontage, and a second non-signalized project entry (right in – right out only) near the northeast corner of the property.

Walls and Signage

There will be a comprehensive coordinated sign program designed for the project. It includes a Freeway Pylon Display, Monument Center ID Displays, Monument Signage at the signalized entrance on Olde Highway 80, and a state required Gas Pricing Sign for the gas station, convenience store and car wash Pad.

Parking

The project proposes 389 parking spaces. The project parking is almost entirely located within the central portion of the site and will largely be out of the casual view of traffic on Lake Jennings Park Road and Olde Highway 80. The County of San Diego Zoning Ordinance requires a total of 389 parking spaces to be provided by the proposed project based on the size and uses proposed in the buildings. Therefore, the project meets the parking requirements of the County of San Diego Zoning Ordinance.

Landscaping Plan

A landscape plan has been prepared for the project. The landscape plan incorporates a variety of species that are intended to provide a visual buffer from Interstate 8 and be compatible with the riparian zone associated with Los Coches Creek. The plant palette reflects a selection of native plant material which can naturally be found in riparian zones of Southern California.

1.2 PROJECT ACCESS

The project will have three access points on Olde Highway 80 and one access point on Lake Jennings Park Road. The main access to the project site is provided at Project Driveway 2, which is a future traffic signal, located on Olde Highway 80 approximately 550 feet east of Lake Jennings Park Road. Project Driveway 1 is a right-in only access located on Olde Highway 80 approximately 200 feet east of Lake Jennings Park Road. Project Driveway 3 is another right-in/right-out only access located on Olde Highway 80 approximately 750 feet east of Lake Jennings Park Road. Project Driveway 4 is a stop-controlled full access driveway located on Ridge Hill Road approximately 200 feet south of Olde Highway 80.

1.3 STUDY AREA

The study area includes locations that are expected to be affected by the proposed project. The scope of the study area is based on the County of San Diego guidelines which specify that an intersection or roadway segment should be analyzed if it will carry 25 project peak hour directional trips. The study area is shown in Figure 1-1. The specific study area includes sixteen (16) roadway segments, fifteen (15) intersections and two freeway mainline links.

1.3.1 Roadway Segments

- Olde Highway 80 from Lake Jennings Park Road to Project Driveway 1
- Olde Highway 80 from Project Driveway 1 to Project Driveway 2
- Olde Highway 80 from Project Driveway 2 to Project Driveway 3
- Olde Highway 80 from Project Driveway 3 to Rios Canyon Road
- Olde Highway 80 from Rios Canyon Road to Pecan Park Lane
- Olde Highway 80 from Pecan Park Lane to Chimney Rock Lane
- Mapleview Street from Ashwood Street to Pino Drive
- Lake Jennings Park Road from Pino Drive to El Monte Road
- Lake Jennings Park Road from El Monte Road to Jack Oak Road
- Lake Jennings Park Road from Jack Oak Road to Harritt Road
- Lake Jennings Park Road from Harritt Road to Blossom Valley Road
- Lake Jennings Park Road from Blossom Valley Road to I-8 Westbound Off-Ramp
- Lake Jennings Park Road from I-8 Westbound Off-Ramp to Olde Highway 80
- Lake Jennings Park Road from Olde Highway 80 to Project Driveway 4
- Ridge Hill Road from Lake Jennings Park Road to Cordial Road
- Rios Canyon Road south of Olde Highway 80

1.3.2 Intersections

- Mapleview Street and Ashwood Street
- Mapleview Street and Pino Drive
- Lake Jennings Park Road and El Monte Road
- Lake Jennings Park Road and Harritt Road
- Lake Jennings Park Road and Blossom Valley Road
- Lake Jennings Park Road and I-8 Westbound Off-Ramp
- Lake Jennings Park Road and I-8 Eastbound Off-Ramp
- Olde Highway 80 and Project Driveway 1
- Olde Highway 80 and Project Driveway 2
- Olde Highway 80 and Project Driveway 3
- Olde Highway 80 and Rios Canyon Road
- Olde Highway 80 and Pecan Park Lane West
- Olde Highway 80 and Pecan Park Lane East
- Ridge Hill Drive and Project Driveway 4
- Rios Canyon Road and Pecan Park Lane

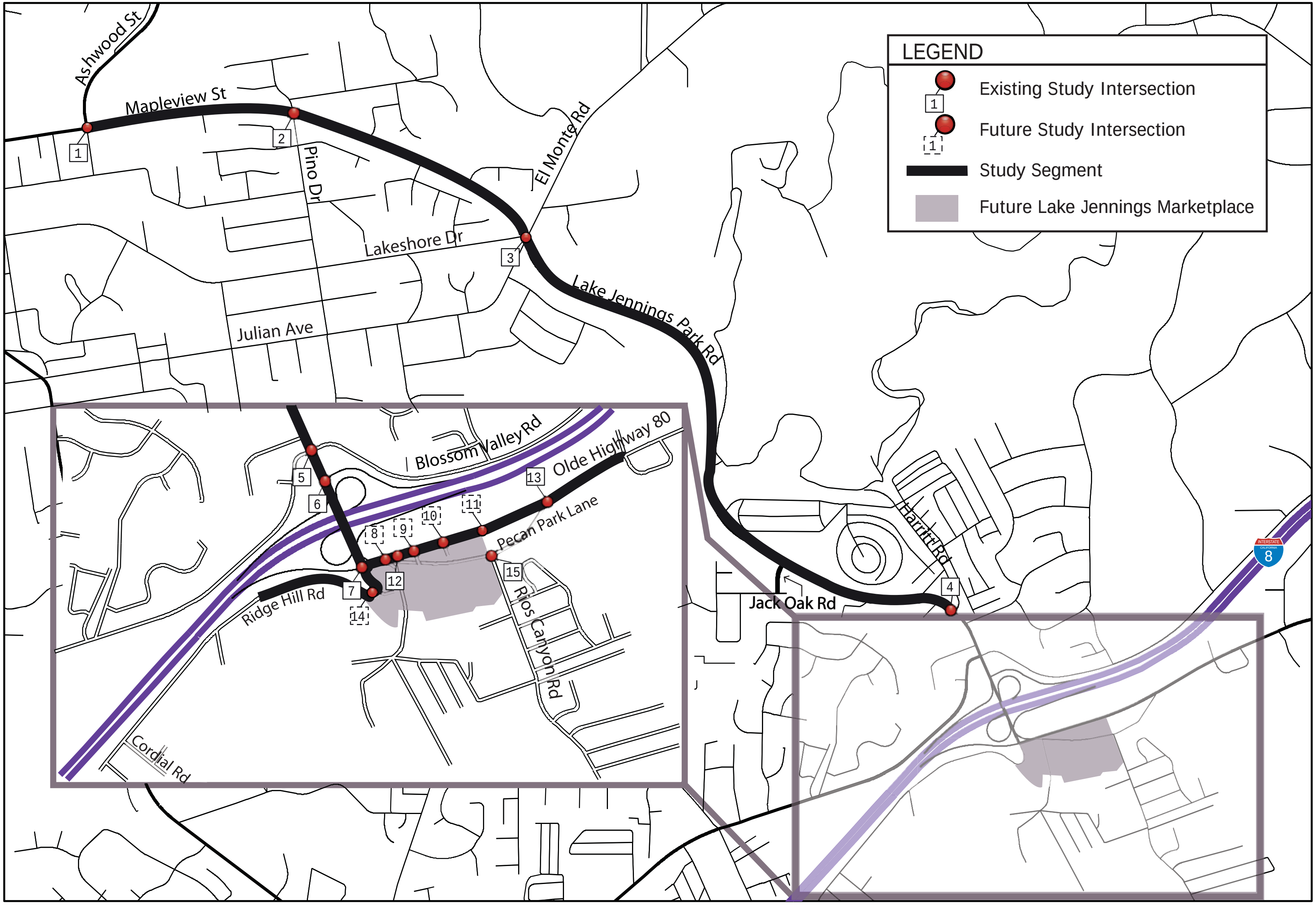


Figure 1-1
Project Study Area

N
Not To Scale

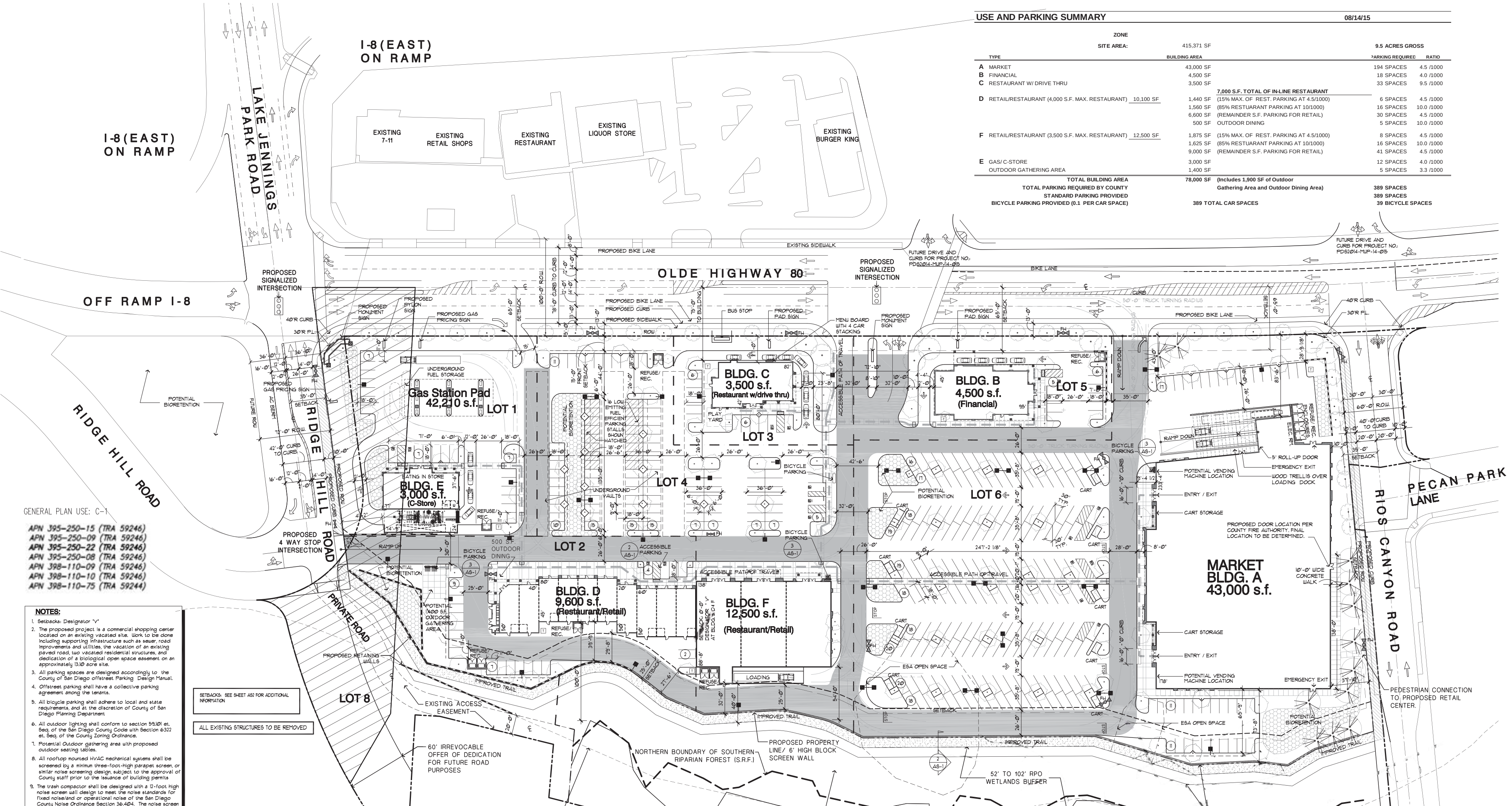
USE AND PARKING SUMMARY

08/14/15

ZONE

SITE AREA: 415,371 SF — 9.5 ACRES GROSS

	TYPE		BUILDING AREA		PARKING REQUIRED	RATIO
A	MARKET		43,000 SF		194 SPACES	4.5 /1000
B	FINANCIAL		4,500 SF		18 SPACES	4.0 /1000
C	RESTAURANT W/ DRIVE THRU		3,500 SF		33 SPACES	9.5 /1000
				7,000 S.F. TOTAL OF IN-LINE RESTAURANT		
D	RETAIL/RESTAURANT (4,000 S.F. MAX. RESTAURANT)	10,100 SF	1,440 SF	(15% MAX. OF REST. PARKING AT 4.5/1000)	6 SPACES	4.5 /1000
			1,560 SF	(85% RESTUARANT PARKING AT 10/1000)	16 SPACES	10.0 /1000
			6,600 SF	(REMAINDER S.F. PARKING FOR RETAIL)	30 SPACES	4.5 /1000
			500 SF	OUTDOOR DINING	5 SPACES	10.0 /1000
F	RETAIL/RESTAURANT (3,500 S.F. MAX. RESTAURANT)	12,500 SF	1,875 SF	(15% MAX. OF REST. PARKING AT 4.5/1000)	8 SPACES	4.5 /1000
			1,625 SF	(85% RESTUARANT PARKING AT 10/1000)	16 SPACES	10.0 /1000
			9,000 SF	(REMAINDER S.F. PARKING FOR RETAIL)	41 SPACES	4.5 /1000
E	GAS/ C-STORE		3,000 SF		12 SPACES	4.0 /1000
	OUTDOOR GATHERING AREA		1,400 SF		5 SPACES	3.3 /1000
	TOTAL BUILDING AREA		**78,000 SF**	**(Includes 1,900 SF of Outdoor**		
	TOTAL PARKING REQUIRED BY COUNTY			**Gathering Area and Outdoor Dining Area)**	**389 SPACES**	
	STANDARD PARKING PROVIDED				**389 SPACES**	
	BICYCLE PARKING PROVIDED (0.1 PER CAR SPACE)		**389 TOTAL CAR SPACES**		**39 BICYCLE SPACES**	



NOTES:

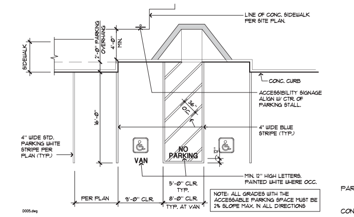
1. Setbacks: Designator 'V'
2. The proposed project is a commercial shopping center located on an existing vacated site. Work to be done including supporting infrastructure such as sewer, road improvements and utilities, the vacation of an existing paved road, two vacated residential structures, and dedication of a biological open space easement on an approximately 13.10 acre site.
3. All parking spaces are designed accordingly to the County of San Diego offstreet Parking Design Manual.
4. Offstreet parking shall have a collective parking agreement among the tenants.
5. All bicycle parking shall adhere to local and state requirements, and at the discretion of County of San Diego Planning Department
6. All outdoor lighting shall conform to section 59.101 et. Seq. of the San Diego County Code with Section 6322 et. Seq. of the County Zoning Ordinance.
7. Potential Outdoor gathering area with proposed outdoor seating tables.
8. All rooftop mounted HVAC mechanical systems shall be screened by a minimum three-foot-high parapet screen, or similar noise screening design, subject to the approval of County staff prior to the issuance of building permits
9. The trash compactor shall be designed with a 12-foot high noise screen wall design to meet the noise standards for fixed noise/and or operational noise of the San Diego County Noise Ordinance Section 36.404. The noise screen wall design will be subject to the approval of County staff prior to the issuance of building permits

LEGEND

■—■	LIGHTING: WIDELITER TWIN 135 WATT, LPS LAMP, 17' POLE w/3' TALL CONCRETE BASE - 2' DIA.
—■	LIGHTING: WIDELITER 135 WATT, LPS LAMP, 17' POLE w/3' TALL CONCRETE BASE - 2' DIA.
— —	ACCESSIBLE PATH OF TRAVEL NOT TO EXCEED 4.9% SLOPE.
▨	25' WIDE FIRE DEPARTMENT ACCESS LANE
— — —⋈	FIRE HYDRANT AND 150' FIRE FIGHTER/HOSELINE ACCESS
▬	RETAINING WALL: EXPOSED HEIGHT VARIES FROM 6 INCHES TO 10 FT. IN HEIGHT. SEE CIVIL DRAWINGS FOR ADDITIONAL INFORMATION.
╭	50'-0" MIN. REQUIRED TRUCK TURNING RADIUS SYMBOL. U.N.O.
▒	10'-0' WIDE TRAIL WITH D.G. SURFACE
▨	10'-0' IMPROVED PATHWAY WITH D.G. SURFACE
◇	LANDSCAPE PLANTER
▭	TRASH ENCLOSURE TO COMPLY WITH COUNTY OF SAN DIEGO STANDARDS
T	ELECTRICAL TRANSFORMER
⋀⋀⋀	10 BICYCLE RACK PARKING TOTAL OF 4 (PARKING FOR 40 BIKES TOTAL) SEE DETAIL NO. 3

BIKE RACK - HOLDS 8 PER RACK ③

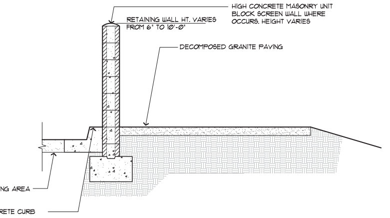
HOLDS 10 BIKES PER RACK TOTAL OF 4 RACKS N.T.S.



NOTE: ALL GRADES WITH THE ACCESSABLE PARKING SPACE MUST BE 2% SLOPE MAX. IN ALL DIRECTIONS

ACCESSIBLE PARKING ①

N.T.S.



Trail - Section ②

x236d01.dwg 1/2" = 1'-0"

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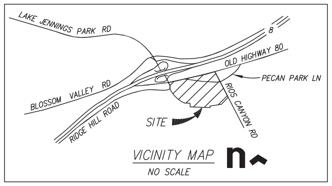

VICINITY MAP

NO SCALE

Site Plan

0 10' 40' 100'

SCALE: 1" = 40'-0"

Developer:

SOUTH COAST DEVELOPMENT

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LAKE JENNINGS MARKET PLACE

Olde Highway 80 & Lake Jennings Park Road
County of San Diego, California

Issue Dates	
Planning Dept.	07/17/2014
Planning Dept.	11/19/2014
Planning Dept.	01/26/2015
Planning Dept.	05/13/2015
Permit Set	-
Construction Set	-
Drawing Date	06/19/2015
Check By	NB
Drawn By	NB
Scale	as noted
Job Number	12080.S01
Sheet Number	AS-1

1.3.3 Freeway Mainlines

- Interstate 8 west of Lake Jennings Park Road
- Interstate 8 east of Lake Jennings Park Road

1.4 PROJECT TRIP GENERATION

Trip generation is a measure or forecast of the number of trips that begin or end at the project site. The traffic generated is a function of the extent and type of development proposed for the site. These trips will result in some traffic increases on the streets where they occur. Vehicular traffic generation characteristics for projects are estimated based on established rates. These rates identify the probable traffic generation of various land uses based studies of developments in comparable settings. The rates used in this analysis are determined based on rates contained in the *(SANDAG) (Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region (2002.)* This manual provides standards and recommendations for the probable traffic generation of various land uses based upon local, regional and nationwide studies of existing developments in comparable settings. Appendix B contains excerpts from this manual.

Building square footage excluding outdoor space was used to calculate project trip generation. As shown in Table 1-1, the project is anticipated to generate an overall 10,992 daily trips with 514 AM peak hour trips and 1,080 PM peak hour trips. For a commercial project, “passer-by” and “diverted” trips are considered in addition to the “primary” amount of trips. In essence, there are an overall 10,992 daily trips at the project’s driveways and lesser amount further away at the off-site locations with the reduction of the passer-by and diverted trips. The project’s primary trips at the off-site analysis locations include 4,683 daily trips with 203 AM peak hour trips and 464 PM peak hour trips, based on the adjustments of the passer-by and diverted trip reduction. For reference purpose a graphic is included in Appendix J that shows where each trip type was applied.

Table 1-1
Project Trip Generation

Land Use	Intensity	Units	Rate/ Trips	Daily	AM Peak Hour			PM Peak Hour		
					Total	In	Out	Total	In	Out
Neighborhood Shopping Center*	76,100	Square Feet	Rate	120	4%	60%	40%	10%	50%	50%
			Trips	9,132	365	219	146	913	457	457
Gasoline with/Food Mart & Car Wash	12	Fueling Space	Rate	155	8%	50%	50%	9%	50%	50%
			Trips	1,860	149	75	75	167	84	84
Total Primary + Diverted + Passby				10,992	514	294	221	1080	541	541
Neighborhood Shopping Center*	78%	Passby Trip Reduction	Rate							
			Trips	7,123	285	171	114	712	356	356
Gasoline with/Food Mart & Car Wash	72%	Passby Trip Reduction	Rate							
			Trips	1,339	107	54	54	120	60	60
Total Primary + Diverted				8,462	392	225	168	832	417	417
Neighborhood Shopping Center*	47%	Diverted Trip Reduction	Rate							
			Trips	4,292	172	103	69	429	215	215
Gasoline with/Food Mart & Car Wash	21%	Diverted Trip Reduction	Rate							
			Trips	391	31	16	16	35	18	18
Total Primary				4,683	203	119	84	464	232	232

* includes 3 ksf from gas store

Source: SANDAG (Not So) Brief Guide of Vehicular Traffic Generation Rates

Note: Numbers may not total due to rounding

A reduced project alternative that would have 13,000 fewer gross square feet of commercial building area has been considered. Instead of a 43,000 square foot grocery store some other commercial use totaling 30,000 square feet would be built there netting out at 13,000 less square feet. That represents 1,560 fewer trips at the site (13,000 s.f. x 120 trips/ksf).As such, the trips would be somewhat reduced in the study but not enough to avoid the traffic impacts otherwise generated by the full project.

1.5 TRIP DISTRIBUTION AND ASSIGNMENT

Trip distribution and assignment is the process of identifying the probable destinations, directions and traffic routes that project related traffic will likely affect. Trip distribution and assignment information can be estimated from observed traffic patterns, experience or through use of a computerized travel forecast model. Once the proposed developments trips have been estimated, they are assigned to the study area network. The trip distribution and assignment for this project is based on SANDAG’s computerized travel forecast model (Series 12 Select Zone analysis). Appendix B contains the select zone model plots.

The trip distribution and assignment for the project-related trips is shown in Figure 1-3. Figure 1-4 shows the project-only daily trips while Figures 1-5 and 1-6 show project-only AM and PM peak hour trips, respectively.

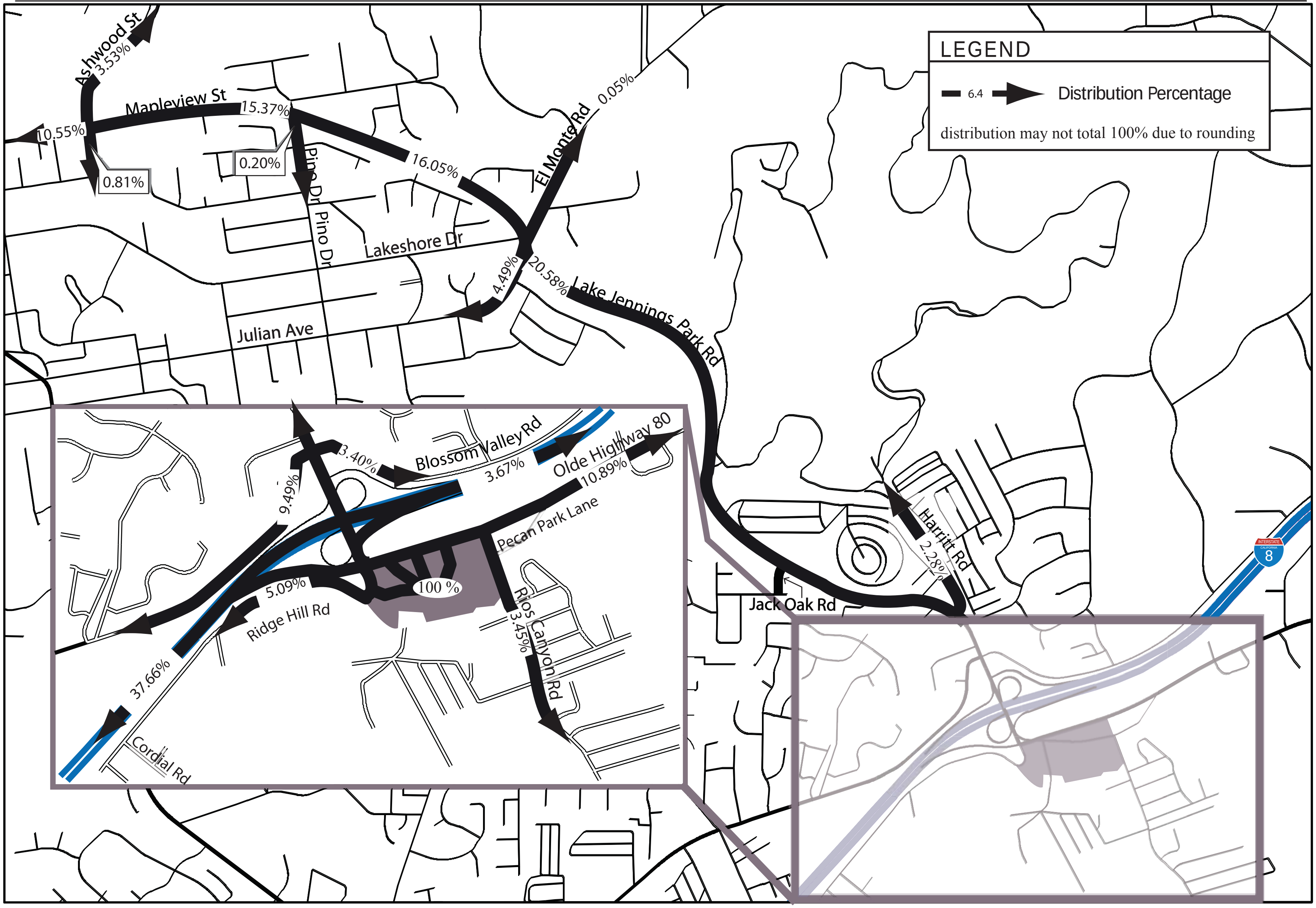

Figure 1-3
Project Trip Distribution

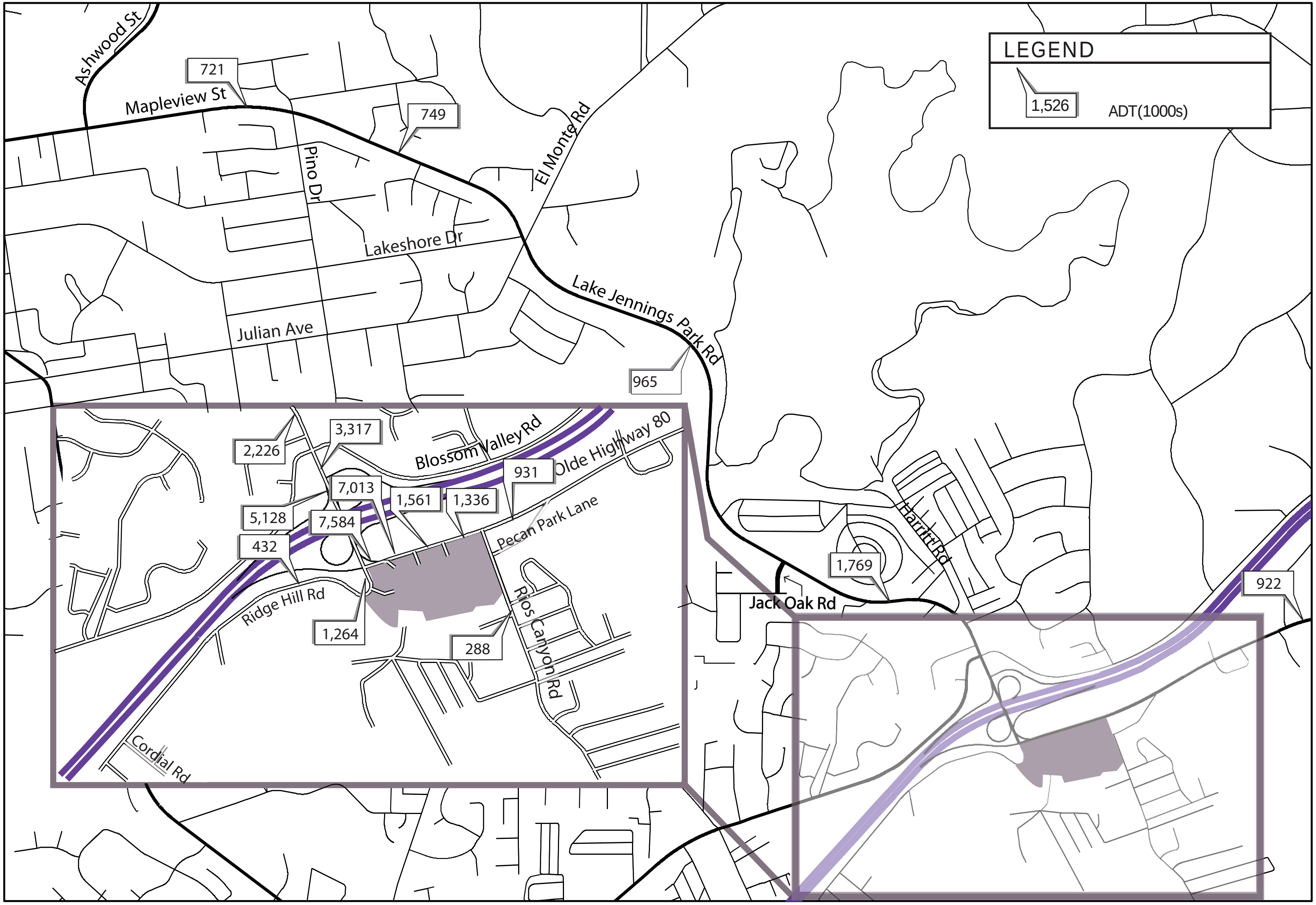

Figure 1-4
Project Daily Roadway Segment Volumes

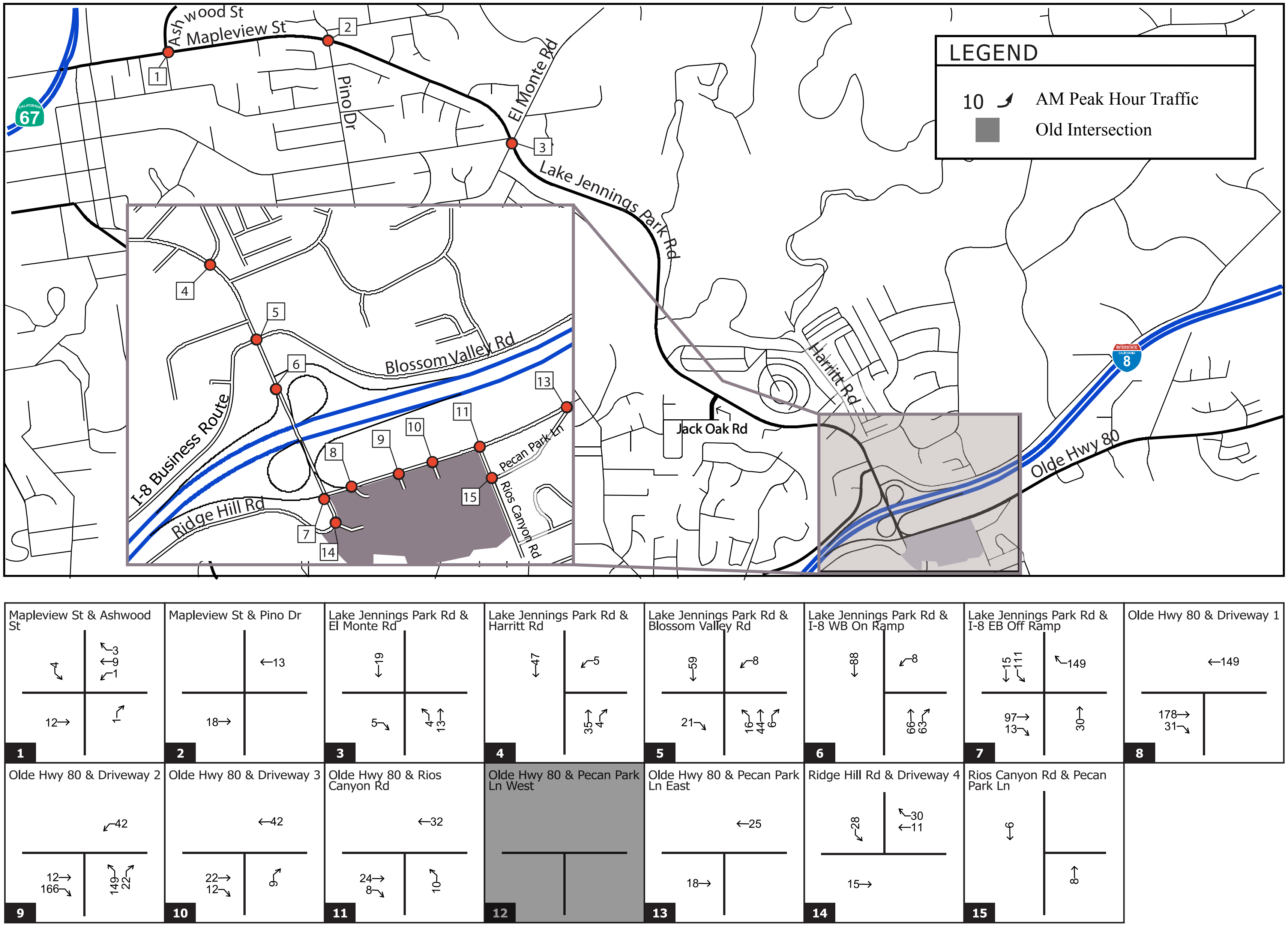

Figure 1- 5
Project AM Peak Hour Intersection Volumes

N
Not To
Scale

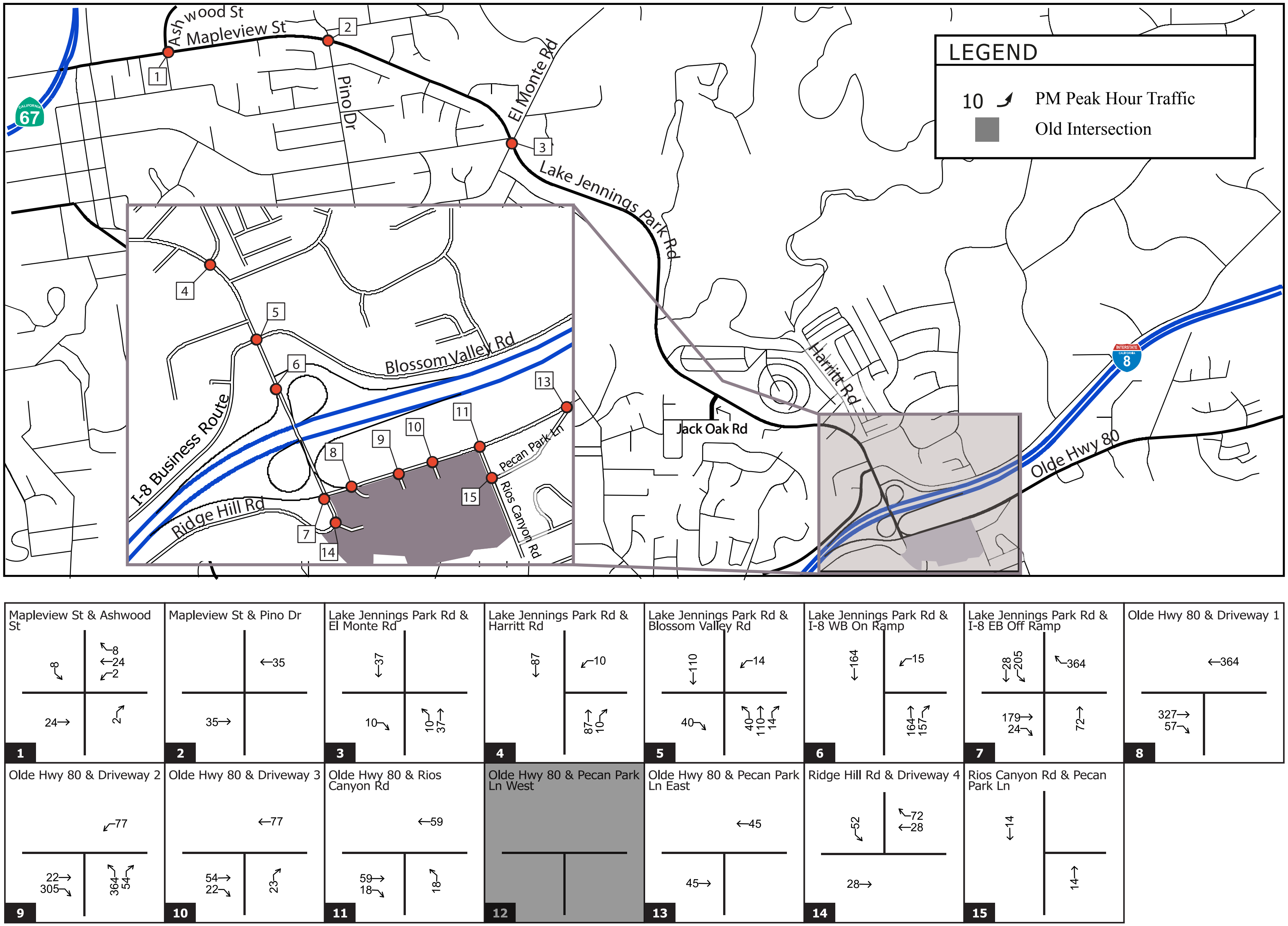

Figure 1- 6
Project PM Peak Hour Intersection Volumes

N
Not To
Scale

1.6 PARKING

The County of San Diego requirements for parking are being met by the project, and there are 389 spaces being provided within the project.

CHAPTER 2
METHODOLOGIES

This chapter documents the methodologies and assumptions used to conduct the traffic impact analysis for the project. The study and analysis methodology is based on the *County of San Diego Report Format and Content Requirements (Transportation and Traffic)* and the *County of San Diego Guidelines for Determining Significance (Transportation and Traffic)* adopted in August 24, 2011. The guidelines are used to determine the project's conformance and evaluate whether a project's impacts are perceptible to the average driver. This section contains the following background information:

- Study scenarios
- Study time periods
- Capacity analysis methodologies

2.1 STUDY SCENARIOS

This report presents an analysis of the following scenarios:

- Existing Conditions
- Existing Conditions With Project
- Cumulative Conditions Without Project
- Cumulative Conditions With Project
- General Plan Conditions Without Project
- General Plan Conditions With Project

2.2 ANALYSIS METHODOLOGIES

Street system operating conditions are typically described in terms of "level of service." Level of service is a report-card scale used to indicate the quality of traffic flow on roadway segments and at intersections. Level of service (LOS) ranges from LOS A (free flow, little congestion) to LOS F (forced flow, extreme congestion). A more detailed description of the concepts described in this section is provided in Appendix A of this document. The following methods are outlined in this publication and used in this study.

2.2.1 Roadway Segment Capacity Analysis

The County of San Diego has published daily traffic volume standards for roadways within its jurisdiction. To determine service levels on study area roadway segments, a comparison is made between the appropriate average daily traffic thresholds for level of service to the daily capacity of the study area roadway segments, and the existing and future volumes in the study area. The thresholds for determining level of service used in this analysis are summarized in Appendix A.

2.2.2 Regionally Significant Arterial Analysis

The San Diego Association of Governments (SANDAG) Congestion Management Program (CMP) identifies the regionally significant circulation network. The SANDAG CMP requires that all large projects generating over 2,400 average daily trips perform a detailed analysis of any CMP roadways within the project study area.

2.2.3 Intersection Capacity Analysis

The analysis of peak hour intersection performance was conducted using the Synchro and Traffix analysis software programs, which uses methodologies defined in the 2000 Highway Capacity Manual (HCM) to calculate results. Level of service (LOS) for intersections is determined by control delay. Control delay is defined as the total elapsed time from when a vehicle stops at the end of a queue to the time the vehicle departs from the stop line. The total elapsed time includes the time required for the vehicle to travel from the last-in-queue position to the first-in-queue position, including deceleration of vehicles from free-flow speed to the speed of vehicles in the queue. Appendix A lists the HCM delay/LOS criteria for both signalized and unsignalized intersections.

2.2.3.1 Signalized Intersections

The HCM analysis methodology for evaluating signalized intersections is based on the “operational analysis” procedure. This technique uses 1,900 passenger cars per hour of green per lane (pcphgpl) as the maximum saturation flow of a single lane at an intersection. This saturation flow rate is adjusted to account for lane width, on-street parking, conflicting pedestrian flow, traffic composition, (e.g., the percentage of vehicles that are trucks) and shared lane movements (e.g., through and right-turn movements from the same lane). Average control delay is calculated by taking a volume-weighted average of all the delays for all vehicles entering the intersection.

2.2.3.2 All-way Stop-controlled (AWSC) Intersections

The HCM analysis methodology for evaluating all-way Stop-controlled intersections is based on the degree of conflict for each independent approach created by the opposing approach and each conflicting approach. Level of Service for AWSC intersections is also based on the average control delay. However, AWSC intersections have different threshold values than those applied to signalized intersections. This is based on the rationale that drivers expect AWSC intersections to carry lower traffic volumes than at signalized intersections. Therefore, a higher level of delay is acceptable at a signalized intersection for the same LOS.

2.2.3.3 Two-way Stop-controlled (TWSC) Intersections

The HCM analysis methodology for evaluating two-way Stop-controlled (TWSC) intersections is based on gap acceptance and conflicting traffic for vehicles stopped on the minor-street approaches. The critical gap (or minimum gap that would be acceptable) is defined as the minimum time interval in the major-street traffic stream that allows intersection entry for one minor-street vehicle. Average control delay and LOS for the “worst approach” are reported. Level of service is not defined for the intersection as a whole.

2.2.4 Freeway Mainline Level of Service

The method for calculating freeway level of service is based on the volume-to-capacity (V/C) ratio using the following equation:

$$V/C = \frac{[\text{ (ADT * Peak hour percent * Directional factor)/Truck factor}]}{\text{Capacity}}$$

where:
ADT = average daily traffic volume (2-way);
Peak hour percent = the proportion of ADT that occurs during the peak hour (not specifically AM or PM);
Directional factor = the proportion of peak hour traffic traveling in the peak direction;
Truck factor = a reduction in capacity to account for heavy vehicles and grades; and
Capacity = 2,300 vehicles per hour per lane.

The resultant V/C ratios are compared to the standard v/c thresholds for level of service contained in Appendix A.

2.2.5 Ramp Meter Analysis

Freeway ramp meters are designed to maximize mainline freeway capacity, reduce traffic congestion and reduce peak period delays. This is accomplished by regulating the flow of vehicles entering the freeway, allowing for traffic flow on the mainline to achieve reasonable speeds. If excess demand exists at freeway on-ramps, delays and considerable queue lengths could result on ramps and adjacent surface roadways. Ramp meters control the access to Interstate 8 at Lake Jennings Park Road in the westbound direction during the AM peak hour. No ramp meters are active in the evening peak hour. The County Draft Guidelines for Determining Significance and Project Screening Criteria for Transportation Impacts require that ramp meter locations be studied where the proposed project adds 20 or more peak hour trips to the ramp.

The average queue length is calculated based on the following data:

- Demand (veh/hr) = peak hour demand expected to use the on-ramp;
- Meter Rate (veh/hr) = peak hour capacity expected to be processed through the ramp meter;
- Excess Demand (veh/hr) = Demand – Meter Rate or zero, whichever is greater;
- Average Delay (min) = (Excess Demand/Meter Rate)x 60 minutes/hour;
- Average Queue (feet) = Excess Demand x 29 feet/vehicle

2.2.6 Analysis of Significance

To determine direct project impacts, the County of San Diego has developed a series of thresholds based on allowable increases in volume-to-capacity ratios that become more stringent as level of service worsens. Appendix A summarizes these thresholds. Where roadway segments and intersections operate at LOS D or better impacts are not considered significant.

The August, 2011 Guidelines define the threshold of significance as on average the addition of one car per lane every 2.4 to 4.8 minutes during peak hour conditions depending on the level of service of the roadway. In most cases, this increase 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.

CHAPTER 3
EXISTING CONDITIONS

3.1 EXISTING TRAFFIC VOLUMES

The intersection turning movement counts were conducted during the weekday morning peak period from 7:00 AM to 9:00 AM, and during the weekday evening peak period from 4:00 PM to 6:00 PM in January of 2014. Average daily traffic volumes were obtained through machine data collection in January of 2014. Freeway mainline volumes were obtained from Caltrans online volume databank and are representative of 2014 freeway volumes. Traffic count data is included in Appendix C. The existing daily traffic volumes are shown in Figure 3-3. The existing weekday morning (AM) and evening (PM) peak hour intersection volumes are shown in Figures 3-4 and 3-5, respectively.

3.2 EXISTING WITH PROJECT TRAFFIC VOLUMES

The Existing With Project daily traffic volumes are shown in Figure 3-6. The Existing With Project AM and PM peak hour intersection volumes are shown in Figures 3-7 and 3-8, respectively.

3.3 ROADWAY NETWORK

The principal roadways in the project study area are described briefly below. The description includes the physical characteristics, adjacent land uses, and traffic control devices along these roadways. The existing roadway geometry and control conditions are shown in Figure 3-1 and 3-2.

Interstate 8 Freeway runs east/west connecting the eastern and western communities in San Diego County from Pacific Ocean to Cleveland National Forest. Interstate 8 continues to extend eastward into the State of Arizona. Near the project study area, Interstate 8 has two travel lanes in each direction. Interstate 8 has a full interchange at Lake Jennings Park Road.

Olde Highway 80 runs east/west running parallel to Interstate 8 from Lake Jennings Park Road to Chimney Rock Lane in the study area. It has a functional classification of a 2 lane collector with 1 lane in each direction and has a striped two-way left lane portion. The posted speed limit is 50 MPH.

Lake Jennings Park Road/Mapleview Street runs north/south connecting Ridge Hill Road and Olde Highway 80 to Pino Drive where it becomes Mapleview Street. Lake Jennings Park Road varies from 2-4 lanes and the ultimate classification of this road from Mapleview St to Olde Highway 80 is a 4.1B Major Road with intermittent Turn Lanes per the County of San Diego General Plan. It has a functional classification of a 2 lane collector road with 1 lane in each direction. The pavement width of the roadway varies throughout the length of the roadway with certain areas having two travel lanes in one direction, striped median, and/or bike lane. The posted speed limit varies between 40-55 MPH. Interstate 8 has a full interchange at Lake Jennings Park Road

Ridge Hill Road runs predominantly east/west with a small portion turning north at Interstate 8 and Olde Highway 80. Along this portion, Ridge Hill Road runs adjacent to the western boundary of the project. It has a functional classification of a 2 lane residential collector per the County of San Diego, with 1 lane in each direction.

Rios Canyon Road runs north/south connecting the residential community south of Interstate 8 to Olde Highway 80 via Pecan Park Lane. It has a functional classification of a 2 lane rural collector with 1 lane in each direction. Rios Canyon Road will be extended northerly from Pecan Park Lane to Olde Highway 80 along the easterly project boundary.

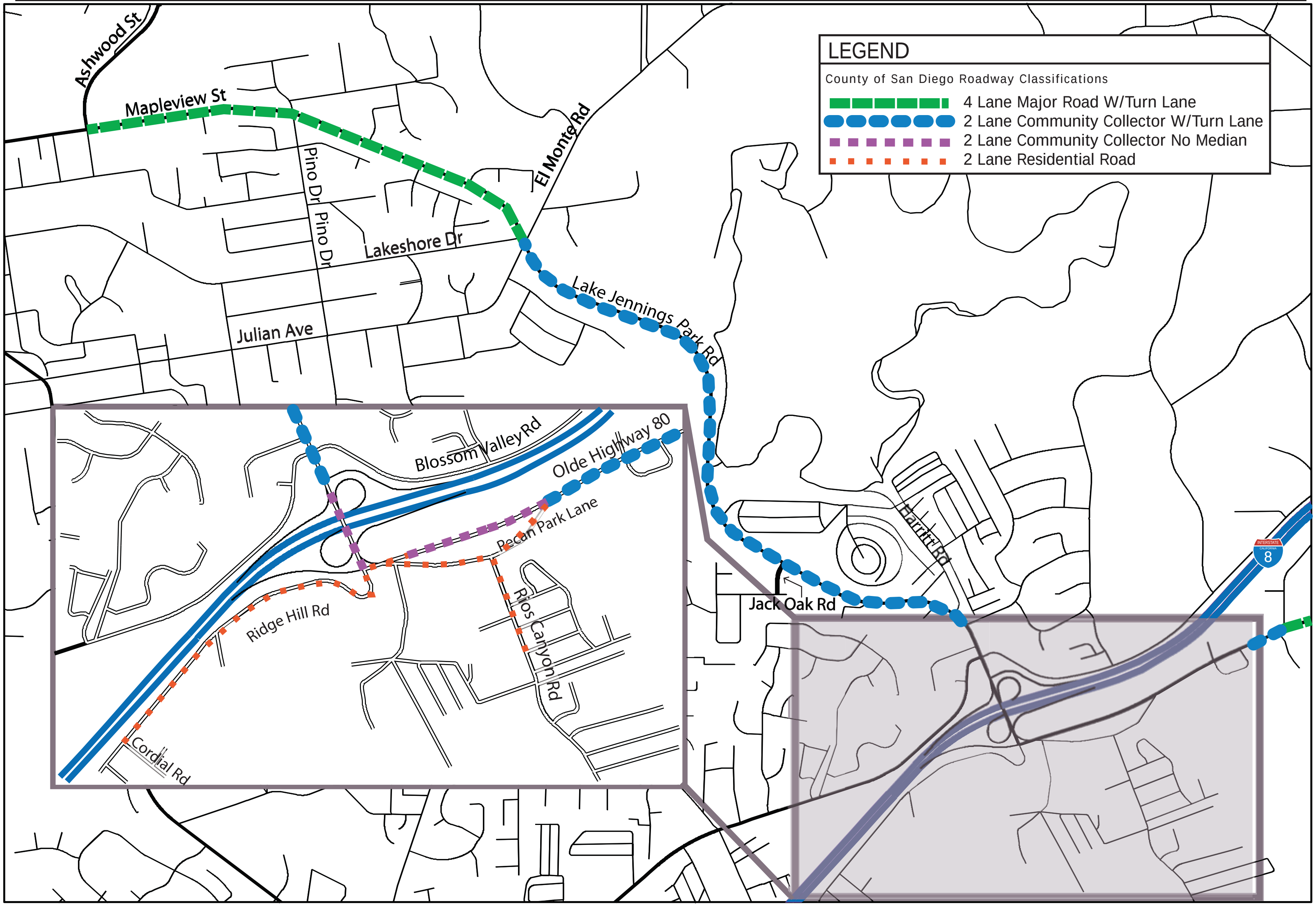

Figure 3-1
Existing Circulation Network

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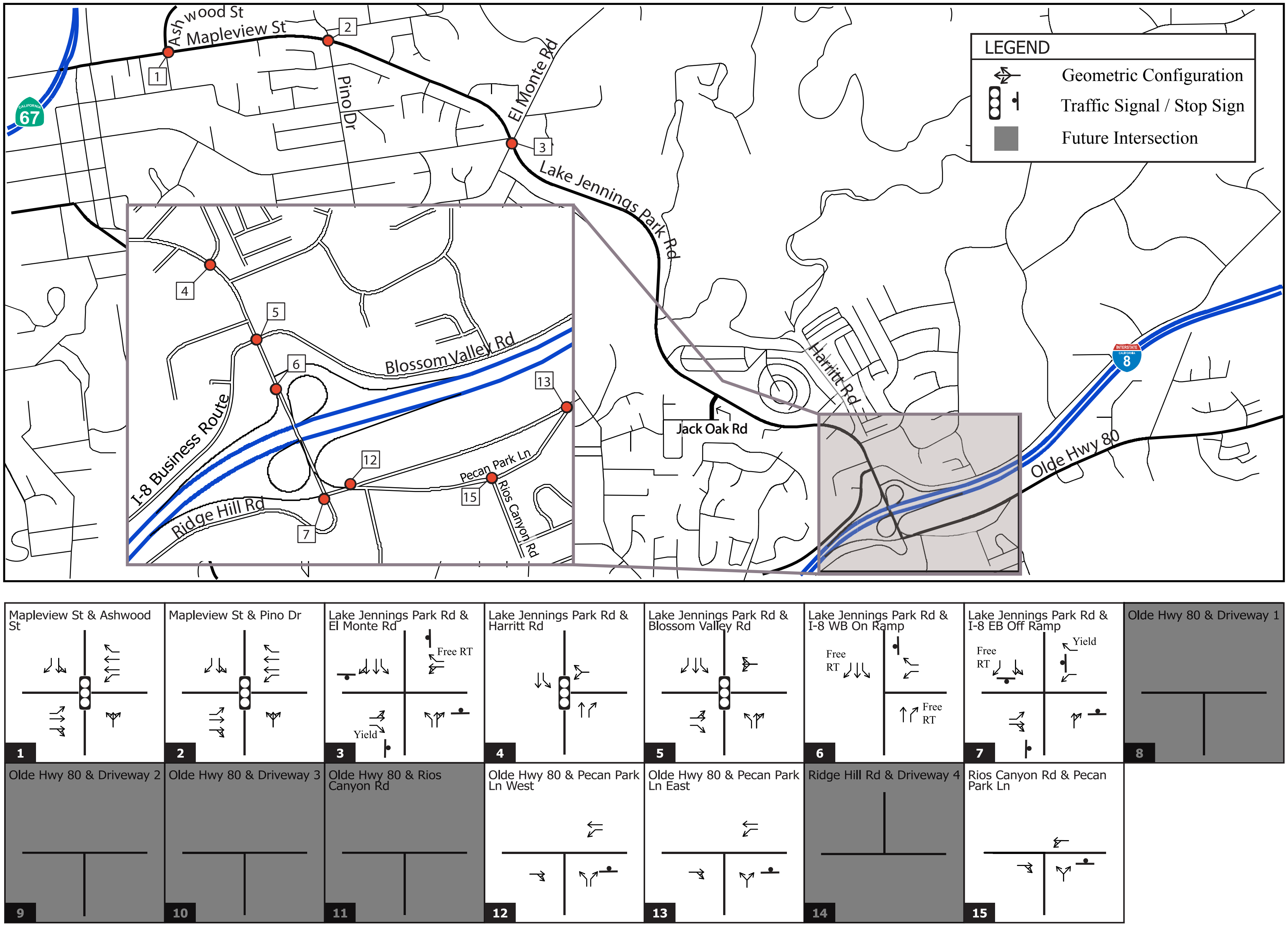

Figure 3-2
Existing Geometric Configuration

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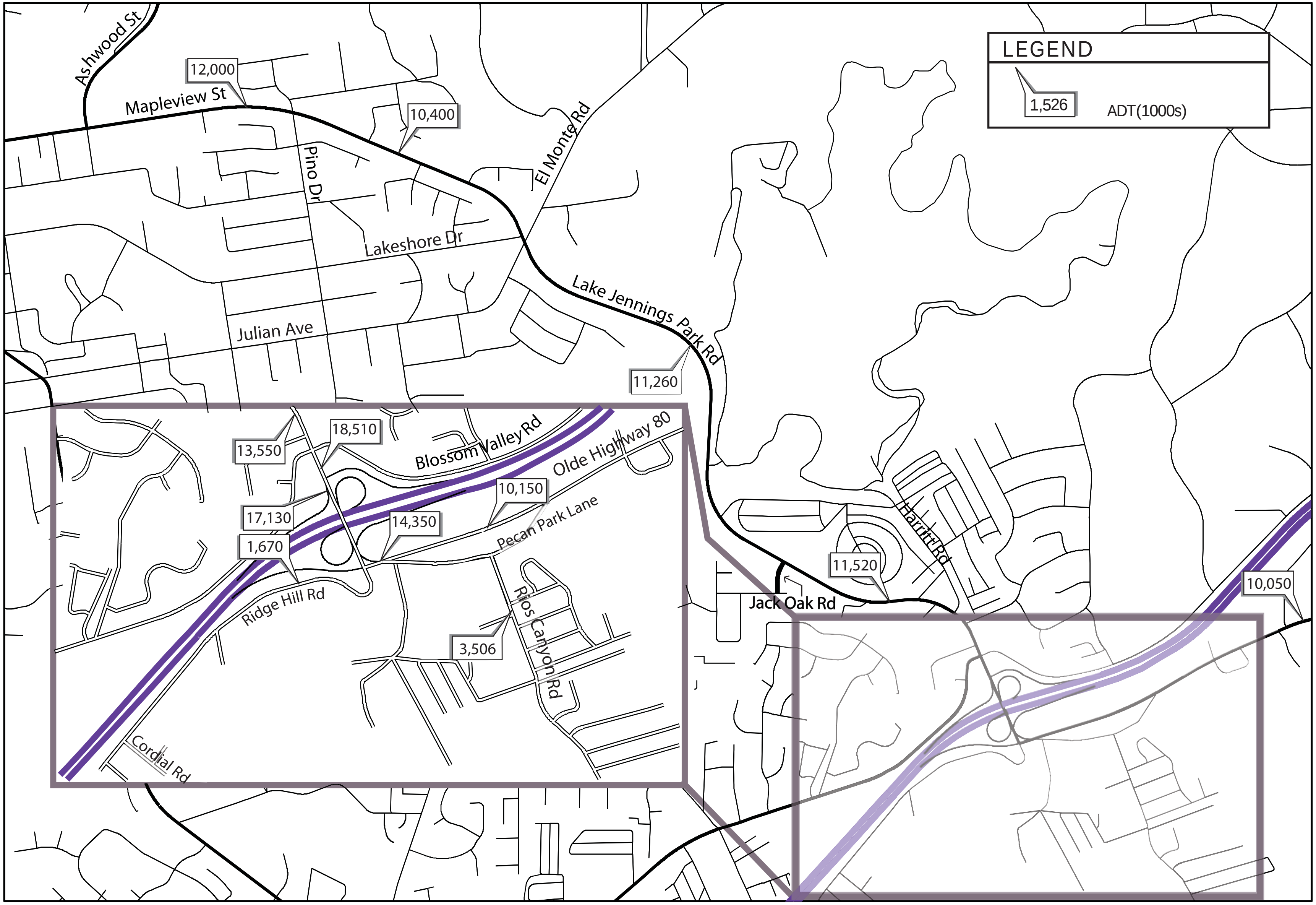

Figure 3-3
Existing Daily Roadway Segment Volumes

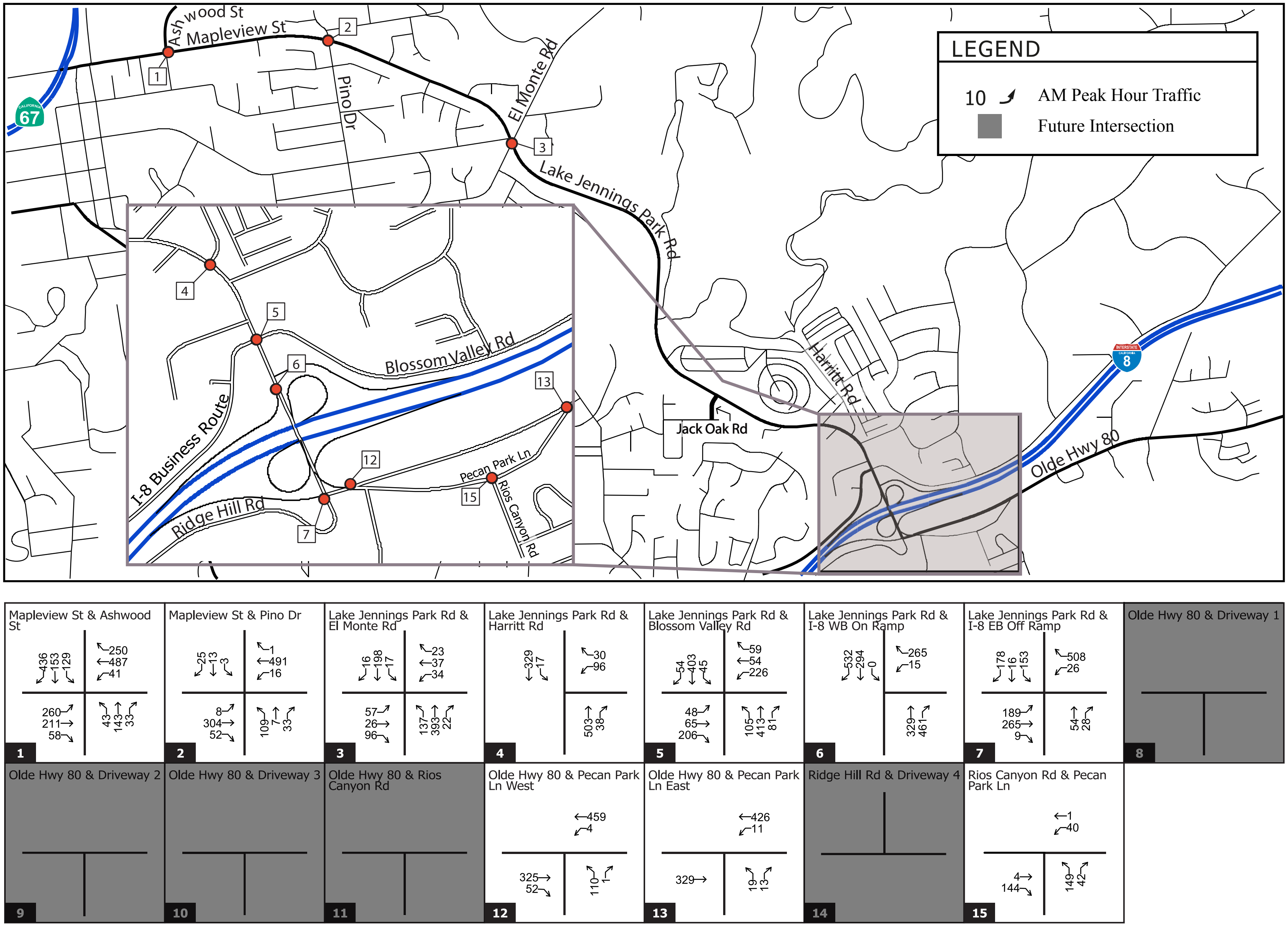

Figure 3-4
Existing AM Peak Hour Intersection Volumes

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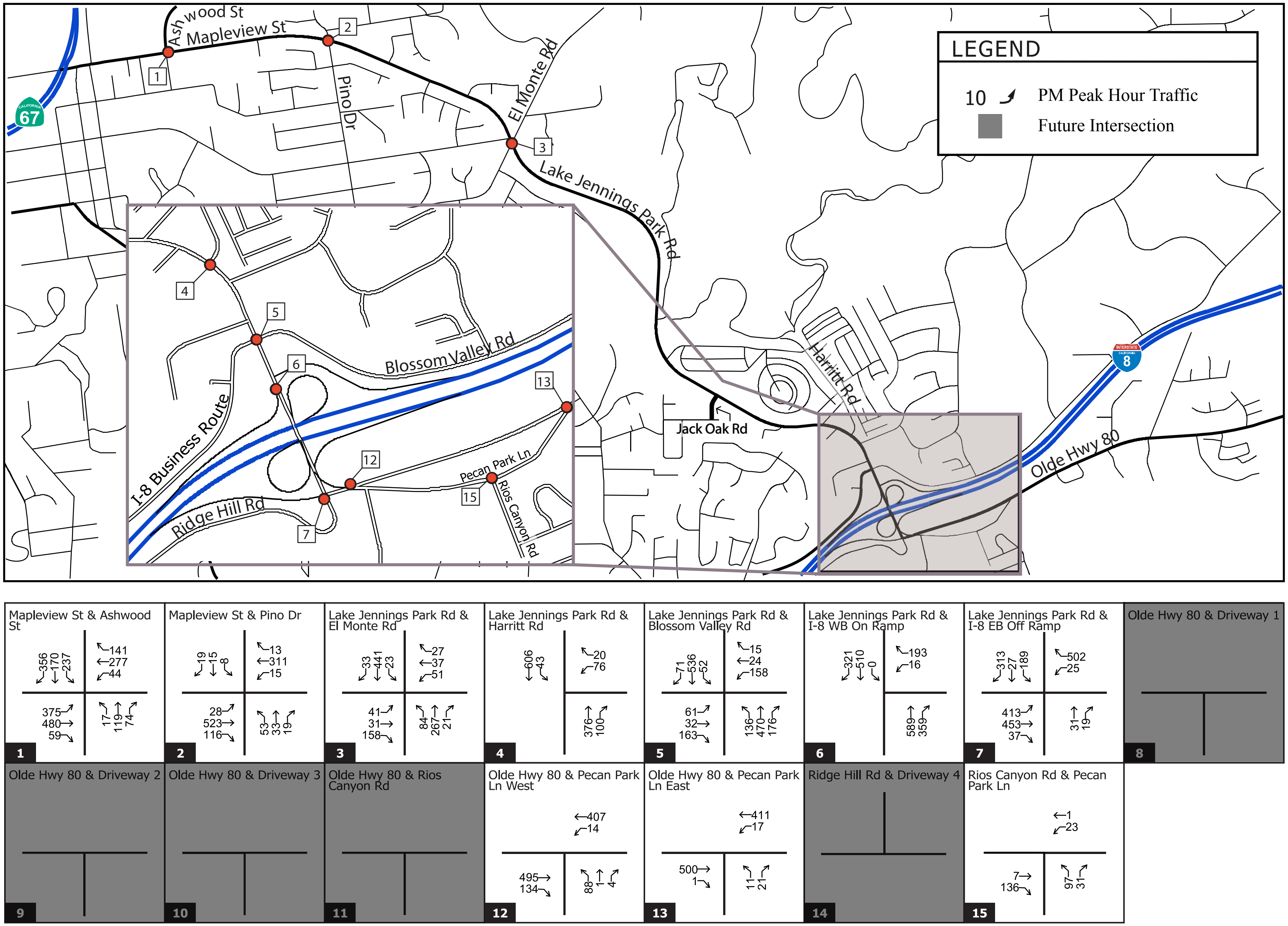

Figure 3-5
Existing PM Peak Hour Intersection Volumes

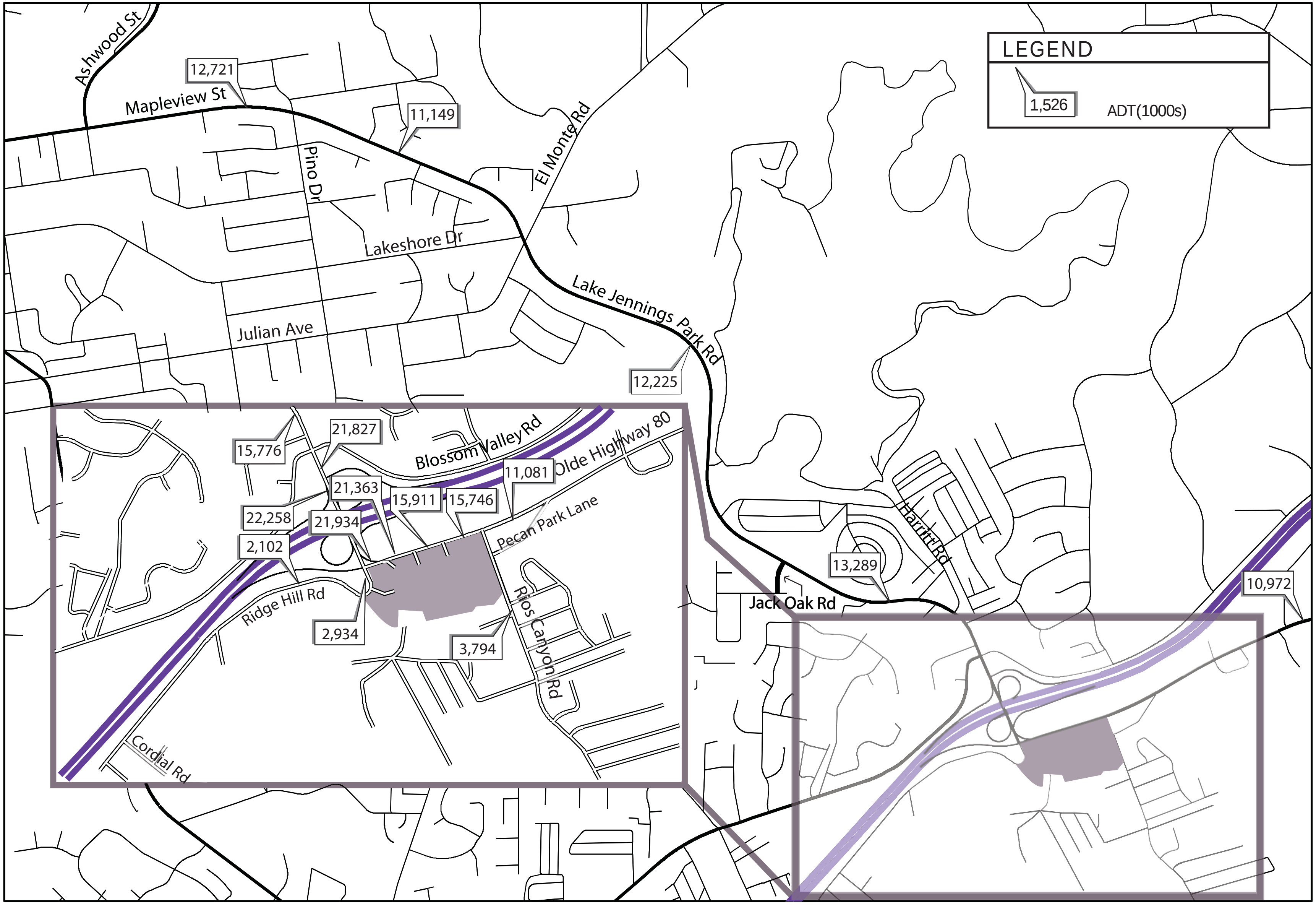

Figure 3-6

Existing With Project Daily Roadway Segment Volumes

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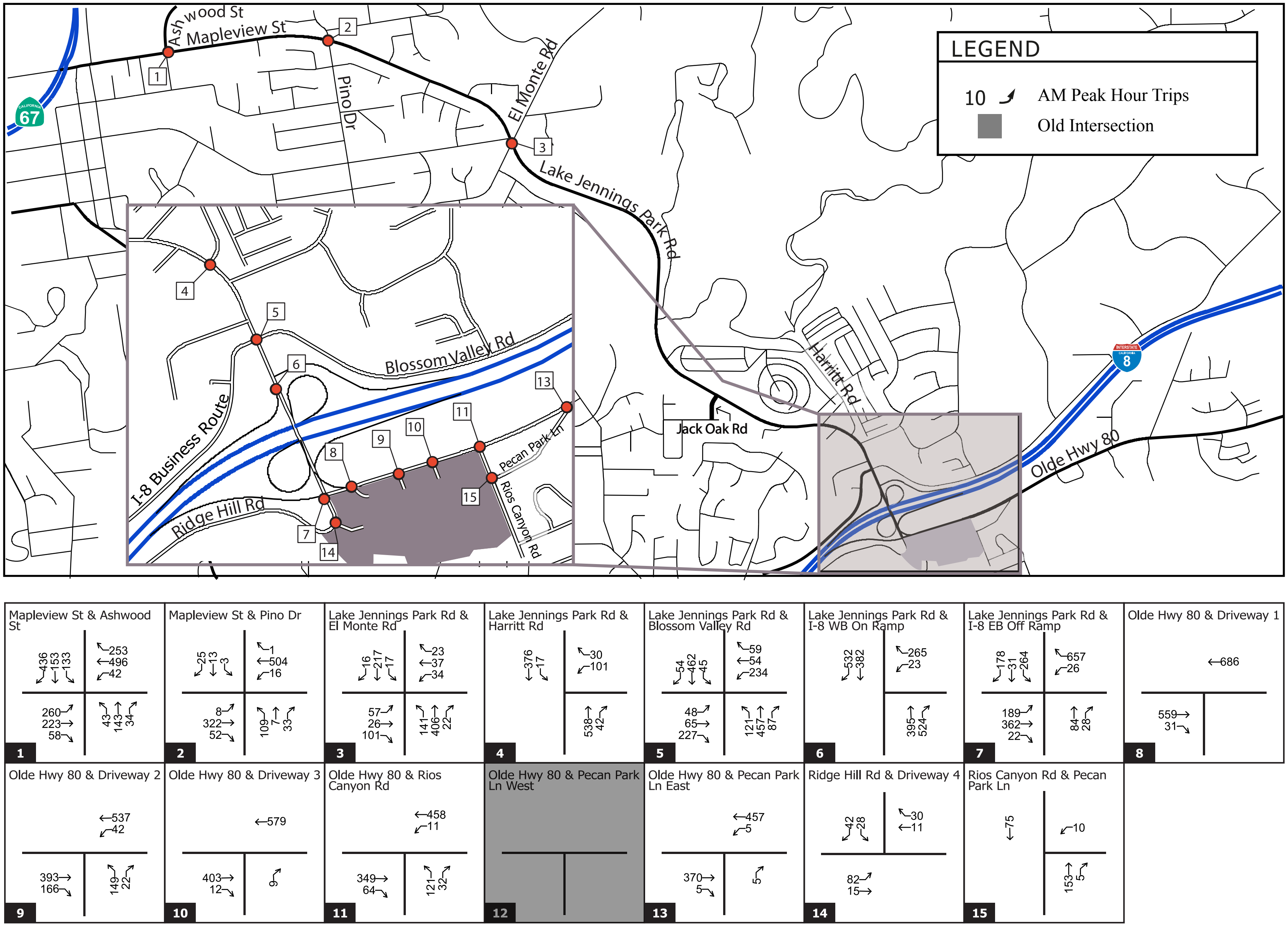

Figure 3-7
Existing With Project AM Peak Hour Intersection Volumes

N
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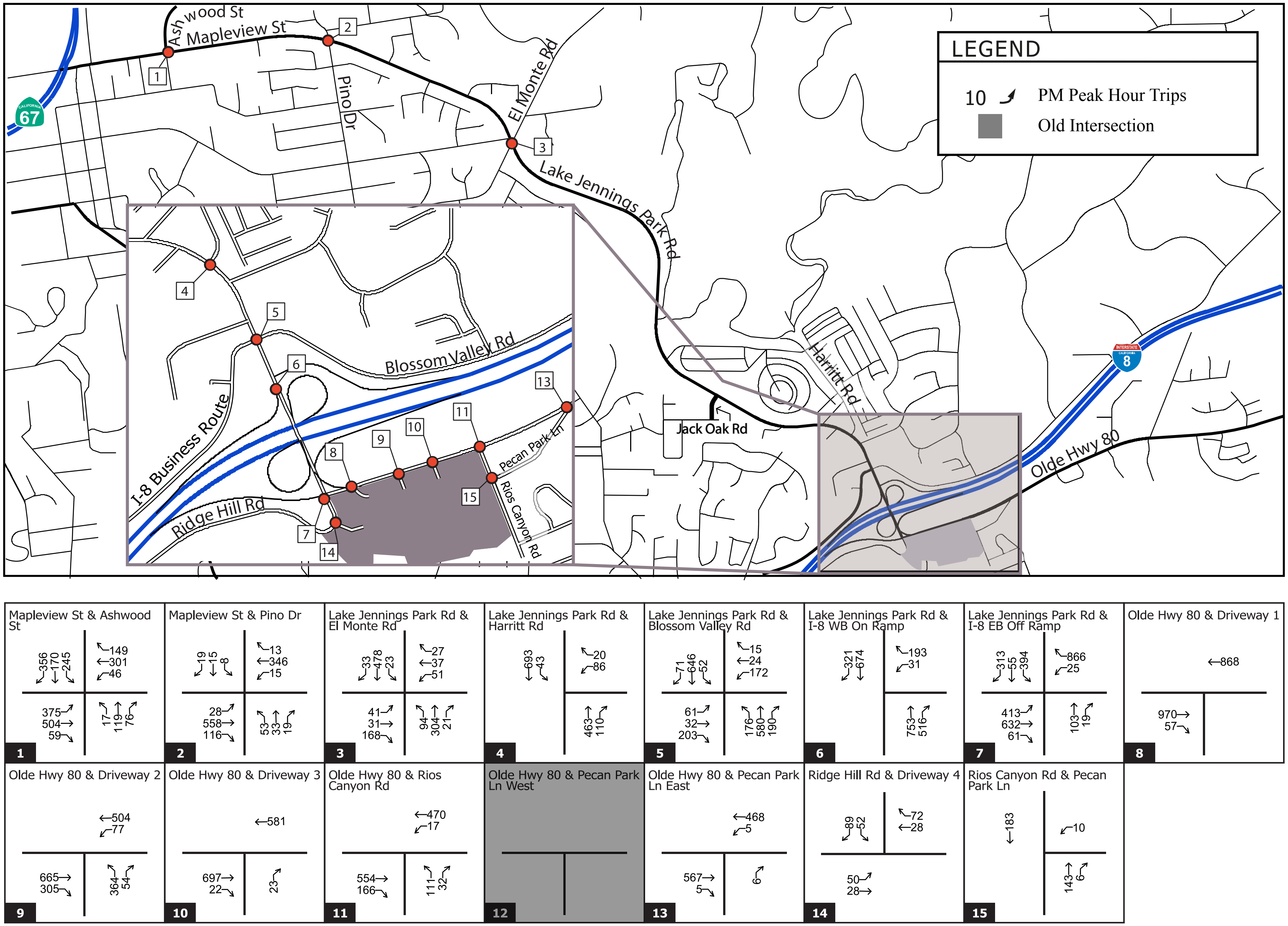

Figure 3-8

Existing With Project PM Peak Hour Intersection Volumes

N
Not To
Scale

3.4 EXISTING WITH PROJECT CONDITIONS ROADWAY SEGMENT ANALYSIS

Table 3-1 summarizes the roadway segment analysis results for existing conditions without and with the project. The roadway segment analysis methodology is described in Section 2.2.1 of this report. Without any improvements by the project, there would be deficient and impacted segments at the following eight locations:

- Olde Highway 80 from Lake Jennings Park Road to Project Driveway 1
- Olde Highway 80 from Project Driveway 1 to Project Driveway 2
- Olde Highway 80 from Project Driveway 2 to Project Driveway 3
- Olde Highway 80 from Project Driveway 3 to Rios Canyon Road
- Olde Highway 80 from Rios Canyon Road to Pecan Park Lane
- Lake Jennings Park Road from Harritt Road to Blossom Valley Road
- Lake Jennings Park Road from Blossom Valley Road to I-8 Westbound Off-Ramp
- Lake Jennings Park Road from I-8 Westbound Off-Ramp to Olde Highway 80

As shown in Table 3-1, the above impacted segments would all be mitigated to avoid direct impacts assuming the project would make the fronting improvements along Olde Highway 80 and the off-site improvements proposed for Lake Jennings Park Road between Olde Highway 80 and Harritt Road. The recommended roadway improvements are shown in Appendix D.

3.5 EXISTING WITH PROJECT CONDITIONS INTERSECTION ANALYSIS

Table 3-2 summarizes the intersection operations analysis results for existing conditions without and with the project. The intersection operations analysis methodology is described in Section 2.2.3 of this report. Existing conditions intersection operations analysis worksheets are included in Appendix E. Existing With Project conditions intersection operations analysis worksheets are included in Appendix F. Without any improvements by the project, most of the study area intersections would operate at acceptable service levels except for the following two intersections where they would be directly impacted and would have less than adequate service levels, particularly during the PM peak hour:

- Lake Jennings Park Road and I-8 Westbound Off-Ramp
- Lake Jennings Park Road and I-8 Eastbound Off-Ramp

Again, the recommended roadway improvements shown in Appendix D would mitigate the intersection operations to avoid direct impacts at the I-8 Westbound and Eastbound Ramp intersections on Lake Jennings Park Road.

3.6 EXISTING WITH PROJECT CONDITIONS FREEWAY MAINLINE ANALYSIS

Table 3-3 summarizes the freeway mainline analysis results for existing conditions without and with the project. The intersection operations analysis methodology is described in Section 2.2.4 of this report. As shown in Table 3-3, the study area freeway mainline links would operate at adequate service levels and there is no direct impact by the project.

Table 3-1 - Existing With Project Conditions Roadway Segment Analysis Summary

Roadway Segment	*Existing Lanes / Configuration*	*LOS E Cap.*	*Existing*		*Existing With Project*		*Δ Traffic*	*Significant?*	*With Mitigation*		
			ADT	*LOS*	*ADT*	*LOS*			*New Lanes/ Config.*	*New LOS E Cap.*	*LOS*
Olde Highway 80											
Lake Jennings Park Rd. to Dwy 1	2CCITL	19,000	14,350	E	21,934	F	7,584	**Yes**	4BITL	28,000	C
Project Dwy 1 to Dwy 2	2CCnM	16,200	14,350	E	21,363	F	7,013	**Yes**	4BITL	28,000	C
Project Dwy 2 to Dwy 3	2CCnM	16,200	14,350	E	15,911	E	1,561	**Yes**	4BITL	28,000	A
Project Dwy 3 to Old Rios Canyon Rd.	2CCnM	16,200	14,350	E	15,746	E	1,396	**Yes**	4BITL	28,000	A
Rios Canyon Rd. to Pecan Park Ln.	2CCnM	16,200	10,150	D	11,081	E	931	**Yes**	2CCITL	19,000	D
Pecan Park Ln. to Chimney Rock Ln.	2CCITL	19,000	10,050	D	10,972	D	922	No			
Mapleview Street											
Ashwood St. to Pino Dr.	4MRITL	34,200	12,000	A	12,721	A	721	No			
Lake Jennings Park Road											
Pino Dr. to El Monte Rd.	4MRITL	34,200	10,400	A	11,149	A	749	No			
El Monte Rd. to Jack Oak Rd.	2CCITL	19,000	11,260	D	12,225	D	965	No			
Jack Oak Rd. to Harritt Rd.	2CCITL	19,000	11,520	D	13,289	D	1,769	No			
Harrit Rd. to Blossom Valley Rd.	2CCITL	19,000	13,550	E	15,776	E	2,226	**Yes**	4BITL	28,000	A
Blossom Valley Rd. to I-8 WB Off-Ramp	2CCITL	19,000	18,510	E	21,827	F	3,317	**Yes**	4BITL	28,000	C
I-8 WB Off-Ramp to Olde Highway 80	2CCnM	16,200	17,130	F	22,258	F	5,128	**Yes**	4BITL	28,000	D
Olde Highway 80 to Driveway 4	2CCnM	16,200	1,670	A	2,934	B	1,264	No			
Ridge Hill Road											
Lake Jennings Park Rd. to Cordial Rd.	2RC	4,500	1,670	Better	2,102	Better than C	432	No			
Rios Canyon Road											
South of Olde Highway 80	2LCRS	9,700	3,506	A	3,794	A	288	No			

Abbreviations:
2CCnM is a 2 lane Community Collector with no Median.
2CCITL is a 2 lane Community Collector with an Itermittent Turn Lane.
4MRITL is a 4 lane Major Road with an Intermittent Turn Lane.
4BITL is a Boulevard with an Intermittent Turn Lane
2RC is a 2 lane Residential Collector
2LCRS is a 2 lane Light Collector with a Reduced Shoulder

Table 3-2 - Existing With Project Conditions
Intersection Operations Analysis Summary

Intersection	Existing		Existing With Project		Δ Delay	PH Trips on Critical Movement	Signif?	With Mitigation	
	Delay	LOS	Delay	LOS				Delay	LOS
AM Peak Hour									
1. Mapleview Street and Ashwood Street	27.7	C	27.5	C	-0.2	-	No		NA
2. Mapleview Street and Pino Drive	18.6	B	18.5	B	-0.1	-	No		NA
3. Lake Jennings Park Road and El Monte Road	14.5***	B	15.3***	C	0.8	-	No		NA
4. Lake Jennings Park Road and Harrit Road	11.6	B	11.7	B	0.1	-	No		NA
5. Lake Jennings Park Road and Blossom Valley Road	30.6	C	35.3	D	4.7	-	No		NA
6. Lake Jennings Park Road and I-8 WB Off Ramp*	13.6	B	15.3	C	1.7	-	No	12.2	B
7. Lake Jennings Park Road and I-8 EB Off Ramp**	9.5***	A	12.7***	B	3.2	-	No	15.3	B
8. Olde Highway 80 and Project Driveway 1	NA	NA	0.0	A	NA	-	No		NA
9. Olde Highway 80 and Project Driveway 2	NA	NA	10.7	B	NA	-	No		NA
10. Olde Highway 80 and Project Driveway 3	NA	NA	9.2	A	NA	-	No		NA
11. Olde Highway 80 and Rios Canyon Road	NA	NA	15.5	C	NA	-	No		NA
12. Olde Highway 80 and Pecan Park Lane West	23.3	C	NA	NA	NA	-	No		NA
13. Olde Highway 80 and Pecan Park Lane East	14.1	B	10.5	B	-3.6	-	No		NA
14. Ridge Hill Drive and Project Driveway 4	NA	NA	7.5	A	NA	-	No		NA
15. Rios Canyon Road and Pecan Park Lane	10.7	B	9.9	A	-0.8	-	No		NA
PM Peak Hour									
1. Mapleview Street and Ashwood Street	32.6	C	35.2	D	2.6	-	No		NA
2. Mapleview Street and Pino Drive	19.6	B	19.6	B	0.0	-	No		NA
3. Lake Jennings Park Road and El Monte Road	13.9***	B	15.6***	C	1.7	-	No		NA
4. Lake Jennings Park Road and Harrit Road	8.6	A	9.6	A	1.0	-	No		NA
5. Lake Jennings Park Road and Blossom Valley Road	32.8	C	54.9	D	22.1	-	No		NA
6. Lake Jennings Park Road and I-8 WB Off Ramp*	19.0	C	72.8	F	53.8	20	Yes	18.8	C
7. Lake Jennings Park Road and I-8 EB Off Ramp**	15.3***	C	59.4***	F	44.1	205	Yes	24.4	C
8. Olde Highway 80 and Project Driveway 1	NA	NA	0.0	A	NA	-	No		NA
9. Olde Highway 80 and Project Driveway 2	NA	NA	19.6	B	NA	-	No		NA
10. Olde Highway 80 and Project Driveway 3	NA	NA	9.2	A	NA	-	No		NA
11. Olde Highway 80 and Rios Canyon Road	NA	NA	19.6	C	NA	-	No		NA
12. Olde Highway 80 and Pecan Park Lane West	29.0	D	NA	NA	NA	-	No		NA
13. Olde Highway 80 and Pecan Park Lane East	14.8	B	12.3	B	-2.5	-	No		NA
14. Ridge Hill Drive and Project Driveway 4	NA	NA	7.7	A	NA	-	No		NA
15. Rios Canyon Road and Pecan Park Lane	9.8	A	10.6	B	1.1	-	No		NA

* Mitigation: Expand Lake Jennings Park Road from a 2 lane Community Collector to a 4 lane Major Road

** Mitigation: Signalize the intersection
*** Average delay calculation for the AWS intersection

Table 3-3 - Existing With Project Conditions Freeway Mainline Analysis Summary

									Existing			*Existing With Project*				
Freeway Mainline Segment	*Direction of Travel*	*Lanes (1-way)*	*Capacity (1)*	*ADT One-Way*	*Peak Hour Volume at LJPR*	*Peak Hour One-Way Volume*	*Peak Hour Factor*	*Truck Factor (3)*	*Peak Volume (PCE) (4)*	*V/C*	*LOS (5)*	*Peak Volume (PCE)*	*V/C*	*LOS (5)*	*Increase in VC*	*Signifi-cant?*
Weekday AM Peak Hour																
I-8 West of Lake Jennings Park Road	West	2	4,600	68,000	2,220	3,224	95.0%	97.18%	3,492	0.763	C	3,509	0.763	C	0.004	No
I-8 East of Lake Jennings Park Road	West	2	4,600	53,000	2,220	2,513	95.0%	97.18%	2,722	0.59	B	2,724	0.59	B	0.000	No
Weekday PM Peak Hour																
I-8 West of Lake Jennings Park Road	East	2	4,600	68,000	2,481	3,311	95.0%	97.18%	3,586	0.78	C	3,627	0.788	C	0.009	No
I-8 East of Lake Jennings Park Road	East	2	4,600	53,000	2,481	2,581	95.0%	97.18%	2,796	0.61	B	2,801	0.61	B	0.001	No

1. Obtained from balancing Caltrans peak hour mainline volume by the Caltrans

2. This is the peak hour peak direction volume before adjusting for heavy vehicles. In the weekay PM peak hour and Saturday Midday hour, the peak direction is NB on Interstate 15.

3. Assume 4% trucks and 2%recreational vehicles for a total of 6% heavy vehicles.

HVF = 1/(1+Percent Truck(Truck Factor-1) + Percent Recreation Vehicle(RV Factor-1))

Truck Factor (<2% grade, 5% trucks) =	1.5
RV Factor (<2% grade, 2% RV) =	1.2
HVF=	97.18%

4. PCE=PHV/(PHF*HVF)

5. Level of service based on *SANTEC Guidelines Attachment C* D/C ratio.

3.7 EXISTING WITH PROJECT CONDITIONS RAMP METER ANALYSIS

Table 3-4 summarizes the ramp meter analysis results for existing conditions without and with the project. The ramp meter analysis methodology is described in Section 2.2.5 of this report. As shown in Table 3-4, there is no direct impact by the project on the ramp meter queuing.

Table 3-4 - Existing With Project Conditions Ramp Meter Analysis Summary

			Existing				*Existing With Project*					
Location	*Peak*	*Meter*	*Demand*	*Excess Demand*	*Avg. Delay*	*Avg. Queue*	*Demand*	*Excess Demand*	*Avg.*	*Avg. Queue*	*Increase in Delay (Minutes)*	*Significant?*
I-8 WB from NB Lake Jennings Park Road	AM	636	449	0	0	0	532	0	0	0	0	No
I-8 WB from SB Lake Jennings Park Road	AM	636	532	0	0	0	532	0	0	0	0	No

CHAPTER 4
CUMULATIVE CONDITIONS

Cumulative baseline conditions represent opening day of the proposed project. Project traffic is added to the Cumulative baseline volumes to create the “With Project” scenario.

4.1 CUMULATIVE BASELINE TRAFFIC VOLUMES

Traffic growth on roadways is a function of the expected land development, economic activity, and changes in demographics. Several methods can be used to estimate this growth.

For this analysis it is conservatively assumed that every parcel builds out to the General Plan designation as modeled by SANDAG for the year 2035 and that all General Plan Amendments within the study area are approved and implemented. Two cumulative projects have been identified that we included data for in our analysis. They are the Lakeside Tractor Supply project directly across the street from the shopping center which has approximately 900 daily trips, and the other project is an 18 unit residential project on Lake Jennings Park Road just to the north of I-8 which generates 180 daily trips. For more specific information concerning these cumulative projects see Appendix G.

The Cumulative Without Project daily traffic volumes are shown in Figure 4-1. The Cumulative Without Project AM and PM peak hour intersection volumes are shown in Figures 4-2 and 4-3, respectively.

4.2 CUMULATIVE WITH PROJECT CONDITIONS TRAFFIC VOLUMES

The Cumulative With Project daily traffic volumes are shown in Figure 4-4. The Cumulative With Project AM and PM peak hour intersection volumes are shown in Figures 4-5 and 4-6, respectively.

4.3 CUMULATIVE WITH PROJECT CONDITIONS ROADWAY SEGMENT ANALYSIS

Table 4-1 summarizes the roadway segment analysis results for Cumulative conditions without and with the project. The roadway segment analysis methodology is described in Section 2.2.1 of this report. Without any improvements by the project, there would be deficient and impacted segments at the following nine locations:

- Olde Highway 80 from Lake Jennings Park Road to Project Driveway 1
- Olde Highway 80 from Project Driveway 1 to Project Driveway 2
- Olde Highway 80 from Project Driveway 2 to Project Driveway 3
- Olde Highway 80 from Project Driveway 3 to Rios Canyon Road
- Olde Highway 80 from Rios Canyon Road to Pecan Park Lane
- Lake Jennings Park Road from Jack Oak Road to Harritt Road
- Lake Jennings Park Road from Harritt Road to Blossom Valley Road
- Lake Jennings Park Road from Blossom Valley Road to I-8 Westbound Off-Ramp
- Lake Jennings Park Road from I-8 Westbound Off-Ramp to Olde Highway 80

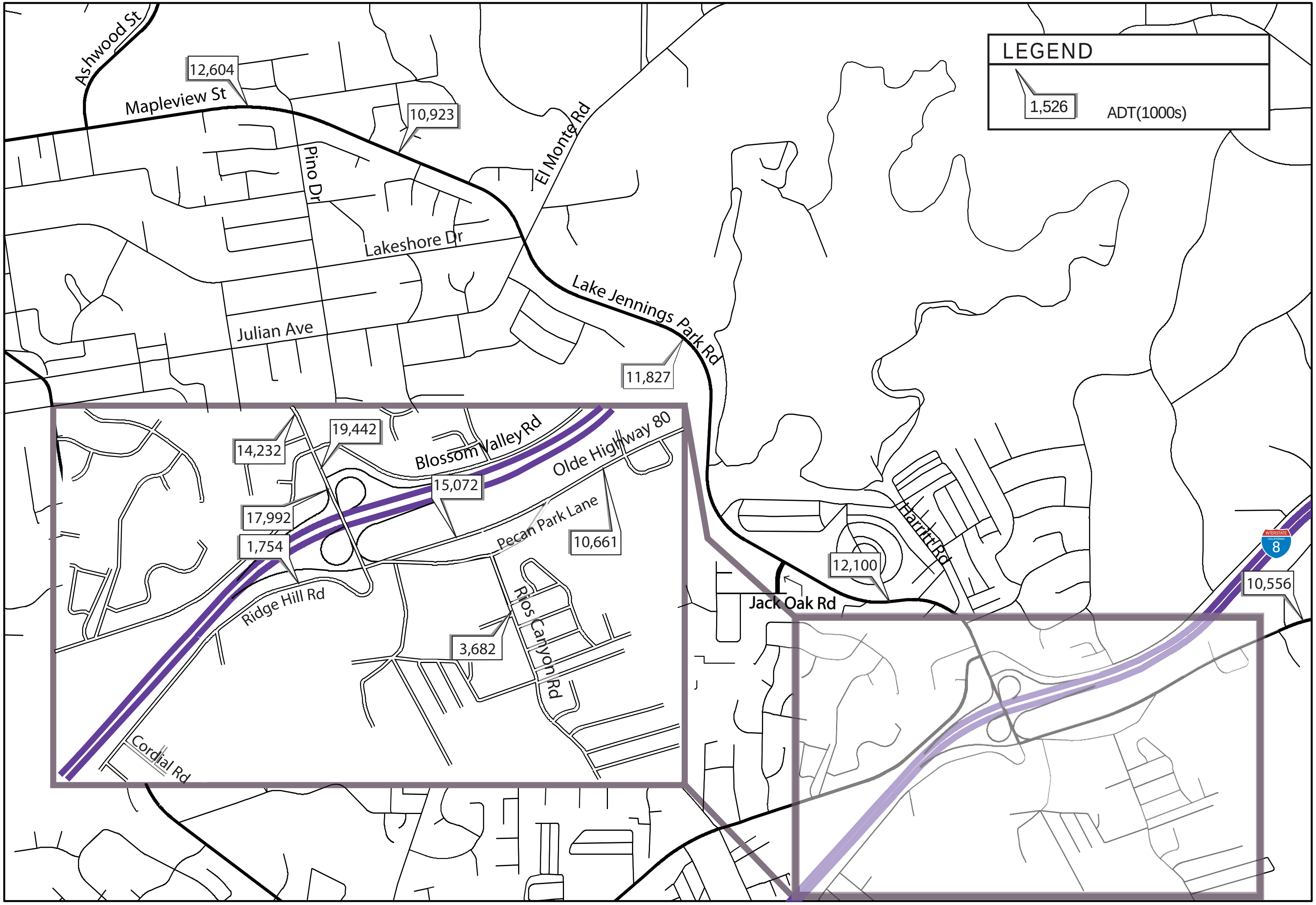

Figure 4-1
Cumulative Without Project Daily Roadway Segment Volumes

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Scale

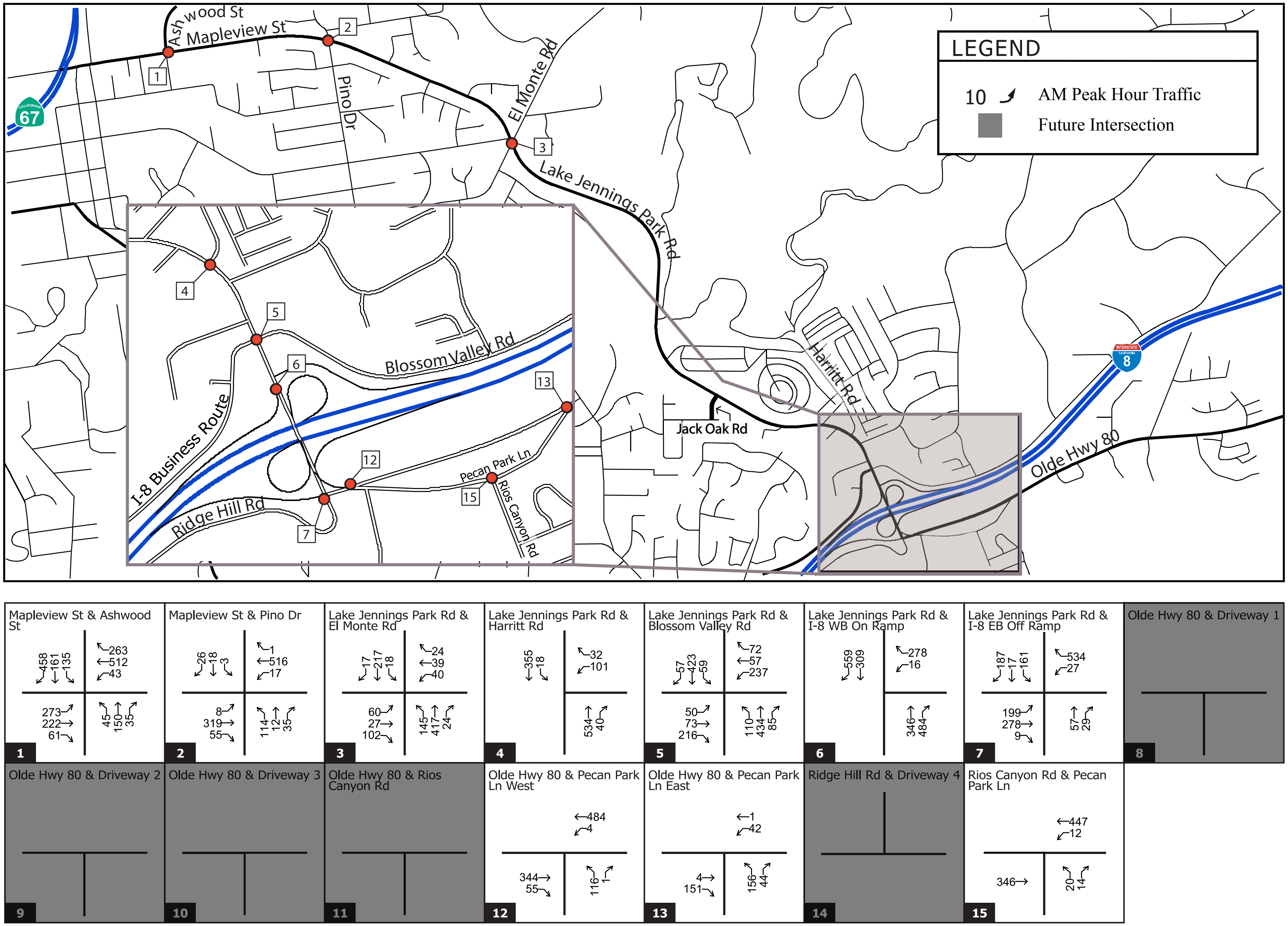

Figure 4-2
Cumulative Without Project AM Peak Hour Intersection Volumes

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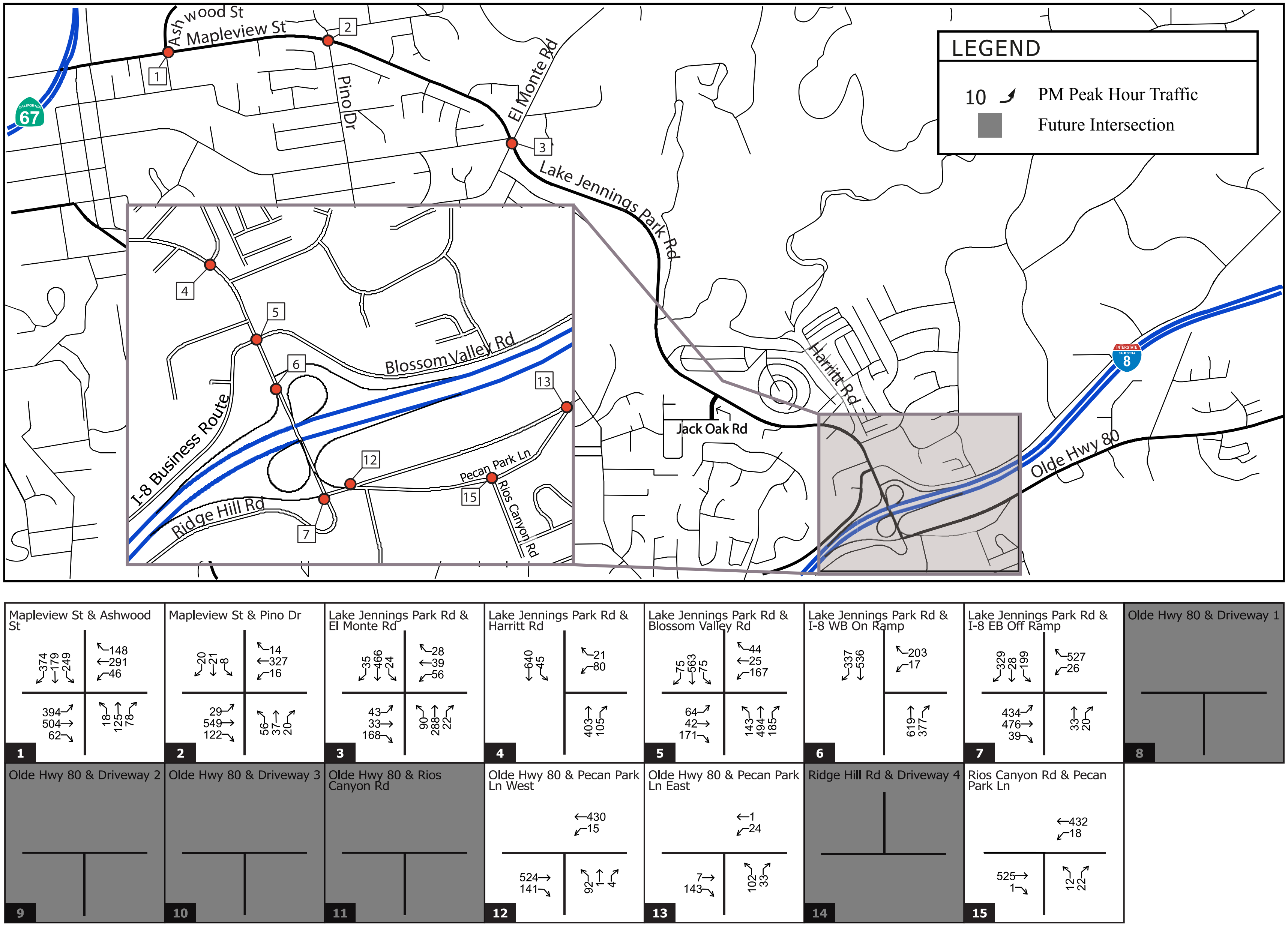

Figure 4-3
Cumulative Without Project PM Peak Hour Intersection Volumes

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Not To Scale

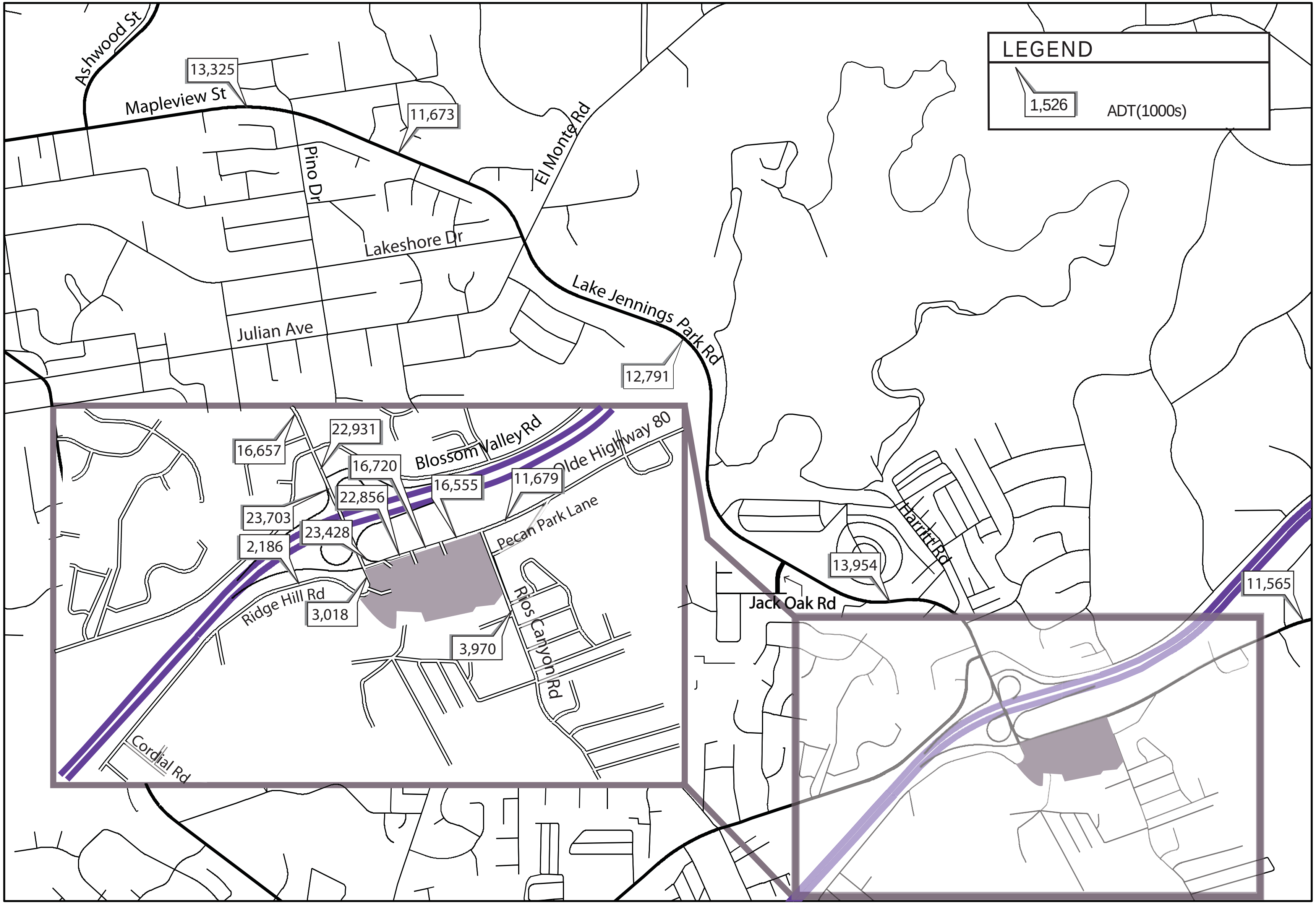

Figure 4-4
Cumulative With Project Daily Roadway Segment Volumes

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Not To Scale

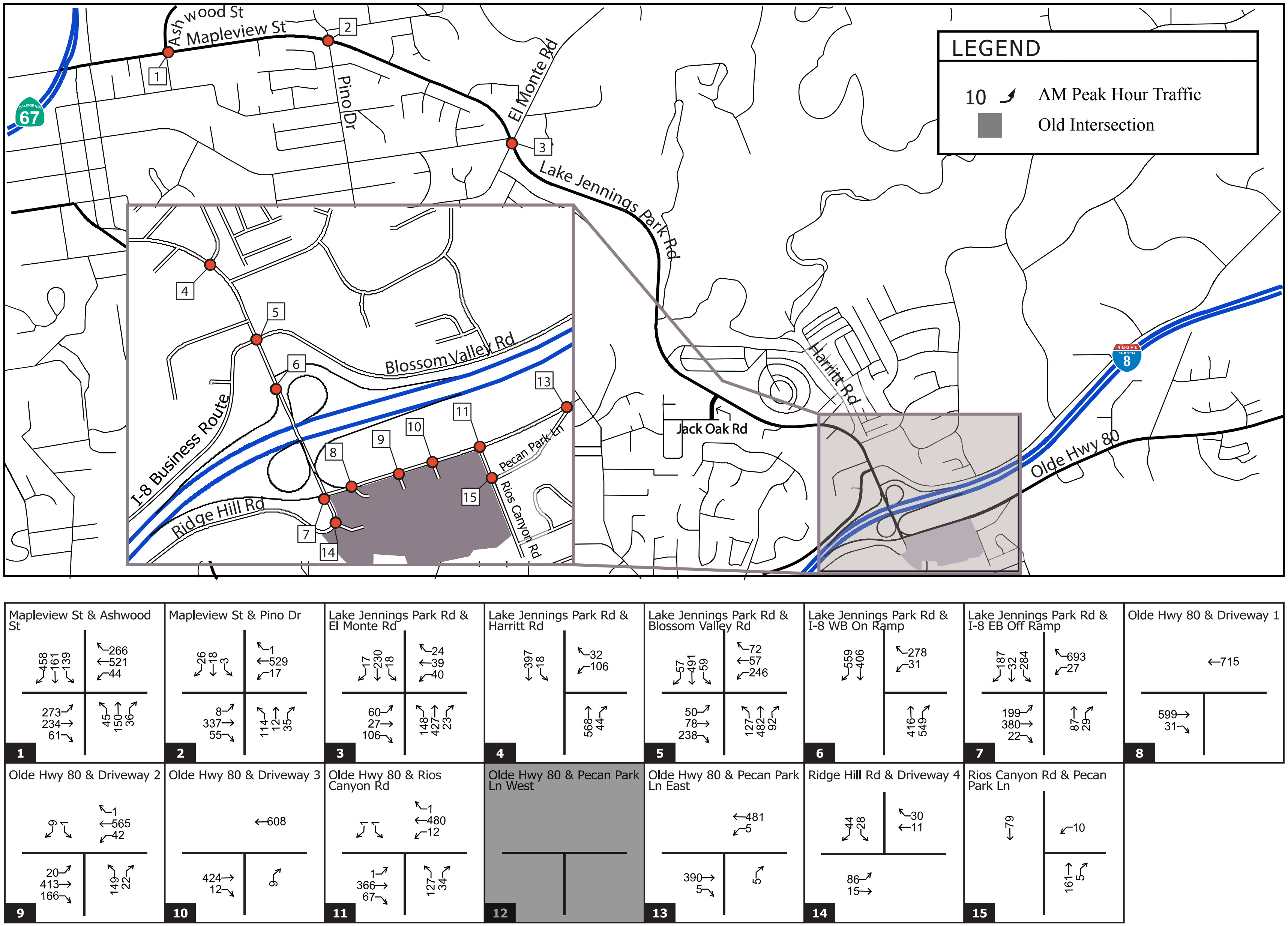

Figure 4-5
Cumulative With Project AM Peak Hour Intersection Volumes

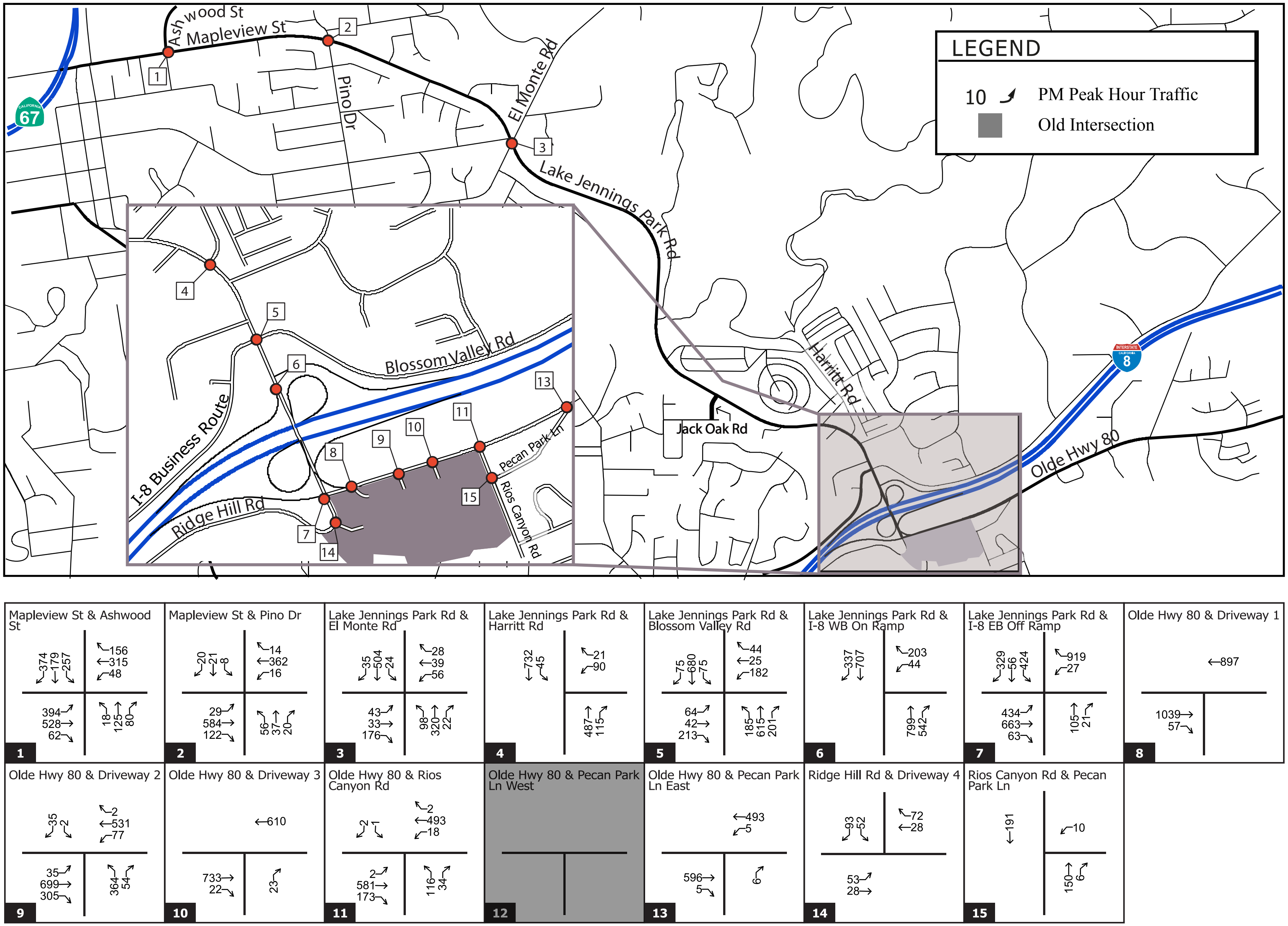

Figure 4-6
Cumulative With Project PM Peak Hour Intersection Volumes

N
Not To Scale

Table 4-1 - Cumulative With Project Conditions Roadway Segment Analysis Summary

Roadway Segment	Existing Lanes / Configuration	LOS E Cap.	Cumulative Without Project		Cumulative With Project		Δ Traffic	Significant?	With Mitigation		
			ADT	LOS	ADT	LOS			New Lanes/ Config.	New LOS E Cap.	LOS
Olde Highway 80											
Lake Jennings Park Rd. to Dwy 1	2CCITL	19,000	15,072	E	23,428	F	7,584	Yes	4BITL	28,000	D
Project Dwy 1 to Dwy 2	2CCnM	16,200	15,072	E	22,856	F	7,013	Yes	4BITL	28,000	D
Project Dwy 2 to Dwy 3	2CCnM	16,200	15,072	E	16,720	F	1,561	Yes	4BITL	28,000	A
Project Dwy 3 to Old Rios Canyon Rd.	2CCnM	16,200	15,072	E	16,555	F	1,396	Yes	4BITL	28,000	A
Rios Canyon Rd. to Pecan Park Ln.	2CCnM	16,200	10,661	D	11,679	E	931	Yes	2CCITL	19,000	D
Pecan Park Ln. to Chimney Rock Ln.	2CCITL	19,000	10,556	D	11,565	D	922	No			
Mapleview Street											
Ashwood St. to Pino Dr.	4MRITL	34,200	12,604	A	13,325	A	721	No			
Lake Jennings Park Road											
Pino Dr. to El Monte Rd.	4MRITL	34,200	10,923	A	11,673	A	749	No			
El Monte Rd. to Jack Oak Rd.	2CCITL	19,000	11,827	D	12,791	D	965	No			
Jack Oak Rd. to Harritt Rd.	2CCITL	19,000	12,100	D	13,954	E	1,769	Yes			
Harrit Rd. to Blossom Valley Rd.	2CCITL	19,000	14,232	E	16,657	E	2,226	Yes	4BITL	28,000	A
Blossom Valley Rd. to I-8 WB Off-Ramp	2CCITL	19,000	19,442	F	22,931	F	3,317	Yes	4BITL	28,000	D
I-8 WB Off-Ramp to Olde Highway 80	2CCnM	16,200	17,992	F	23,703	F	5,128	Yes	4BITL	28,000	D
Olde Highway 80 to Driveway 4	2CCnM	16,200	1,754	A	3,018	B	1,264	No			
Ridge Hill Road											
Lake Jennings Park Rd. to Cordial Rd.	2RC	4,500	1,754	Better than C	2,186	Better than C	432	No			
Rios Canyon Road											
South of Olde Highway 80	2LCRS	9,700	3,682	A	3,970	A	288	No			

Abbreviations:	2CCnM is a 2 lane Community Collector with no Median.
	2CCITL is a 2 lane Community Collector with an Itermittent Turn Lane.
	4MRITL is a 4 lane Major Road with an Intermittent Turn Lane.
	4BITL is a Boulevard with an Intermittent Turn Lane
	2RC is a 2 lane Residential Collector
	2LCRS is a 2 lane Light Collector with a Reduced Shoulder

As shown in Table 4-1, all of the impacted segments, except for the segment of Lake Jennings Park Road from Jack Oak Road to Harritt Road, would all be mitigated to avoid cumulative impacts with the recommended roadway improvements. The recommended roadway improvements are shown in Appendix D.

The segment of Lake Jennings Park Road from Jack Oak Road to Harritt Road will experience LOS E for Cumulative With Project conditions, and the project would normally have a cumulative impact at this segment. However, this portion of roadway does not really conform to the normal list of facilities given the availability of a climbing lane southbound and southerly from El Monte Road, the painted median just south of Jack Oak Road, and the width of the pavement and limited conflicts from there to Harritt Road further to the south. Also, as demonstrated by the intersection analysis along this portion of Lake Jennings Park Road it will be operating acceptably (LOS = A-C) despite this LOS anomaly when compared to the normal acceptable daily volumes. Therefore, the practical capacity is indeed something greater than the values used in the tables for making our assessment of adequacy. The improvements being proposed by the applicant to Lake Jennings Park Road between Harritt Road and Olde Highway 8 constitutes a substantial proportional contribution to the project’s effects throughout this area.

4.4 CUMULATIVE WITH PROJECT CONDITIONS INTERSECTION ANALYSIS

Table 4-2 summarizes the intersection operations analysis results for Cumulative conditions without and with the project. The intersection operations analysis methodology is described in Section 2.2.3 of this report. Cumulative Without Project conditions intersection operations analysis worksheets are included in Appendix G. Cumulative With Project conditions intersection operations analysis worksheets are included in Appendix H. Without any improvements by the project, most of the study area intersections would operate at acceptable service levels except for the following three intersections where they would be significantly impacted and would have less than adequate service levels, particularly during the PM peak hour:

- Lake Jennings Park Road and Blossom Valley Road
- Lake Jennings Park Road and I-8 Westbound Off-Ramp
- Lake Jennings Park Road and I-8 Eastbound Off-Ramp

Again, the recommended roadway improvements shown in Appendix D would mitigate the intersection operations to avoid cumulative impacts at intersections.

4.5 CUMULATIVE WITH PROJECT CONDITIONS FREEWAY MAINLINE ANALYSIS

Table 4-3 summarizes the freeway mainline analysis results for Cumulative conditions without and with the project. The intersection operations analysis methodology is described in Section 2.2.4 of this report. As shown in Table 4-3, the study area freeway mainline links would operate at adequate service levels and there is no cumulative impact by the project.

4.6 CUMULATIVE WITH PROJECT CONDITIONS RAMP METER ANALYSIS

Table 4-4 summarizes the ramp meter analysis results for Cumulative conditions without and with the project. The ramp meter analysis methodology is described in Section 2.2.5 of this report. As shown in Table 4-4, there is no cumulative impact by the project on the ramp meter queuing.

Table 4-2 - Cumulative With Project Conditions
Intersection Operations Analysis Summary

Intersection	Cumulative Without Project		Cumulative With Project		∆ Delay	PH Trips on Critical Movement	Signif?	With Mitigation	
	Delay	LOS	Delay	LOS				Delay	LOS
AM Peak Hour									
1. Mapleview Street and Ashwood Street	28.6	C	28.6	C	0.0	-	No		NA
2. Mapleview Street and Pino Drive	18.6	B	18.5	B	-0.1	-	No		NA
3. Lake Jennings Park Road and El Monte Road	16.3****	C	16.0****	C	-0.3	-	No		NA
4. Lake Jennings Park Road and Harrit Road	11.9	B	12.6	B	0.7	-	No		NA
5. Lake Jennings Park Road and Blossom Valley Road*	36.9	D	41.4	D	4.5	-	No	31.3	C
6. Lake Jennings Park Road and I-8 WB Off Ramp**	14.3	B	16.3	C	2.0	-	No	12.7	B
7. Lake Jennings Park Road and I-8 EB Off Ramp***	9.8****	A	13.8****	B	4.0	-	No	18.6	B
8. Olde Highway 80 and Project Driveway 1	NA	NA	0.0	A	NA	-	No		NA
9. Olde Highway 80 and Project Driveway 2	NA	NA	27.5	C	NA	-	No		NA
10. Olde Highway 80 and Project Driveway 3	NA	NA	8.9	A	NA	-	No		NA
11. Olde Highway 80 and Rios Canyon Road	NA	NA	17.8	C	NA	-	No		NA
12. Olde Highway 80 and Pecan Park Lane West	26.0	D	NA	NA	NA	-	No		NA
13. Olde Highway 80 and Pecan Park Lane East	14.6	B	10.7	B	-3.9	-	No		NA
14. Ridge Hill Drive and Project Driveway 4	NA	NA	7.5	A	NA	-	No		NA
15. Rios Canyon Road and Pecan Park Lane	10.8	B	10.0	A	-0.8	-	No		NA
PM Peak Hour									
1. Mapleview Street and Ashwood Street	37.9	D	41.7	D	3.8	-	No		NA
2. Mapleview Street and Pino Drive	19.7	B	19.7	B	0.0	-	No		NA
3. Lake Jennings Park Road and El Monte Road	15.2****	C	15.0****	C	-0.2	-	No		NA
4. Lake Jennings Park Road and Harrit Road	8.7	A	9.8	A	1.1	-	No		NA
5. Lake Jennings Park Road and Blossom Valley Road*	44.1	D	82.2	F	38.1	-	Yes	28.9	C
6. Lake Jennings Park Road and I-8 WB Off Ramp**	20.8	C	90.4	F	69.6	20	Yes	19.7	C
7. Lake Jennings Park Road and I-8 EB Off Ramp***	17.1****	C	72.2****	F	55.1	205	Yes	27.2	C
8. Olde Highway 80 and Project Driveway 1	NA	NA	0.0	A	NA	-	No		NA
9. Olde Highway 80 and Project Driveway 2	NA	NA	24.7	C	NA	-	No		NA
10. Olde Highway 80 and Project Driveway 3	NA	NA	9.5	A	NA	-	No		NA
11. Olde Highway 80 and Rios Canyon Road	NA	NA	24.6	C	NA	-	No		NA
12. Olde Highway 80 and Pecan Park Lane West	33.4	D	NA	NA	NA	-	No		NA
13. Olde Highway 80 and Pecan Park Lane East	15.5	C	12.6	B	-2.9	-	No		NA
14. Ridge Hill Drive and Project Driveway 4	NA	NA	7.8	A	NA	-	No		NA
15. Rios Canyon Road and Pecan Park Lane	9.9	A	10.7	B	0.8	-	No		NA

* Mitigation: Extend northbound left turn pocket, modify southbound right turn lane to a shared though/right turn lane

**Mitigation: Expand Lake Jennings Park Road from a 2 lane Community Collector to a 4 lane Major Road

*** Mitigation: Signalize the intersection

**** Average delay calculation for the AWS intersection

Table 4-3 - Cumulative With Project Conditions Freeway Mainline Analysis Summary

								Cumulative Without Project			*Cumulative With Project*				
Freeway Mainline Segment	*Direction of Travel*	*Lanes (1-way)*	*Capacity (1)*	***Peak Hour One-Way Volume***	*Peak Hour Volume (2)*	*Peak Hour Factor*	*Truck Factor (3)*	*Peak Volume (PCE)(4)*	*V/C*	*LOS (5)*	*Peak Volume (PCE)*	*V/C*	*LOS (5)*	*Increase in VC*	*Signifi-cant?*
Weekday AM Peak Hour															
I-8 West of Lake Jennings Park Road	West	2	4,600	3,224	4%	95.0%	97.18%	3,621	0.79	C	3,638	0.79	C	0.004	No
I-8 East of Lake Jennings Park Road	West	2	4,600	2,513	6%	95.0%	97.18%	2,829	0.62	B	2,831	0.62	B	0.000	No
Weekday PM Peak Hour															
I-8 West of Lake Jennings Park Road	East	2	4,600	3,311	5%	95.0%	97.18%	3,724	0.81	C	3,765	0.82	D	0.009	No
I-8 East of Lake Jennings Park Road	East	2	4,600	2,581	4%	95.0%	97.18%	2,908	0.63	C	2,913	0.63	C	0.001	No

1. Obtained from balancing Caltrans peak hour mainline volume by the Caltrans

2. This is the peak hour peak direction volume before adjusting for heavy vehicles. In the weekay PM peak hour and Saturday Midday hour, the peak direction is NB on Interstate 15.

3. Assume 4% trucks and 2%recreational vehicles for a total of 6% heavy vehicles.

HVF = 1/(1+Percent Truck(Truck Factor-1) + Percent Recreation Vehicle(RV Factor-1))

Truck Factor (<2% grade, 5% trucks) = 1.5

RV Factor (<2% grade, 2% RV) = 1.2

HVF= 97.18%

4. PCE=PHV/(PHF*HVF)

5. Level of service based on *SANTEC Guidelines Attachment C* D/C ratio.

Table 4-4 - Cumulative With Project Conditions Ramp Meter Analysis Summary

			Cumulative Without Project				*Cumulative With Project*					
Location	*Peak*	*Meter*	*Demand*	*Excess Demand*	*Avg. Delay*	*Avg. Queue*	*Demand*	*Excess Demand*	*Avg.*	*Avg. Queue*	*Increase in Delay (Minutes)*	*Significant?*
I-8 WB from NB Lake Jennings Park Road	AM	636	449	0	0	0	552	0	0.0	0	0	No
I-8 WB from SB Lake Jennings Park Road	AM	636	532	0	0	0	557	0	0.0	0	0	No

CHAPTER 5
GENERAL PLAN BUILDOUT CONDITIONS

General Plan Buildout conditions represent long-range traffic conditions in 2035.

5.1 GENERAL PLAN BUILDOUT BASELINE TRAFFIC VOLUMES

Traffic growth on area roadways is a function of the expected land development, economic activity, and changes in demographics. Several methods can be used to estimate this growth. For this analysis SANDAG Series 12 traffic forecast model was used to develop General Plan Buildout baseline volumes. Previously the project had been approved for 160 condominiums which were reflected in the model as being built over time. Mobility Element classifications that reflect buildout of roadways was also used for the analysis. Table 5-1 compares the proposed versus the previously approved project.

Table 5-1
Proposed vs Approved

Type	ADT
Neighborhood Commercial	10,992
Condominiums: 160	1,280
Increase	9,712

The segment classification was assumed to be built out per the Mobility Element therefore was used in the analysis. Appendix B contains detailed information about volume development. The General Plan Buildout Without Project daily traffic volumes are shown in Figure 5-1.

5.2 GENERAL PLAN BUILDOUT WITH PROJECT CONDITIONS TRAFFIC VOLUMES

The General Plan Buildout With Project daily traffic volumes are shown in Figure 5-2.

5.3 GENERAL PLAN BUILDOUT WITH PROJECT CONDITIONS ROADWAY SEGMENT ANALYSIS

Table 5-2 summarizes the roadway segment analysis results for General Plan Buildout conditions without and with the project. The roadway segment analysis methodology is described in Section 2.2.1 of this report. With the improvements being made by the project, there would be no impacts to the study area.

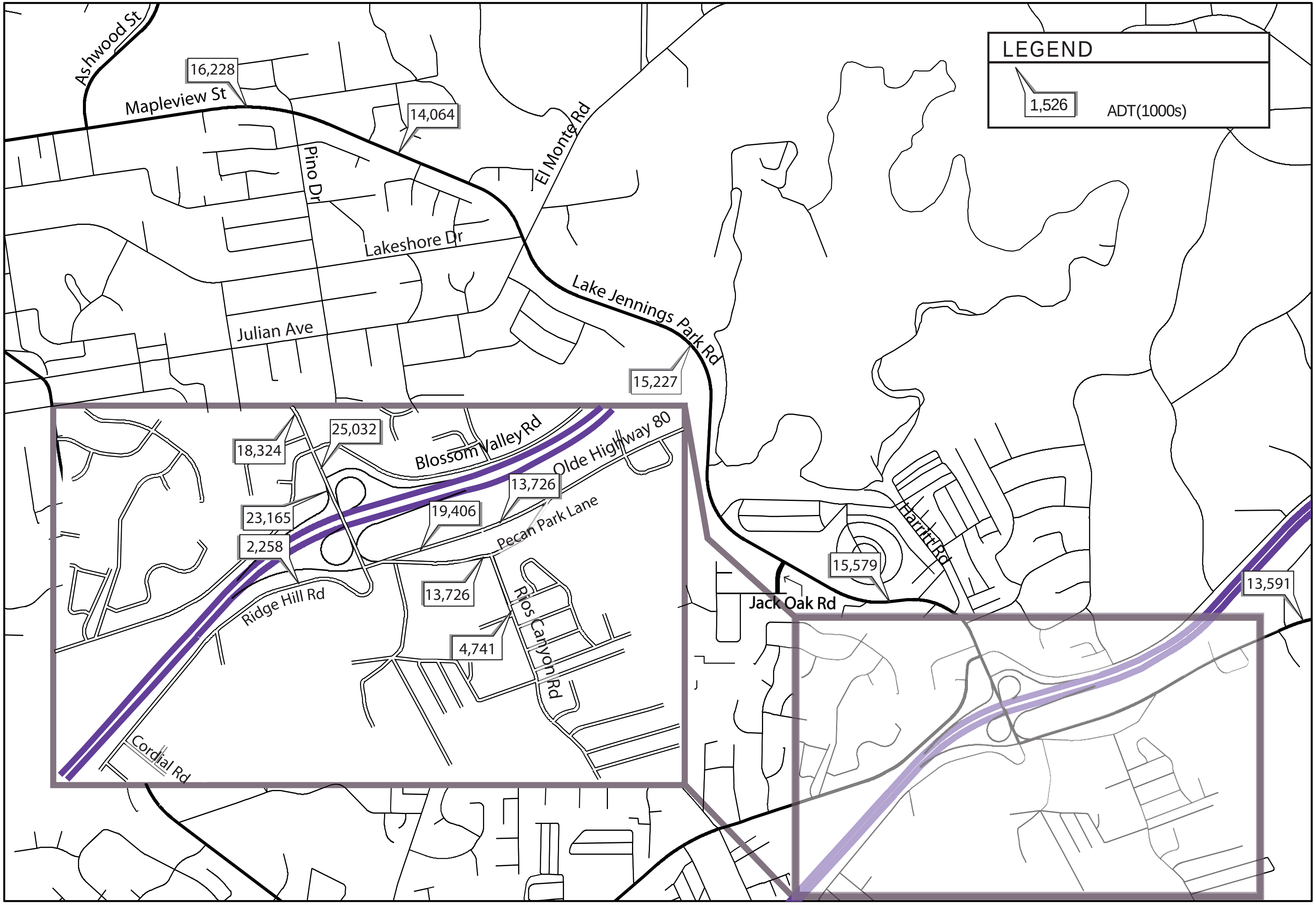

Figure 5-1
General Plan Buildout Without Project Daily Roadway Segment Volumes

N
Not To Scale

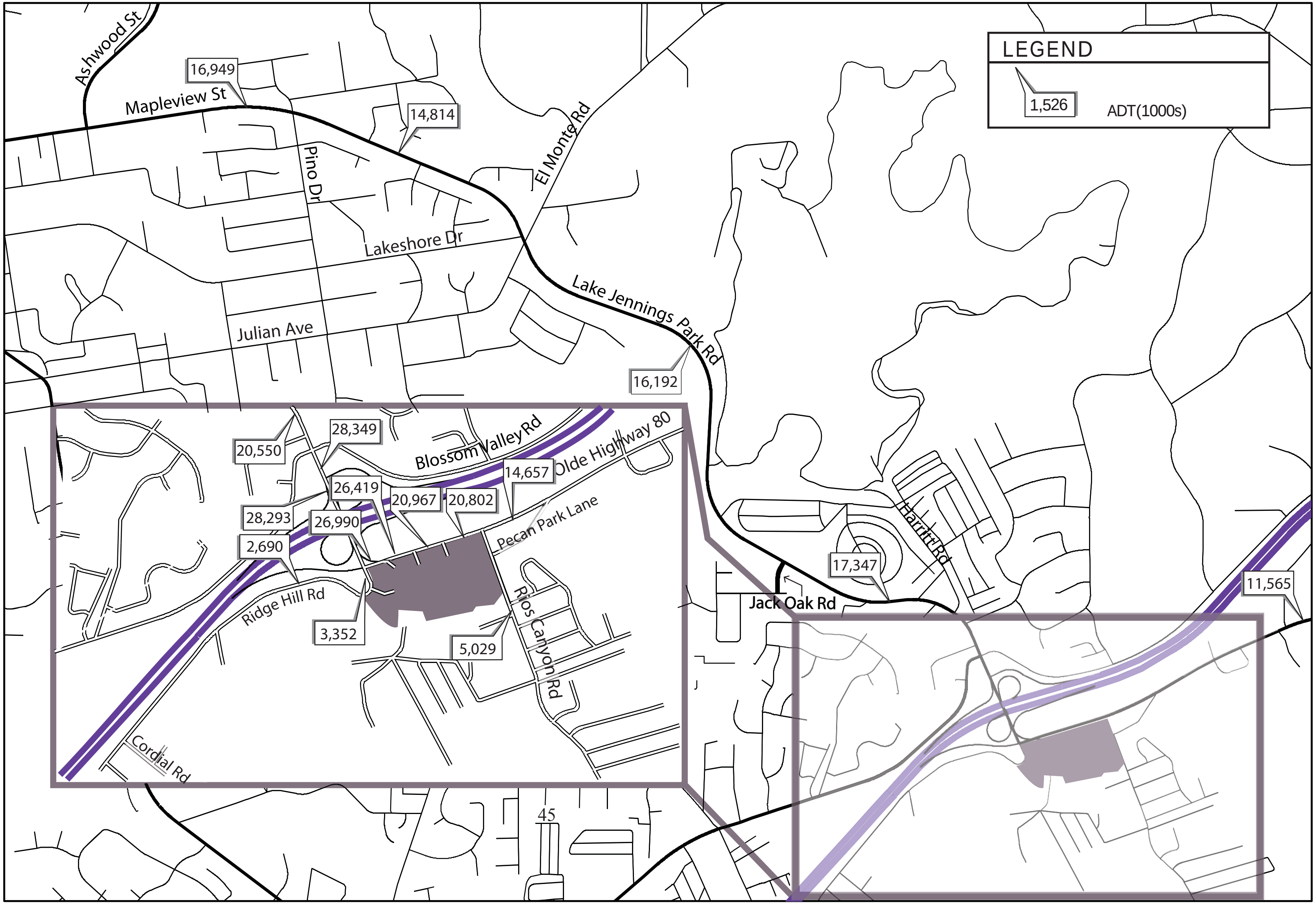

Figure 5-2
General Plan Buildout With Project Daily Roadway Segment Volumes

N
Not To
Scale

Table 5-2 - General Plan Buildout With Project Conditions Roadway Segment Analysis Summary

Roadway Segment	Mobility Element Lanes / Configuration	LOS E Cap.	GP Buildout Without Project		GP Buildout With Project		Δ Traffic	Significant?
			ADT	LOS	ADT	LOS		
Olde Highway 80								
Lake Jennings Park Rd. to Dwy 1	4MRITL	34,200	19,406	B	26,990	C	7,584	No
Project Dwy 1 to Dwy 2	4MRITL	34,200	19,406	B	26,419	C	7,013	No
Project Dwy 2 to Dwy 3	4MRITL	34,200	19,406	B	20,967	B	1,561	No
Project Dwy 3 to Old Rios Canyon Rd.	4MRITL	34,200	19,406	B	20,802	B	1,396	No
Rios Canyon Rd. to Pecan Park Ln.	4MRITL	34,200	13,726	B	14,657	B	931	No
Pecan Park Ln. to Chimney Rock Ln.	4MRITL	34,200	13,591	A	14,513	B	922	No
Mapleview Street								
Ashwood St. to Pino Dr.	4MRITL	34,200	16,228	B	16,949	B	721	No
Lake Jennings Park Road								
Pino Dr. to El Monte Rd.	4MRITL	34,200	14,064	B	14,814	B	749	No
El Monte Rd. to Jack Oak Rd.	4MRITL	34,200	15,227	B	16,192	B	965	No
Jack Oak Rd. to Harritt Rd.	4MRITL	34,200	15,579	B	17,347	B	1,769	No
Harrit Rd. to Blossom Valley Rd.	4MRITL	34,200	18,324	B	20,550	B	2,226	No
Blossom Valley Rd. to I-8 WB Off-Ramp	4MRITL	34,200	25,032	C	28,349	D	3,317	No
I-8 WB Off-Ramp to Olde Highway 80	4MRITL	34,200	23,165	C	28,293	D	5,128	No
Olde Highway 80 to Driveway 4	4MRITL	34,200	2,258	A	3,352	A	1,094	No
Ridge Hill Road								
Lake Jennings Park Rd. to Cordial Rd.	2RR	4,500	2,258	Better than C	2,690	Better than C	432	No
Rios Canyon Road								
South of Olde Highway 80	2LCRS	9,700	4,741	A	5,029	A	288	No

Abbreviations:

4MRITL is a 4 lane Major Road with an Intermittent Turn Lane.
2RR is a 2 lane Residential Road.
2LCRS is a 2 lane Light Collector with a Reduced Shoulder

CHAPTER 6
TRANSIT AND ON-SITE CIRCULATION

6.1 ON-SITE CIRCULATION

The project will have a total of four access points with three access points on Olde Highway 80 and one access point on Ridge Hill Road as described below:

- Project Driveway 1 – A right-in only access located on Olde Highway 80 approximately 200 feet east of Lake Jennings Park Road.

- Project Driveway 2 – The main access to the project site will be a signalized full access, and it is located on Olde Highway 80 approximately 550 feet east of Lake Jennings Park Road. No sight distance issue exists for the main access at Project Driveway 2 is because the horizontal alignment of Olde Highway 80 is straight, and the access is controlled by a traffic signal. A signal warrant analysis was conducted for this location and it meets warrant. This can be found in Appendix I.

- Project Driveway 3 – A right-in/right-out only access located on Olde Highway 80 approximately 750 feet east of Lake Jennings Park Road. A northbound stop sign will be installed at Project Driveway 3.

- Project Driveway 4 – A full access driveway located on Ridge Hill Road approximately 200 feet south of Olde Highway 80. A westbound stop sign will be installed at Project Driveway 4. The westbound driveway approach will align directly with the approaching lanes on Ridge Hill Road for appropriate sight distance and visibility of approach traffic.

6.2 PEDESTRIAN

The existing pedestrian network does not currently provide a continuous sidewalk connecting adjoining land uses along Olde Highway 80, Lake Jennings Park Road and Rio Canyon Road in the study area. The project will provide sidewalk, curb and gutter along the project frontage along Lake Jennings Park Road, Olde Highway 80 and the northerly extension of Rios Canyon Road. The proposed traffic signal and striping improvements at the intersection of Lake Jennings Park Road and Olde Highway 80 will include a crosswalk on the west leg connecting the new sidewalk along the project frontage to the existing sidewalk on the north side of Olde Highway 80. The improved pedestrian network will enhance the pedestrian access for the residential neighborhood located along Rios Canyon Road to utilize the retail and transit opportunities available along Olde Highway 80.

All internal pedestrian networks will be constructed to meet County standards as they relate to pedestrians.

6.3 TRANSIT

Transit service in the study is offered by the San Diego County Metropolitan Transit System (MTS). MTS provides Route 864 along Olde Highway 80, Pecan Park Lane and Lake Jennings Park Road that services the Lakeside Community. The west end of Route 864 is the El Cajon Transit Center and the east end of Route 864 is the Viejas Outlet Center and Viejas Casino. The current westerly segment of Pecan Park Lane between Rios Canyon Road and Olde Highway 80 will be eliminated with the development of the project.

6.4 BICYCLE

Class II on-street bike lanes are currently available on both directions along Olde Highway 80 east of the project site past Pecan Park Lane. No bicycle lanes currently exist along the project frontage on Olde Highway 80 and Lake Jennings Park Road. The project will provide for a standard 8' shoulder serving a bicycle lane with the frontage improvements.

6.5 PARKING

The parking for the project shall be identified on the project plans and will meet DPLU requirements. A total of 389 spaces are being provided on-site.

6.6 DESIGN EXCEPTIONS

A request for exceptions to public road standards was submitted to the Department of Planning and Development Services (PDS) on December 22, 2014. On February 5, 2015 the PDS department released a letter that waived the 300-foot driveway separation requirements of Section 6.1C.2 for the proposed project driveways on Olde Highway 80 along the project frontage. The request was reviewed and supported by the County of San Diego of Public Works Traffic Engineering. Appendix M contains the supporting information.

6.7 INTERSECTION CONTROL EVALUATION (ICE)

Intersection Control Evaluation refers to the process and framework that Caltrans has adopted to provide a more balanced or holistic approach to the consideration and selection of access strategies and concepts during transportation planning, project identification and initiation processes that contemplate the addition, expansion or full control of major intersections (including interchange ramp termini). "Full control" involves the use of signal, stop or yield control (roundabouts) on each of the through and most major movements. The project has conducted the evaluation of intersection control (signal and roundabout) under separate cover and reviewed by Caltrans staff. Final determination of the intersection control at Lake Jennings Park Road and I-8 EB off-ramp will be done through Caltrans Permit review, and is yet to be determined, however, either alternative mitigates the project's direct impact.

CHAPTER 7
CONSTRUCTION TRAFFIC MANAGEMENT

7.1 CONSTRUCTION

It is estimated that the project will require a street closure of Pecan Park Lane (west) during construction phase to make the necessary improvements to Rios Canyon Road and Pecan Park Lane. A construction traffic management plan will be prepared to address the street closure and detours. Construction impacts on the area are projected to be minimal since construction vehicles are estimated to contribute fewer vehicles during the peak hours than the project would after completion. The traffic generated by the dirt haul is also estimated to contribute fewer vehicles during the peak hours than the project would after completion.

During the period of time that Pecan Park Lane (west) is closed and prior to the opening of the Rios Canyon Road extension traffic will be temporarily routed easterly on Old Highway 80 to Pecan Park Lane (east). From this point vehicles can continue to access Rios Canyon Road during the temporary condition. Prior to this temporary detour the applicant will be improving the Pecan Park Lane (east) intersection with Olde Highway 80 to a 90-degree intersection rather than keeping the current, skewed angle in order to provide better safety.

Project construction is expected to take place over approximately 9.5 months with a 5-day, 9-hour work week construction schedule from 7:00 am to 4:00 pm. Construction activity will take place during all available hours for construction as allowed by code. Traffic control plans will be prepared to alleviate any vehicular, pedestrian, transit, bicycle and parking impacts to the extent possible. Contractors will be required to follow the approved control plans to ensure that safe routes throughout the construction zones are provided for all modes of transportations. See Appendix L for traffic control plan.

7.2 PEDESTRIAN

Pedestrian facilities currently do not exist along the project frontage. The existing pedestrian network does not currently provide a continuous sidewalk connecting adjoining land uses along Olde Highway 80. These discontinuous pedestrian facilities are not expected to be impacted by the construction of the project.

7.3 TRANSIT

Transit service is offered by the Metropolitan Transit Service (MTS) bus route 864 along the project frontage. The project does not directly affect the ability of transit to use any of their existing routes or stops. In the event that an existing bus stop is temporarily affected by construction within an existing street right of way that has transit service, the contractor shall coordinate with MTS to temporarily relocate the affected transit stop location.

7.4 BICYCLE

Bicycle lanes and routes are classified on the features provided for them within the right of way. Class II bike lanes are striped in the roadway along the outer edge either near the curb or just outside parking areas. The Class II facilities are the ones that could be affected by construction within the right of way, in the limited number of areas where that occurs for this project. To the extent that any construction activity within the right of way would affect an existing Class II bike lane, the

Contractor shall make provisions for the safe passage of bicyclists though the construction zone as part of the permit process for right of way encroachment with the responsible agency. While recreational riders may be present on many of the back country roads, there are no dedicated bicycle lanes for them and they would follow standard vehicular rules of the road.

7.5 PARKING

Construction workers will park personal vehicles at the project site where adequate parking space will be provided. The anticipated construction activities will not temporarily eliminate any existing parking spaces that would result in parking deficiencies. Heavy equipment will be parked and maintained at construction sites and all utility trucks will park in the construction yards. Therefore, there would be no impact on the public parking inventory associated with the construction of the project since sufficient parking for all employees, visitors, service vehicles, and contractors will be provided and occur on-site during the construction phases of the project.

CHAPTER 8
IMPACTS AND MITIGATION

This chapter identifies significant impacts, project mitigation, and outlines the applicant's TIF contribution.

8.1 SIGNIFICANT IMPACTS

The following intersections and roadway segments were found to be significantly impacted by the proposed project based on the County's significance criteria.

8.1.1 Direct Impacts

Without any improvements by the project, there would be direct impacts for Existing With Project conditions.

8.1.1.1 Roadway Segment Direct Impacts

- Olde Highway 80 from Lake Jennings Park Road to Project Driveway 1
- Olde Highway 80 from Project Driveway 1 to Project Driveway 2
- Olde Highway 80 from Project Driveway 2 to Project Driveway 3
- Olde Highway 80 from Project Driveway 3 to Rios Canyon Road
- Olde Highway 80 from Rios Canyon Road to Pecan Park Lane
- Lake Jennings Park Road from Harritt Road to Blossom Valley Road
- Lake Jennings Park Road from Blossom Valley Road to I-8 Westbound Off-Ramp
- Lake Jennings Park Road from I-8 Westbound Off-Ramp to Olde Highway 80

8.1.1.2 Intersections Direct Impacts

- Lake Jennings Park Road and I-8 Westbound Off-Ramp
- Lake Jennings Park Road and I-8 Eastbound Off-Ramp

8.2.2 Cumulative Impacts

The following segments and intersections have been identified as cumulatively impacted. Table 8-1 identifies the recommended improvements associated in order to bring the LOS grade to an acceptable letter grade.

8.2.2.1 Roadway Segment Cumulative Impacts

- Olde Highway 80 from Lake Jennings Park Road to Project Driveway 1
- Olde Highway 80 from Project Driveway 1 to Project Driveway 2
- Olde Highway 80 from Project Driveway 2 to Project Driveway 3
- Olde Highway 80 from Project Driveway 3 to Rios Canyon Road
- Olde Highway 80 from Rios Canyon Road to Pecan Park Lane
- Lake Jennings Park Road from Jack Oak to Harritt Road
- Lake Jennings Park Road from Harritt Road to Blossom Valley Road
- Lake Jennings Park Road from Blossom Valley Road to I-8 Westbound Off-Ramp
- Lake Jennings Park Road from I-8 Westbound Off-Ramp to Olde Highway 80

8.2.2.2 Intersection Cumulative Impacts

- Lake Jennings Park Road and Blossom Valley Road
- Lake Jennings Park Road and I-8 Westbound Off-Ramp
- Lake Jennings Park Road and I-8 Eastbound Off-Ramp

8.3 MITIGATION

The project would make the fronting improvements along Olde Highway 80 and the off-site improvements proposed for Lake Jennings Park Road between Olde Highway 80 and Harritt Road. The recommended improvements are shown in Appendix D and analysis in Appendix G, and summarized below:

Table 8-1
Impacts and Mitigation Measures

Location	Mitigation Measure
Direct Impacts	
Segments	
Olde Highway 80 from Lake Jennings Park Road to Rios Canyon Road	- Improve to provide 4 lanes with intermittent turn lanes between Lake Jennings Park Road and Rios Canyon Road
Olde Highway 80 from Rios Canyon Road to Pecan Park Lane	- Improve to one lane each way with a two-way-left-turn lane between new Rios Canyon Road and Pecan Park Lane (east).
Lake Jennings Park Road from Harritt Road to Blossom Valley Road	- Add NB through lane from Blossom Valley Road to Jennings Vista Drive. - Improve transition from one southbound through lane to two SB through lanes from Harritt Road to Jennings Vista Drive. - Add SB through lane from Jennings Vista Drive to Blossom Valley Road. - Add two way left turn lane south of Harritt Road to Rancho Del Villa - Modify the southbound right turn lane at Blossom Valley to a shared through/right turn lane.
Lake Jennings Park Road from Blossom Valley Road to I-8 westbound off-ramp	- Extend the northbound left turn pocket at Blossom Valley Road to 115 feet. - Improve to provide 4 lanes and bike lanes
Lake Jennings Park Road from I-8 westbound off-ramp to Olde Highway 80	- Improve to provide 4 lanes plus bike lanes - Mitigation strategy/improvement to be reviewed and approved by Caltrans at a later time.
Intersections	
Lake Jennings Park Road and I-8 westbound off-Ramp	-Provide additional capacity at intersection according to segmental improvements above -Provide southbound refuge lane for the westbound left turn lane movement from the I-8 westbound off-ramp. - Mitigation strategy/improvement to be reviewed and approved by Caltrans at a later time.
Lake Jennings Park Road and I-8 eastbound off-Ramp	- Install traffic signal at intersection (Signal Warrant provided in Appendix I) and widen off-ramp for 320 ft to have a third lane to accommodate a left turn lane, a left through lane and a through right lane; however, mitigation strategy/improvement to be reviewed and approved by Caltrans consistent with I.C.E. policy.
Olde Highway 80 and Project Driveway #2	- Install a traffic signal at the intersection opposite the proposed Tractor Supply project (Signal Warrant provided in Appendix I).
Cumulative Impacts	
Segments	
Lake Jennings Park Road from Jack Oak Road to Harritt Road	- No improvement is proposed in this area given the discussion of traffic operations in the text and the other improvements being offered along Lake Jennings Park Road.
Intersections	
Lake Jennings Park Road and Blossom Valley Road	- Expand Lake Jennings Park Rd from a 2 lane CC to a 4 lane Major Rd

All of the impacted roadway segments and intersections would be mitigated to avoid the direct impacts with the recommended roadway improvements.

The segment of Lake Jennings Park Road from Jack Oak Road to Harritt Road, will experience LOS E for Cumulative With Project conditions; however, this portion of roadway does not really conform to the normal list of facilities given the availability of a climbing lane southbound and southerly from El Monte Road, and the practical capacity is indeed something greater than the values used in the tables for making our assessment of adequacy. Also, as demonstrated by the intersection analysis along this portion of Lake Jennings Park Road it will be operating acceptably (LOS = A-C) despite this LOS anomaly when compared to the normal acceptable daily volumes. Therefore, the improvements being proposed by the applicant to that portion of Lake Jennings Park Road between Harritt Road and Olde Highway 80 constitutes a substantial proportional contribution to the project's effects throughout this area.

8.4 TIF UPDATE

The County may also condition the project applicant to fund an update of the TIF program to help underwrite the cost of reflecting new, non-conformal projects in the updated fee program which would result in a new cost formulation for the TIF payment that the project would be subject to.

CHAPTER 9
RECOMMENDATIONS

The proposed development consists of 76,100 square feet of neighborhood commercial uses including an auto fueling facility of 12 fueling positions. Based on the preceding analysis of this project we recommend the mitigation measures and fair share contributions described in Chapter 8.

Prepared By:
J. Arnold Torma, TE – Principal Engineer
Rogelio Pelayo – Associate Transportation Planner

REGISTERED PROFESSIONAL ENGINEER
ARNOLD TORMA
No. 1143
Exp. 09/30/16
TRAFFIC
STATE OF CALIFORNIA

LAKE JENNINGS MARKETPLACE
TRAFFIC IMPACT STUDY

July 2015

KOA CORPORATION
PLANNING & ENGINEERING
www.koacorporation.com

LAKE JENNINGS MARKETPLACE
TRAFFIC IMPACT STUDY

July 29, 2015

RECORD ID: PDS2014-GPA-14-005; PDS2014-REZ-14-004; PDS2014-TM-5590;
PDS2014-STP-14-019; PDS2014-MUP-15-004

Environmental Log No.: PDS2014-ER-14-14013

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GLOSSARY OF TERMS AND ACRONYMS

Acronyms	**Definitions**
AASHTO	American Association of State Highway and Transportation Officials
ADA	Americans with Disabilities Act
ADT	Average Daily Traffic
APE	Area of Potential Effect
AWSC	All-way Stop-Controlled
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CMP	Congestion Management Program
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
FEIR	Final Environmental Impact Report
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
GIS	Geographic Information Systems
HCM	2000 Highway Capacity Manual
HUD	U.S. Department of Housing and Urban Development
ILV	Intersecting Lane Volume
ITS	Intelligent Transportation Systems
LOS	Level of Service
MHPA	Multi-Habitat Planning Area
MOA	Memorandum of Agreement
MOE	Measure of Effectiveness
MOU	Memorandum of Understanding
mph	miles per hour
MTDB	Metropolitan Transit Development Board
NOC	Notice of Completion
NOP	Notice of Preparation
PCE	Passenger Car Equivalent
pcphgpl	passenger cars per hour of green per lane
PeMS	Performance Measurement Systems
RTP	Regional Transportation Plan
SANDAG	San Diego Association of Governments
SANTEC	San Diego Traffic Engineers’ Council
sf	Square feet
SR	State Route
TIF	Transportation Impact Fee
TIS	Traffic Impact Study
TWSC	Two-way Stop Controlled
V/C	Volume-to-Capacity ratio

EXECUTIVE SUMMARY

This traffic impact analysis has been prepared for the proposed Lake Jennings Marketplace project, and it consists of 76,100 square feet of neighborhood commercial use including an auto fueling facility of 12 fueling positions. The proposed development is located in the Lakeside Community of the unincorporated County of San Diego on the south side of Interstate 8 near the Lake Jennings Park Road Interchange. The project site is located south of Olde Highway 80 between Lake Jennings Park Road and the future northerly extension of Rios Canyon Road. Interstate 8 provides regional access to the project site at the Lake Jennings Park Road.

The traffic study is prepared in accordance with the *County of San Diego Report Format and Content Requirements (Transportation and Traffic)* and the *County of San Diego Guidelines for Determining Significance (Transportation and Traffic, August, 2011).*

Traffic counts for the project were taken in January of 2014. The project is anticipated to generate an overall 10,992 daily trips with 514 AM peak hour trips and 1,080 PM peak hour trips. For a commercial project, "passer-by" and "diverted" trips are considered in addition to the "primary" amount of trips. In essence, there are an overall 10,992 daily trips at the project's driveways and lesser amount further away at the off-site locations with the reduction of the passer-by and diverted trips. The project's primary trips at the off-site analysis locations include 4,683 daily trips with 203 AM peak hour trips and 464 PM peak hour trips, based on the adjustments of the passer-by and diverted trip reduction. The trip generation rates used in this analysis are determined based on rates contained in the *(SANDAG) (Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region* (2002). This manual provides standards and recommendations for the probable traffic generation of various land uses based upon local, regional and nationwide studies of existing developments in comparable settings.

Trip distribution and assignment is the process of identifying the probable destinations, directions and traffic routes that project related traffic will likely affect. The trip distribution and assignment for this project is based on SANDAG's computerized travel forecast model (Series 12 Select Zone analysis).

The project is evaluated for potential direct and cumulative impacts as well as conformance with the adopted General Plan. The traffic study indicates that the project will cause several direct impacts to Olde Highway 80 and Lake Jennings Park Road, and there are cumulative impacts as well. The project would make the fronting improvements along Olde Highway 80 and the off-site improvements proposed for Lake Jennings Park Road between Olde Highway 80 and Harritt Road. The recommended roadway improvements are shown in Appendix D. All of the impacted roadway segments and intersections would be mitigated to avoid direct impacts with the recommended roadway improvements. The segment of Lake Jennings Park Road from Jack Oak Road to Harritt Road, segment will experience LOS E for Cumulative With Project conditions, however, we would observe that this portion of roadway does not really conform to the normal list of facilities given the availability of a climbing lane southbound and southerly from El Monte Road, and the practical capacity is indeed something greater than the values used in the tables for making our assessment of adequacy. Therefore, the improvements being proposed by the applicant to that portion of Lake Jennings Park Road between Harritt Road and Olde Highway 80 are a reasonable and proportional contribution to the project's effects throughout this area.

CHAPTER 1
THE PROJECT

This traffic impact analysis has been prepared for the proposed Lake Jennings Marketplace project. The proposed development is located in the Lakeside Community of the unincorporated County of San Diego on the south side of Interstate 8 near the Lake Jennings Park Road Interchange. The project site is located south of Olde Highway 80 between Lake Jennings Park Road and the future northerly extension of Rios Canyon Road. Interstate 8 provides regional access to the project site at the Lake Jennings Park Road. Figure 1-1 shows the project vicinity and study area.

This property has been the subject of earlier studies both as a neighborhood commercial center and as a residential project for which it was approved previously by the County. At this time the proposal is to return to a commercial center project. Since the last time the project was analyzed there have been changes in existing background traffic conditions on County roadways, procedures and guidelines for the preparation of studies, SANDAG's modeling system upon which the distribution is based, and the project itself has reduced in its size from 93,000 square feet to 76,100 square feet since last studied as a commercial center.

1.1 PROJECT LOCATION AND DESCRIPTION

Project Location

The project is located in east San Diego County near the community of Lakeside in East San Diego County, south of Olde Highway 80, and east of Lake Jennings Park Road (Figures 1-1 and 1-2).

Project Description

The proposed project is a commercial shopping center located on an existing vacated site. Work to be done includes supporting infrastructure such as sewer, road improvements and utilities, the vacation of an existing paved road, and dedication of a biological open space easement on an approximately 13.10 acre site.

Commercial Shopping Center

The project proposes to construct a commercial shopping center with 76,100 square feet (sf) of building area. The project would include six structures, all of which will be located on individual lots. The development will include the following:

1. Market Building (Building A – 43,000 sf) located along the east side of the project site.
2. Financial Building with drive through (Building B – 4,500 sf) located on the northeast intersection of Olde Highway 80 and the proposed signalized project entrance on Olde Highway 80.
3. Restaurant with drive through (Building C – 3,500 sf) located on the northwest intersection of Olde Highway 80 and the proposed signalized project entrance on Olde Highway 80.
4. Restaurant-Retail Building (Building D – 9,600 sf) located along the southern boundary of the project's developed area. (Site plan includes a 500 sf outdoor dining area for a total of 10,100 sf)
5. Gas Station with convenience store and car wash (43,000 sf pad) at the intersection of Olde Highway 80 and Ridge Hill Road, and Commercial Building (Building E – 3,000 sf) located directly south of the gas station.

6. Restaurant-Retail Building (Building F – 12,500 sf) located along the southern boundary of the project's developed area. Building F shares a common wall with Building D.

Trail Component

The project will construct a multi-use trail suitable for pedestrians and equestrian users. The trail will be 10 feet wide and constructed of decomposed granite material. The trail segments adjacent to the two public streets are proposed as standard trail pathways per the County's Community Trails Master Plan (CTMP). The trail segment within the open space lot will run along the southern edge of the development area (immediately north of the proposed open space area) within a 20 foot wide trail easement and will include a 10 foot wide treadway.

Access

The project requires four access points; one from Ridge Hill Road located on the west side of the project, and three others located along Olde Highway 80; a right-in (only) approximately 200 feet east of the intersection of Olde Highway 80 and Lake Jennings Park Road, a full signalized project entry half way along the project frontage, and a second non-signalized project entry (right in – right out only) near the northeast corner of the property.

Walls and Signage

There will be a comprehensive coordinated sign program designed for the project. It includes a Freeway Pylon Display, Monument Center ID Displays, Monument Signage at the signalized entrance on Olde Highway 80, and a state required Gas Pricing Sign for the gas station, convenience store and car wash Pad.

Parking

The project proposes 389 parking spaces. The project parking is almost entirely located within the central portion of the site and will largely be out of the casual view of traffic on Lake Jennings Park Road and Olde Highway 80. The County of San Diego Zoning Ordinance requires a total of 389 parking spaces to be provided by the proposed project based on the size and uses proposed in the buildings. Therefore, the project meets the parking requirements of the County of San Diego Zoning Ordinance.

Landscaping Plan

A landscape plan has been prepared for the project. The landscape plan incorporates a variety of species that are intended to provide a visual buffer from Interstate 8 and be compatible with the riparian zone associated with Los Coches Creek. The plant palette reflects a selection of native plant material which can naturally be found in riparian zones of Southern California.

1.2 PROJECT ACCESS

The project will have three access points on Olde Highway 80 and one access point on Lake Jennings Park Road. The main access to the project site is provided at Project Driveway 2, which is a future traffic signal, located on Olde Highway 80 approximately 550 feet east of Lake Jennings Park Road. Project Driveway 1 is a right-in only access located on Olde Highway 80 approximately 200 feet east of Lake Jennings Park Road. Project Driveway 3 is another right-in/right-out only access located on Olde Highway 80 approximately 750 feet east of Lake Jennings Park Road. Project Driveway 4 is a stop-controlled full access driveway located on Ridge Hill Road approximately 200 feet south of Olde Highway 80.

1.3 STUDY AREA

The study area includes locations that are expected to be affected by the proposed project. The scope of the study area is based on the County of San Diego guidelines which specify that an intersection or roadway segment should be analyzed if it will carry 25 project peak hour directional trips. The study area is shown in Figure 1-1. The specific study area includes sixteen (16) roadway segments, fifteen (15) intersections and two freeway mainline links.

1.3.1 Roadway Segments

- Olde Highway 80 from Lake Jennings Park Road to Project Driveway 1
- Olde Highway 80 from Project Driveway 1 to Project Driveway 2
- Olde Highway 80 from Project Driveway 2 to Project Driveway 3
- Olde Highway 80 from Project Driveway 3 to Rios Canyon Road
- Olde Highway 80 from Rios Canyon Road to Pecan Park Lane
- Olde Highway 80 from Pecan Park Lane to Chimney Rock Lane
- Mapleview Street from Ashwood Street to Pino Drive
- Lake Jennings Park Road from Pino Drive to El Monte Road
- Lake Jennings Park Road from El Monte Road to Jack Oak Road
- Lake Jennings Park Road from Jack Oak Road to Harritt Road
- Lake Jennings Park Road from Harritt Road to Blossom Valley Road
- Lake Jennings Park Road from Blossom Valley Road to I-8 Westbound Off-Ramp
- Lake Jennings Park Road from I-8 Westbound Off-Ramp to Olde Highway 80
- Lake Jennings Park Road from Olde Highway 80 to Project Driveway 4
- Ridge Hill Road from Lake Jennings Park Road to Cordial Road
- Rios Canyon Road south of Olde Highway 80

1.3.2 Intersections

- Mapleview Street and Ashwood Street
- Mapleview Street and Pino Drive
- Lake Jennings Park Road and El Monte Road
- Lake Jennings Park Road and Harritt Road
- Lake Jennings Park Road and Blossom Valley Road
- Lake Jennings Park Road and I-8 Westbound Off-Ramp
- Lake Jennings Park Road and I-8 Eastbound Off-Ramp
- Olde Highway 80 and Project Driveway 1
- Olde Highway 80 and Project Driveway 2
- Olde Highway 80 and Project Driveway 3
- Olde Highway 80 and Rios Canyon Road
- Olde Highway 80 and Pecan Park Lane West
- Olde Highway 80 and Pecan Park Lane East
- Ridge Hill Drive and Project Driveway 4
- Rios Canyon Road and Pecan Park Lane

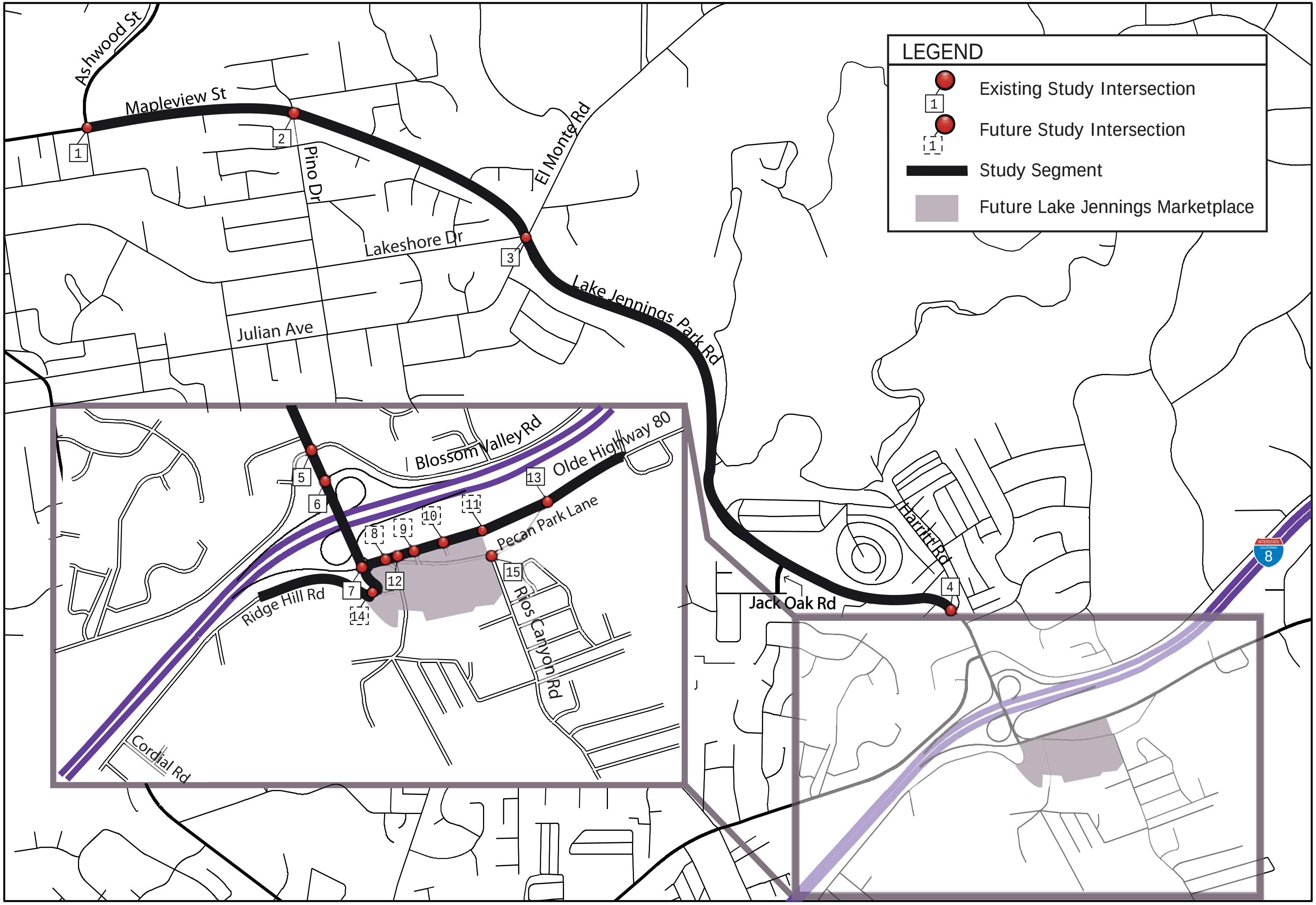
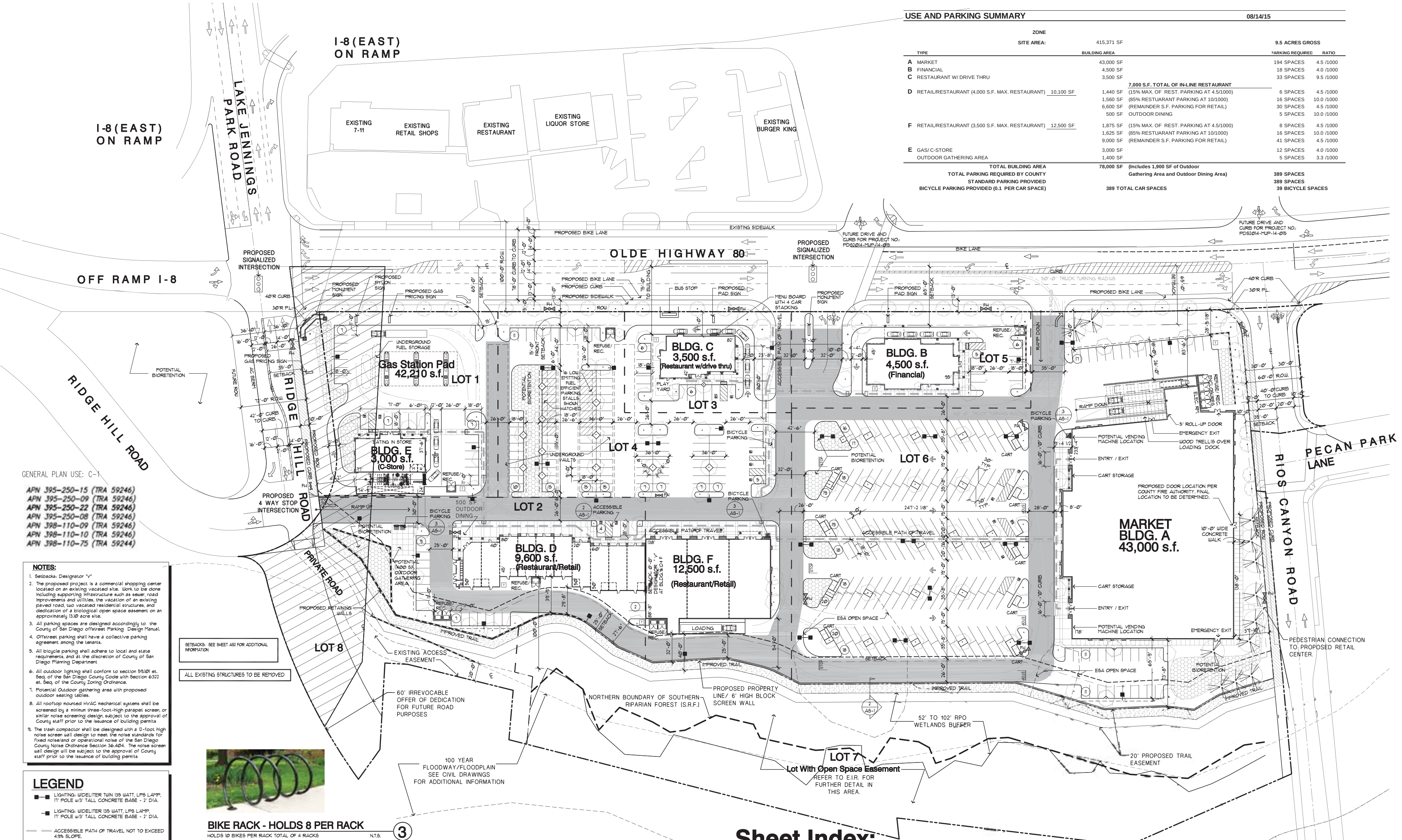


Figure 1-1
Project Study Area

N
Not To
Scale



USE AND PARKING SUMMARY

08/14/15

ZONE

	SITE AREA:		415,371 SF		9.5 ACRES GROSS	
	TYPE		BUILDING AREA		PARKING REQUIRED	RATIO
A	MARKET		43,000 SF		194 SPACES	4.5 /1000
B	FINANCIAL		4,500 SF		18 SPACES	4.0 /1000
C	RESTAURANT W/ DRIVE THRU		3,500 SF		33 SPACES	9.5 /1000
				7,000 S.F. TOTAL OF IN-LINE RESTAURANT		
D	RETAIL/RESTAURANT (4,000 S.F. MAX. RESTAURANT)	10,100 SF	1,440 SF	(15% MAX. OF REST. PARKING AT 4.5/1000)	6 SPACES	4.5 /1000
			1,560 SF	(85% RESTUARANT PARKING AT 10/1000)	16 SPACES	10.0 /1000
			6,600 SF	(REMAINDER S.F. PARKING FOR RETAIL)	30 SPACES	4.5 /1000
			500 SF	OUTDOOR DINING	5 SPACES	10.0 /1000
F	RETAIL/RESTAURANT (3,500 S.F. MAX. RESTAURANT)	12,500 SF	1,875 SF	(15% MAX. OF REST. PARKING AT 4.5/1000)	8 SPACES	4.5 /1000
			1,625 SF	(85% RESTUARANT PARKING AT 10/1000)	16 SPACES	10.0 /1000
			9,000 SF	(REMAINDER S.F. PARKING FOR RETAIL)	41 SPACES	4.5 /1000
E	GAS/ C-STORE		3,000 SF		12 SPACES	4.0 /1000
	OUTDOOR GATHERING AREA		1,400 SF		5 SPACES	3.3 /1000
	TOTAL BUILDING AREA		78,000 SF	(Includes 1,900 SF of Outdoor		
	TOTAL PARKING REQUIRED BY COUNTY			Gathering Area and Outdoor Dining Area)	389 SPACES	
	STANDARD PARKING PROVIDED				389 SPACES	
	BICYCLE PARKING PROVIDED (0.1 PER CAR SPACE)		389 TOTAL CAR SPACES		39 BICYCLE SPACES	

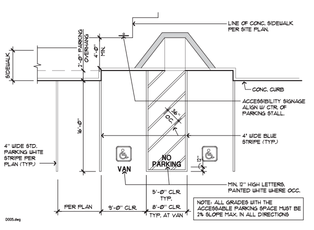
NOTES:

1. Setbacks: Designator 'V'
2. The proposed project is a commercial shopping center located on an existing vacated site. Work to be done including supporting infrastructure such as sewer, road improvements and utilities, the vacation of an existing paved road, two vacated residential structures, and dedication of a biological open space easement on an approximately 13.10 acre site.
3. All parking spaces are designed accordingly to the County of San Diego offstreet Parking Design Manual.
4. Offstreet parking shall have a collective parking agreement among the tenants.
5. All bicycle parking shall adhere to local and state requirements, and at the discretion of County of San Diego Planning Department
6. All outdoor lighting shall conform to section 59.101 et. Seq. of the San Diego County Code with Section 6322 et. Seq. of the County Zoning Ordinance.
7. Potential Outdoor gathering area with proposed outdoor seating tables.
8. All rooftop mounted HVAC mechanical systems shall be screened by a minimum three-foot-high parapet screen, or similar noise screening design, subject to the approval of County staff prior to the issuance of building permits
9. The trash compactor shall be designed with a 12-foot high noise screen wall design to meet the noise standards for fixed noise/and or operational noise of the San Diego County Noise Ordinance Section 36.404. The noise screen wall design will be subject to the approval of County staff prior to the issuance of building permits

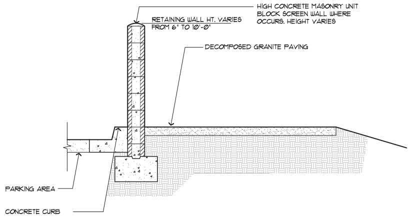
LEGEND

■–■	LIGHTING: WIDELITER TWIN 135 WATT, LPS LAMP, 17' POLE w/3' TALL CONCRETE BASE - 2' DIA.
–■	LIGHTING: WIDELITER 135 WATT, LPS LAMP, 17' POLE w/3' TALL CONCRETE BASE - 2' DIA.
— —	ACCESSIBLE PATH OF TRAVEL NOT TO EXCEED 4.9% SLOPE.
▨	25' WIDE FIRE DEPARTMENT ACCESS LANE
– – –⋈	FIRE HYDRANT AND 150' FIRE FIGHTER/HOSELINE ACCESS
▬	RETAINING WALL: EXPOSED HEIGHT VARIES FROM 6 INCHES TO 10 FT. IN HEIGHT. SEE CIVIL DRAWINGS FOR ADDITIONAL INFORMATION.
╭	50'-0" MIN. REQUIRED TRUCK TURNING RADIUS SYMBOL. U.N.O.
░	10'-0' WIDE TRAIL WITH D.G. SURFACE
▨	10'-0' IMPROVED PATHWAY WITH D.G. SURFACE
◇	LANDSCAPE PLANTER
▭	TRASH ENCLOSURE TO COMPLY WITH COUNTY OF SAN DIEGO STANDARDS
T	ELECTRICAL TRANSFORMER
⩘	10 BICYCLE RACK PARKING TOTAL OF 4 (PARKING FOR 40 BIKES TOTAL) SEE DETAIL NO. 3

BIKE RACK - HOLDS 8 PER RACK ③
HOLDS 10 BIKES PER RACK TOTAL OF 4 RACKS N.T.S.

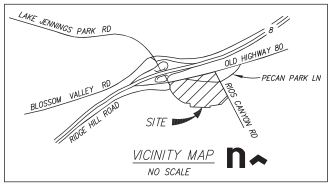


ACCESSIBLE PARKING ①
N.T.S.



Trail - Section ②
1/2" = 1'-0"

Sheet Index:



VICINITY MAP
NO SCALE

Site Plan

0 10' 40' 100'
SCALE: 1" = 40'-0"

Developer:
SOUTH COAST DEVELOPMENT

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Solana Beach, CA 92075
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LAKE JENNINGS MARKET PLACE
Olde Highway 80 & Lake Jennings Park Road
County of San Diego, California

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planning
interiors
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Issue Dates

Planning Dept.	07/17/2014
Planning Dept.	11/19/2014
Planning Dept.	01/26/2015
Planning Dept.	05/13/2015
Permit Set	-
Construction Set	-
Drawing Date	06/19/2015
Check By	NB
Drawn By	NB
Scale	as noted
Job Number	12080.S01
Sheet Number	AS-1

Site Plan 1-2

1.3.3 Freeway Mainlines

- Interstate 8 west of Lake Jennings Park Road
- Interstate 8 east of Lake Jennings Park Road

1.4 PROJECT TRIP GENERATION

Trip generation is a measure or forecast of the number of trips that begin or end at the project site. The traffic generated is a function of the extent and type of development proposed for the site. These trips will result in some traffic increases on the streets where they occur. Vehicular traffic generation characteristics for projects are estimated based on established rates. These rates identify the probable traffic generation of various land uses based studies of developments in comparable settings. The rates used in this analysis are determined based on rates contained in the *(SANDAG) (Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region (2002.)* This manual provides standards and recommendations for the probable traffic generation of various land uses based upon local, regional and nationwide studies of existing developments in comparable settings. Appendix B contains excerpts from this manual.

Building square footage excluding outdoor space was used to calculate project trip generation. As shown in Table 1-1, the project is anticipated to generate an overall 10,992 daily trips with 514 AM peak hour trips and 1,080 PM peak hour trips. For a commercial project, “passer-by” and “diverted” trips are considered in addition to the “primary” amount of trips. In essence, there are an overall 10,992 daily trips at the project’s driveways and lesser amount further away at the off-site locations with the reduction of the passer-by and diverted trips. The project’s primary trips at the off-site analysis locations include 4,683 daily trips with 203 AM peak hour trips and 464 PM peak hour trips, based on the adjustments of the passer-by and diverted trip reduction. For reference purpose a graphic is included in Appendix J that shows where each trip type was applied.

Table 1-1
Project Trip Generation

Land Use	Intensity	Units	Rate/ Trips	Daily	AM Peak Hour			PM Peak Hour		
					Total	In	Out	Total	In	Out
Neighborhood Shopping Center*	76,100	Square Feet	Rate	120	4%	60%	40%	10%	50%	50%
			Trips	9,132	365	219	146	913	457	457
Gasoline with/Food Mart & Car Wash	12	Fueling Space	Rate	155	8%	50%	50%	9%	50%	50%
			Trips	1,860	149	75	75	167	84	84
Total Primary + Diverted + Passby				10,992	514	294	221	1080	541	541
Neighborhood Shopping Center*	78%	Passby Trip Reduction	Rate							
			Trips	7,123	285	171	114	712	356	356
Gasoline with/Food Mart & Car Wash	72%	Passby Trip Reduction	Rate							
			Trips	1,339	107	54	54	120	60	60
Total Primary + Diverted				8,462	392	225	168	832	417	417
Neighborhood Shopping Center*	47%	Diverted Trip Reduction	Rate							
			Trips	4,292	172	103	69	429	215	215
Gasoline with/Food Mart & Car Wash	21%	Diverted Trip Reduction	Rate							
			Trips	391	31	16	16	35	18	18
Total Primary				4,683	203	119	84	464	232	232

* includes 3 ksf from gas store

Source: SANDAG (Not So) Brief Guide of Vehicular Traffic Generation Rates

Note: Numbers may not total due to rounding

A reduced project alternative that would have 13,000 fewer gross square feet of commercial building area has been considered. Instead of a 43,000 square foot grocery store some other commercial use totaling 30,000 square feet would be built there netting out at 13,000 less square feet. That represents 1,560 fewer trips at the site (13,000 s.f. x 120 trips/ksf).As such, the trips would be somewhat reduced in the study but not enough to avoid the traffic impacts otherwise generated by the full project.

1.5 TRIP DISTRIBUTION AND ASSIGNMENT

Trip distribution and assignment is the process of identifying the probable destinations, directions and traffic routes that project related traffic will likely affect. Trip distribution and assignment information can be estimated from observed traffic patterns, experience or through use of a computerized travel forecast model. Once the proposed developments trips have been estimated, they are assigned to the study area network. The trip distribution and assignment for this project is based on SANDAG's computerized travel forecast model (Series 12 Select Zone analysis). Appendix B contains the select zone model plots.

The trip distribution and assignment for the project-related trips is shown in Figure 1-3. Figure 1-4 shows the project-only daily trips while Figures 1-5 and 1-6 show project-only AM and PM peak hour trips, respectively.

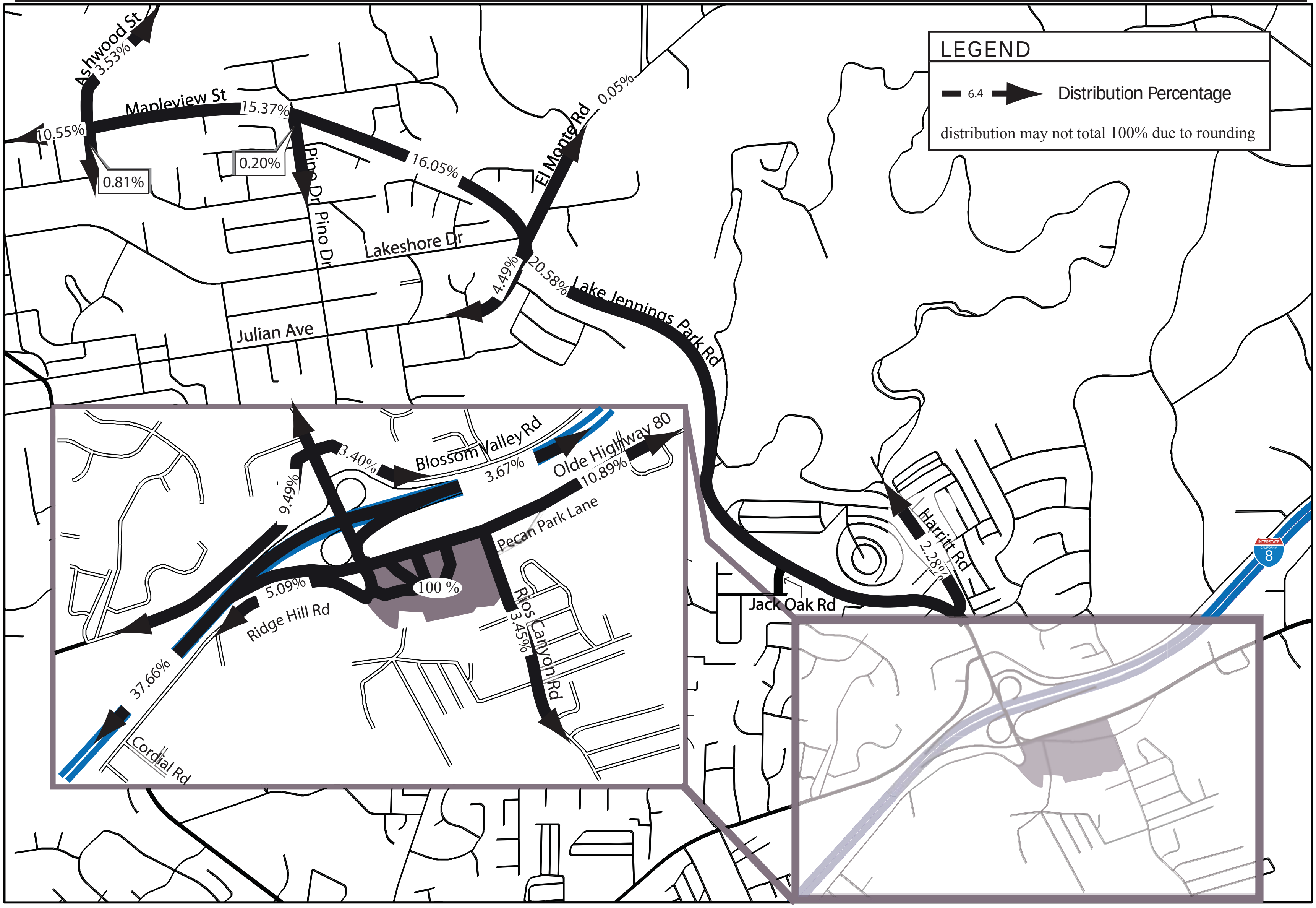

Figure 1-3
Project Trip Distribution

N
Not To
Scale

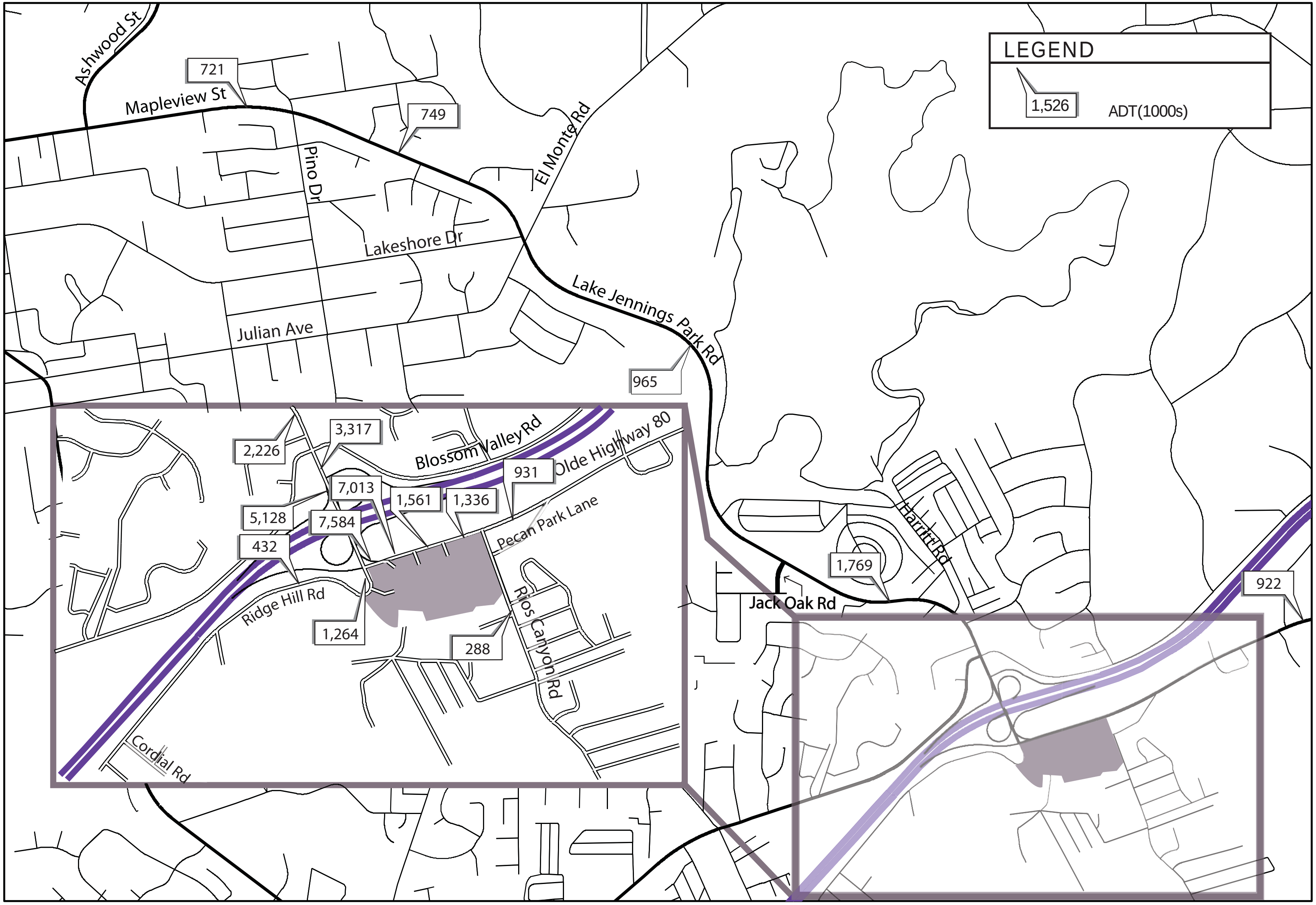

Figure 1-4
Project Daily Roadway Segment Volumes

N
Not To Scale

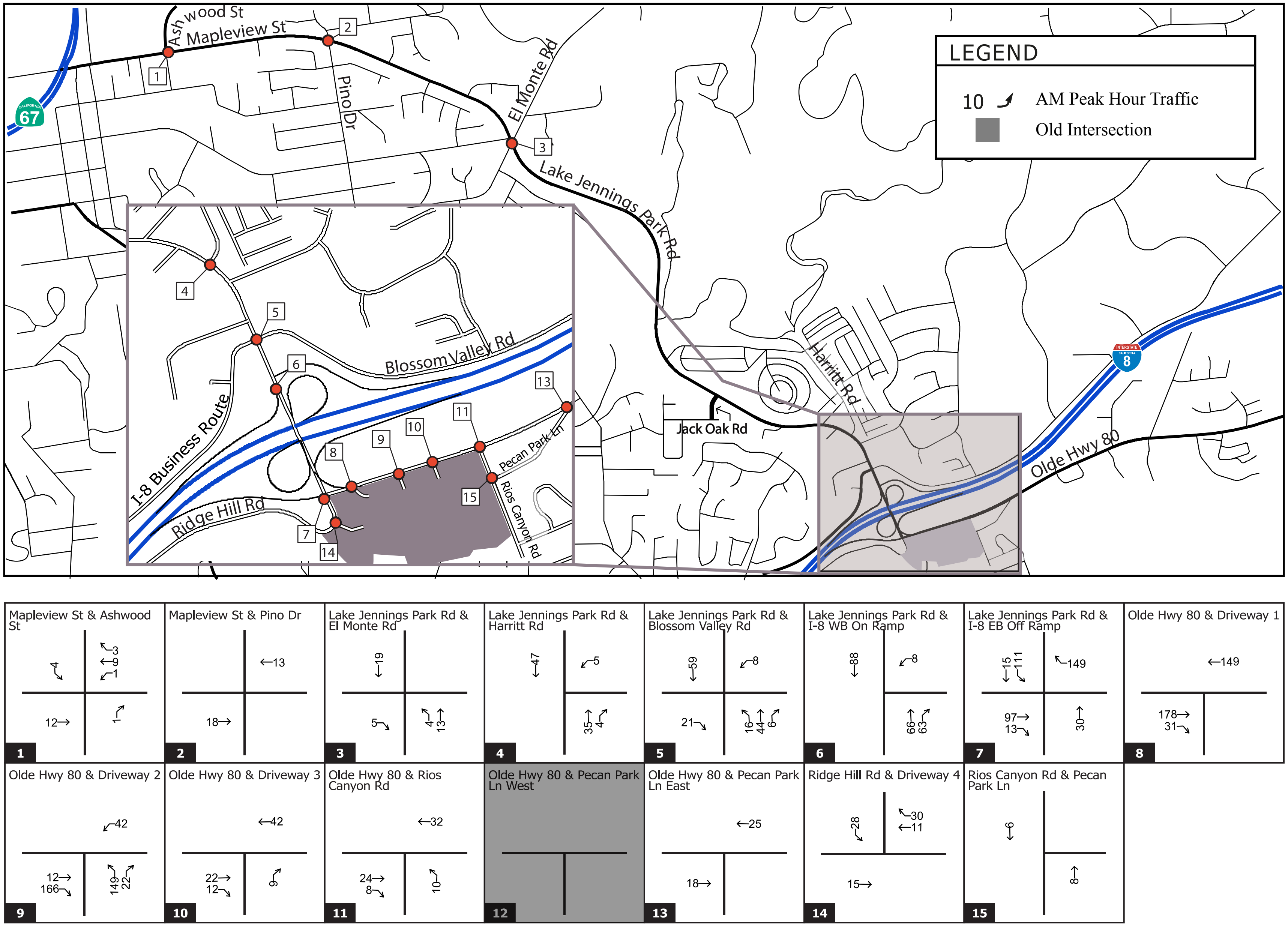

Figure 1- 5
Project AM Peak Hour Intersection Volumes

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Not To
Scale

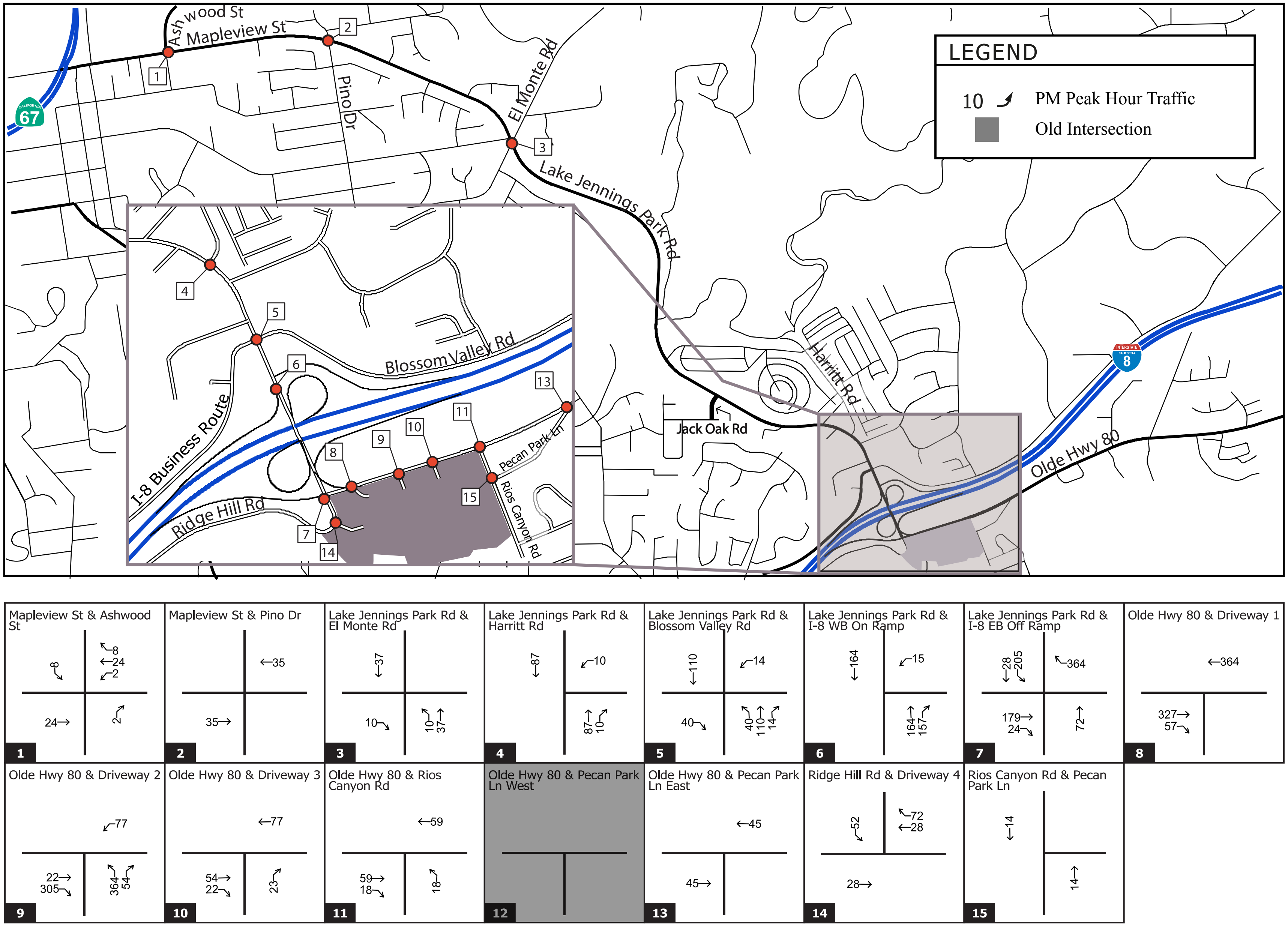

Figure 1- 6
Project PM Peak Hour Intersection Volumes

N
Not To Scale

1.6 PARKING

The County of San Diego requirements for parking are being met by the project, and there are 389 spaces being provided within the project.

CHAPTER 2
METHODOLOGIES

This chapter documents the methodologies and assumptions used to conduct the traffic impact analysis for the project. The study and analysis methodology is based on the *County of San Diego Report Format and Content Requirements (Transportation and Traffic)* and the *County of San Diego Guidelines for Determining Significance (Transportation and Traffic)* adopted in August 24, 2011. The guidelines are used to determine the project's conformance and evaluate whether a project's impacts are perceptible to the average driver. This section contains the following background information:

- Study scenarios
- Study time periods
- Capacity analysis methodologies

2.1 STUDY SCENARIOS

This report presents an analysis of the following scenarios:

- Existing Conditions
- Existing Conditions With Project
- Cumulative Conditions Without Project
- Cumulative Conditions With Project
- General Plan Conditions Without Project
- General Plan Conditions With Project

2.2 ANALYSIS METHODOLOGIES

Street system operating conditions are typically described in terms of "level of service." Level of service is a report-card scale used to indicate the quality of traffic flow on roadway segments and at intersections. Level of service (LOS) ranges from LOS A (free flow, little congestion) to LOS F (forced flow, extreme congestion). A more detailed description of the concepts described in this section is provided in Appendix A of this document. The following methods are outlined in this publication and used in this study.

2.2.1 Roadway Segment Capacity Analysis

The County of San Diego has published daily traffic volume standards for roadways within its jurisdiction. To determine service levels on study area roadway segments, a comparison is made between the appropriate average daily traffic thresholds for level of service to the daily capacity of the study area roadway segments, and the existing and future volumes in the study area. The thresholds for determining level of service used in this analysis are summarized in Appendix A.

2.2.2 Regionally Significant Arterial Analysis

The San Diego Association of Governments (SANDAG) Congestion Management Program (CMP) identifies the regionally significant circulation network. The SANDAG CMP requires that all large projects generating over 2,400 average daily trips perform a detailed analysis of any CMP roadways within the project study area.

2.2.3 Intersection Capacity Analysis

The analysis of peak hour intersection performance was conducted using the Synchro and Traffix analysis software programs, which uses methodologies defined in the 2000 Highway Capacity Manual (HCM) to calculate results. Level of service (LOS) for intersections is determined by control delay. Control delay is defined as the total elapsed time from when a vehicle stops at the end of a queue to the time the vehicle departs from the stop line. The total elapsed time includes the time required for the vehicle to travel from the last-in-queue position to the first-in-queue position, including deceleration of vehicles from free-flow speed to the speed of vehicles in the queue. Appendix A lists the HCM delay/LOS criteria for both signalized and unsignalized intersections.

2.2.3.1 Signalized Intersections

The HCM analysis methodology for evaluating signalized intersections is based on the "operational analysis" procedure. This technique uses 1,900 passenger cars per hour of green per lane (pcphgpl) as the maximum saturation flow of a single lane at an intersection. This saturation flow rate is adjusted to account for lane width, on-street parking, conflicting pedestrian flow, traffic composition, (e.g., the percentage of vehicles that are trucks) and shared lane movements (e.g., through and right-turn movements from the same lane). Average control delay is calculated by taking a volume-weighted average of all the delays for all vehicles entering the intersection.

2.2.3.2 All-way Stop-controlled (AWSC) Intersections

The HCM analysis methodology for evaluating all-way Stop-controlled intersections is based on the degree of conflict for each independent approach created by the opposing approach and each conflicting approach. Level of Service for AWSC intersections is also based on the average control delay. However, AWSC intersections have different threshold values than those applied to signalized intersections. This is based on the rationale that drivers expect AWSC intersections to carry lower traffic volumes than at signalized intersections. Therefore, a higher level of delay is acceptable at a signalized intersection for the same LOS.

2.2.3.3 Two-way Stop-controlled (TWSC) Intersections

The HCM analysis methodology for evaluating two-way Stop-controlled (TWSC) intersections is based on gap acceptance and conflicting traffic for vehicles stopped on the minor-street approaches. The critical gap (or minimum gap that would be acceptable) is defined as the minimum time interval in the major-street traffic stream that allows intersection entry for one minor-street vehicle. Average control delay and LOS for the "worst approach" are reported. Level of service is not defined for the intersection as a whole.

2.2.4 Freeway Mainline Level of Service

The method for calculating freeway level of service is based on the volume-to-capacity (V/C) ratio using the following equation:

$$V/C = \frac{[\ (\text{ADT} * \text{Peak hour percent} * \text{Directional factor})/\text{Truck factor}]}{\text{Capacity}}$$

where:
ADT = average daily traffic volume (2-way);
Peak hour percent = the proportion of ADT that occurs during the peak hour (not specifically AM or PM);
Directional factor = the proportion of peak hour traffic traveling in the peak direction;
Truck factor = a reduction in capacity to account for heavy vehicles and grades; and
Capacity = 2,300 vehicles per hour per lane.

The resultant V/C ratios are compared to the standard v/c thresholds for level of service contained in Appendix A.

2.2.5 Ramp Meter Analysis

Freeway ramp meters are designed to maximize mainline freeway capacity, reduce traffic congestion and reduce peak period delays. This is accomplished by regulating the flow of vehicles entering the freeway, allowing for traffic flow on the mainline to achieve reasonable speeds. If excess demand exists at freeway on-ramps, delays and considerable queue lengths could result on ramps and adjacent surface roadways. Ramp meters control the access to Interstate 8 at Lake Jennings Park Road in the westbound direction during the AM peak hour. No ramp meters are active in the evening peak hour. The County Draft Guidelines for Determining Significance and Project Screening Criteria for Transportation Impacts require that ramp meter locations be studied where the proposed project adds 20 or more peak hour trips to the ramp.

The average queue length is calculated based on the following data:

- Demand (veh/hr) = peak hour demand expected to use the on-ramp;
- Meter Rate (veh/hr) = peak hour capacity expected to be processed through the ramp meter;
- Excess Demand (veh/hr) = Demand – Meter Rate or zero, whichever is greater;
- Average Delay (min) = (Excess Demand/Meter Rate)x 60 minutes/hour;
- Average Queue (feet) = Excess Demand x 29 feet/vehicle

2.2.6 Analysis of Significance

To determine direct project impacts, the County of San Diego has developed a series of thresholds based on allowable increases in volume-to-capacity ratios that become more stringent as level of service worsens. Appendix A summarizes these thresholds. Where roadway segments and intersections operate at LOS D or better impacts are not considered significant.

The August, 2011 Guidelines define the threshold of significance as on average the addition of one car per lane every 2.4 to 4.8 minutes during peak hour conditions depending on the level of service of the roadway. In most cases, this increase 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.

CHAPTER 3
EXISTING CONDITIONS

3.1 EXISTING TRAFFIC VOLUMES

The intersection turning movement counts were conducted during the weekday morning peak period from 7:00 AM to 9:00 AM, and during the weekday evening peak period from 4:00 PM to 6:00 PM in January of 2014. Average daily traffic volumes were obtained through machine data collection in January of 2014. Freeway mainline volumes were obtained from Caltrans online volume databank and are representative of 2014 freeway volumes. Traffic count data is included in Appendix C. The existing daily traffic volumes are shown in Figure 3-3. The existing weekday morning (AM) and evening (PM) peak hour intersection volumes are shown in Figures 3-4 and 3-5, respectively.

3.2 EXISTING WITH PROJECT TRAFFIC VOLUMES

The Existing With Project daily traffic volumes are shown in Figure 3-6. The Existing With Project AM and PM peak hour intersection volumes are shown in Figures 3-7 and 3-8, respectively.

3.3 ROADWAY NETWORK

The principal roadways in the project study area are described briefly below. The description includes the physical characteristics, adjacent land uses, and traffic control devices along these roadways. The existing roadway geometry and control conditions are shown in Figure 3-1 and 3-2.

Interstate 8 Freeway runs east/west connecting the eastern and western communities in San Diego County from Pacific Ocean to Cleveland National Forest. Interstate 8 continues to extend eastward into the State of Arizona. Near the project study area, Interstate 8 has two travel lanes in each direction. Interstate 8 has a full interchange at Lake Jennings Park Road.

Olde Highway 80 runs east/west running parallel to Interstate 8 from Lake Jennings Park Road to Chimney Rock Lane in the study area. It has a functional classification of a 2 lane collector with 1 lane in each direction and has a striped two-way left lane portion. The posted speed limit is 50 MPH.

Lake Jennings Park Road/Mapleview Street runs north/south connecting Ridge Hill Road and Olde Highway 80 to Pino Drive where it becomes Mapleview Street. Lake Jennings Park Road varies from 2-4 lanes and the ultimate classification of this road from Mapleview St to Olde Highway 80 is a 4.1B Major Road with intermittent Turn Lanes per the County of San Diego General Plan. It has a functional classification of a 2 lane collector road with 1 lane in each direction. The pavement width of the roadway varies throughout the length of the roadway with certain areas having two travel lanes in one direction, striped median, and/or bike lane. The posted speed limit varies between 40-55 MPH. Interstate 8 has a full interchange at Lake Jennings Park Road

Ridge Hill Road runs predominantly east/west with a small portion turning north at Interstate 8 and Olde Highway 80. Along this portion, Ridge Hill Road runs adjacent to the western boundary of the project. It has a functional classification of a 2 lane residential collector per the County of San Diego, with 1 lane in each direction.

Rios Canyon Road runs north/south connecting the residential community south of Interstate 8 to Olde Highway 80 via Pecan Park Lane. It has a functional classification of a 2 lane rural collector with 1 lane in each direction. Rios Canyon Road will be extended northerly from Pecan Park Lane to Olde Highway 80 along the easterly project boundary.

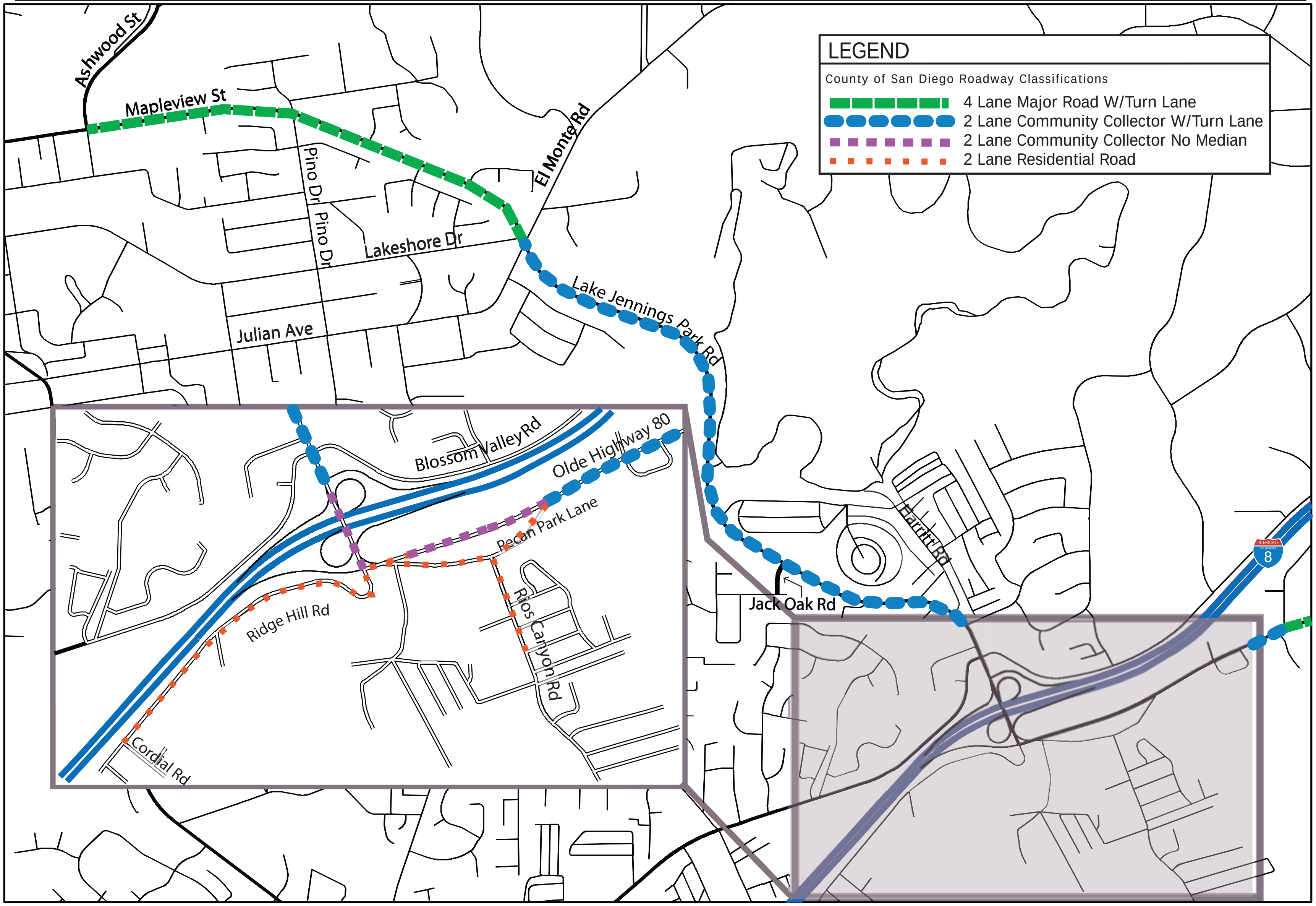

Figure 3-1
Existing Circulation Network

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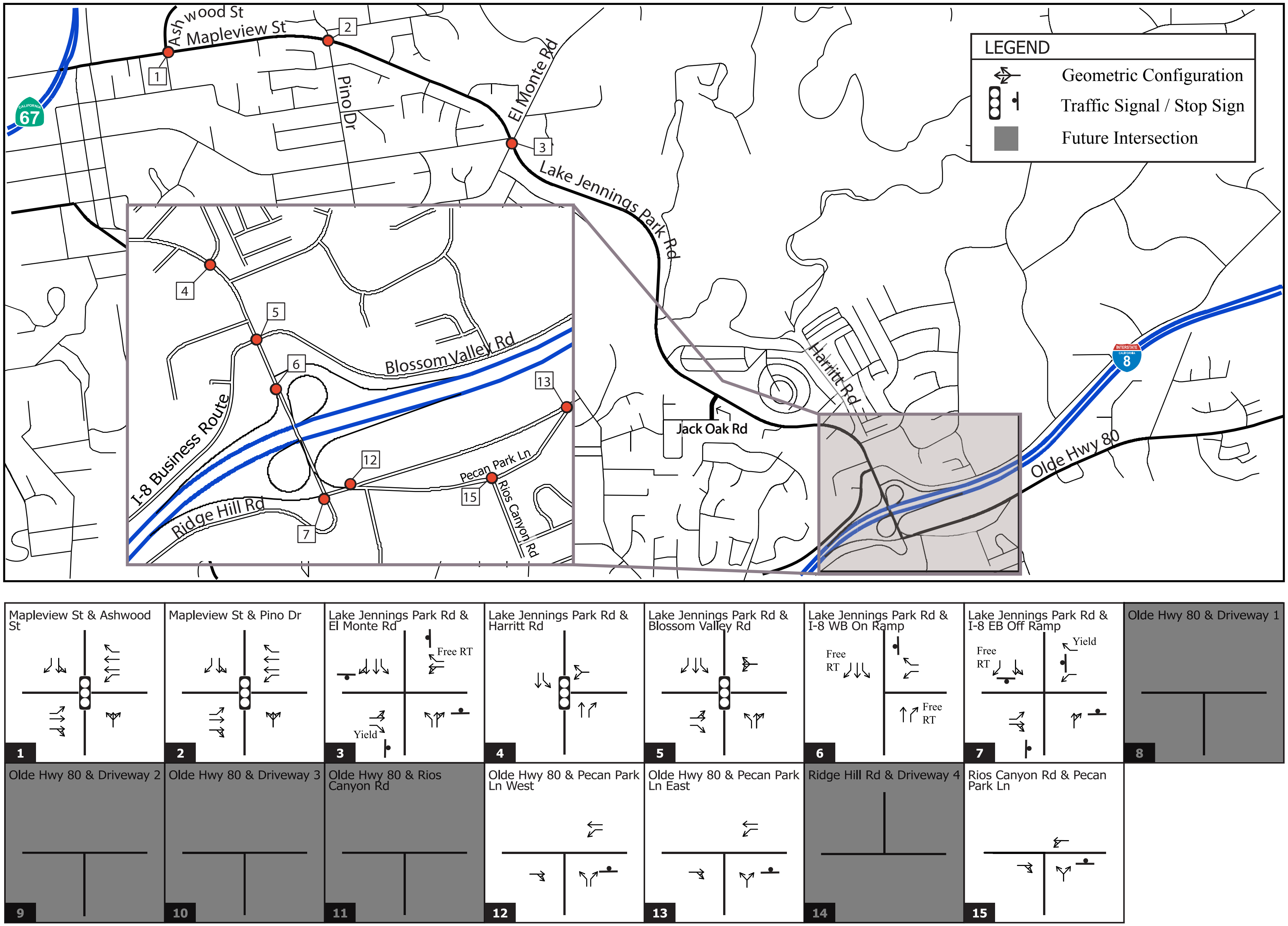

Figure 3-2
Existing Geometric Configuration

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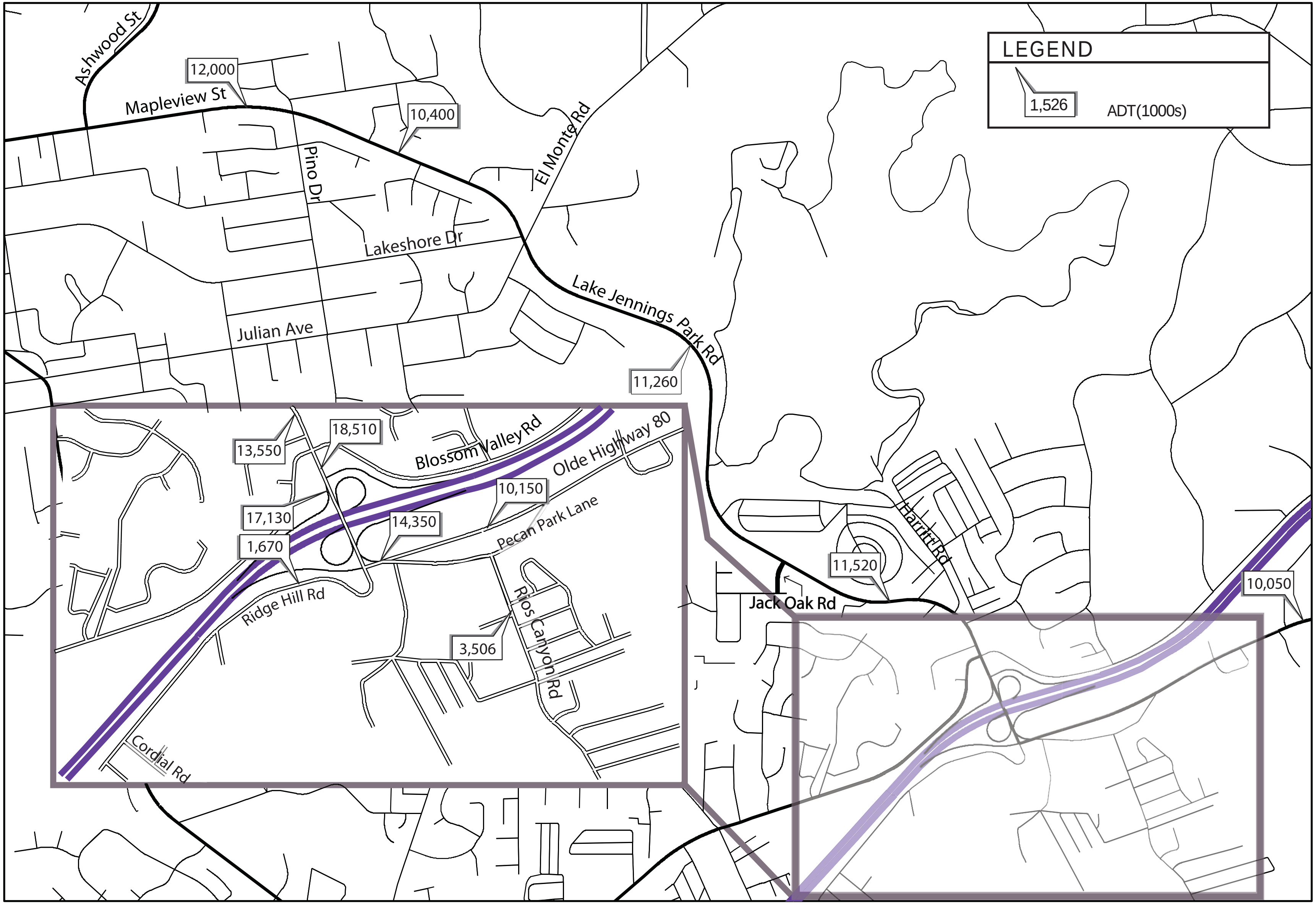

Figure 3-3
Existing Daily Roadway Segment Volumes

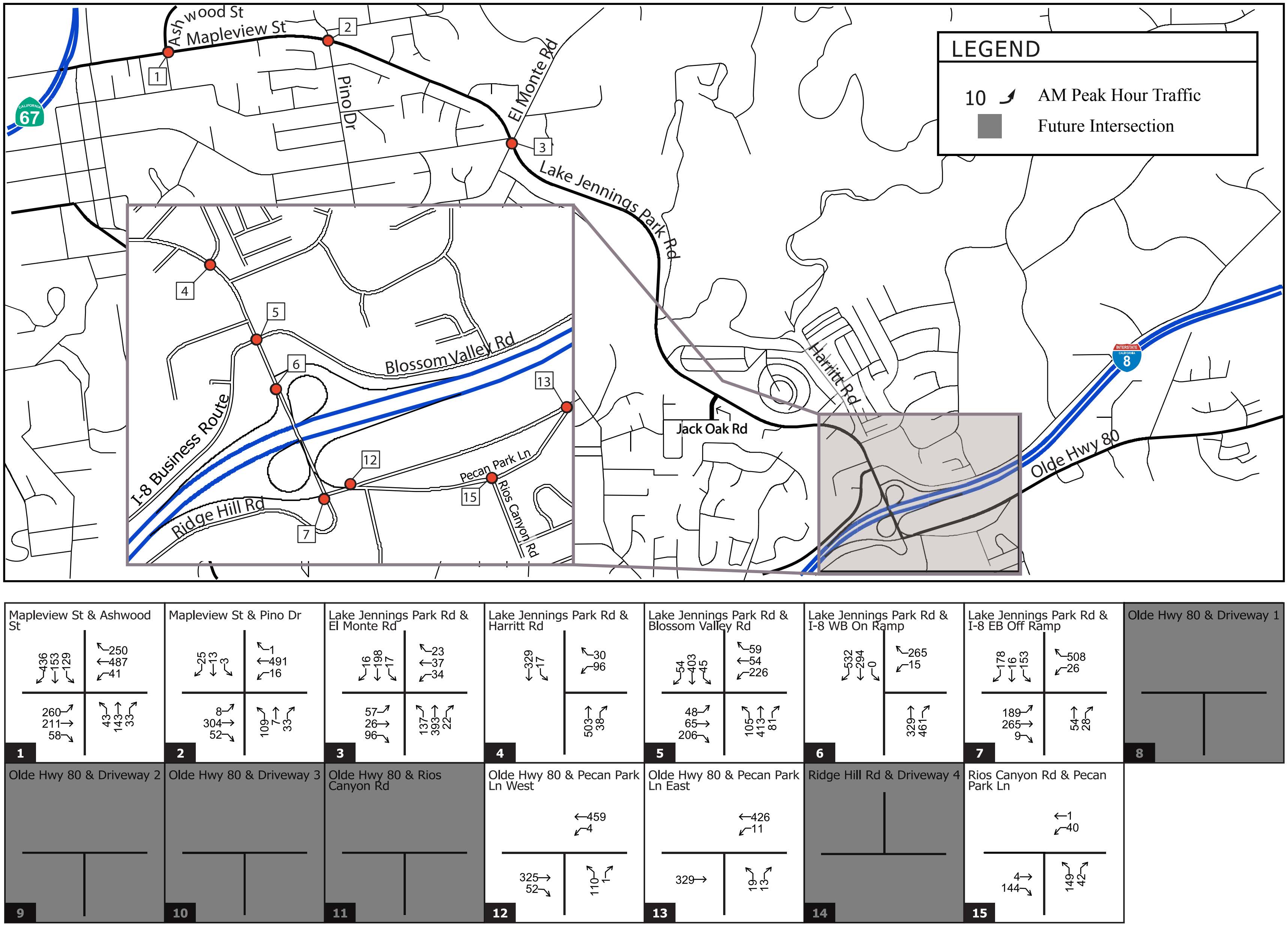

Figure 3-4

Existing AM Peak Hour Intersection Volumes

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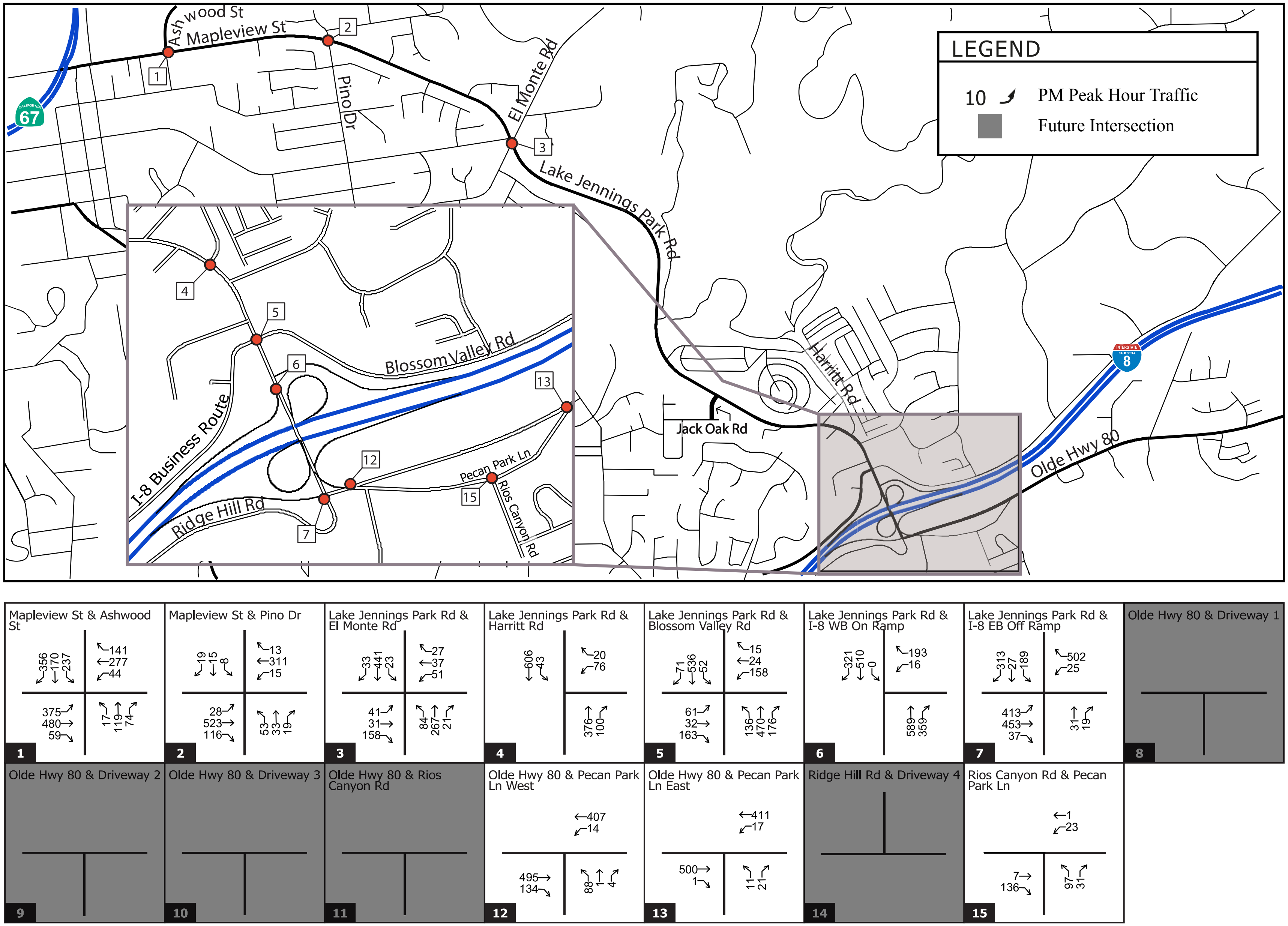

Figure 3-5
Existing PM Peak Hour Intersection Volumes

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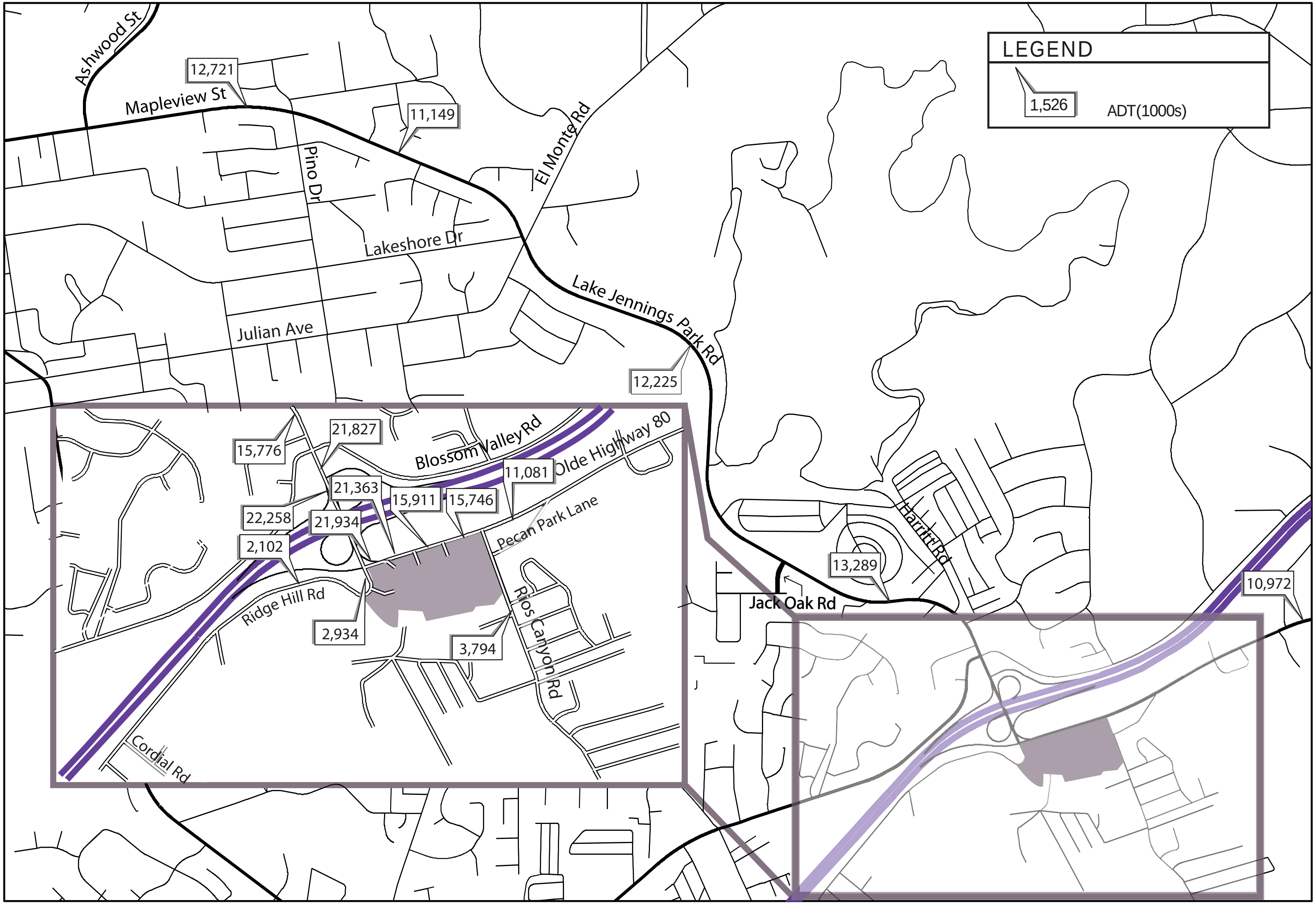

Figure 3-6

Existing With Project Daily Roadway Segment Volumes

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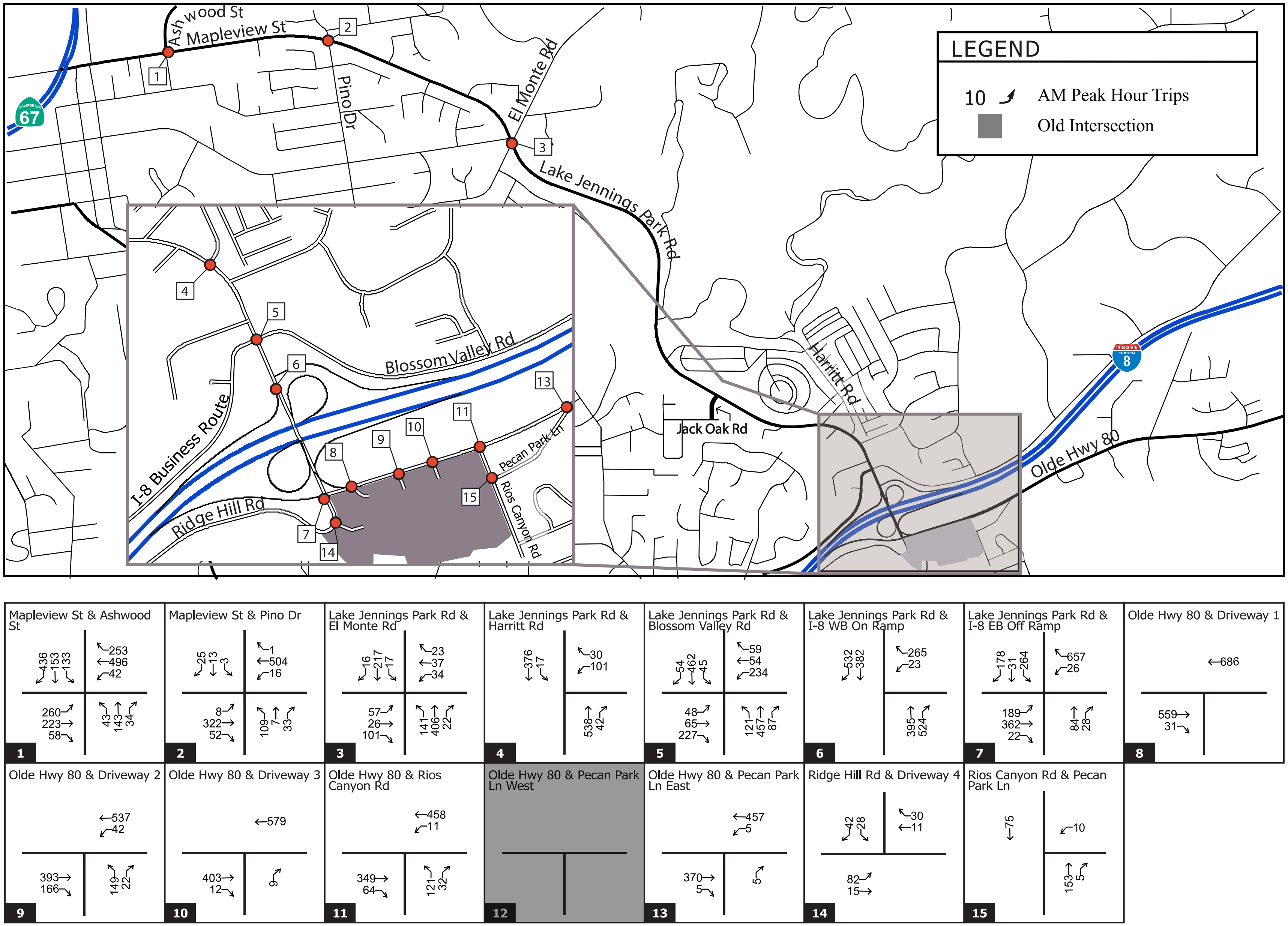

Figure 3-7
Existing With Project AM Peak Hour Intersection Volumes

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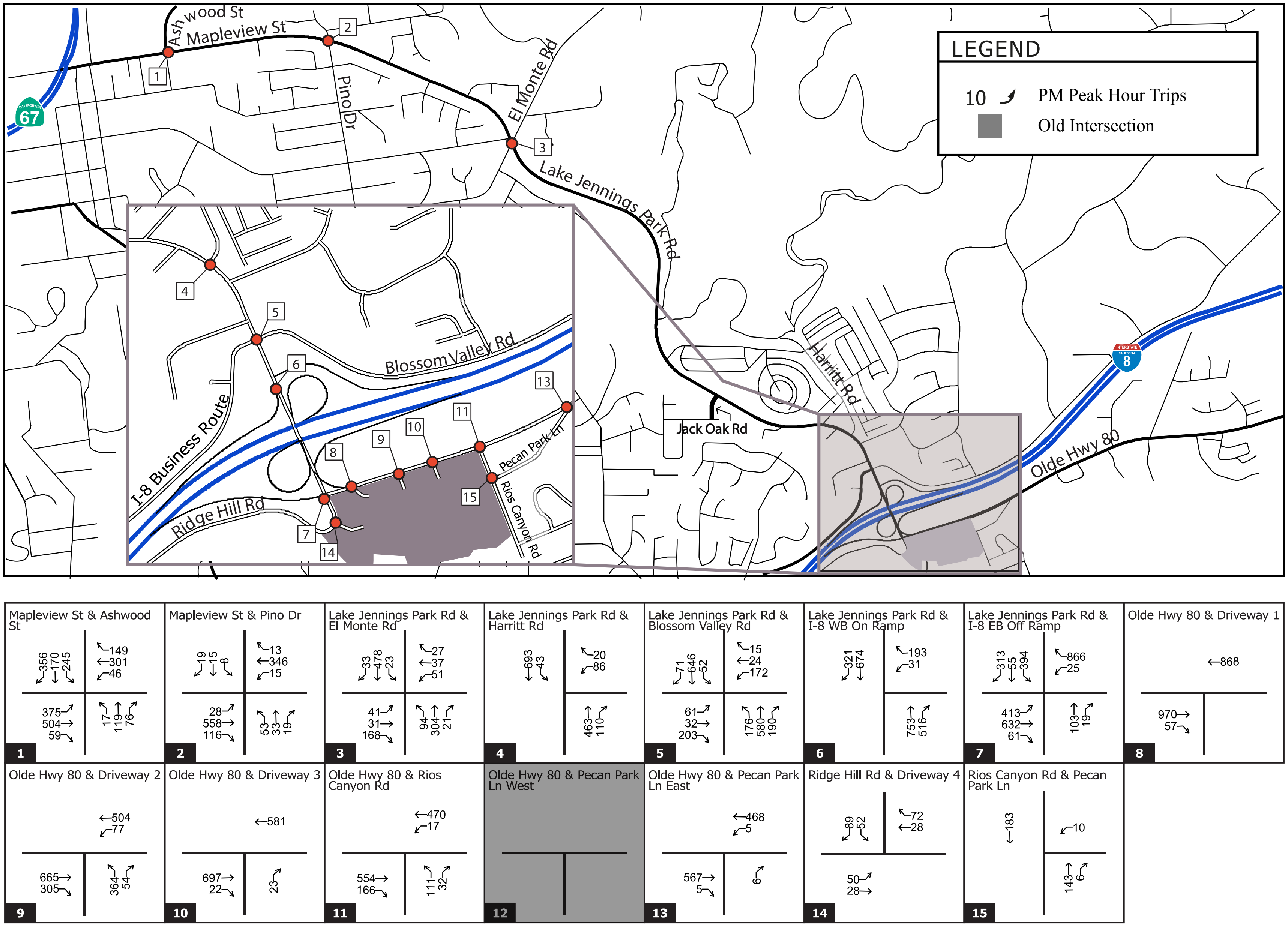

Figure 3-8
Existing With Project PM Peak Hour Intersection Volumes

N
Not To Scale

3.4 EXISTING WITH PROJECT CONDITIONS ROADWAY SEGMENT ANALYSIS

Table 3-1 summarizes the roadway segment analysis results for existing conditions without and with the project. The roadway segment analysis methodology is described in Section 2.2.1 of this report. Without any improvements by the project, there would be deficient and impacted segments at the following eight locations:

- Olde Highway 80 from Lake Jennings Park Road to Project Driveway 1
- Olde Highway 80 from Project Driveway 1 to Project Driveway 2
- Olde Highway 80 from Project Driveway 2 to Project Driveway 3
- Olde Highway 80 from Project Driveway 3 to Rios Canyon Road
- Olde Highway 80 from Rios Canyon Road to Pecan Park Lane
- Lake Jennings Park Road from Harritt Road to Blossom Valley Road
- Lake Jennings Park Road from Blossom Valley Road to I-8 Westbound Off-Ramp
- Lake Jennings Park Road from I-8 Westbound Off-Ramp to Olde Highway 80

As shown in Table 3-1, the above impacted segments would all be mitigated to avoid direct impacts assuming the project would make the fronting improvements along Olde Highway 80 and the off-site improvements proposed for Lake Jennings Park Road between Olde Highway 80 and Harritt Road. The recommended roadway improvements are shown in Appendix D.

3.5 EXISTING WITH PROJECT CONDITIONS INTERSECTION ANALYSIS

Table 3-2 summarizes the intersection operations analysis results for existing conditions without and with the project. The intersection operations analysis methodology is described in Section 2.2.3 of this report. Existing conditions intersection operations analysis worksheets are included in Appendix E. Existing With Project conditions intersection operations analysis worksheets are included in Appendix F. Without any improvements by the project, most of the study area intersections would operate at acceptable service levels except for the following two intersections where they would be directly impacted and would have less than adequate service levels, particularly during the PM peak hour:

- Lake Jennings Park Road and I-8 Westbound Off-Ramp
- Lake Jennings Park Road and I-8 Eastbound Off-Ramp

Again, the recommended roadway improvements shown in Appendix D would mitigate the intersection operations to avoid direct impacts at the I-8 Westbound and Eastbound Ramp intersections on Lake Jennings Park Road.

3.6 EXISTING WITH PROJECT CONDITIONS FREEWAY MAINLINE ANALYSIS

Table 3-3 summarizes the freeway mainline analysis results for existing conditions without and with the project. The intersection operations analysis methodology is described in Section 2.2.4 of this report. As shown in Table 3-3, the study area freeway mainline links would operate at adequate service levels and there is no direct impact by the project.

Table 3-1 - Existing With Project Conditions Roadway Segment Analysis Summary

Roadway Segment	*Existing Lanes / Configuration*	*LOS E Cap.*	*Existing*		*Existing With Project*		*Δ Traffic*	*Significant?*	*With Mitigation*		
			ADT	*LOS*	*ADT*	*LOS*			*New Lanes/ Config.*	*New LOS E Cap.*	*LOS*
Olde Highway 80											
Lake Jennings Park Rd. to Dwy 1	2CCITL	19,000	14,350	E	21,934	F	7,584	**Yes**	4BITL	28,000	C
Project Dwy 1 to Dwy 2	2CCnM	16,200	14,350	E	21,363	F	7,013	**Yes**	4BITL	28,000	C
Project Dwy 2 to Dwy 3	2CCnM	16,200	14,350	E	15,911	E	1,561	**Yes**	4BITL	28,000	A
Project Dwy 3 to Old Rios Canyon Rd.	2CCnM	16,200	14,350	E	15,746	E	1,396	**Yes**	4BITL	28,000	A
Rios Canyon Rd. to Pecan Park Ln.	2CCnM	16,200	10,150	D	11,081	E	931	**Yes**	2CCITL	19,000	D
Pecan Park Ln. to Chimney Rock Ln.	2CCITL	19,000	10,050	D	10,972	D	922	No			
Mapleview Street											
Ashwood St. to Pino Dr.	4MRITL	34,200	12,000	A	12,721	A	721	No			
Lake Jennings Park Road											
Pino Dr. to El Monte Rd.	4MRITL	34,200	10,400	A	11,149	A	749	No			
El Monte Rd. to Jack Oak Rd.	2CCITL	19,000	11,260	D	12,225	D	965	No			
Jack Oak Rd. to Harritt Rd.	2CCITL	19,000	11,520	D	13,289	D	1,769	No			
Harrit Rd. to Blossom Valley Rd.	2CCITL	19,000	13,550	E	15,776	E	2,226	**Yes**	4BITL	28,000	A
Blossom Valley Rd. to I-8 WB Off-Ramp	2CCITL	19,000	18,510	E	21,827	F	3,317	**Yes**	4BITL	28,000	C
I-8 WB Off-Ramp to Olde Highway 80	2CCnM	16,200	17,130	F	22,258	F	5,128	**Yes**	4BITL	28,000	D
Olde Highway 80 to Driveway 4	2CCnM	16,200	1,670	A	2,934	B	1,264	No			
Ridge Hill Road											
Lake Jennings Park Rd. to Cordial Rd.	2RC	4,500	1,670	Better	2,102	Better than C	432	No			
Rios Canyon Road											
South of Olde Highway 80	2LCRS	9,700	3,506	A	3,794	A	288	No			

Abbreviations: 2CCnM is a 2 lane Community Collector with no Median.
2CCITL is a 2 lane Community Collector with an Itermittent Turn Lane.
4MRITL is a 4 lane Major Road with an Intermittent Turn Lane.
4BITL is a Boulevard with an Intermittent Turn Lane
2RC is a 2 lane Residential Collector
2LCRS is a 2 lane Light Collector with a Reduced Shoulder

Table 3-2 - Existing With Project Conditions
Intersection Operations Analysis Summary

Intersection	Existing		Existing With Project		Δ Delay	PH Trips on Critical Movement	Signif?	With Mitigation	
	Delay	LOS	Delay	LOS				Delay	LOS
AM Peak Hour									
1. Mapleview Street and Ashwood Street	27.7	C	27.5	C	-0.2	-	No		NA
2. Mapleview Street and Pino Drive	18.6	B	18.5	B	-0.1	-	No		NA
3. Lake Jennings Park Road and El Monte Road	14.5***	B	15.3***	C	0.8	-	No		NA
4. Lake Jennings Park Road and Harrit Road	11.6	B	11.7	B	0.1	-	No		NA
5. Lake Jennings Park Road and Blossom Valley Road	30.6	C	35.3	D	4.7	-	No		NA
6. Lake Jennings Park Road and I-8 WB Off Ramp*	13.6	B	15.3	C	1.7	-	No	12.2	B
7. Lake Jennings Park Road and I-8 EB Off Ramp**	9.5***	A	12.7***	B	3.2	-	No	15.3	B
8. Olde Highway 80 and Project Driveway 1	NA	NA	0.0	A	NA	-	No		NA
9. Olde Highway 80 and Project Driveway 2	NA	NA	10.7	B	NA	-	No		NA
10. Olde Highway 80 and Project Driveway 3	NA	NA	9.2	A	NA	-	No		NA
11. Olde Highway 80 and Rios Canyon Road	NA	NA	15.5	C	NA	-	No		NA
12. Olde Highway 80 and Pecan Park Lane West	23.3	C	NA	NA	NA	-	No		NA
13. Olde Highway 80 and Pecan Park Lane East	14.1	B	10.5	B	-3.6	-	No		NA
14. Ridge Hill Drive and Project Driveway 4	NA	NA	7.5	A	NA	-	No		NA
15. Rios Canyon Road and Pecan Park Lane	10.7	B	9.9	A	-0.8	-	No		NA
PM Peak Hour									
1. Mapleview Street and Ashwood Street	32.6	C	35.2	D	2.6	-	No		NA
2. Mapleview Street and Pino Drive	19.6	B	19.6	B	0.0	-	No		NA
3. Lake Jennings Park Road and El Monte Road	13.9***	B	15.6***	C	1.7	-	No		NA
4. Lake Jennings Park Road and Harrit Road	8.6	A	9.6	A	1.0	-	No		NA
5. Lake Jennings Park Road and Blossom Valley Road	32.8	C	54.9	D	22.1	-	No		NA
6. Lake Jennings Park Road and I-8 WB Off Ramp*	19.0	C	72.8	F	53.8	20	Yes	18.8	C
7. Lake Jennings Park Road and I-8 EB Off Ramp**	15.3***	C	59.4***	F	44.1	205	Yes	24.4	C
8. Olde Highway 80 and Project Driveway 1	NA	NA	0.0	A	NA	-	No		NA
9. Olde Highway 80 and Project Driveway 2	NA	NA	19.6	B	NA	-	No		NA
10. Olde Highway 80 and Project Driveway 3	NA	NA	9.2	A	NA	-	No		NA
11. Olde Highway 80 and Rios Canyon Road	NA	NA	19.6	C	NA	-	No		NA
12. Olde Highway 80 and Pecan Park Lane West	29.0	D	NA	NA	NA	-	No		NA
13. Olde Highway 80 and Pecan Park Lane East	14.8	B	12.3	B	-2.5	-	No		NA
14. Ridge Hill Drive and Project Driveway 4	NA	NA	7.7	A	NA	-	No		NA
15. Rios Canyon Road and Pecan Park Lane	9.8	A	10.6	B	1.1	-	No		NA

* Mitigation: Expand Lake Jennings Park Road from a 2 lane Community Collector to a 4 lane Major Road

** Mitigation: Signalize the intersection

*** Average delay calculation for the AWS intersection

Table 3-3 - Existing With Project Conditions Freeway Mainline Analysis Summary

									Existing			*Existing With Project*				
Freeway Mainline Segment	*Direction of Travel*	*Lanes (1-way)*	*Capacity (1)*	*ADT One-Way*	*Peak Hour Volume at LJPR*	*Peak Hour One-Way Volume*	*Peak Hour Factor*	*Truck Factor (3)*	*Peak Volume (PCE) (4)*	*V/C*	*LOS (5)*	*Peak Volume (PCE)*	*V/C*	*LOS (5)*	*Increase in VC*	*Signifi-cant?*
Weekday AM Peak Hour																
I-8 West of Lake Jennings Park Road	West	2	4,600	68,000	2,220	3,224	95.0%	97.18%	3,492	0.763	C	3,509	0.763	C	0.004	No
I-8 East of Lake Jennings Park Road	West	2	4,600	53,000	2,220	2,513	95.0%	97.18%	2,722	0.59	B	2,724	0.59	B	0.000	No
Weekday PM Peak Hour																
I-8 West of Lake Jennings Park Road	East	2	4,600	68,000	2,481	3,311	95.0%	97.18%	3,586	0.78	C	3,627	0.788	C	0.009	No
I-8 East of Lake Jennings Park Road	East	2	4,600	53,000	2,481	2,581	95.0%	97.18%	2,796	0.61	B	2,801	0.61	B	0.001	No

1. Obtained from balancing Caltrans peak hour mainline volume by the Caltrans

2. This is the peak hour peak direction volume before adjusting for heavy vehicles. In the weekay PM peak hour and Saturday Midday hour, the peak direction is NB on Interstate 15.

3. Assume 4% trucks and 2%recreational vehicles for a total of 6% heavy vehicles.

HVF = 1/(1+Percent Truck(Truck Factor-1) + Percent Recreation Vehicle(RV Factor-1))

Truck Factor (<2% grade, 5% trucks) = 1.5

RV Factor (<2% grade, 2% RV) = 1.2

HVF= 97.18%

4. PCE=PHV/(PHF*HVF)

5. Level of service based on *SANTEC Guidelines Attachment C* D/C ratio.

3.7 EXISTING WITH PROJECT CONDITIONS RAMP METER ANALYSIS

Table 3-4 summarizes the ramp meter analysis results for existing conditions without and with the project. The ramp meter analysis methodology is described in Section 2.2.5 of this report. As shown in Table 3-4, there is no direct impact by the project on the ramp meter queuing.

Table 3-4 - Existing With Project Conditions Ramp Meter Analysis Summary

			Existing				*Existing With Project*					
Location	*Peak*	*Meter*	*Demand*	*Excess Demand*	*Avg. Delay*	*Avg. Queue*	*Demand*	*Excess Demand*	*Avg.*	*Avg. Queue*	*Increase in Delay (Minutes)*	*Significant?*
I-8 WB from NB Lake Jennings Park Road	AM	636	449	0	0	0	532	0	0	0	0	No
I-8 WB from SB Lake Jennings Park Road	AM	636	532	0	0	0	532	0	0	0	0	No

CHAPTER 4
CUMULATIVE CONDITIONS

Cumulative baseline conditions represent opening day of the proposed project. Project traffic is added to the Cumulative baseline volumes to create the "With Project" scenario.

4.1 CUMULATIVE BASELINE TRAFFIC VOLUMES

Traffic growth on roadways is a function of the expected land development, economic activity, and changes in demographics. Several methods can be used to estimate this growth.

For this analysis it is conservatively assumed that every parcel builds out to the General Plan designation as modeled by SANDAG for the year 2035 and that all General Plan Amendments within the study area are approved and implemented. Two cumulative projects have been identified that we included data for in our analysis. They are the Lakeside Tractor Supply project directly across the street from the shopping center which has approximately 900 daily trips, and the other project is an 18 unit residential project on Lake Jennings Park Road just to the north of I-8 which generates 180 daily trips. For more specific information concerning these cumulative projects see Appendix G.

The Cumulative Without Project daily traffic volumes are shown in Figure 4-1. The Cumulative Without Project AM and PM peak hour intersection volumes are shown in Figures 4-2 and 4-3, respectively.

4.2 CUMULATIVE WITH PROJECT CONDITIONS TRAFFIC VOLUMES

The Cumulative With Project daily traffic volumes are shown in Figure 4-4. The Cumulative With Project AM and PM peak hour intersection volumes are shown in Figures 4-5 and 4-6, respectively.

4.3 CUMULATIVE WITH PROJECT CONDITIONS ROADWAY SEGMENT ANALYSIS

Table 4-1 summarizes the roadway segment analysis results for Cumulative conditions without and with the project. The roadway segment analysis methodology is described in Section 2.2.1 of this report. Without any improvements by the project, there would be deficient and impacted segments at the following nine locations:

- Olde Highway 80 from Lake Jennings Park Road to Project Driveway 1
- Olde Highway 80 from Project Driveway 1 to Project Driveway 2
- Olde Highway 80 from Project Driveway 2 to Project Driveway 3
- Olde Highway 80 from Project Driveway 3 to Rios Canyon Road
- Olde Highway 80 from Rios Canyon Road to Pecan Park Lane
- Lake Jennings Park Road from Jack Oak Road to Harritt Road
- Lake Jennings Park Road from Harritt Road to Blossom Valley Road
- Lake Jennings Park Road from Blossom Valley Road to I-8 Westbound Off-Ramp
- Lake Jennings Park Road from I-8 Westbound Off-Ramp to Olde Highway 80

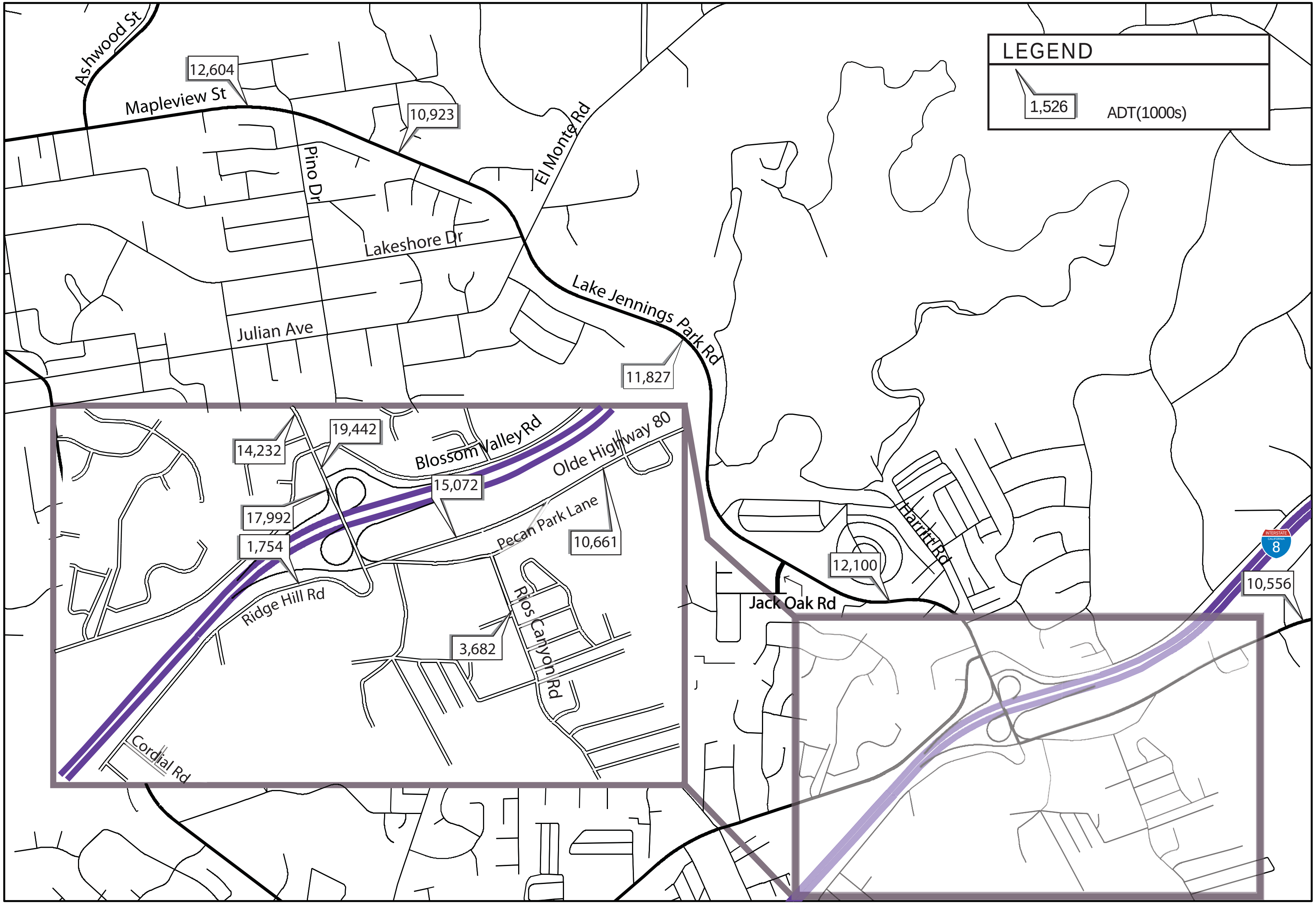

Figure 4-1
Cumulative Without Project Daily Roadway Segment Volumes

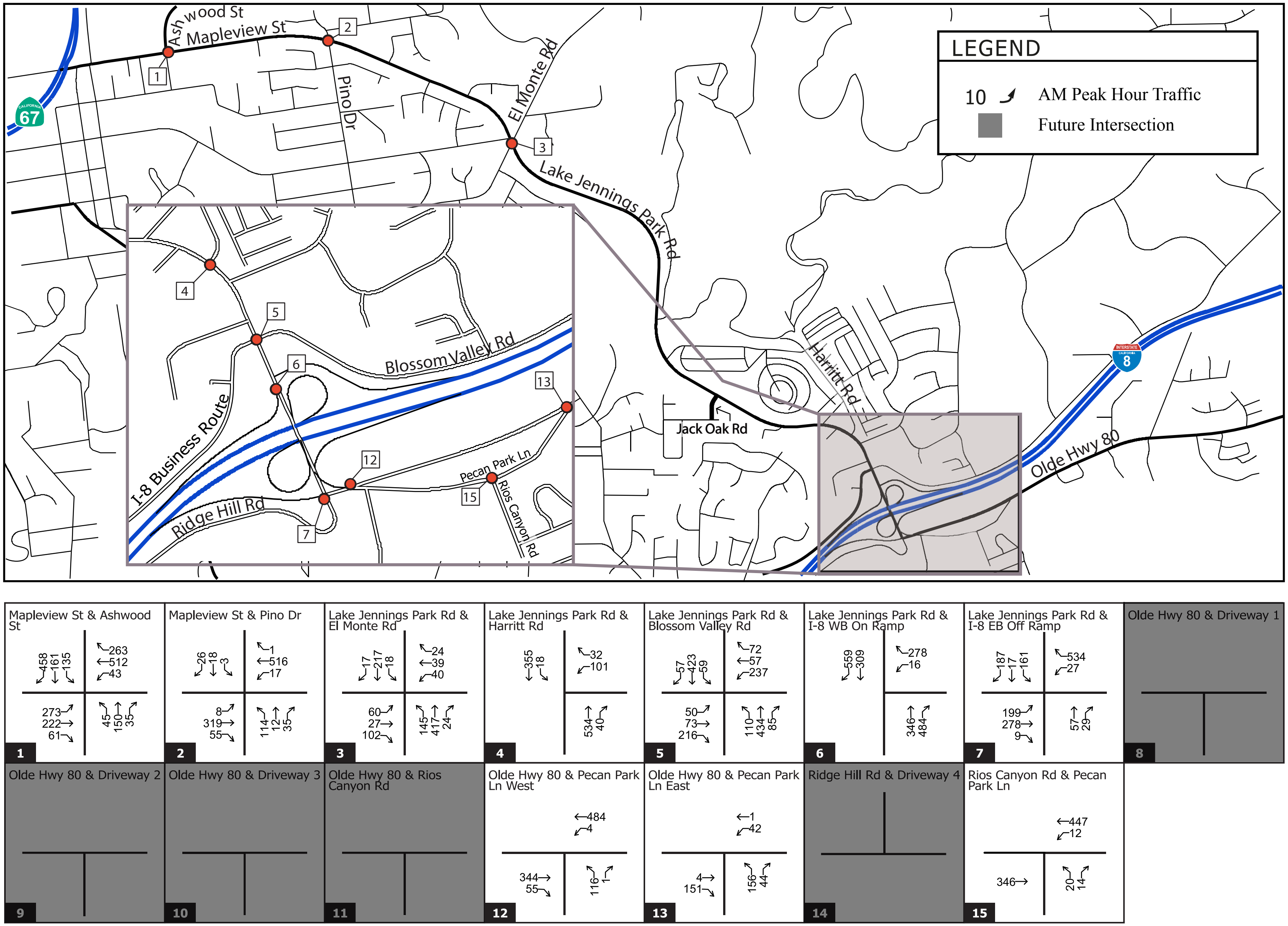

Figure 4-2
Cumulative Without Project AM Peak Hour Intersection Volumes

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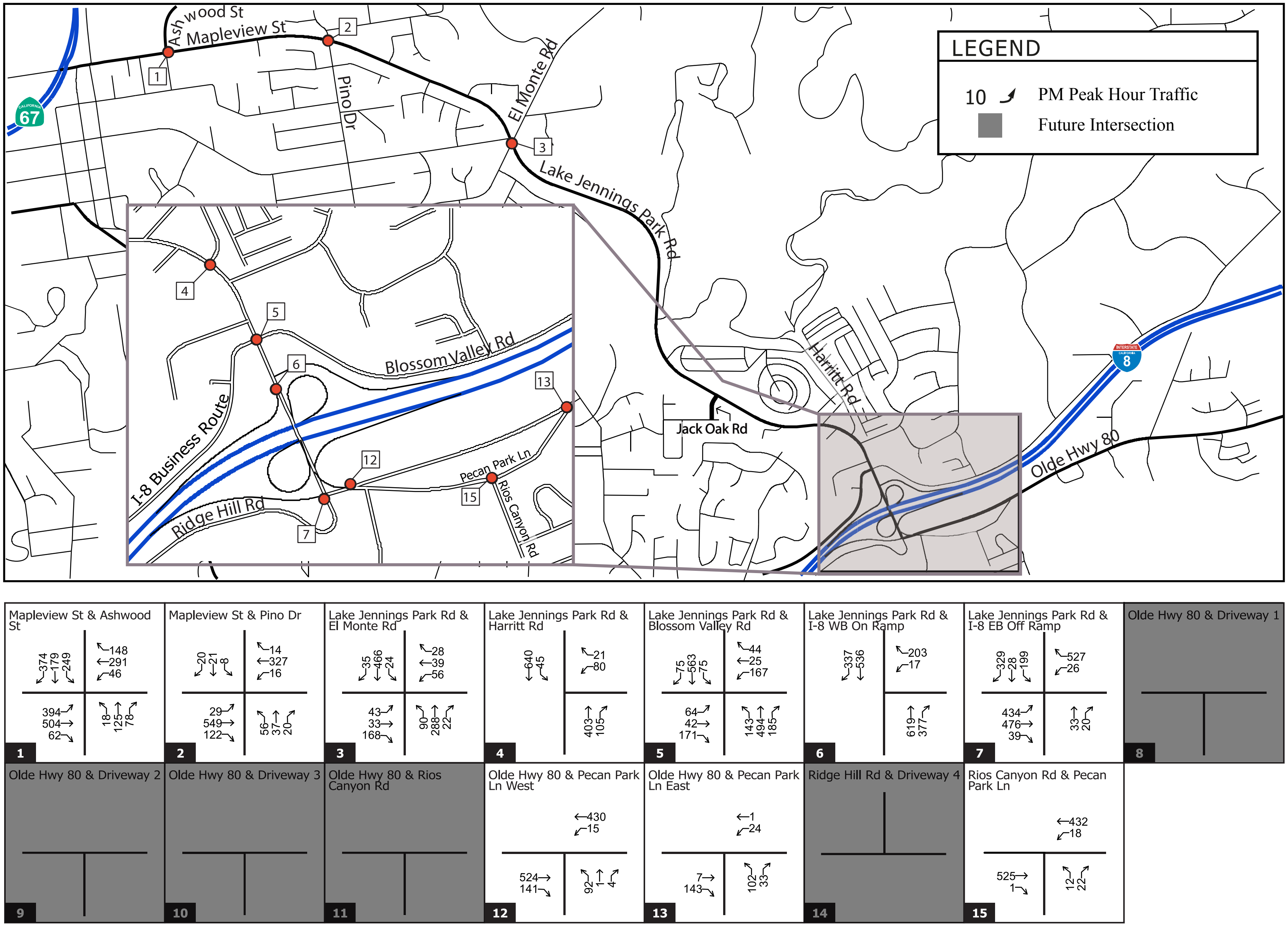

Figure 4-3
Cumulative Without Project PM Peak Hour Intersection Volumes

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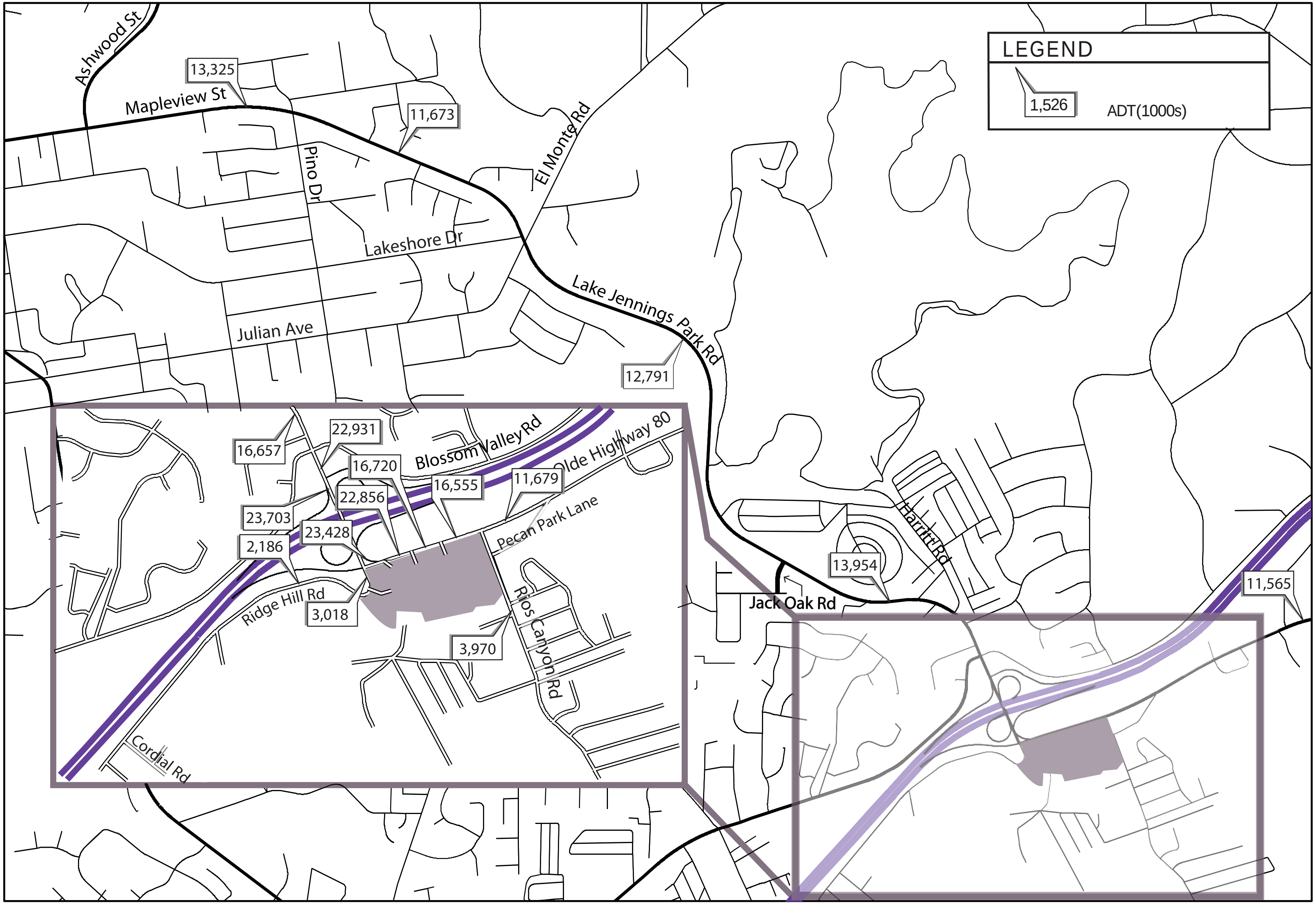

Figure 4-4
Cumulative With Project Daily Roadway Segment Volumes

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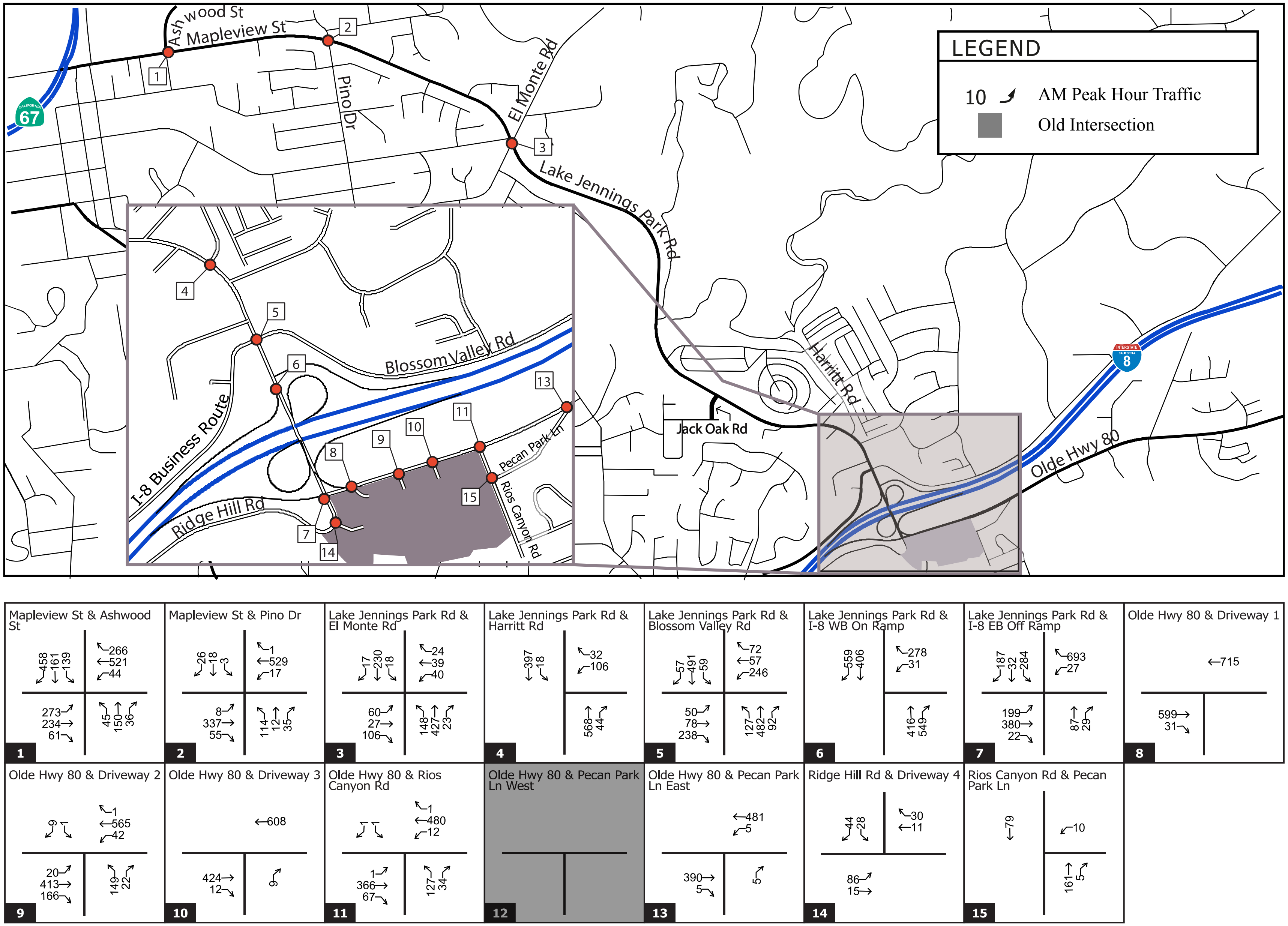

Figure 4-5
Cumulative With Project AM Peak Hour Intersection Volumes

N
Not To
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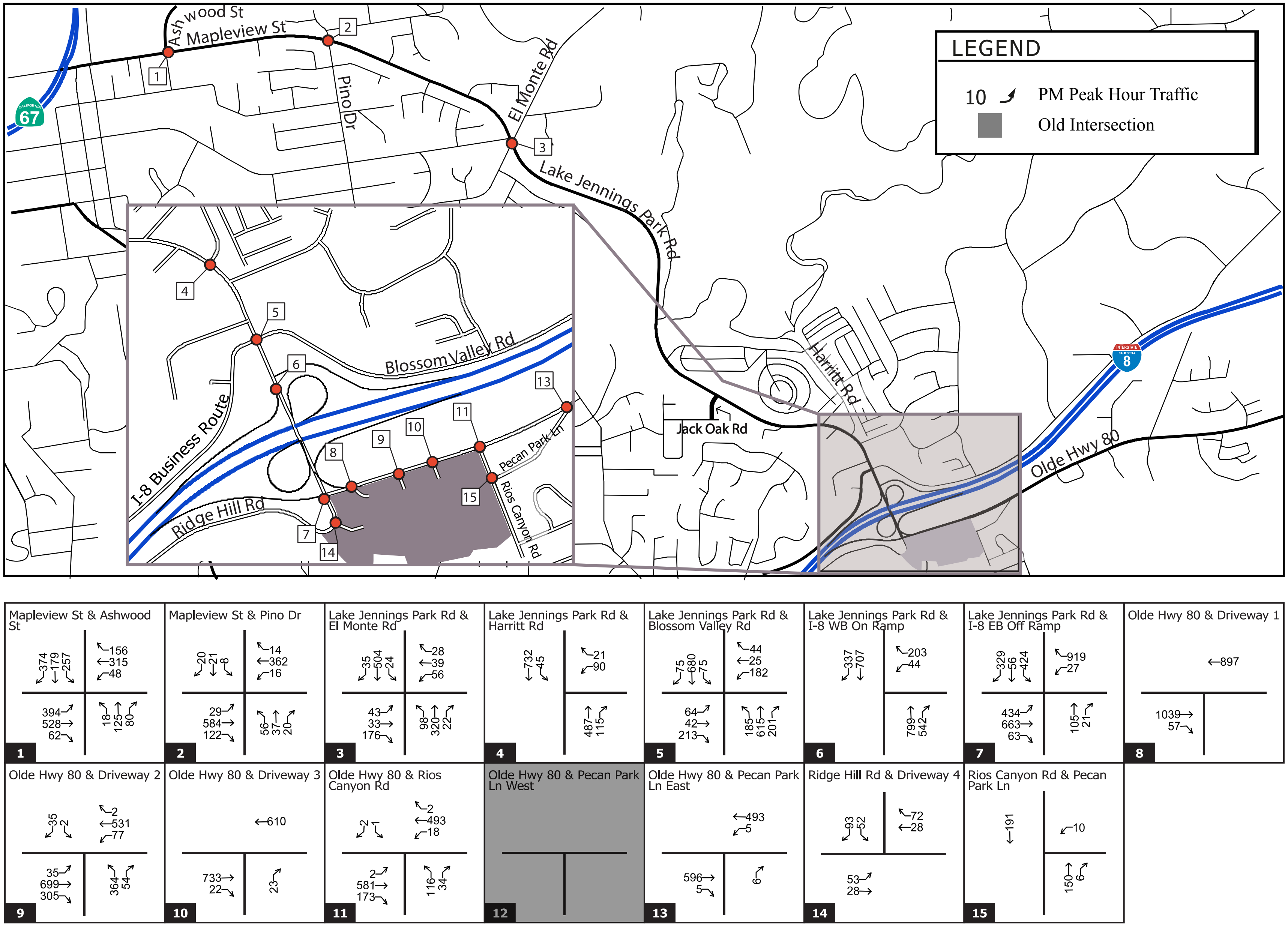


Figure 4-6
Cumulative With Project PM Peak Hour Intersection Volumes

N
Not To Scale

Table 4-1 - Cumulative With Project Conditions Roadway Segment Analysis Summary

Roadway Segment	*Existing Lanes / Configuration*	*LOS E Cap.*	*Cumulative Without Project*		*Cumulative With Project*		*Δ Traffic*	*Significant?*	*With Mitigation*		
			ADT	*LOS*	*ADT*	*LOS*			*New Lanes/ Config.*	*New LOS E Cap.*	*LOS*
Olde Highway 80											
Lake Jennings Park Rd. to Dwy 1	2CCITL	19,000	15,072	E	23,428	F	7,584	Yes	4BITL	28,000	D
Project Dwy 1 to Dwy 2	2CCnM	16,200	15,072	E	22,856	F	7,013	Yes	4BITL	28,000	D
Project Dwy 2 to Dwy 3	2CCnM	16,200	15,072	E	16,720	F	1,561	Yes	4BITL	28,000	A
Project Dwy 3 to Old Rios Canyon Rd.	2CCnM	16,200	15,072	E	16,555	F	1,396	Yes	4BITL	28,000	A
Rios Canyon Rd. to Pecan Park Ln.	2CCnM	16,200	10,661	D	11,679	E	931	Yes	2CCITL	19,000	D
Pecan Park Ln. to Chimney Rock Ln.	2CCITL	19,000	10,556	D	11,565	D	922	No			
Mapleview Street											
Ashwood St. to Pino Dr.	4MRITL	34,200	12,604	A	13,325	A	721	No			
Lake Jennings Park Road											
Pino Dr. to El Monte Rd.	4MRITL	34,200	10,923	A	11,673	A	749	No			
El Monte Rd. to Jack Oak Rd.	2CCITL	19,000	11,827	D	12,791	D	965	No			
Jack Oak Rd. to Harritt Rd.	2CCITL	19,000	12,100	D	13,954	E	1,769	Yes			
Harrit Rd. to Blossom Valley Rd.	2CCITL	19,000	14,232	E	16,657	E	2,226	Yes	4BITL	28,000	A
Blossom Valley Rd. to I-8 WB Off-Ramp	2CCITL	19,000	19,442	F	22,931	F	3,317	Yes	4BITL	28,000	D
I-8 WB Off-Ramp to Olde Highway 80	2CCnM	16,200	17,992	F	23,703	F	5,128	Yes	4BITL	28,000	D
Olde Highway 80 to Driveway 4	2CCnM	16,200	1,754	A	3,018	B	1,264	No			
Ridge Hill Road											
Lake Jennings Park Rd. to Cordial Rd.	2RC	4,500	1,754	Better than C	2,186	Better than C	432	No			
Rios Canyon Road											
South of Olde Highway 80	2LCRS	9,700	3,682	A	3,970	A	288	No			

Abbreviations:

2CCnM is a 2 lane Community Collector with no Median.
2CCITL is a 2 lane Community Collector with an Itermittent Turn Lane.
4MRITL is a 4 lane Major Road with an Intermittent Turn Lane.
4BITL is a Boulevard with an Intermittent Turn Lane
2RC is a 2 lane Residential Collector
2LCRS is a 2 lane Light Collector with a Reduced Shoulder

As shown in Table 4-1, all of the impacted segments, except for the segment of Lake Jennings Park Road from Jack Oak Road to Harritt Road, would all be mitigated to avoid cumulative impacts with the recommended roadway improvements. The recommended roadway improvements are shown in Appendix D.

The segment of Lake Jennings Park Road from Jack Oak Road to Harritt Road will experience LOS E for Cumulative With Project conditions, and the project would normally have a cumulative impact at this segment. However, this portion of roadway does not really conform to the normal list of facilities given the availability of a climbing lane southbound and southerly from El Monte Road, the painted median just south of Jack Oak Road, and the width of the pavement and limited conflicts from there to Harritt Road further to the south. Also, as demonstrated by the intersection analysis along this portion of Lake Jennings Park Road it will be operating acceptably (LOS = A-C) despite this LOS anomaly when compared to the normal acceptable daily volumes. Therefore, the practical capacity is indeed something greater than the values used in the tables for making our assessment of adequacy. The improvements being proposed by the applicant to Lake Jennings Park Road between Harritt Road and Olde Highway 8 constitutes a substantial proportional contribution to the project's effects throughout this area.

4.4 CUMULATIVE WITH PROJECT CONDITIONS INTERSECTION ANALYSIS

Table 4-2 summarizes the intersection operations analysis results for Cumulative conditions without and with the project. The intersection operations analysis methodology is described in Section 2.2.3 of this report. Cumulative Without Project conditions intersection operations analysis worksheets are included in Appendix G. Cumulative With Project conditions intersection operations analysis worksheets are included in Appendix H. Without any improvements by the project, most of the study area intersections would operate at acceptable service levels except for the following three intersections where they would be significantly impacted and would have less than adequate service levels, particularly during the PM peak hour:

- Lake Jennings Park Road and Blossom Valley Road
- Lake Jennings Park Road and I-8 Westbound Off-Ramp
- Lake Jennings Park Road and I-8 Eastbound Off-Ramp

Again, the recommended roadway improvements shown in Appendix D would mitigate the intersection operations to avoid cumulative impacts at intersections.

4.5 CUMULATIVE WITH PROJECT CONDITIONS FREEWAY MAINLINE ANALYSIS

Table 4-3 summarizes the freeway mainline analysis results for Cumulative conditions without and with the project. The intersection operations analysis methodology is described in Section 2.2.4 of this report. As shown in Table 4-3, the study area freeway mainline links would operate at adequate service levels and there is no cumulative impact by the project.

4.6 CUMULATIVE WITH PROJECT CONDITIONS RAMP METER ANALYSIS

Table 4-4 summarizes the ramp meter analysis results for Cumulative conditions without and with the project. The ramp meter analysis methodology is described in Section 2.2.5 of this report. As shown in Table 4-4, there is no cumulative impact by the project on the ramp meter queuing.

Table 4-2 - Cumulative With Project Conditions
Intersection Operations Analysis Summary

Intersection	Cumulative Without Project		Cumulative With Project		Δ Delay	PH Trips on Critical Movement	Signif?	With Mitigation	
	Delay	LOS	Delay	LOS				Delay	LOS
AM Peak Hour									
1. Mapleview Street and Ashwood Street	28.6	C	28.6	C	0.0	-	No		NA
2. Mapleview Street and Pino Drive	18.6	B	18.5	B	-0.1	-	No		NA
3. Lake Jennings Park Road and El Monte Road	16.3****	C	16.0****	C	-0.3	-	No		NA
4. Lake Jennings Park Road and Harrit Road	11.9	B	12.6	B	0.7	-	No		NA
5. Lake Jennings Park Road and Blossom Valley Road*	36.9	D	41.4	D	4.5	-	No	31.3	C
6. Lake Jennings Park Road and I-8 WB Off Ramp**	14.3	B	16.3	C	2.0	-	No	12.7	B
7. Lake Jennings Park Road and I-8 EB Off Ramp***	9.8****	A	13.8****	B	4.0	-	No	18.6	B
8. Olde Highway 80 and Project Driveway 1	NA	NA	0.0	A	NA	-	No		NA
9. Olde Highway 80 and Project Driveway 2	NA	NA	27.5	C	NA	-	No		NA
10. Olde Highway 80 and Project Driveway 3	NA	NA	8.9	A	NA	-	No		NA
11. Olde Highway 80 and Rios Canyon Road	NA	NA	17.8	C	NA	-	No		NA
12. Olde Highway 80 and Pecan Park Lane West	26.0	D	NA	NA	NA	-	No		NA
13. Olde Highway 80 and Pecan Park Lane East	14.6	B	10.7	B	-3.9	-	No		NA
14. Ridge Hill Drive and Project Driveway 4	NA	NA	7.5	A	NA	-	No		NA
15. Rios Canyon Road and Pecan Park Lane	10.8	B	10.0	A	-0.8	-	No		NA
PM Peak Hour									
1. Mapleview Street and Ashwood Street	37.9	D	41.7	D	3.8	-	No		NA
2. Mapleview Street and Pino Drive	19.7	B	19.7	B	0.0	-	No		NA
3. Lake Jennings Park Road and El Monte Road	15.2****	C	15.0****	C	-0.2	-	No		NA
4. Lake Jennings Park Road and Harrit Road	8.7	A	9.8	A	1.1	-	No		NA
5. Lake Jennings Park Road and Blossom Valley Road*	44.1	D	82.2	F	38.1	-	Yes	28.9	C
6. Lake Jennings Park Road and I-8 WB Off Ramp**	20.8	C	90.4	F	69.6	20	Yes	19.7	C
7. Lake Jennings Park Road and I-8 EB Off Ramp***	17.1****	C	72.2****	F	55.1	205	Yes	27.2	C
8. Olde Highway 80 and Project Driveway 1	NA	NA	0.0	A	NA	-	No		NA
9. Olde Highway 80 and Project Driveway 2	NA	NA	24.7	C	NA	-	No		NA
10. Olde Highway 80 and Project Driveway 3	NA	NA	9.5	A	NA	-	No		NA
11. Olde Highway 80 and Rios Canyon Road	NA	NA	24.6	C	NA	-	No		NA
12. Olde Highway 80 and Pecan Park Lane West	33.4	D	NA	NA	NA	-	No		NA
13. Olde Highway 80 and Pecan Park Lane East	15.5	C	12.6	B	-2.9	-	No		NA
14. Ridge Hill Drive and Project Driveway 4	NA	NA	7.8	A	NA	-	No		NA
15. Rios Canyon Road and Pecan Park Lane	9.9	A	10.7	B	0.8	-	No		NA

* Mitigation: Extend northbound left turn pocket, modify southbound right turn lane to a shared though/right turn lane

**Mitigation: Expand Lake Jennings Park Road from a 2 lane Community Collector to a 4 lane Major Road

*** Mitigation: Signalize the intersection

**** Average delay calculation for the AWS intersection

Table 4-3 - Cumulative With Project Conditions Freeway Mainline Analysis Summary

								Cumulative Without Project			Cumulative With Project				
Freeway Mainline Segment	*Direction of Travel*	*Lanes (1-way)*	*Capacity (1)*	***Peak Hour One-Way Volume***	*Peak Hour Volume (2)*	*Peak Hour Factor*	*Truck Factor (3)*	*Peak Volume (PCE)(4)*	*V/C*	*LOS (5)*	*Peak Volume (PCE)*	*V/C*	*LOS (5)*	*Increase in VC*	*Signifi-cant?*
Weekday AM Peak Hour															
I-8 West of Lake Jennings Park Road	West	2	4,600	3,224	4%	95.0%	97.18%	3,621	0.79	C	3,638	0.79	C	0.004	No
I-8 East of Lake Jennings Park Road	West	2	4,600	2,513	6%	95.0%	97.18%	2,829	0.62	B	2,831	0.62	B	0.000	No
Weekday PM Peak Hour															
I-8 West of Lake Jennings Park Road	East	2	4,600	3,311	5%	95.0%	97.18%	3,724	0.81	C	3,765	0.82	D	0.009	No
I-8 East of Lake Jennings Park Road	East	2	4,600	2,581	4%	95.0%	97.18%	2,908	0.63	C	2,913	0.63	C	0.001	No

1. Obtained from balancing Caltrans peak hour mainline volume by the Caltrans

2. This is the peak hour peak direction volume before adjusting for heavy vehicles. In the weekay PM peak hour and Saturday Midday hour, the peak direction is NB on Interstate 15.

3. Assume 4% trucks and 2%recreational vehicles for a total of 6% heavy vehicles.

HVF = 1/(1+Percent Truck(Truck Factor-1) + Percent Recreation Vehicle(RV Factor-1))

Truck Factor (<2% grade, 5% trucks) = 1.5

RV Factor (<2% grade, 2% RV) = 1.2

HVF= 97.18%

4. PCE=PHV/(PHF*HVF)

5. Level of service based on *SANTEC Guidelines Attachment C* D/C ratio.

Table 4-4 - Cumulative With Project Conditions Ramp Meter Analysis Summary

			Cumulative Without Project				*Cumulative With Project*					
Location	*Peak*	*Meter*	*Demand*	*Excess Demand*	*Avg. Delay*	*Avg. Queue*	*Demand*	*Excess Demand*	*Avg.*	*Avg. Queue*	*Increase in Delay (Minutes)*	*Significant?*
I-8 WB from NB Lake Jennings Park Road	AM	636	449	0	0	0	552	0	0.0	0	0	No
I-8 WB from SB Lake Jennings Park Road	AM	636	532	0	0	0	557	0	0.0	0	0	No

CHAPTER 5
GENERAL PLAN BUILDOUT CONDITIONS

General Plan Buildout conditions represent long-range traffic conditions in 2035.

5.1 GENERAL PLAN BUILDOUT BASELINE TRAFFIC VOLUMES

Traffic growth on area roadways is a function of the expected land development, economic activity, and changes in demographics. Several methods can be used to estimate this growth. For this analysis SANDAG Series 12 traffic forecast model was used to develop General Plan Buildout baseline volumes. Previously the project had been approved for 160 condominiums which were reflected in the model as being built over time. Mobility Element classifications that reflect buildout of roadways was also used for the analysis. Table 5-1 compares the proposed versus the previously approved project.

Table 5-1
Proposed vs Approved

Type	ADT
Neighborhood Commercial	10,992
Condominiums: 160	1,280
Increase	9,712

The segment classification was assumed to be built out per the Mobility Element therefore was used in the analysis. Appendix B contains detailed information about volume development. The General Plan Buildout Without Project daily traffic volumes are shown in Figure 5-1.

5.2 GENERAL PLAN BUILDOUT WITH PROJECT CONDITIONS TRAFFIC VOLUMES

The General Plan Buildout With Project daily traffic volumes are shown in Figure 5-2.

5.3 GENERAL PLAN BUILDOUT WITH PROJECT CONDITIONS ROADWAY SEGMENT ANALYSIS

Table 5-2 summarizes the roadway segment analysis results for General Plan Buildout conditions without and with the project. The roadway segment analysis methodology is described in Section 2.2.1 of this report. With the improvements being made by the project, there would be no impacts to the study area.

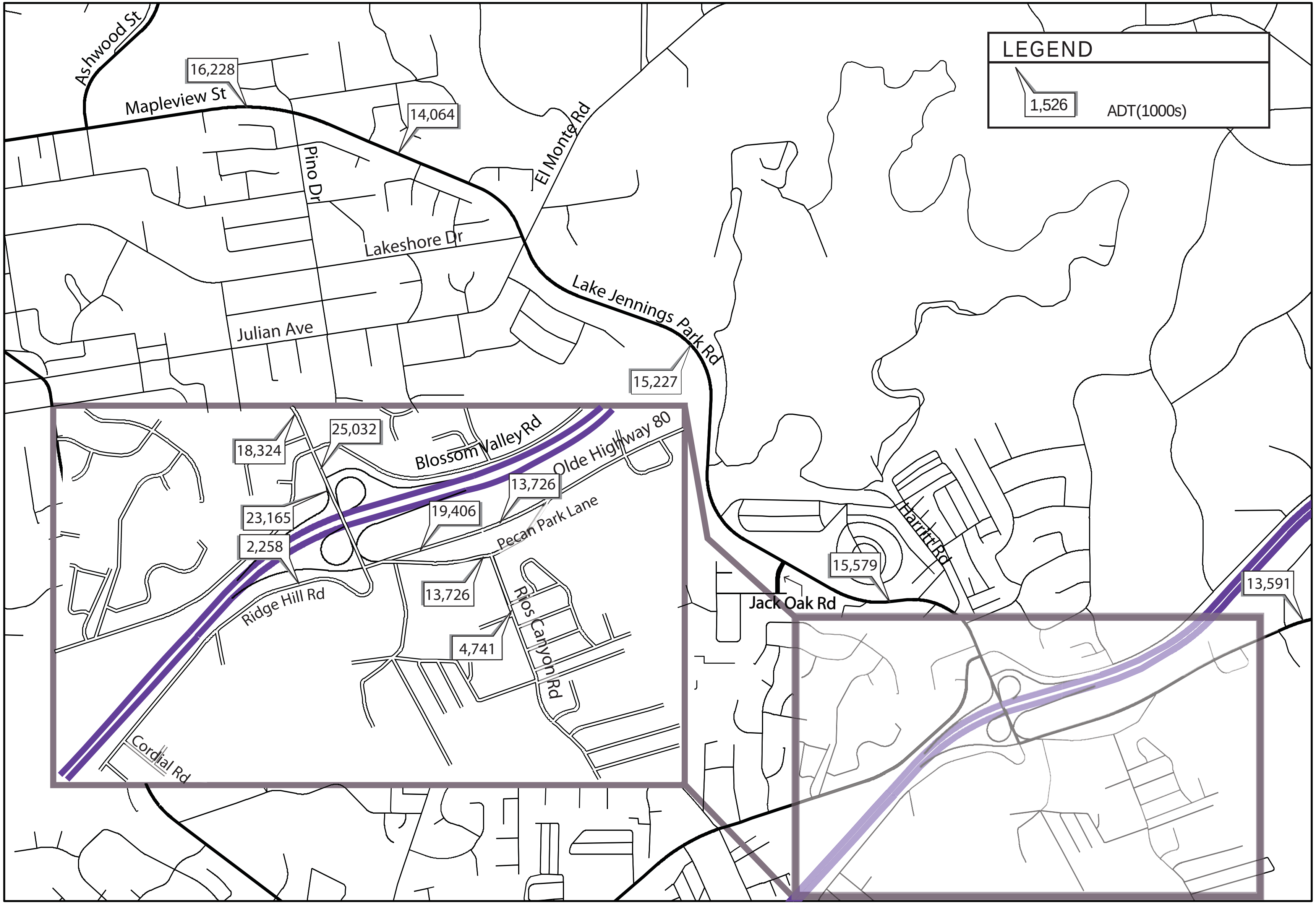


Figure 5-1

General Plan Buildout Without Project Daily Roadway Segment Volumes

N
Not To
Scale

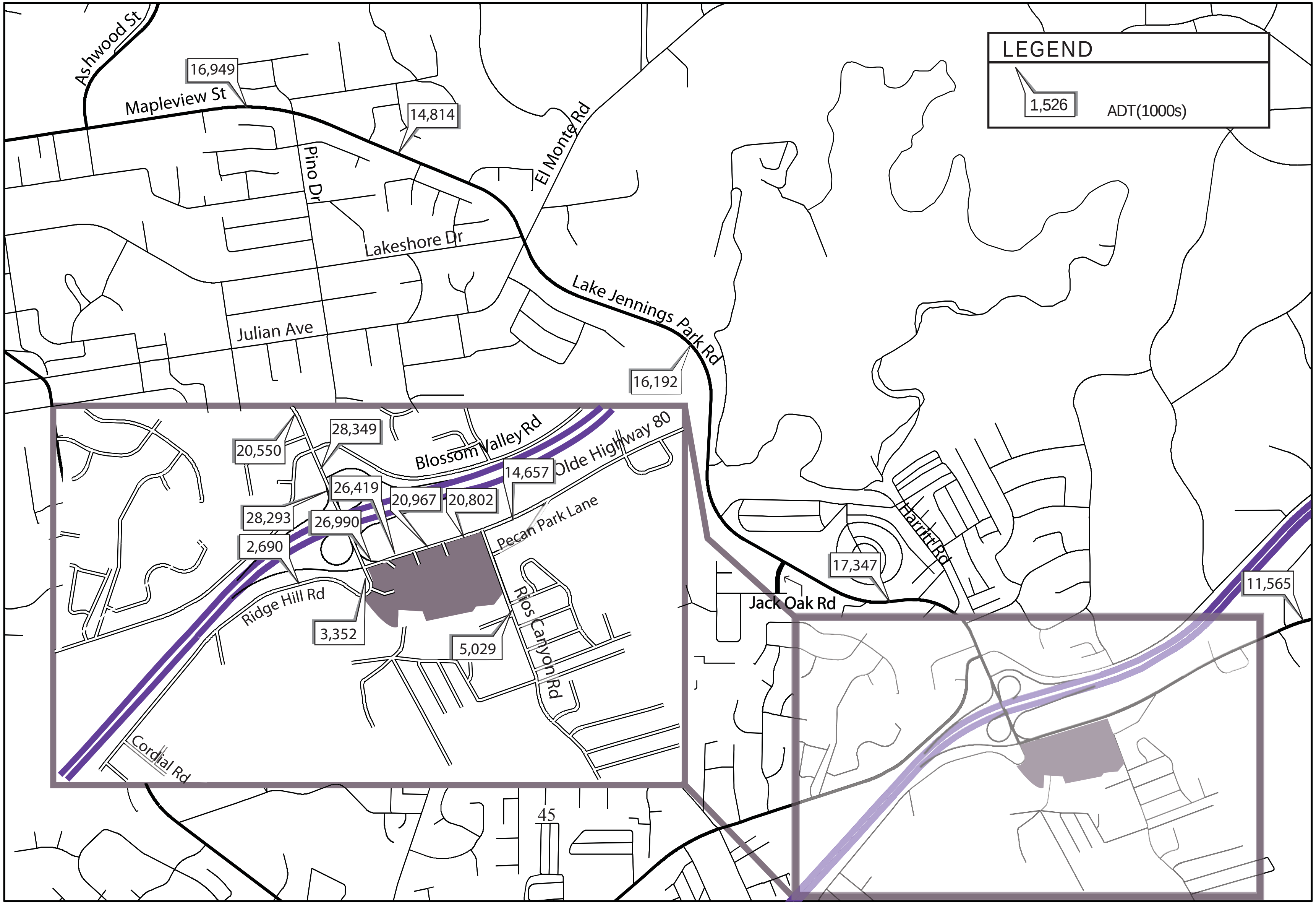


Figure 5-2

General Plan Buildout With Project Daily Roadway Segment Volumes

N
Not To Scale

Table 5-2 - General Plan Buildout With Project Conditions Roadway Segment Analysis Summary

Roadway Segment	Mobility Element Lanes / Configuration	LOS E Cap.	GP Buildout Without Project		GP Buildout With Project		Δ Traffic	Significant?
			ADT	LOS	ADT	LOS		
Olde Highway 80								
Lake Jennings Park Rd. to Dwy 1	4MRITL	34,200	19,406	B	26,990	C	7,584	No
Project Dwy 1 to Dwy 2	4MRITL	34,200	19,406	B	26,419	C	7,013	No
Project Dwy 2 to Dwy 3	4MRITL	34,200	19,406	B	20,967	B	1,561	No
Project Dwy 3 to Old Rios Canyon Rd.	4MRITL	34,200	19,406	B	20,802	B	1,396	No
Rios Canyon Rd. to Pecan Park Ln.	4MRITL	34,200	13,726	B	14,657	B	931	No
Pecan Park Ln. to Chimney Rock Ln.	4MRITL	34,200	13,591	A	14,513	B	922	No
Mapleview Street								
Ashwood St. to Pino Dr.	4MRITL	34,200	16,228	B	16,949	B	721	No
Lake Jennings Park Road								
Pino Dr. to El Monte Rd.	4MRITL	34,200	14,064	B	14,814	B	749	No
El Monte Rd. to Jack Oak Rd.	4MRITL	34,200	15,227	B	16,192	B	965	No
Jack Oak Rd. to Harritt Rd.	4MRITL	34,200	15,579	B	17,347	B	1,769	No
Harrit Rd. to Blossom Valley Rd.	4MRITL	34,200	18,324	B	20,550	B	2,226	No
Blossom Valley Rd. to I-8 WB Off-Ramp	4MRITL	34,200	25,032	C	28,349	D	3,317	No
I-8 WB Off-Ramp to Olde Highway 80	4MRITL	34,200	23,165	C	28,293	D	5,128	No
Olde Highway 80 to Driveway 4	4MRITL	34,200	2,258	A	3,352	A	1,094	No
Ridge Hill Road								
Lake Jennings Park Rd. to Cordial Rd.	2RR	4,500	2,258	Better than C	2,690	Better than C	432	No
Rios Canyon Road								
South of Olde Highway 80	2LCRS	9,700	4,741	A	5,029	A	288	No

Abbreviations:

4MRITL is a 4 lane Major Road with an Intermittent Turn Lane.
2RR is a 2 lane Residential Road.
2LCRS is a 2 lane Light Collector with a Reduced Shoulder

CHAPTER 6
TRANSIT AND ON-SITE CIRCULATION

6.1 ON-SITE CIRCULATION

The project will have a total of four access points with three access points on Olde Highway 80 and one access point on Ridge Hill Road as described below:

- Project Driveway 1 – A right-in only access located on Olde Highway 80 approximately 200 feet east of Lake Jennings Park Road.
- Project Driveway 2 – The main access to the project site will be a signalized full access, and it is located on Olde Highway 80 approximately 550 feet east of Lake Jennings Park Road. No sight distance issue exists for the main access at Project Driveway 2 is because the horizontal alignment of Olde Highway 80 is straight, and the access is controlled by a traffic signal. A signal warrant analysis was conducted for this location and it meets warrant. This can be found in Appendix I.
- Project Driveway 3 – A right-in/right-out only access located on Olde Highway 80 approximately 750 feet east of Lake Jennings Park Road. A northbound stop sign will be installed at Project Driveway 3.
- Project Driveway 4 – A full access driveway located on Ridge Hill Road approximately 200 feet south of Olde Highway 80. A westbound stop sign will be installed at Project Driveway 4. The westbound driveway approach will align directly with the approaching lanes on Ridge Hill Road for appropriate sight distance and visibility of approach traffic.

6.2 PEDESTRIAN

The existing pedestrian network does not currently provide a continuous sidewalk connecting adjoining land uses along Olde Highway 80, Lake Jennings Park Road and Rio Canyon Road in the study area. The project will provide sidewalk, curb and gutter along the project frontage along Lake Jennings Park Road, Olde Highway 80 and the northerly extension of Rios Canyon Road. The proposed traffic signal and striping improvements at the intersection of Lake Jennings Park Road and Olde Highway 80 will include a crosswalk on the west leg connecting the new sidewalk along the project frontage to the existing sidewalk on the north side of Olde Highway 80. The improved pedestrian network will enhance the pedestrian access for the residential neighborhood located along Rios Canyon Road to utilize the retail and transit opportunities available along Olde Highway 80.

All internal pedestrian networks will be constructed to meet County standards as they relate to pedestrians.

6.3 TRANSIT

Transit service in the study is offered by the San Diego County Metropolitan Transit System (MTS). MTS provides Route 864 along Olde Highway 80, Pecan Park Lane and Lake Jennings Park Road that services the Lakeside Community. The west end of Route 864 is the El Cajon Transit Center and the east end of Route 864 is the Viejas Outlet Center and Viejas Casino. The current westerly segment of Pecan Park Lane between Rios Canyon Road and Olde Highway 80 will be eliminated with the development of the project.

6.4 BICYCLE

Class II on-street bike lanes are currently available on both directions along Olde Highway 80 east of the project site past Pecan Park Lane. No bicycle lanes currently exist along the project frontage on Olde Highway 80 and Lake Jennings Park Road. The project will provide for a standard 8' shoulder serving a bicycle lane with the frontage improvements.

6.5 PARKING

The parking for the project shall be identified on the project plans and will meet DPLU requirements. A total of 389 spaces are being provided on-site.

6.6 DESIGN EXCEPTIONS

A request for exceptions to public road standards was submitted to the Department of Planning and Development Services (PDS) on December 22, 2014. On February 5, 2015 the PDS department released a letter that waived the 300-foot driveway separation requirements of Section 6.1C.2 for the proposed project driveways on Olde Highway 80 along the project frontage. The request was reviewed and supported by the County of San Diego of Public Works Traffic Engineering. Appendix M contains the supporting information.

6.7 INTERSECTION CONTROL EVALUATION (ICE)

Intersection Control Evaluation refers to the process and framework that Caltrans has adopted to provide a more balanced or holistic approach to the consideration and selection of access strategies and concepts during transportation planning, project identification and initiation processes that contemplate the addition, expansion or full control of major intersections (including interchange ramp termini). "Full control" involves the use of signal, stop or yield control (roundabouts) on each of the through and most major movements. The project has conducted the evaluation of intersection control (signal and roundabout) under separate cover and reviewed by Caltrans staff. Final determination of the intersection control at Lake Jennings Park Road and I-8 EB off-ramp will be done through Caltrans Permit review, and is yet to be determined, however, either alternative mitigates the project's direct impact.

CHAPTER 7
CONSTRUCTION TRAFFIC MANAGEMENT

7.1 CONSTRUCTION

It is estimated that the project will require a street closure of Pecan Park Lane (west) during construction phase to make the necessary improvements to Rios Canyon Road and Pecan Park Lane. A construction traffic management plan will be prepared to address the street closure and detours. Construction impacts on the area are projected to be minimal since construction vehicles are estimated to contribute fewer vehicles during the peak hours than the project would after completion. The traffic generated by the dirt haul is also estimated to contribute fewer vehicles during the peak hours than the project would after completion.

During the period of time that Pecan Park Lane (west) is closed and prior to the opening of the Rios Canyon Road extension traffic will be temporarily routed easterly on Old Highway 80 to Pecan Park Lane (east). From this point vehicles can continue to access Rios Canyon Road during the temporary condition. Prior to this temporary detour the applicant will be improving the Pecan Park Lane (east) intersection with Olde Highway 80 to a 90-degree intersection rather than keeping the current, skewed angle in order to provide better safety.

Project construction is expected to take place over approximately 9.5 months with a 5-day, 9-hour work week construction schedule from 7:00 am to 4:00 pm. Construction activity will take place during all available hours for construction as allowed by code. Traffic control plans will be prepared to alleviate any vehicular, pedestrian, transit, bicycle and parking impacts to the extent possible. Contractors will be required to follow the approved control plans to ensure that safe routes throughout the construction zones are provided for all modes of transportations. See Appendix L for traffic control plan.

7.2 PEDESTRIAN

Pedestrian facilities currently do not exist along the project frontage. The existing pedestrian network does not currently provide a continuous sidewalk connecting adjoining land uses along Olde Highway 80. These discontinuous pedestrian facilities are not expected to be impacted by the construction of the project.

7.3 TRANSIT

Transit service is offered by the Metropolitan Transit Service (MTS) bus route 864 along the project frontage. The project does not directly affect the ability of transit to use any of their existing routes or stops. In the event that an existing bus stop is temporarily affected by construction within an existing street right of way that has transit service, the contractor shall coordinate with MTS to temporarily relocate the affected transit stop location.

7.4 BICYCLE

Bicycle lanes and routes are classified on the features provided for them within the right of way. Class II bike lanes are striped in the roadway along the outer edge either near the curb or just outside parking areas. The Class II facilities are the ones that could be affected by construction within the right of way, in the limited number of areas where that occurs for this project. To the extent that any construction activity within the right of way would affect an existing Class II bike lane, the

Contractor shall make provisions for the safe passage of bicyclists though the construction zone as part of the permit process for right of way encroachment with the responsible agency. While recreational riders may be present on many of the back country roads, there are no dedicated bicycle lanes for them and they would follow standard vehicular rules of the road.

7.5 PARKING

Construction workers will park personal vehicles at the project site where adequate parking space will be provided. The anticipated construction activities will not temporarily eliminate any existing parking spaces that would result in parking deficiencies. Heavy equipment will be parked and maintained at construction sites and all utility trucks will park in the construction yards. Therefore, there would be no impact on the public parking inventory associated with the construction of the project since sufficient parking for all employees, visitors, service vehicles, and contractors will be provided and occur on-site during the construction phases of the project.

CHAPTER 8
IMPACTS AND MITIGATION

This chapter identifies significant impacts, project mitigation, and outlines the applicant's TIF contribution.

8.1 SIGNIFICANT IMPACTS

The following intersections and roadway segments were found to be significantly impacted by the proposed project based on the County's significance criteria.

8.1.1 Direct Impacts

Without any improvements by the project, there would be direct impacts for Existing With Project conditions.

8.1.1.1 Roadway Segment Direct Impacts

- Olde Highway 80 from Lake Jennings Park Road to Project Driveway 1
- Olde Highway 80 from Project Driveway 1 to Project Driveway 2
- Olde Highway 80 from Project Driveway 2 to Project Driveway 3
- Olde Highway 80 from Project Driveway 3 to Rios Canyon Road
- Olde Highway 80 from Rios Canyon Road to Pecan Park Lane
- Lake Jennings Park Road from Harritt Road to Blossom Valley Road
- Lake Jennings Park Road from Blossom Valley Road to I-8 Westbound Off-Ramp
- Lake Jennings Park Road from I-8 Westbound Off-Ramp to Olde Highway 80

8.1.1.2 Intersections Direct Impacts

- Lake Jennings Park Road and I-8 Westbound Off-Ramp
- Lake Jennings Park Road and I-8 Eastbound Off-Ramp

8.2.2 Cumulative Impacts

The following segments and intersections have been identified as cumulatively impacted. Table 8-1 identifies the recommended improvements associated in order to bring the LOS grade to an acceptable letter grade.

8.2.2.1 Roadway Segment Cumulative Impacts

- Olde Highway 80 from Lake Jennings Park Road to Project Driveway 1
- Olde Highway 80 from Project Driveway 1 to Project Driveway 2
- Olde Highway 80 from Project Driveway 2 to Project Driveway 3
- Olde Highway 80 from Project Driveway 3 to Rios Canyon Road
- Olde Highway 80 from Rios Canyon Road to Pecan Park Lane
- Lake Jennings Park Road from Jack Oak to Harritt Road
- Lake Jennings Park Road from Harritt Road to Blossom Valley Road
- Lake Jennings Park Road from Blossom Valley Road to I-8 Westbound Off-Ramp
- Lake Jennings Park Road from I-8 Westbound Off-Ramp to Olde Highway 80

8.2.2.2 Intersection Cumulative Impacts

- Lake Jennings Park Road and Blossom Valley Road
- Lake Jennings Park Road and I-8 Westbound Off-Ramp
- Lake Jennings Park Road and I-8 Eastbound Off-Ramp

8.3 MITIGATION

The project would make the fronting improvements along Olde Highway 80 and the off-site improvements proposed for Lake Jennings Park Road between Olde Highway 80 and Harritt Road. The recommended improvements are shown in Appendix D and analysis in Appendix G, and summarized below:

Table 8-1
Impacts and Mitigation Measures

Location	Mitigation Measure
Direct Impacts	
Segments	
Olde Highway 80 from Lake Jennings Park Road to Rios Canyon Road	- Improve to provide 4 lanes with intermittent turn lanes between Lake Jennings Park Road and Rios Canyon Road
Olde Highway 80 from Rios Canyon Road to Pecan Park Lane	- Improve to one lane each way with a two-way-left-turn lane between new Rios Canyon Road and Pecan Park Lane (east).
Lake Jennings Park Road from Harritt Road to Blossom Valley Road	- Add NB through lane from Blossom Valley Road to Jennings Vista Drive. - Improve transition from one southbound through lane to two SB through lanes from Harritt Road to Jennings Vista Drive. - Add SB through lane from Jennings Vista Drive to Blossom Valley Road. - Add two way left turn lane south of Harritt Road to Rancho Del Villa - Modify the southbound right turn lane at Blossom Valley to a shared through/right turn lane.
Lake Jennings Park Road from Blossom Valley Road to I-8 westbound off-ramp	- Extend the northbound left turn pocket at Blossom Valley Road to 115 feet. - Improve to provide 4 lanes and bike lanes
Lake Jennings Park Road from I-8 westbound off-ramp to Olde Highway 80	- Improve to provide 4 lanes plus bike lanes - Mitigation strategy/improvement to be reviewed and approved by Caltrans at a later time.
Intersections	
Lake Jennings Park Road and I-8 westbound off-Ramp	-Provide additional capacity at intersection according to segmental improvements above -Provide southbound refuge lane for the westbound left turn lane movement from the I-8 westbound off-ramp. - Mitigation strategy/improvement to be reviewed and approved by Caltrans at a later time.
Lake Jennings Park Road and I-8 eastbound off-Ramp	- Install traffic signal at intersection (Signal Warrant provided in Appendix I) and widen off-ramp for 320 ft to have a third lane to accommodate a left turn lane, a left through lane and a through right lane; however, mitigation strategy/improvement to be reviewed and approved by Caltrans consistent with I.C.E. policy.
Olde Highway 80 and Project Driveway #2	- Install a traffic signal at the intersection opposite the proposed Tractor Supply project (Signal Warrant provided in Appendix I).
Cumulative Impacts	
Segments	
Lake Jennings Park Road from Jack Oak Road to Harritt Road	- No improvement is proposed in this area given the discussion of traffic operations in the text and the other improvements being offered along Lake Jennings Park Road.
Intersections	
Lake Jennings Park Road and Blossom Valley Road	- Expand Lake Jennings Park Rd from a 2 lane CC to a 4 lane Major Rd

All of the impacted roadway segments and intersections would be mitigated to avoid the direct impacts with the recommended roadway improvements.

The segment of Lake Jennings Park Road from Jack Oak Road to Harritt Road, will experience LOS E for Cumulative With Project conditions; however, this portion of roadway does not really conform to the normal list of facilities given the availability of a climbing lane southbound and southerly from El Monte Road, and the practical capacity is indeed something greater than the values used in the tables for making our assessment of adequacy. Also, as demonstrated by the intersection analysis along this portion of Lake Jennings Park Road it will be operating acceptably (LOS = A-C) despite this LOS anomaly when compared to the normal acceptable daily volumes. Therefore, the improvements being proposed by the applicant to that portion of Lake Jennings Park Road between Harritt Road and Olde Highway 80 constitutes a substantial proportional contribution to the project's effects throughout this area.

8.4 TIF UPDATE

The County may also condition the project applicant to fund an update of the TIF program to help underwrite the cost of reflecting new, non-conformal projects in the updated fee program which would result in a new cost formulation for the TIF payment that the project would be subject to.

CHAPTER 9
RECOMMENDATIONS

The proposed development consists of 76,100 square feet of neighborhood commercial uses including an auto fueling facility of 12 fueling positions. Based on the preceding analysis of this project we recommend the mitigation measures and fair share contributions described in Chapter 8.

Prepared By:
J. Arnold Torma, TE – Principal Engineer
Rogelio Pelayo – Associate Transportation Planner

REGISTERED PROFESSIONAL ENGINEER
ARNOLD TORMA
No. 1143
Exp. 09/30/16
TRAFFIC
STATE OF CALIFORNIA

APPENDIX A

LEVEL OF SERVICE CONCEPTS, ANALYSIS METHODOLOGIES, STANDARDS OF SIGNIFICANCE

Roadway Segment Level of Service Definitions

LOS	V/C	Congestion/Delay	Traffic Description
(Used for surface streets, freeways, expressways and conventional highways)			
"A"	≤0.41	None	Free flow.
"B"	>0.41-0.62	None	Free to stable flow, light to moderate volumes.
"C"	>0.62-0.80	None to minimal	Stable flow, moderate volumes, freedom to maneuver noticeably restricted.
"D"	>0.80-0.92	Minimal to substantial	Approaches unstable flow, heavy volumes, very limited freedom to maneuver.
"E"	>0.92-1.00	Significant	Extremely unstable flow, maneuverability and psychological comfort extremely poor.
(Used for surface streets and conventional highways)			
"F"	>1.00	Considerable	Forced or breakdown flow. Delay measured in average travel speed (MPH). Signalized segments experience delays >60.0 seconds/vehicle.
(Used for freeways and expressways)			
"F(0)"	>1.00-1.25	Considerable 0-1 hour delay	Forced flow, heavy congestion, long queues form behind breakdown points, stop and go.
"F(1)"	>1.25-1.35	Severe 1-2 hour delay	Very heavy congestion, very long queues.
"F(2)"	>1.35-1.45	Very Severe 2-3 hour delay	Extremely heavy congestion, longer queues, more numerous breakdown points, longer stop periods.
"F(3)"	>1.45	Extremely Severe 3+ hours of delay	Gridlock

Source: Caltrans, 1992.

LEVEL OF SERVICE (LOS) DEFINITIONS

The concept of LOS is defined as a qualitative measure describing operational conditions within a traffic stream, and the motorist's and/or passengers' perception of operations. A LOS definition generally describes these conditions in terms of such factors as speed, travel time, freedom to maneuver, comfort, convenience, and safety. Levels of service for freeway segments can generally be categorized as shown in the table above.

San Diego County Roadway Classifications, Levels of Service (LOS) and Average Daily Traffic (ADT)

Street Classification	**Lanes**	**Maximum Recommended ADT by LOS**				
		A Free flow	**B Steady flow**	**C Stable flow**	**D Approach unstable**	**E Unstable flow**
Expressway	6	36,000	54,000	70,000	86,000	108,000
Prime	6	22,200	37,000	44,600	50,000	57,000
Major	4	14,800	24,700	29,600	33,400	37,000
Collector	4	13,700	22,800	27,400	30,800	34,200
Town Collector	2	3,000	6,000	9,500	13,500	19,000
Collector	2	1,900	4,100	7,100	10,900	16,200
State Route[1]	2			14,400	16,200	22,900
State Route w/LTL[2]	2			17,000	18,800	25,500

[1] Refer to Guidelines for Determining Significance: Section 4.3.1 (Table 3) Signalized Intersection Spacing Over One Mile for LOS Criteria

[2] The capacity of the 2SR w/ LTL is determined by adding the additional capacity of a collector series road with left turn lanes to the State Route base capacity.

Signalized Intersection Level of Service
Highway Capacity Manual Operational Analysis Method

The operational analysis method for evaluation of signalized intersections presented in the *2000 Highway Capacity Manual* (Transportation Research Board Special Report 209) defines level of service in terms of delay, or more specifically, control stopped delay per vehicle. Delay is a measure of driver and/or passenger discomfort, frustration, fuel consumption, and lost travel time.

Control Stopped Delay Per Vehicle (seconds)	Level of Service (LOS) Characteristics
<10	LOS A describes operations with very low delay. This occurs when progression is extremely favorable, and most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
>10 – 20	LOS B describes operations with generally good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.
>20 – 35	LOS C describes operations with higher delays, which may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.
>35 – 55	LOS D describes operations with high delay, resulting from some combination of unfavorable progression, long cycle lengths, or high volumes. The influence of congestion becomes more noticeable, and individual cycle failures are noticeable.
>55 – 80	LOS E is considered to be the limit of acceptable delay. Individual cycle failures are frequent occurrences.
>80	LOS F describes a condition of excessively high delay, considered unacceptable to most drivers. This condition often occurs when arrival flow rates exceed the capacity of the intersection. Poor progression and long cycle lengths may also be major contributing causes to such delay.

Source: Highway Capacity Manual 2000, Exhibit 16-2

MINOR STREET STOP AND ALL-WAY STOP CONTROLLED INTERSECTION LEVEL OF SERVICE
HIGHWAY CAPACITY MANUAL OPERATIONAL ANALYSIS METHOD

The Highway Capacity Manual (HCM) analysis method for evaluating minor street stop intersections is based on the average total delay for each impeded movement. For all-way stop controlled intersections it is based on the average total delay for the entire intersection. As used here, total delay is defined as the total elapsed time from when a when a vehicle stops at the end of a queue until the vehicle departs from the stop line; this time includes the time required for the vehicle to travel from the last-in-queue to the first-in-queue position. The average total delay for any particular minor movement is a function of the service rate or capacity of the approach and the degree of saturation. The resulting delay is used to determine the level of service as shown in the following table.

Average Total Delay	Level of Service (LOS) Characteristics
0-10	*LOS A* – Little or no delay
>10 – 15	*LOS B* – Short traffic delay
>15 – 25	*LOS C* – Average traffic delay
>25 – 35	*LOS D* – Long traffic delays
>35 – 50	*LOS E* – Very long traffic delays
>50	*LOS F* – When the demand exceeds the capacity of the lane, extreme delays will be encountered and queuing may cause severe congestion to the intersection.

Source: Highway Capacity Manual 2000, Exhibit 17-22

County of San Diego
Measure of Significant Project Impacts

Roadway Segment LOS	Allowable Increase on Congested Segments				Intersection LOS	Allowable Increase at Congested Intersections	
	2-Lane Road	4-Lane Road	6-Lane Road	2-Lane Highway		Signalized	Unsignalized
LOS E	200 ADT	400 ADT	600 ADT	325 ADT	LOS E	Delay of 2 seconds	20 peak hour trips on a critical movement
LOS F	100 ADT	200 ADT	300 ADT	225 ADT	LOS F	Delay of 1 second, or 5 peak hour trips on a critical movement	5 peak hour trips on a critical movement

Note: A critical movement is one that is experiencing excessive queues.

2008 CMP Roadway Network

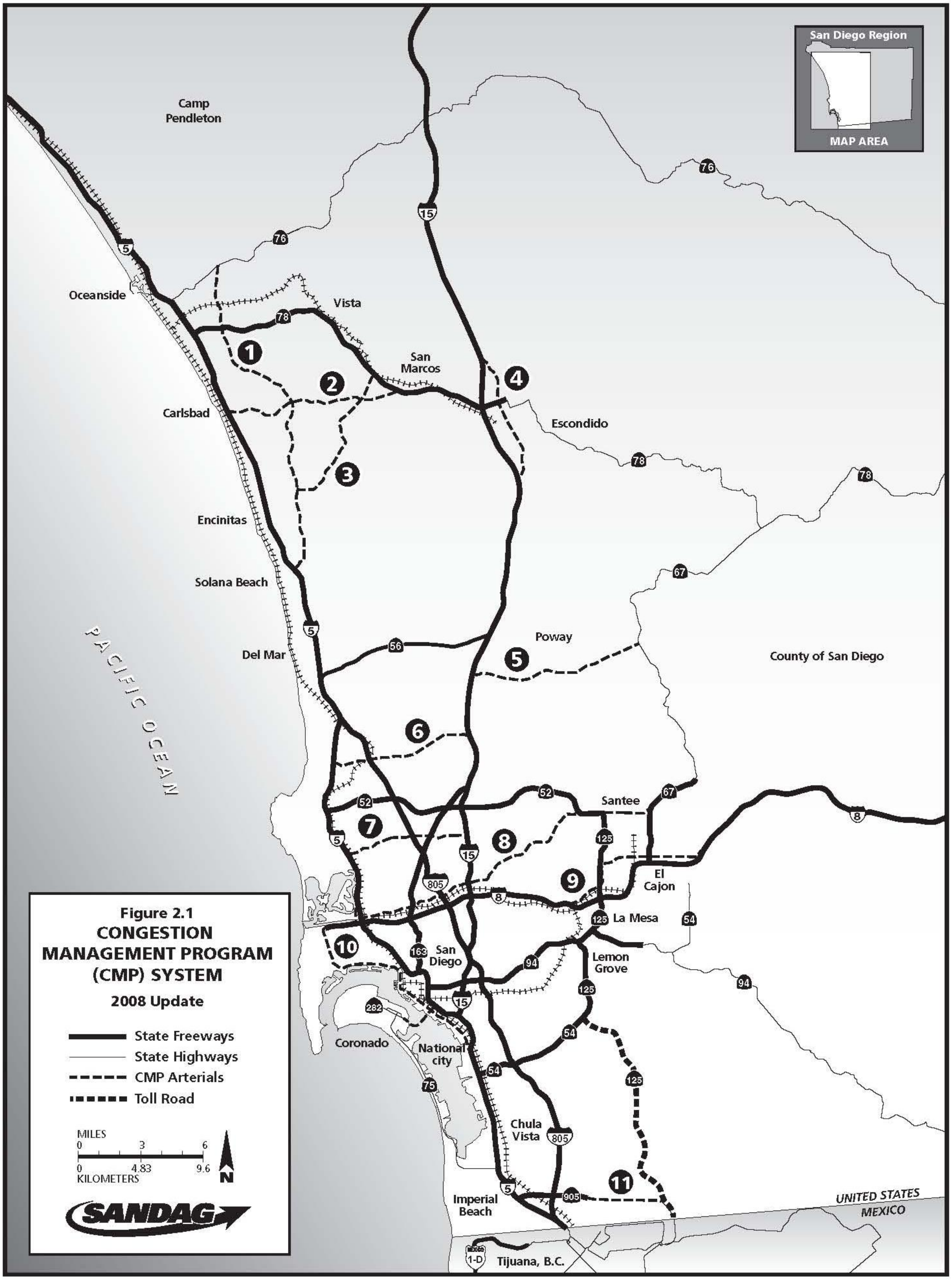


Table 2.3
CMP System Roadways

CMP Freeways:

Interstate 5 (I-5): Orange County Line to United States/Mexico Border
Interstate 8: Nimitz Boulevard to Imperial County Line
Interstate 15: Riverside County Line to I-5
Interstate 805: I-5 (North) to I-5 (South)
State Route 52 (SR 52): I-5 to SR 125
State Route 54: I-5 to Briarwood Road
State Route 56: I-5 to I-15
State Route 67: Mapleview Street to I-8
State Route 78: I-5 to North Broadway
State Route 94: I-5 to Avocado Boulevard
State Route 125: SR 54 to SR 52
State Route 125: SR 905 to San Miguel Road[1]
State Route 163: I-15 to I-5
State Route 905: Oro Vista Road to Otay Mesa Road

CMP Highways:

State Route 54: SR 94 to Grove Road
State Route 67: SR 78 to Mapleview Road
State Route 75: I-5 (North) to I-5 (South)
State Route 76: Coast Highway to SR 79
State Route 78: North Broadway to Imperial County Line
State Route 79: Riverside County Line to I-8
State Route 94: Avocado Boulevard to Old Highway 80
State Route 282: Alameda Boulevard to Orange Avenue

CMP Arterials:

(1) Manchester Avenue/El Camino Real: I-5 to SR 76/Mission Avenue
(2) Palomar Airport Road/San Marcos Boulevard: I-5 to SR 78
(3) Olivenhain Road/Rancho Santa Fe Road: El Camino Real to SR 78
(4) Centre City Parkway: I-15 (North) to I-15 (South)
(5) Scripps Poway Parkway: I-15 to SR 67
(6) La Jolla Village Drive/Miramar Road: I-5 to I-15
(7) Balboa Avenue: I-5 to I-15
(8) Sea World Drive/Friars Road/Mission Gorge Road/Woodside Avenue: I-5 to SR 67
(9) Fletcher Parkway/Broadway/E. Main Street: I-8 (West) to I-8 (East)
(10) Nimitz Boulevard/North Harbor Drive/Grape Hawthorne Streets/Pacific Highway/Harbor Drive: I-8 to I-5
(11) Otay Mesa Road-Interim State Route 905: SR 905 (West) to SR 905 (East)[2]

[1] This portion of SR 125 is a privately-funded toll road that opened to traffic in November 2007. Currently, LOS data are not available.

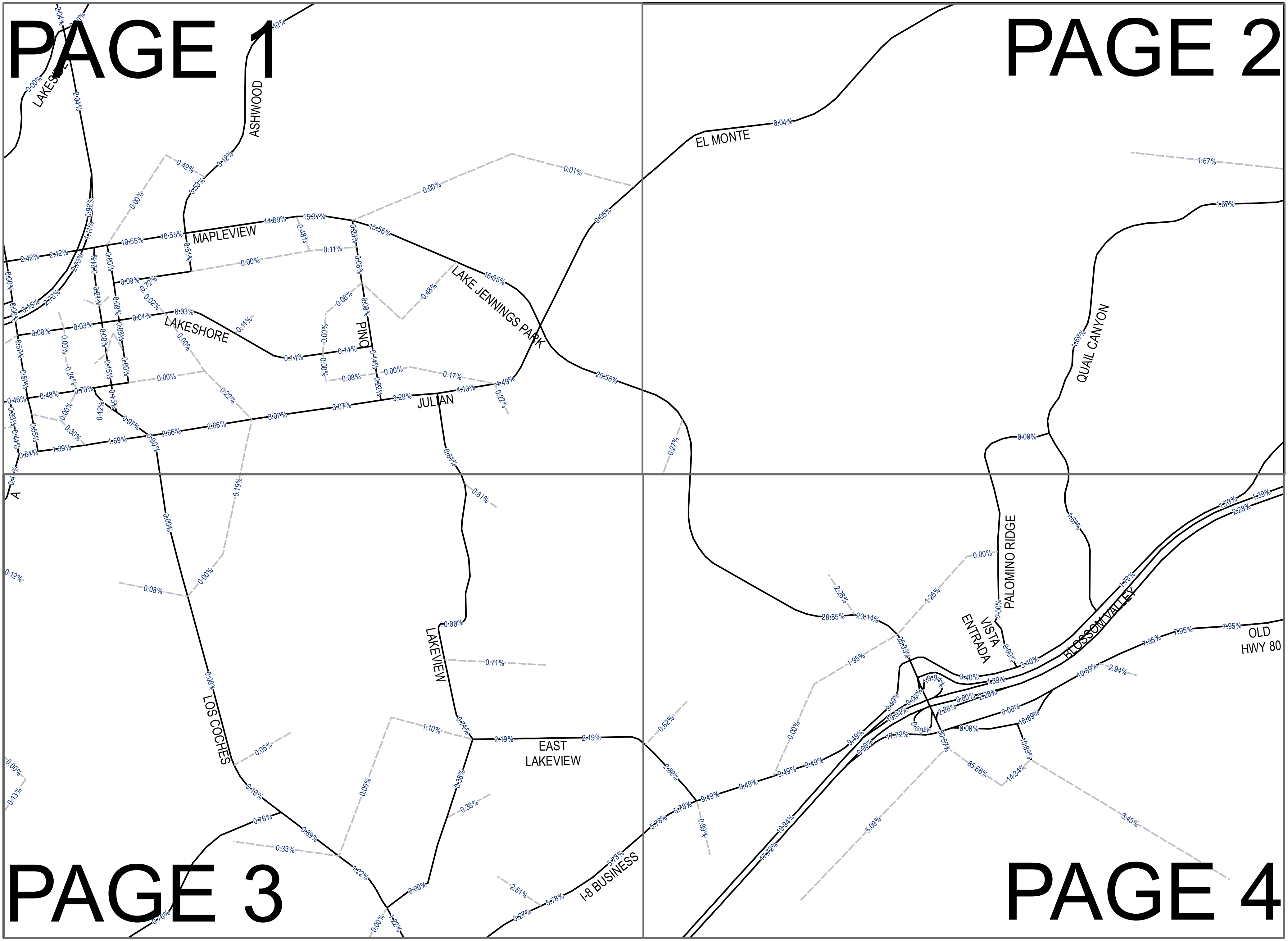
[2] This CMP Arterial is designated as an interim facility on the CMP network and will be replaced by a state highway following its construction.

APPENDIX B

MODELING INFORMATION / TRIP GENERATION

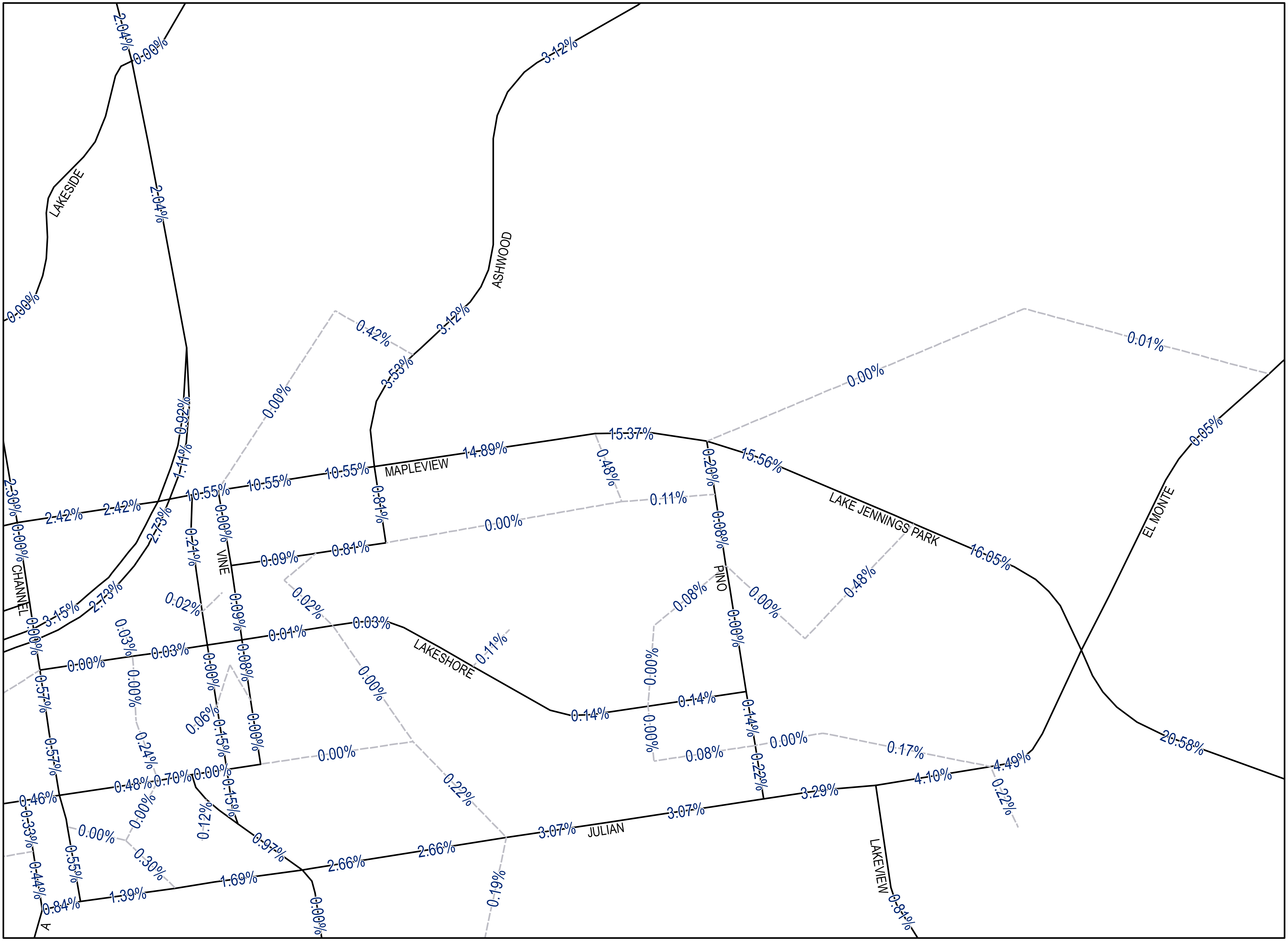
Select Zone Trip Distribution Reference Page - Lake Jennings

3.10.2014



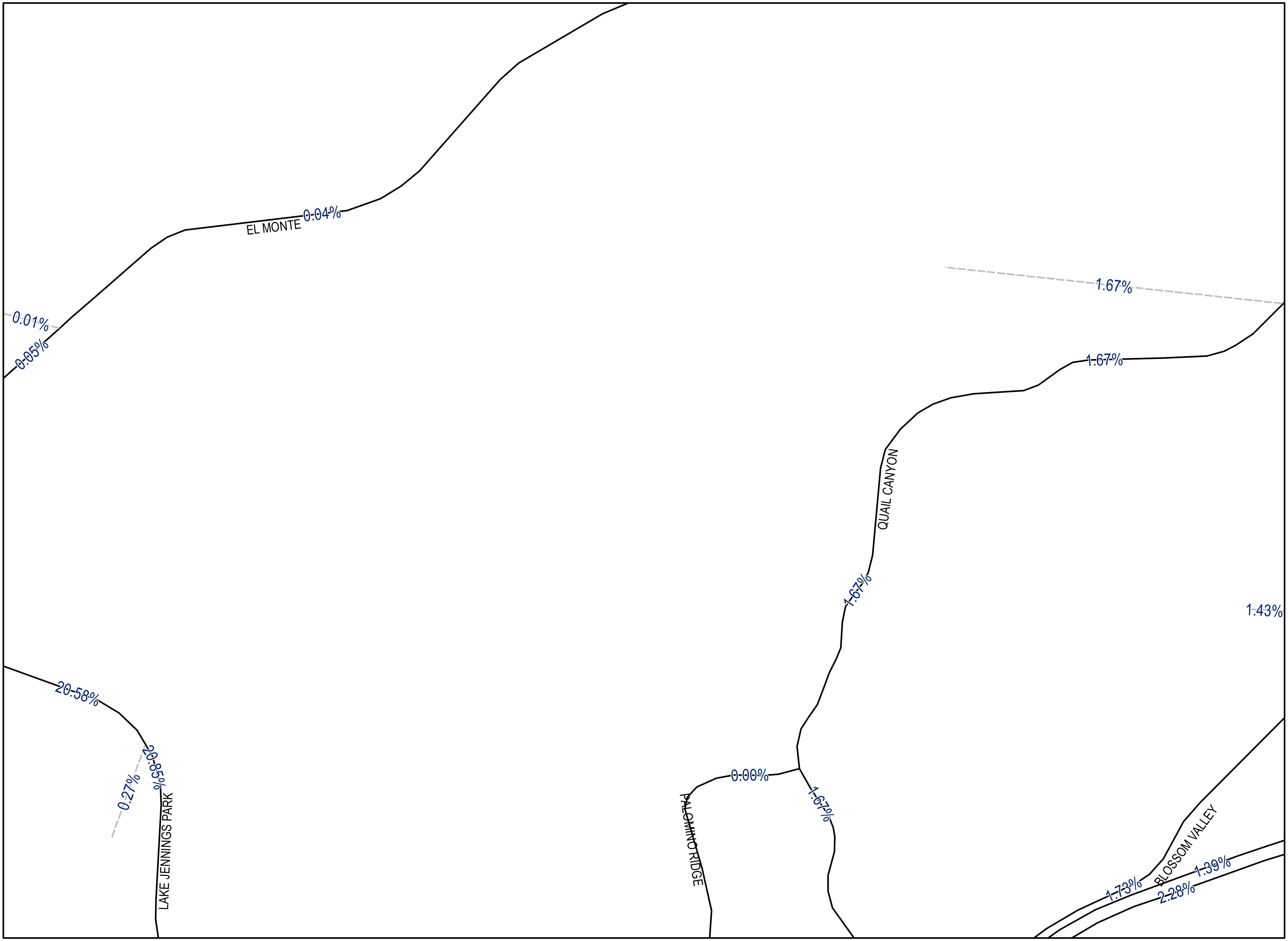
Select Zone Trip Distribution Page 1- Lake Jennings

3.10.2014



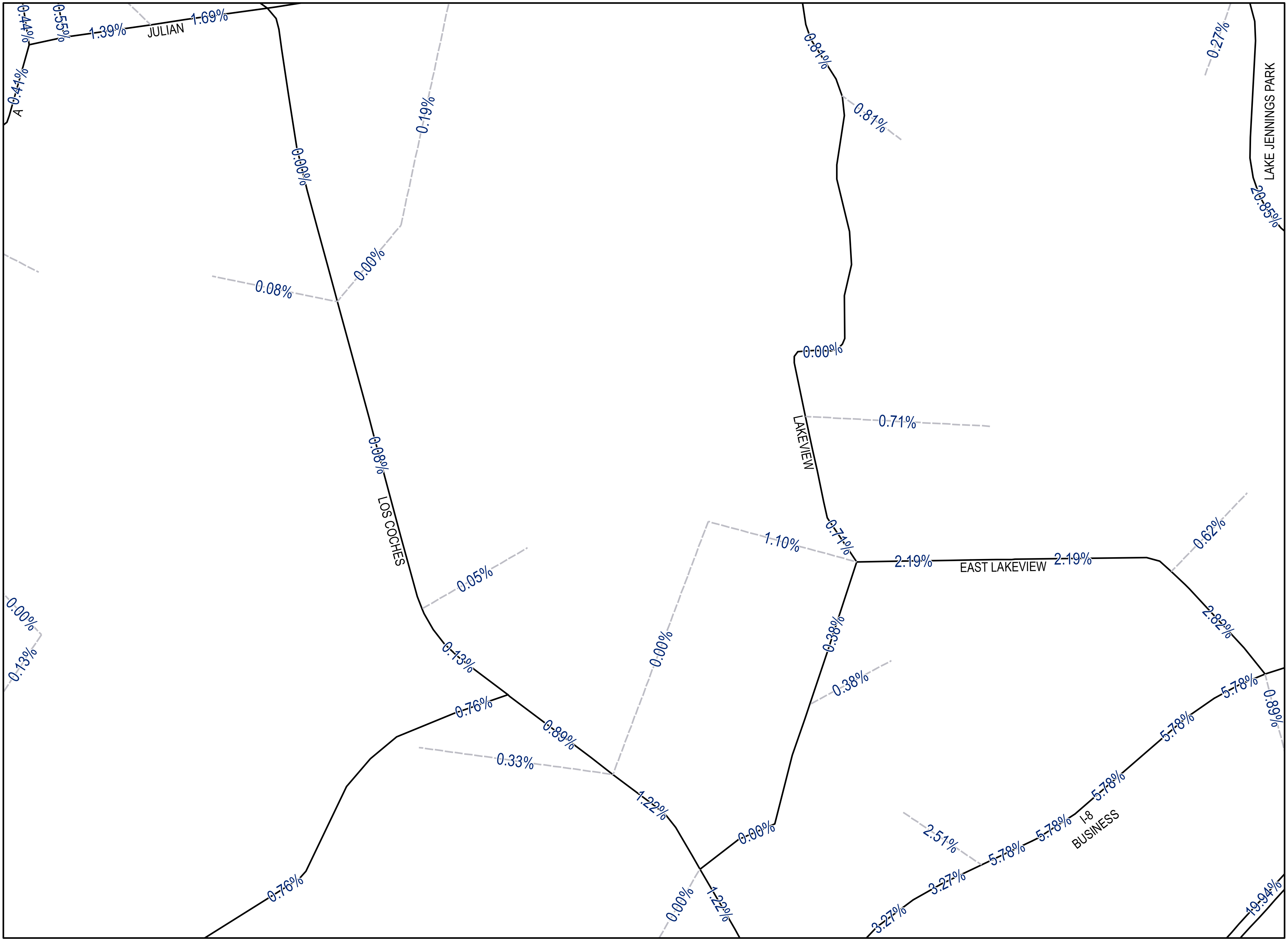
Select Zone Trip Distribution Page 2 - Lake Jennings

3.10.2014



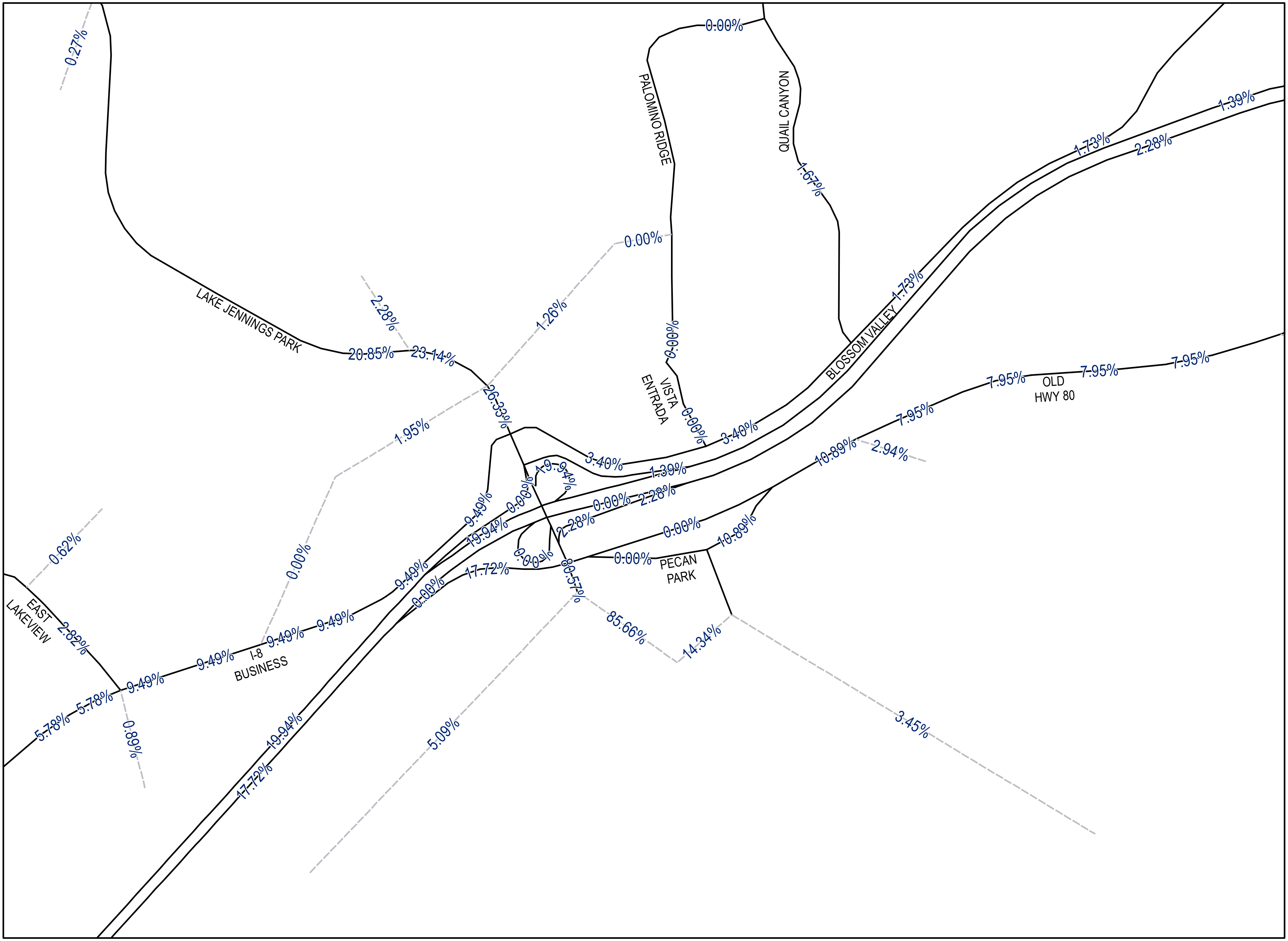
Select Zone Trip Distribution Page 3 - Lake Jennings

3.10.2014



Select Zone Trip Distribution Page 4 - Lake Jennings

3.10.2014



(NOT SO)
BRIEF GUIDE OF VEHICULAR TRAFFIC GENERATION RATES FOR THE SAN DIEGO REGION

APRIL 2002

SANDAG
401 B Street, Suite 800
San Diego, California 92101
(619) 699-1900 • Fax (619) 699-1950

NOTE: This listing only represents a *guide* of average, or estimated, traffic generation "driveway" rates and some very general trip data for land uses (emphasis on acreage and building square footage) in the San Diego region. These rates (both local and national) are subject to change as future documentation becomes available, or as regional sources are updated. For more specific information regarding traffic data and trip rates, please refer to the San Diego Traffic Generators manual. ***Always check with local jurisdictions for their preferred or applicable rates.***

LAND USE	TRIP CATEGORIES [PRIMARY:DIVERTED:PASS-BY]^{P}	ESTIMATED WEEKDAY VEHICLE TRIP GENERATION RATE (DRIVEWAY)	HIGHEST PEAK HOUR % (plus IN:OUT ratio)				TRIP LENGTH (Miles)^{L}
			Between 6:00-9:30 A.M.		Between 3:00-6:30 P.M.		
AGRICULTURE (Open Space)	[80:18:2]	2/acre**					10.8
AIRPORT	[78:20:2]						12.5
Commercial		60/acre, 100/flight, 70/1000 sq. ft.* **	5%	(6:4)	6%	(5:5)	
General Aviation		6/acre, 2/flight, 6/based aircraft* **	9%	(7:3)	15%	(5:5)	
Heliports		100/acre**					
AUTOMOBILE^{5}							
Car Wash							
Automatic		900/site, 600/acre**	4%	(5:5)	9%	(5:5)	
Self-serve		100/wash stall**	4%	(5:5)	8%	(5:5)	
Gasoline	[21:51:28]						2.8
with/Food Mart		160/vehicle fueling space**	7%	(5:5)	8%	(5:5)	
with/Food Mart & Car Wash		155/vehicle fueling space**	8%	(5:5)	9%	(5:5)	
Older Service Station Design		150/vehicle fueling space, 900/station**	7%	(5:5)	9%	(5:5)	
Sales (Dealer & Repair)		50/1000 sq. ft., 300/acre, 60/service stall* **	5%	(7:3)	8%	(4:6)	
Auto Repair Center		20/1000 sq. ft., 400/acre, 20/service stall*	8%	(7:3)	11%	(4:6)	
Auto Parts Sales		60/1000 sq. ft. **	4%		10%		
Quick Lube		40/service stall**	7%	(6:4)	10%	(5:5)	
Tire Store		25/1000 sq. ft., 30/service stall**	7%	(6:4)	11%	(5:5)	
CEMETERY		5/acre*					
CHURCH (or Synagogue)	[64:25:11]	9/1000 sq. ft., 30/acre** (quadruple rates for Sunday, or days of assembly)	5%	(6:4)	8%	(5:5)	5.1
COMMERCIAL/RETAIL^{5}							
Super Regional Shopping Center (More than 80 acres, more than 800,000 sq. ft., w/usually 3+ major stores)		35/1000 sq. ft.,^{C} 400/acre*	4%	(7:3)	10%	(5:5)	
Regional Shopping Center (40-80acres, 400,000-800,000 sq. ft., w/usually 2+ major stores)	[54:35:11]	50/1000 sq. ft.,^{C} 500/acre*	4%	(7:3)	9%	(5:5)	5.2
Community Shopping Center (15-40 acres, 125,000-400,000 sq. ft., w/usually 1 major store, detached restaurant(s), grocery and drugstore)	[47:31:22]	80/1000 sq. ft., 700/acre* **	4%	(6:4)	10%	(5:5)	3.6
Neighborhood Shopping Center (Less than 15 acres, less than 125,000 sq. ft., w/usually grocery & drugstore, cleaners, beauty & barber shop, & fast food services)		120/1000 sq. ft., 1200/acre* **	4%	(6:4)	10%	(5:5)	
Commercial Shops	[45:40:15]						
Specialty Retail/Strip Commercial		40/1000 sq. ft., 400/acre*	3%	(6:4)	9%	(5:5)	4.3
Electronics Superstore		50/1000 sq. ft**			10%	(5:5)	
Factory Outlet		40/1000 sq. ft.**	3%	(7:3)	9%	(5:5)	
Supermarket		150/1000 sq. ft., 2000/acre* **	4%	(7:3)	10%	(5:5)	
Drugstore		90/1000 sq. ft.**	4%	(6:4)	10%	(5:5)	
Convenience Market (15-16 hours)		500/1000 sq. ft.**	8%	(5:5)	8%	(5:5)	
Convenience Market (24 hours)		700/1000 sq. ft.**	9%	(5:5)	7%	(5:5)	
Convenience Market (w/gasoline pumps)		850/1000 sq. ft., 550/vehicle fueling space**	6%	(5:5)	7%	(5:5)	
Discount Club		60/1000 sq. ft., 600/acre* **	1%	(7:3)	9%	(5.5)	
Discount Store		60/1000 sq. ft., 600/acre**	3%	(6:4)	8%	(5:5)	
Furniture Store		6/1000 sq. ft., 100/acre**	4%	(7:3)	9%	(5:5)	
Lumber Store		30/1000 sq. ft., 150/acre**	7%	(6:4)	9%	(5:5)	
Home Improvement Superstore		40/1000 sq. ft.**	5%	(6:4)	8%	(5:5)	
Hardware/Paint Store		60/1000 sq. ft., 600/acre**	2%	(6:4)	9%	(5:5)	
Garden Nursery		40/1000 sq. ft., 90/acre**	3%	(6:4)	10%	(5:5)	
Mixed Use: Commercial (w/supermarket)/Residential		110/1000 sq. ft., 2000/acre* (commercial only)	3%	(6:4)	9%	(5:5)	
		5/dwelling unit, 200/acre* (residential only)	9%	(3:7)	13%	(6:4)	
EDUCATION							
University (4 years)	[91:9:0]	2.4/student, 100 acre*	10%	(8:2)	9%	(3:7)	8.9
Junior College (2 years)	[92:7:1]	1.2/student, 24/1000 sq. ft., 120/acre* **	12%	(8:2)	9%	(6:4)	9.0
High School	[75:19:6]	1.3/student, 15/1000 sq. ft., 60/acre* **	20%	(7:3)	10%	(4:6)	4.8
Middle/Junior High	[63:25:12]	1.4/student, 12/1000 sq. ft. 50/acre**	30%	(6:4)	9%	(4:6)	5.0
Elementary	[57:25:10]	1.6/student, 14/1000 sq. ft., 90/acre* **	32%	(6:4)	9%	(4:6)	3.4
Day Care	[28:58:14]	5/child, 80/1000 sq. ft.**	17%	(5:5)	18%	(5:5)	3.7
FINANCIAL^{5}	[35:42:23]						3.4
Bank (Walk-In only)		150/1000 sq. ft., 1000/acre* **	4%	(7:3)	8%	(4:6)	
with Drive-Through		200/1000 sq. ft., 1500/acre*	5%	(6:4)	10%	(5:5)	
Drive-Through only		250 (125 one-way)/lane*	3%	(5:5)	13%	(5:5)	
Savings & Loan		60/1000 sq. ft., 600/acre**	2%		9%		
Drive-Through only		100 (50 one-way)/lane**	4%		15%		
HOSPITAL	[73:25:2]						8.3
General		20/bed, 25/1000 sq. ft., 250/acre*	8%	(7:3)	10%	(4:6)	
Convalescent/Nursing		3/bed**	7%	(6:4)	7%	(4:6)	
INDUSTRIAL							
Industrial/Business Park (commercial included)	[79:19:2]	16/1000 sq. ft., 200/acre* **	12%	(8:2)	12%	(2:8)	9.0
Industrial Park (no commercial)		8/1000 sq. ft., 90/acre**	11%	(9:1)	12%	(2:8)	
Industrial Plant (multiple shifts)	[92:5:3]	10/1000 sq. ft., 120/acre*	14%	(8:2)	15%	(3:7)	11.7
Manufacturing/Assembly		4/1000 sq. ft., 50/acre**	19%	(9:1)	20%	(2:8)	
Warehousing		5/1000 sq. ft., 60/acre**	13%	(7:3)	15%	(4:6)	
Storage		2/1000 sq. ft., 0.2/vault, 30/acre*	6%	(5:5)	9%	(5:5)	
Science Research & Development		8/1000 sq. ft., 80/acre*	16%	(9:1)	14%	(1:9)	
Landfill & Recycling Center		6/acre	11%	(5:5)	10%	(4:6)	

(OVER)

MEMBER AGENCIES: Cities of Carlsbad, Chula Vista, Coronado, Del Mar, El Cajon, Encinitas, Escondido, Imperial Beach, La Mesa, Lemon Grove, National City, Oceanside, Poway, San Diego, San Marcos, Santee, Solana Beach, Vista and County of San Diego.
ADVISORY/LIAISON MEMBERS: California Department of Transportation, County Water Authority, U.S. Department of Defense, S.D. Unified Port District and Tijuana/Baja California.

LAND USE	TRIP CATEGORIES [PRIMARY:DIVERTED:PASS-BY][P]	ESTIMATED WEEKDAY VEHICLE TRIP GENERATION RATE (DRIVEWAY)	HIGHEST PEAK HOUR % (plus IN:OUT ratio)				TRIP LENGTH (Miles)[L]
			Between 6:00-9:30 A.M.		Between 3:00-6:30 P.M.		
LIBRARY	[44:44:12]	50/1000 sq. ft., 400/acre**	2%	(7:3)	10%	(5:5)	3.9
LODGING	[58:38:4]						7.6
Hotel (w/convention facilities/restaurant)		10/occupied room, 300/acre	6%	(6:4)	8%	(6:4)	
Motel		9/occupied room, 200/acre*	8%	(4:6)	9%	(6:4)	
Resort Hotel		8/occupied room, 100/acre*	5%	(6:4)	7%	(4:6)	
Business Hotel		7/occupied room**	8%	(4:6)	9%	(6:4)	
MILITARY	[82:16:2]	2.5/military & civilian personnel*	9%	(9:1)	10%	(2:8)	11.2
OFFICE							
Standard Commercial Office (less than 100,000 sq. ft.)	[77:19:4]	20/1000 sq. ft.,[O] 300/acre*	14%	(9:1)	13%	(2:8)	8.8
Large (High-Rise) Commercial Office (more than 100,000 sq. ft., 6+ stories)	[82:15:3]	17/1000 sq. ft.,[O] 600/acre*	13%	(9:1)	14%	(2:8)	10.0
Office Park (400,000+ sq. ft.)		12/1000 sq.ft., 200/acre* **	13%	(9:1)	13%	(2:8)	
Single Tenant Office		14/1000 sq. ft., 180/acre*	15%	(9:1)	15%	(2:8)	8.8
Corporate Headquarters		7/1000 sq. ft., 110/acre*	17%	(9:1)	16%	(1:9)	
Government (Civic Center)	[50:34:16]	30/1000 sq. ft.**	9%	(9:1)	12%	(3:7)	6.0
Post Office							
Central/Walk-In Only		90/1000 sq. ft.**	5%		7%		
Community (not including mail drop lane)		200/1000 sq. ft., 1300/acre*	6%	(6:4)	9%	(5:5)	
Community (w/mail drop lane)		300/1000 sq. ft., 2000/acre*	7%	(5:5)	10%	(5:5)	
Mail Drop Lane only		1500 (750 one-way)/lane*	7%	(5:5)	12%	(5:5)	
Department of Motor Vehicles		180/1000 sq. ft., 900/acre**	6%	(6:4)	10%	(4:6)	
Medical-Dental	[60:30:10]	50/1000 sq. ft., 500/acre*	6%	(8:2)	11%	(3:7)	6.4
PARKS	[66:28:6]		4%		8%		5.4
City (developed w/meeting rooms and sports facilities)		50/acre*	13%	(5:5)	9%	(5:5)	
Regional (developed)		20/acre*					
Neighborhood/County (undeveloped)		5/acre (add for specific sport uses), 6/picnic site* **					
State (average 1000 acres)		1/acre, 10/picnic site**					
Amusement (Theme)		80/acre, 130/acre (summer only)**			6%	(6:4)	
San Diego Zoo		115/acre*					
Sea World		80/acre*					
RECREATION							
Beach, Ocean or Bay	[52:39:9]	600/1000 ft. shoreline, 60/acre*					6.3
Beach, Lake (fresh water)		50/1000 ft. shoreline, 5/acre*					
Bowling Center		30/1000 sq. ft., 300/acre, 30/lane **	7%	(7:3)	11%	(4:6)	
Campground		4/campsite**	4%		8%		
Golf Course		7/acre, 40/hole, 700/course* **	7%	(8:2)	9%	(3:7)	
Driving Range only		70/acre, 14/tee box*	3%	(7:3)	9%	(5:5)	
Marinas		4/berth, 20/acre* **	3%	(3:7)	7%	(6:4)	
Multi-purpose (miniature golf, video arcade, batting cage, etc.)		90/acre	2%		6%		
Racquetball/Health Club		30/1000 sq. ft., 300/acre, 40/court*	4%	(6:4)	9%	(6:4)	
Tennis Courts		16/acre, 30/court**	5%		11%	(5:5)	
Sports Facilities							
Outdoor Stadium		50/acre, 0.2/seat*					
Indoor Arena		30/acre, 0.1/seat*					
Racetrack		40/acre, 0.6 seat*					
Theaters (multiplex w/matinee)	[66:17:17]	80/1000 sq. ft., 1.8/seat, 360/screen*	1/3%		8%	(6:4)	6.1
RESIDENTIAL	[86:11:3]						7.9
Estate, Urban or Rural (average 1-2 DU/acre)		12/dwelling unit *[R]	8%	(3:7)	10%	(7:3)	
Single Family Detached (average 3-6 DU/acre)		10/dwelling unit *[R]	8%	(3:7)	10%	(7:3)	
Condominium (or any multi-family 6-20 DU/acre)		8/dwelling unit *[R]	8%	(2:8)	10%	(7:3)	
Apartment (or any multi-family units more than 20 DU/acre)		6/dwelling unit *[R]	8%	(2:8)	9%	(7:3)	
Military Housing (off-base, multi-family)							
(less than 6 DU/acre)		8/dwelling unit	7%	(3:7)	9%	(6:4)	
(6-20 DU/acre)		6/dwelling unit	7%	(3:7)	9%	(6:4)	
Mobile Home							
Family		5/dwelling unit, 40/acre*	8%	(3:7)	11%	(6:4)	
Adults Only		3/dwelling unit, 20/acre*	9%	(3:7)	10%	(6:4)	
Retirement Community		4/dwelling unit**	5%	(4:6)	7%	(6:4)	
Congregate Care Facility		2.5/dwelling unit**	4%	(6:4)	8%	(5:5)	
RESTAURANT[S]	[51:37:12]						4.7
Quality		100/1000 sq. ft., 3/seat, 500/acre* **	1%	(6:4)	8%	(7:3)	
Sit-down, high turnover		160/1000 sq. ft., 6/seat, 1000/acre* **	8%	(5:5)	8%	(6:4)	
Fast Food (w/drive-through)		650/1000 sq. ft., 20/seat, 3000/acre* **	7%	(5:5)	7%	(5:5)	
Fast Food (without drive-through)		700/1000 sq. ft.**	5%	(6:4)	7%	(5:5)	
Delicatessen (7am-4pm)		150/1000 sq. ft., 11/seat*	9%	(6:4)	3%	(3:7)	
TRANSPORTATION							
Bus Depot		25/1000 sq. ft.**					
Truck Terminal		10/1000 sq. ft., 7/bay, 80/acre**	9%	(4:6)	8%	(5:5)	
Waterport/Marine Terminal		170/berth, 12/acre**					
Transit Station (Light Rail w/parking)		300/acre, 2½/parking space (4/occupied)**	14%	(7:3)	15%	(3:7)	
Park & Ride Lots		400/acre (600/paved acre), {5/parking space (8/occupied)* **	14%	(7:3)	15%	(3:7)	

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* Primary source: *San Diego Traffic Generators.*

* Other sources: *ITE Trip Generation Report [6th Edition]*, Trip Generation Rates (other agencies and publications), various SANDAG & CALTRANS studies, reports and estimates.

[P] Trip category percentage ratios are daily from local household surveys, often cannot be applied to very specific land uses, and do not include non-resident drivers (draft SANDAG *Analysis of Trip Diversion*, revised November, 1990):
PRIMARY - one trip directly between origin and primary destination.
DIVERTED - linked trip (having one or more stops along the way to a primary destination) whose distance compared to direct distance ≥ 1 mile.
PASS-BY - undiverted or diverted < 1 mile.

[L] Trip lengths are average weighted for all trips to and from general land use site. (All trips system-wide average length = 6.9 miles)

[C] Fitted curve equation: $Ln(T) = 0.502\ Ln(x) + 6.945$

[O] Fitted curve equation: $Ln(T) = 0.756\ Ln(x) + 3.950$ } T = total trips, x = 1,000 sq. ft.

[R] Fitted curve equation: $t = -2.169\ Ln(d) + 12.85$ t = trips/DU, d = density (DU/acre), DU = dwelling unit

[S] Suggested PASS-BY [undiverted or diverted < 1 mile] percentages for trip rate reductions only during P.M. peak period (based on combination of local data/review and Other sources**):

COMMERCIAL/RETAIL	
Regional Shopping Center	20%
Community " "	30%
Neighborhood " "	40%
Specialty Retail/Strip Commercial (other)	10%
Supermarket	40%
Convenience Market	50%
Discount Club/Store	30%
FINANCIAL	
Bank	25%
AUTOMOBILE	
Gasoline Station	50%
RESTAURANT	
Quality	10%
Sit-down high turnover	20%
Fast Food	40%

[T] Trip Reductions - In order to help promote regional "smart growth" policies, and acknowledge San Diego's expanding mass transit system, consider vehicle trip rate reductions (with proper documentation and necessary adjustments for peak periods). The following are some examples:

[1] A 5% daily trip reduction for land uses with transit access or near transit stations accessible within 1/4 mile.

[2] Up to 10% daily trip reduction for mixed-use developments where residential and commercial retail are combined (demonstrate mode split of walking trips to replace vehicular trips).

Growth multiplier factors

streets	*full period growth 2008-2035*	*yrs 2008-2035*	*per year*	*perc. Growth 2014-2017*	*2017 percent over base*	*2017 mult. factor*
generally	145%	27	1.68%	5.03%	105.033%	**1.05033**

Growth multiplier factors

streets	*full period growth 2008-2035*	*yrs 2008-2035*	*per year*	*perc. Growth 2014-2035*	*BO percent over base*	*BO mult. factor*
generally	145%	27	1.68%	35.23%	135.233%	**1.35233**

APPENDIX C

TRAFFIC COUNT DATA

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:
1/23/14
THURSDAY

LOCATION: LAKESIDE
NORTH & SOUTH: LAKE JENNINGS
EAST & WEST: EL MONTE

PROJECT #: PTD14-0124-01
LOCATION #: 1
CONTROL: 4-WAY STOP

NOTES:

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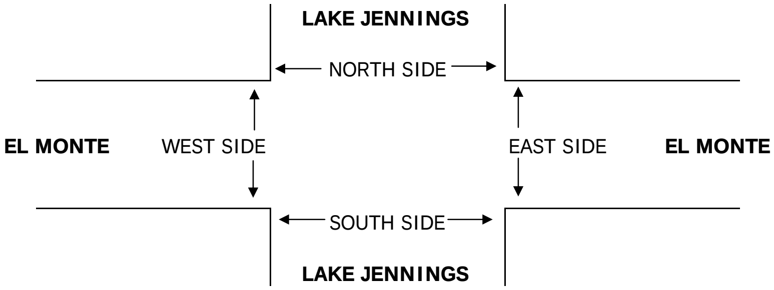
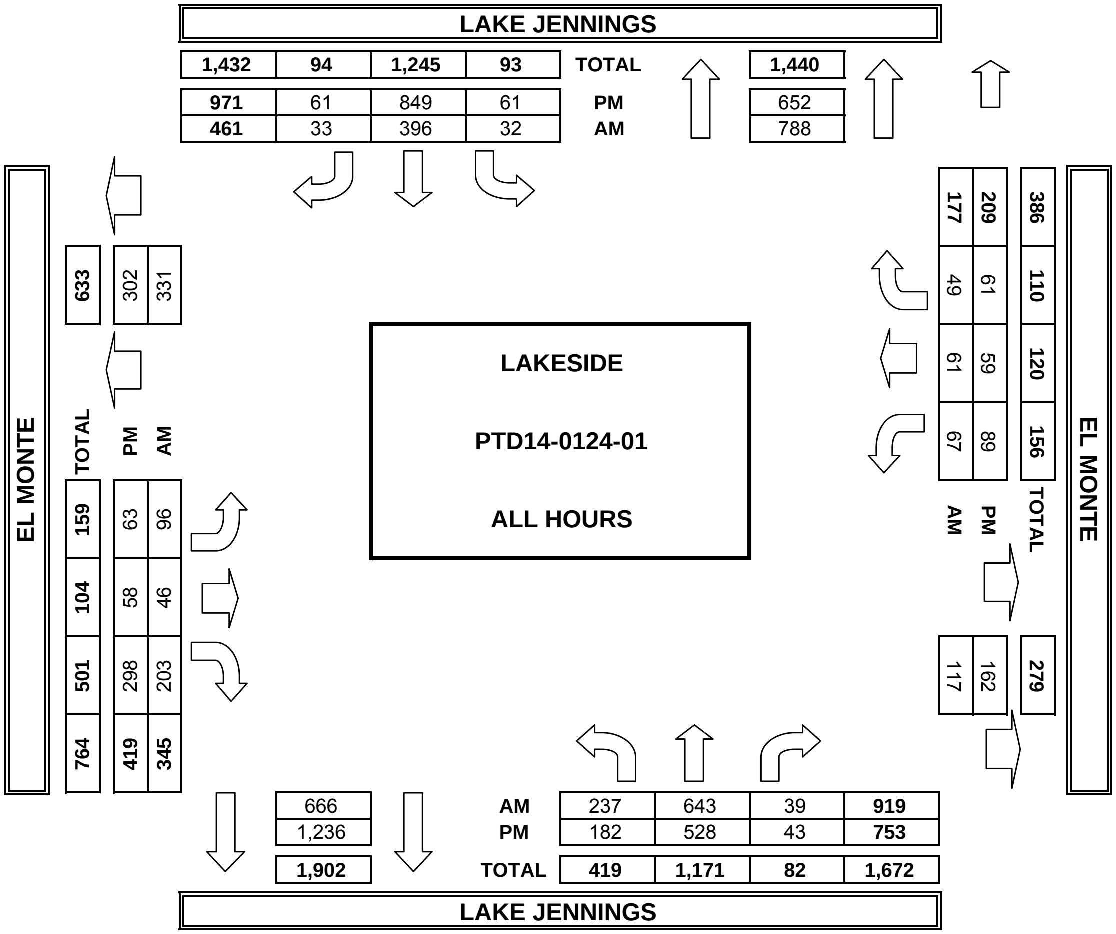
		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND				U-TURNS				
		LAKE JENNINGS			LAKE JENNINGS			EL MONTE			EL MONTE								
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL
	LANES:	1	1	0	1	2	0	0	1	1	0	1	1		X	X	X	X	
AM	7:00 AM	27	80	3	4	51	4	20	7	26	13	10	4	249					0
	7:15 AM	46	105	8	4	52	5	16	7	18	9	9	5	284					0
	7:30 AM	22	106	4	6	54	2	11	7	29	5	11	9	266					0
	7:45 AM	42	102	7	3	41	5	10	5	23	7	7	5	257					0
	8:00 AM	35	73	3	3	47	3	4	6	32	15	7	6	234					0
	8:15 AM	29	61	5	3	56	12	13	5	27	6	7	7	231					0
	8:30 AM	19	63	6	6	51	1	11	4	26	10	6	9	212					0
	8:45 AM	17	53	3	3	44	1	11	5	22	2	4	4	169					0
	VOLUMES	237	643	39	32	396	33	96	46	203	67	61	49	1,902	0	0	0	0	0
	APPROACH %	26%	70%	4%	7%	86%	7%	28%	13%	59%	38%	34%	28%						
	APP/DEPART	919	/	788	461	/	666	345	/	117	177	/	331	0					
	BEGIN PEAK HR		7:00 AM																
	VOLUMES	137	393	22	17	198	16	57	26	96	34	37	23	1,056					
	APPROACH %	25%	71%	4%	7%	86%	7%	32%	15%	54%	36%	39%	24%						
	PEAK HR FACTOR		0.868			0.931			0.844			0.870		0.930					
	APP/DEPART	552	/	473	231	/	328	179	/	65	94	/	190	0					
PM	4:00 PM	28	63	8	9	101	6	7	11	41	10	3	10	297					0
	4:15 PM	36	72	4	5	98	7	6	10	32	12	5	4	291					0
	4:30 PM	19	75	5	9	108	7	5	5	39	7	6	7	292					0
	4:45 PM	20	65	5	5	109	9	11	7	35	5	10	5	286					0
	5:00 PM	23	58	7	10	113	4	10	12	55	20	7	3	322					0
	5:15 PM	22	72	5	3	108	8	10	8	34	10	10	14	304					0
	5:30 PM	19	72	4	5	111	12	10	4	34	16	10	5	302					0
	5:45 PM	15	51	5	15	101	8	4	1	28	9	8	13	258					0
	VOLUMES	182	528	43	61	849	61	63	58	298	89	59	61	2,352	0	0	0	0	0
	APPROACH %	24%	70%	6%	6%	87%	6%	15%	14%	71%	43%	28%	29%						
	APP/DEPART	753	/	652	971	/	1,236	419	/	162	209	/	302	0					
	BEGIN PEAK HR		4:45 PM																
	VOLUMES	84	267	21	23	441	33	41	31	158	51	37	27	1,214					
	APPROACH %	23%	72%	6%	5%	89%	7%	18%	13%	69%	44%	32%	23%						
	PEAK HR FACTOR		0.939			0.971			0.747			0.846		0.943					
	APP/DEPART	372	/	335	497	/	650	230	/	75	115	/	154	0					

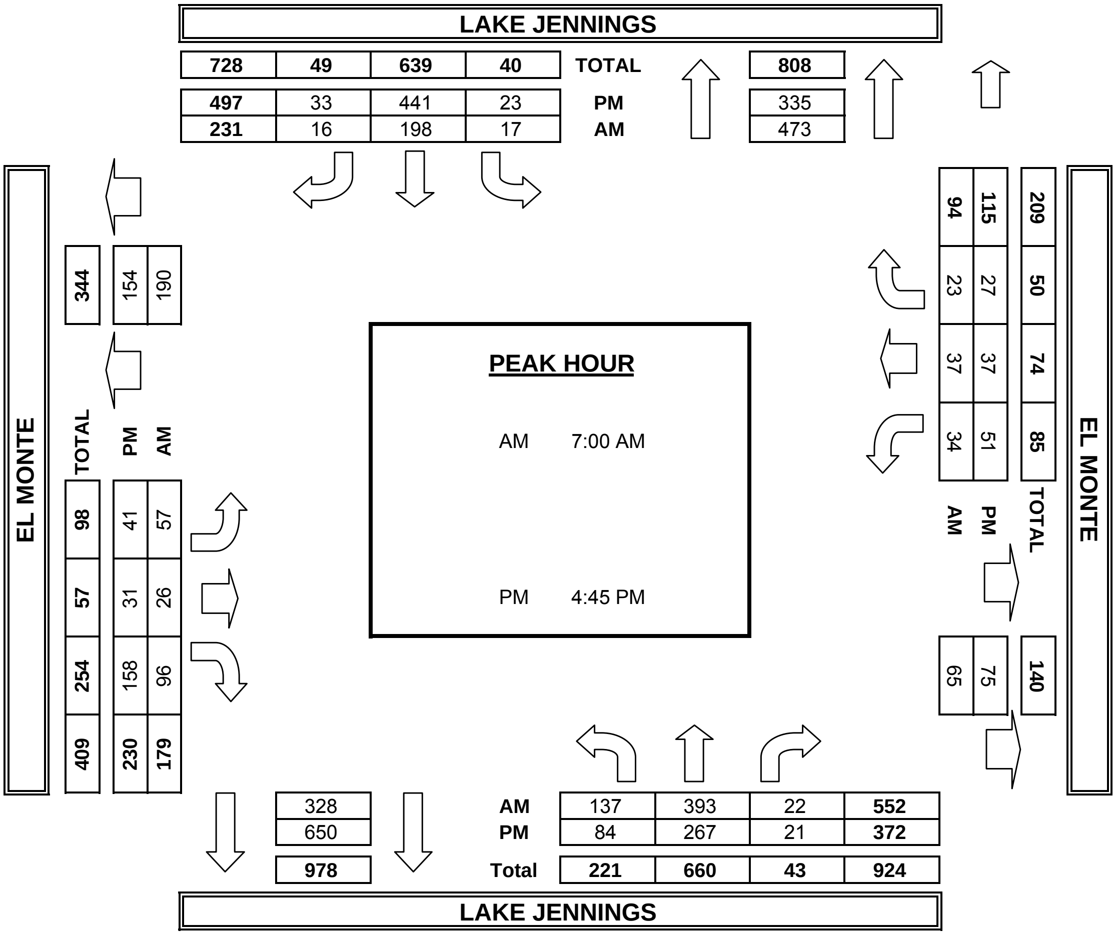


		PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM					0					0					0
	7:15 AM					0					0					0
	7:30 AM					0					0					0
	7:45 AM					0					0					0
	8:00 AM					0					0					0
	8:15 AM					0					0					0
	8:30 AM					0					0					0
	8:45 AM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM					0					0					0
	4:15 PM					0					0					0
	4:30 PM					0					0					0
	4:45 PM					0					0					0
	5:00 PM					0					0					0
	5:15 PM					0					0					0
	5:30 PM					0					0					0
	5:45 PM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PACIFIC TECHNICAL DATA

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:
1/23/14
THURSDAY

LOCATION: LAKESIDE
NORTH & SOUTH: LAKE JENNINGS
EAST & WEST: HARRITT

PROJECT #: PTD14-0124-01
LOCATION #: 2
CONTROL: SIGNAL

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		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
			LAKE JENNINGS			LAKE JENNINGS			HARRITT			HARRITT		
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	LANES:	X	1	1	1	1	X	X	X	X	0.5	X	0.5	
AM	7:00 AM		102	7	3	95					20		12	239
	7:15 AM		148	4	3	82					22		5	264
	7:30 AM		128	10	2	88					30		12	270
	7:45 AM		129	7	6	70					20		6	238
	8:00 AM		98	17	6	89					24		7	241
	8:15 AM		80	10	4	84					27		5	210
	8:30 AM		92	11	3	92					24		7	229
	8:45 AM		65	15	4	60					26		5	175
	VOLUMES	0	842	81	31	660	0	0	0	0	193	0	59	1,866
	APPROACH %	0%	91%	9%	4%	96%	0%	0%	0%	0%	77%	0%	23%	
	APP/DEPART	923	/	901	691	/	853	0	/	112	252	/	0	0
	BEGIN PEAK HR		7:15 AM											
	VOLUMES	0	503	38	17	329	0	0	0	0	96	0	30	1,013
	APPROACH %	0%	93%	7%	5%	95%	0%	0%	0%	0%	76%	0%	24%	
	PEAK HR FACTOR		0.890			0.911			0.000			0.750		0.938
	APP/DEPART	541	/	533	346	/	425	0	/	55	126	/	0	0
PM	4:00 PM		96	6	13	130					20		6	271
	4:15 PM		116	19	9	140					15		8	307
	4:30 PM		97	27	10	152					11		5	302
	4:45 PM		90	23	7	138					22		3	283
	5:00 PM		83	27	10	172					21		5	318
	5:15 PM		106	23	16	144					22		7	318
	5:30 PM		76	21	12	148					15		6	278
	5:45 PM		73	14	10	136					14		8	255
	VOLUMES	0	737	160	87	1,160	0	0	0	0	140	0	48	2,332
	APPROACH %	0%	82%	18%	7%	93%	0%	0%	0%	0%	74%	0%	26%	
	APP/DEPART	897	/	785	1,247	/	1,300	0	/	247	188	/	0	0
	BEGIN PEAK HR		4:30 PM											
	VOLUMES	0	376	100	43	606	0	0	0	0	76	0	20	1,221
	APPROACH %	0%	79%	21%	7%	93%	0%	0%	0%	0%	79%	0%	21%	
	PEAK HR FACTOR		0.922			0.891			0.000			0.828		0.960
	APP/DEPART	476	/	396	649	/	682	0	/	143	96	/	0	0

U-TURNS				
NB	SB	EB	WB	TTL
X	X	X	X	
				0
				0
				0
				0
				0
				0
				0
				0
0	0	0	0	0
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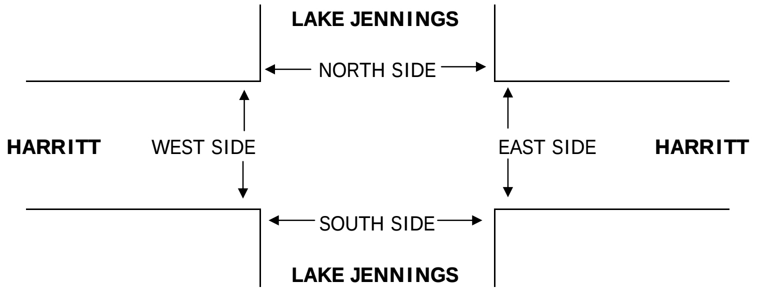
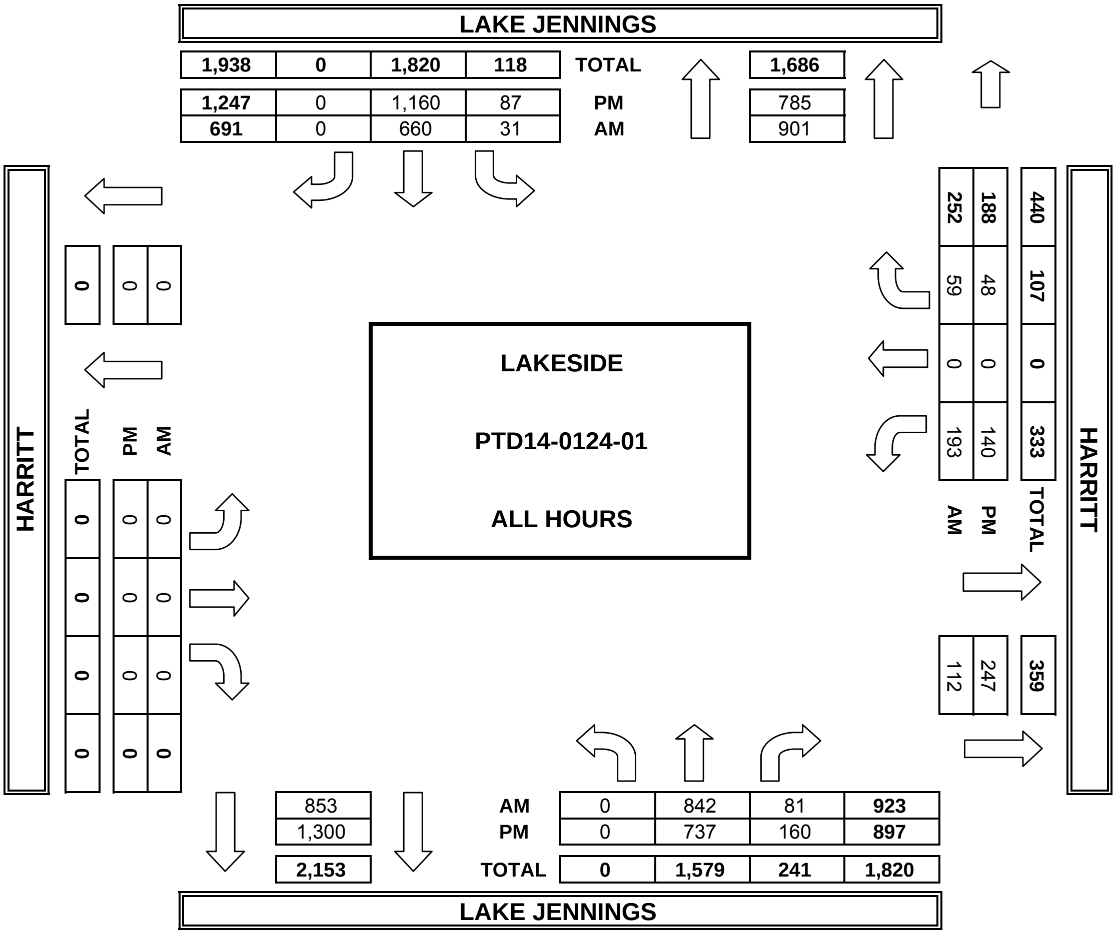
				0
0	0	0	0	0

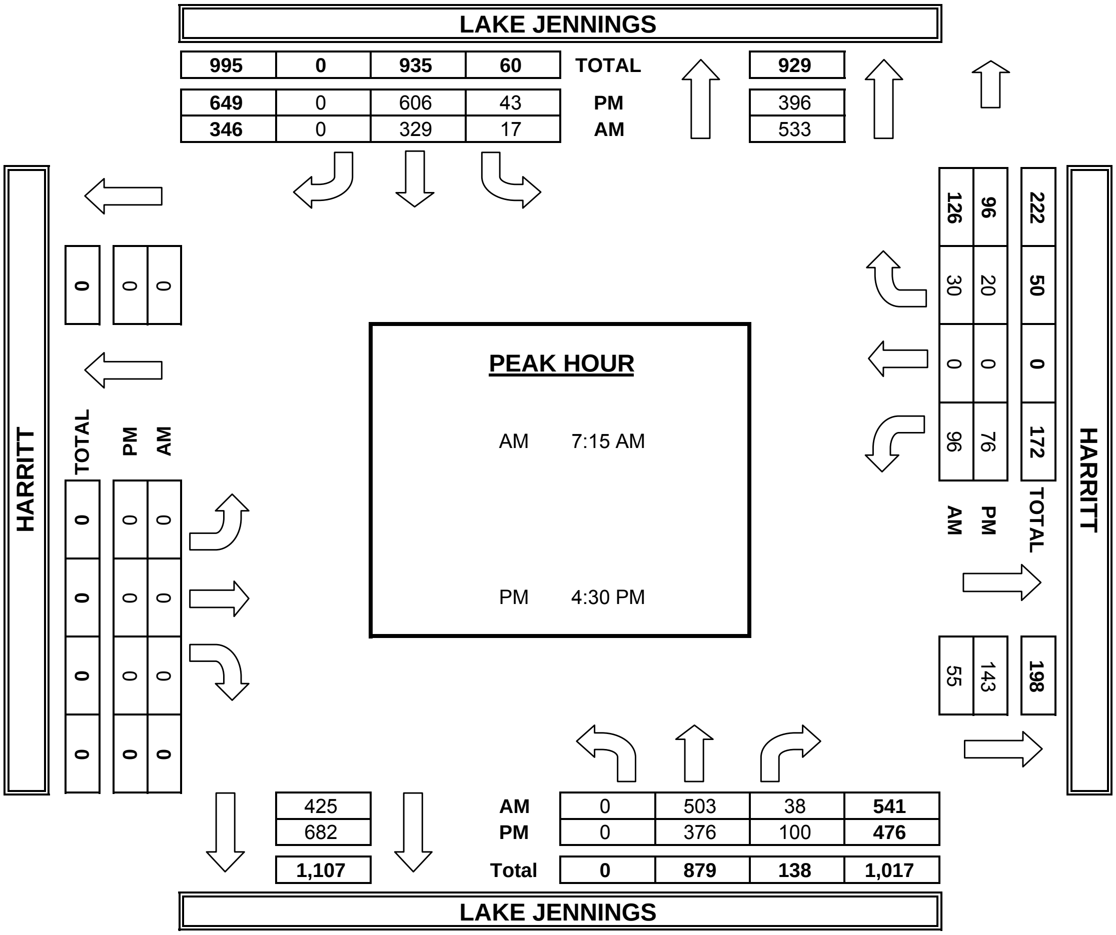


		PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM					0					0					0
	7:15 AM					0					0					0
	7:30 AM					0					0					0
	7:45 AM					0					0					0
	8:00 AM					0					0					0
	8:15 AM					0					0					0
	8:30 AM					0					0					0
	8:45 AM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM					0					0					0
	4:15 PM					0					0					0
	4:30 PM					0					0					0
	4:45 PM					0					0					0
	5:00 PM					0					0					0
	5:15 PM					0					0					0
	5:30 PM					0					0					0
	5:45 PM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PACIFIC TECHNICAL DATA

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:
1/23/14
THURSDAY

LOCATION:	LAKESIDE	PROJECT #:	PTD14-0124-01
NORTH & SOUTH:	LAKE JENNINGS	LOCATION #:	3
EAST & WEST:	BLOSSOM VALLEY	CONTROL:	SIGNAL

NOTES:

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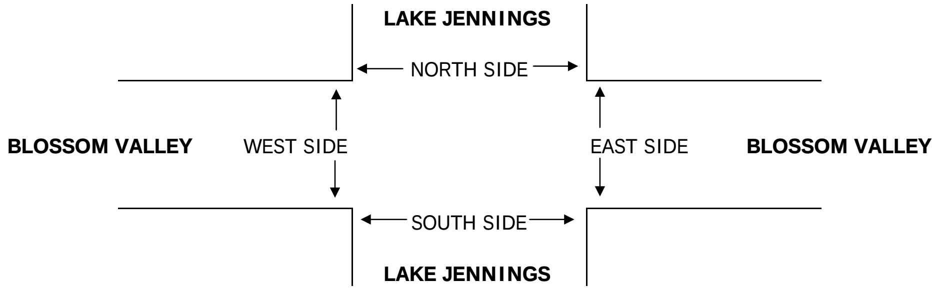
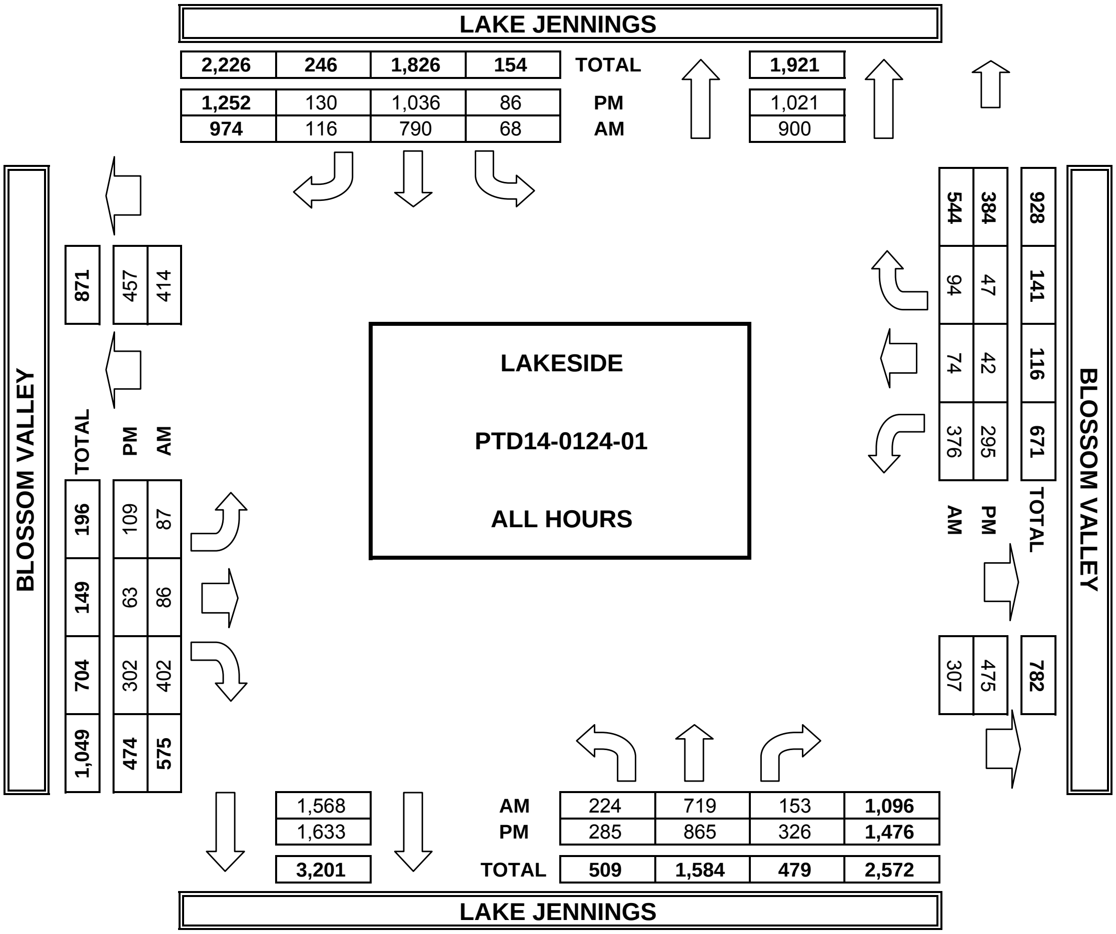
		NORTHBOUND LAKE JENNINGS			SOUTHBOUND LAKE JENNINGS			EASTBOUND BLOSSOM VALLEY			WESTBOUND BLOSSOM VALLEY				U-TURNS				
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL
	LANES:	1	1	0	1	1	1	0.5	0.5	1	0	1	0		X	X	X	X	
AM	7:00 AM	20	91	13	4	114	16	10	7	47	45	1	11	379					0
	7:15 AM	23	101	12	6	98	17	20	14	53	60	9	14	427					0
	7:30 AM	33	116	14	17	118	11	10	26	58	58	7	10	478					0
	7:45 AM	24	109	28	9	83	10	11	21	48	64	16	17	440					0
	8:00 AM	25	87	27	13	104	16	7	4	47	44	22	18	414					0
	8:15 AM	32	72	23	4	102	15	13	4	45	42	8	11	371					0
	8:30 AM	26	78	16	9	101	17	8	6	69	31	5	10	376					0
	8:45 AM	41	65	20	6	70	14	8	4	35	32	6	3	304					0
	VOLUMES	224	719	153	68	790	116	87	86	402	376	74	94	3,189	0	0	0	0	0
	APPROACH %	20%	66%	14%	7%	81%	12%	15%	15%	70%	69%	14%	17%						
	APP/DEPART	1,096	/	900	974	/	1,568	575	/	307	544	/	414	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	105	413	81	45	403	54	48	65	206	226	54	59	1,759					
	APPROACH %	18%	69%	14%	9%	80%	11%	15%	20%	65%	67%	16%	17%						
	PEAK HR FACTOR		0.919			0.860			0.848			0.874		0.920					
	APP/DEPART	599	/	520	502	/	835	319	/	191	339	/	213	0					
PM	4:00 PM	46	105	40	3	115	13	24	10	39	34	8	9	446					0
	4:15 PM	38	123	49	17	129	13	18	9	41	37	4	4	482					0
	4:30 PM	29	112	44	12	129	21	15	8	40	39	6	3	458					0
	4:45 PM	31	122	45	13	125	22	16	9	43	41	9	4	480					0
	5:00 PM	38	113	38	10	153	15	12	6	39	41	5	4	474					0
	5:15 PM	37	111	32	11	136	16	10	7	40	39	5	5	449					0
	5:30 PM	42	94	38	13	123	18	8	7	27	26	3	10	409					0
	5:45 PM	24	85	40	7	126	12	6	7	33	38	2	8	388					0
	VOLUMES	285	865	326	86	1,036	130	109	63	302	295	42	47	3,586	0	0	0	0	0
	APPROACH %	19%	59%	22%	7%	83%	10%	23%	13%	64%	77%	11%	12%						
	APP/DEPART	1,476	/	1,021	1,252	/	1,633	474	/	475	384	/	457	0					
	BEGIN PEAK HR		4:15 PM																
	VOLUMES	136	470	176	52	536	71	61	32	163	158	24	15	1,894					
	APPROACH %	17%	60%	23%	8%	81%	11%	24%	13%	64%	80%	12%	8%						
	PEAK HR FACTOR		0.931			0.926			0.941			0.912		0.982					
	APP/DEPART	782	/	546	659	/	857	256	/	260	197	/	231	0					



		PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM					0					0					0
	7:15 AM					0					0					0
	7:30 AM					0					0					0
	7:45 AM					0					0					0
	8:00 AM					0					0					0
	8:15 AM					0					0					0
	8:30 AM					0					0					0
	8:45 AM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM					0					0					0
	4:15 PM					0					0					0
	4:30 PM					0					0					0
	4:45 PM					0					0					0
	5:00 PM					0					0					0
	5:15 PM					0					0					0
	5:30 PM					0					0					0
	5:45 PM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PACIFIC TECHNICAL DATA

TURNING MOVEMENT COUNTS



LAKESIDE

PTD14-0124-01

ALL HOURS

LAKE JENNINGS

2,226	**246**	**1,826**	**154**	**TOTAL**		**1,921**
1,252	130	1,036	86	**PM**		1,021
974	116	790	68	**AM**		900

BLOSSOM VALLEY

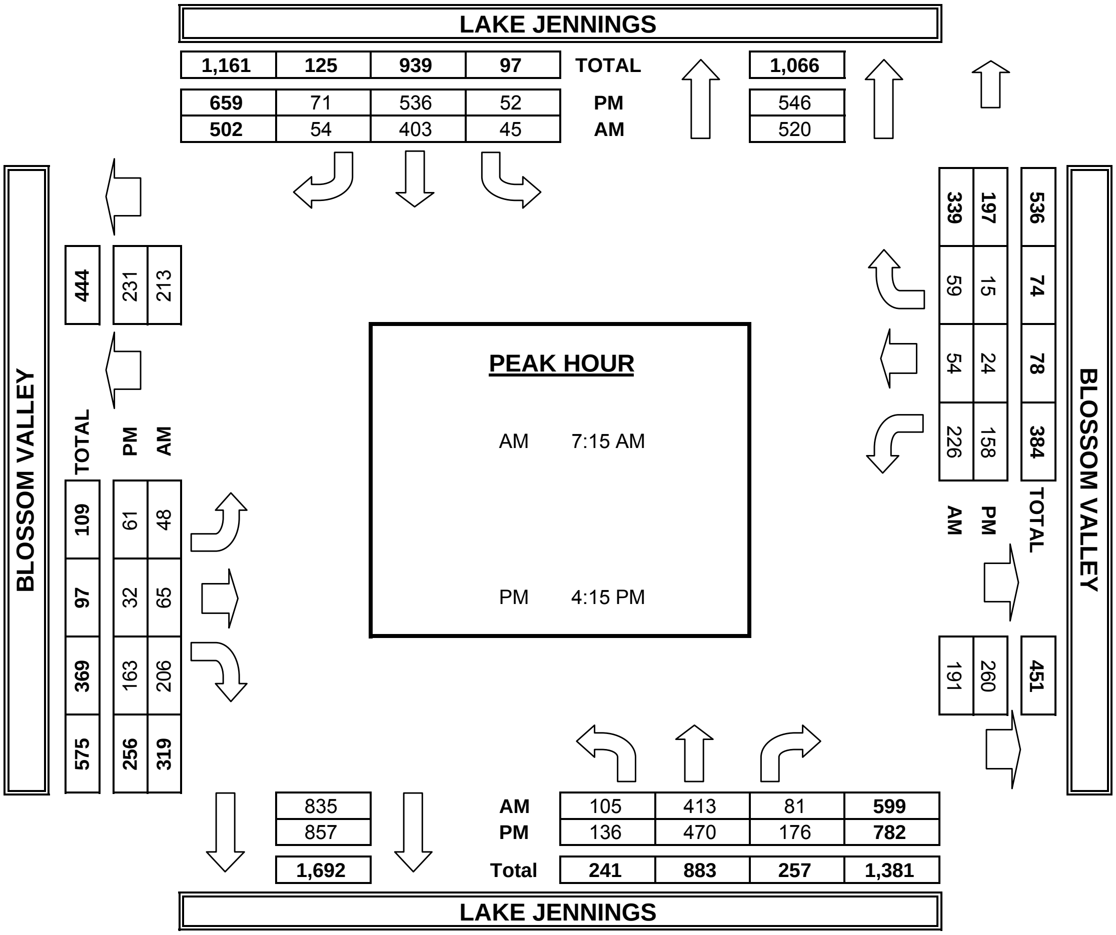
TOTAL	**871**	**196**	**149**	**704**	**1,049**
PM	457	109	63	302	**474**
AM	414	87	86	402	**575**

BLOSSOM VALLEY

AM	**544**	94	74	376	307
PM	**384**	47	42	295	475
TOTAL	**928**	**141**	**116**	**671**	**782**

LAKE JENNINGS

1,568	**AM**	224	719	153	**1,096**
1,633	**PM**	285	865	326	**1,476**
3,201	**TOTAL**	**509**	**1,584**	**479**	**2,572**



PEAK HOUR

AM 7:15 AM

PM 4:15 PM

LAKE JENNINGS

1,161	**125**	**939**	**97**	**TOTAL**		**1,066**
659	71	536	52	**PM**		546
502	54	403	45	**AM**		520

BLOSSOM VALLEY

TOTAL	**444**	**109**	**97**	**369**	**575**
PM	231	61	32	163	**256**
AM	213	48	65	206	**319**

BLOSSOM VALLEY

AM	**339**	59	54	226	191
PM	**197**	15	24	158	260
TOTAL	**536**	**74**	**78**	**384**	**451**

LAKE JENNINGS

835	**AM**	105	413	81	**599**
857	**PM**	136	470	176	**782**
1,692	**Total**	**241**	**883**	**257**	**1,381**

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE: 1/23/14 THURSDAY	LOCATION:	LAKESIDE	PROJECT #:	PTD14-0124-01
	NORTH & SOUTH:	LAKE JENNINGS	LOCATION #:	4
	EAST & WEST:	I-8 WB RAMPS	CONTROL:	SIGNAL

NOTES:

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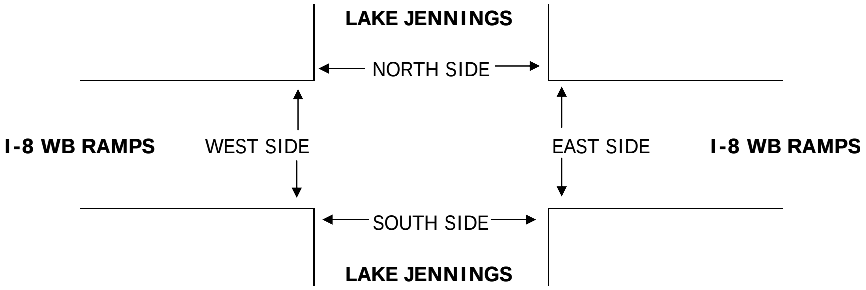
		NORTHBOUND LAKE JENNINGS			SOUTHBOUND LAKE JENNINGS			EASTBOUND I-8 WB RAMPS			WESTBOUND I-8 WB RAMPS			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	LANES:	X	1	1	X	1	1	X	X	X	1	X	1	
AM	7:00 AM		70	97		66	116				4		66	419
	7:15 AM		78	104		65	123				2		68	440
	7:30 AM		66	115		71	151				4		74	481
	7:45 AM		101	124		81	123				3		66	498
	8:00 AM		84	118		77	135				6		57	477
	8:15 AM		80	97		91	90				4		51	413
	8:30 AM		89	103		106	84				12		54	448
	8:45 AM		81	94		80	81				9		43	388
	VOLUMES	0	649	852	0	637	903	0	0	0	44	0	479	3,564
	APPROACH %	0%	43%	57%	0%	41%	59%	0%	0%	0%	8%	0%	92%	
	APP/DEPART	1,501	/	1,128	1,540	/	681	0	/	852	523	/	903	0
	BEGIN PEAK HR		7:15 AM											
	VOLUMES	0	329	461	0	294	532	0	0	0	15	0	265	1,896
	APPROACH %	0%	42%	58%	0%	36%	64%	0%	0%	0%	5%	0%	95%	
	PEAK HR FACTOR		0.878			0.930			0.000			0.897		0.952
	APP/DEPART	790	/	594	826	/	309	0	/	461	280	/	532	0
PM	4:00 PM		128	84		111	88				5		51	467
	4:15 PM		135	89		121	70				4		66	485
	4:30 PM		162	95		116	84				3		40	500
	4:45 PM		141	77		131	77				4		52	482
	5:00 PM		151	98		142	90				5		35	521
	5:15 PM		148	81		121	75				9		40	474
	5:30 PM		121	92		118	68				8		55	462
	5:45 PM		119	61		124	70				6		42	422
	VOLUMES	0	1,105	677	0	984	622	0	0	0	44	0	381	3,813
	APPROACH %	0%	62%	38%	0%	61%	39%	0%	0%	0%	10%	0%	90%	
	APP/DEPART	1,782	/	1,486	1,606	/	1,028	0	/	677	425	/	622	0
	BEGIN PEAK HR		4:15 PM											
	VOLUMES	0	589	359	0	510	321	0	0	0	16	0	193	1,988
	APPROACH %	0%	62%	38%	0%	61%	39%	0%	0%	0%	8%	0%	92%	
	PEAK HR FACTOR		0.922			0.895			0.000			0.746		0.954
	APP/DEPART	948	/	782	831	/	526	0	/	359	209	/	321	0

U-TURNS				
NB	SB	EB	WB	TTL
X	X	X	X	
				0
				0
				0
				0
				0
				0
				0
				0
0	0	0	0	0
				0
				0
				0
				0
				0
				0
				0
				0
0	0	0	0	0



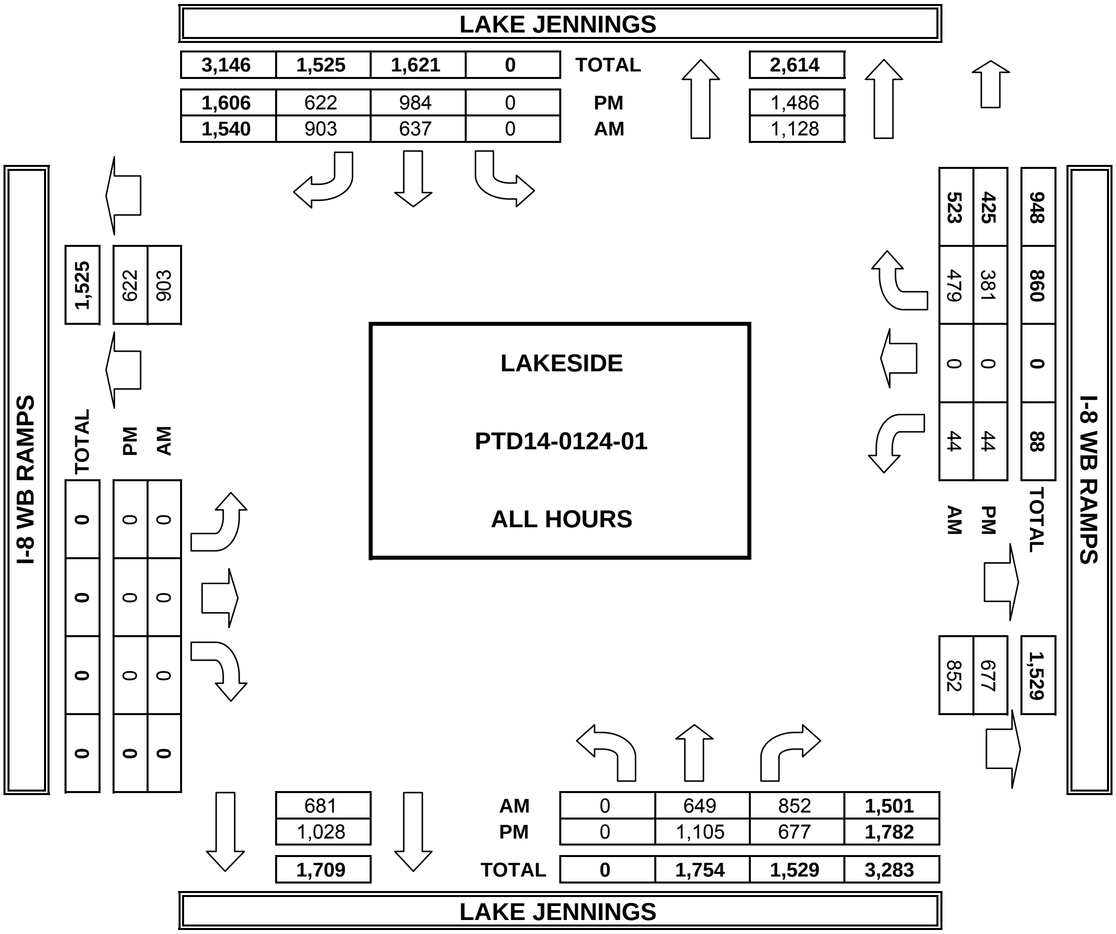
		PEDESTRIAN CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
AM	7:00 AM					0
	7:15 AM					0
	7:30 AM					0
	7:45 AM					0
	8:00 AM					0
	8:15 AM					0
	8:30 AM					0
	8:45 AM					0
	TOTAL	0	0	0	0	0
PM	4:00 PM					0
	4:15 PM					0
	4:30 PM					0
	4:45 PM					0
	5:00 PM					0
	5:15 PM					0
	5:30 PM					0
	5:45 PM					0
	TOTAL	0	0	0	0	0

PEDESTRIAN ACTIVATIONS				
N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
				0
				0
				0
				0
				0
				0
				0
				0
0	0	0	0	0
				0
				0
				0
				0
				0
				0
				0
				0
0	0	0	0	0

BICYCLE CROSSINGS				
NS	SS	ES	WS	TOTAL
				0
				0
				0
				0
				0
				0
				0
				0
0	0	0	0	0
				0
				0
				0
				0
				0
				0
				0
				0
0	0	0	0	0

PACIFIC TECHNICAL DATA

TURNING MOVEMENT COUNTS



LAKESIDE

PTD14-0124-01

ALL HOURS

LAKE JENNINGS

3,146	**1,525**	**1,621**	**0**	**TOTAL**	**2,614**
1,606	622	984	0	**PM**	1,486
1,540	903	637	0	**AM**	1,128

I-8 WB RAMPS

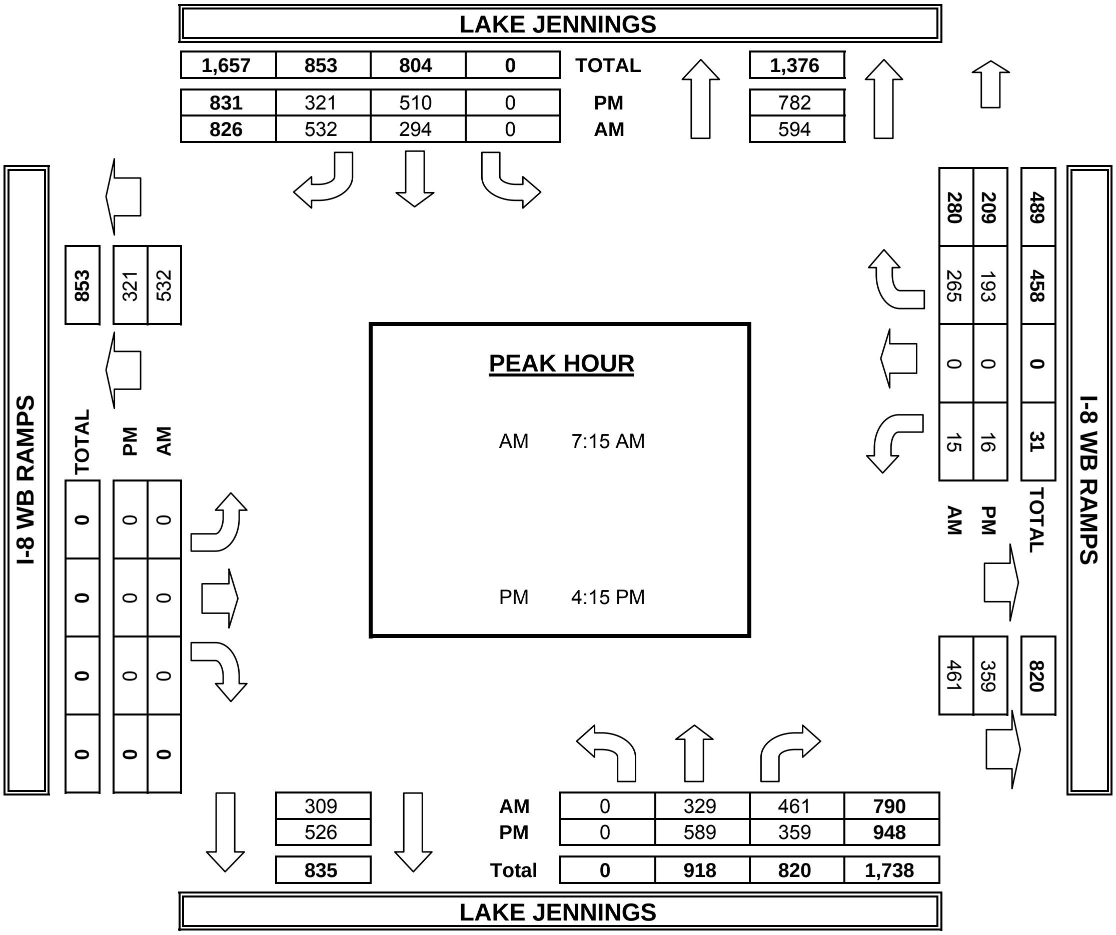
1,525	622	903
TOTAL	**PM**	**AM**
0	0	0
0	0	0
0	0	0
0	**0**	**0**

I-8 WB RAMPS

523	**425**	**948**
479	381	**860**
0	0	**0**
44	44	**88**
AM	**PM**	**TOTAL**
852	677	**1,529**

681	**AM**	0	649	852	**1,501**
1,028	**PM**	0	1,105	677	**1,782**
1,709	**TOTAL**	**0**	**1,754**	**1,529**	**3,283**

LAKE JENNINGS



PEAK HOUR

AM 7:15 AM

PM 4:15 PM

LAKE JENNINGS

1,657	**853**	**804**	**0**	**TOTAL**	**1,376**
831	321	510	0	**PM**	782
826	532	294	0	**AM**	594

I-8 WB RAMPS

853	321	532
TOTAL	**PM**	**AM**
0	0	0
0	0	0
0	0	0
0	**0**	**0**

I-8 WB RAMPS

280	**209**	**489**
265	193	**458**
0	0	**0**
15	16	**31**
AM	**PM**	**TOTAL**
461	359	**820**

309	**AM**	0	329	461	**790**
526	**PM**	0	589	359	**948**
835	**Total**	**0**	**918**	**820**	**1,738**

LAKE JENNINGS

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:
1/23/14
THURSDAY

LOCATION: LAKESIDE
NORTH & SOUTH: LAKE JENNINGS
EAST & WEST: OLDE HWY 80

PROJECT #: PTD14-0124-01
LOCATION #: 5
CONTROL: 4-WAY STOP

NOTES:

THE NB U-TURNS ARE THE VEHICLES GOING ONTO THE I-8 EB ON RAMP

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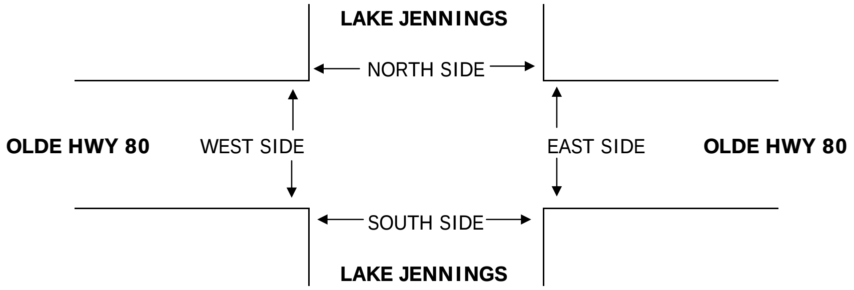
		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
		LAKE JENNINGS			LAKE JENNINGS			OLDE HWY 80			OLDE HWY 80			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	LANES:	X	1	0	0	1	0	1	0.5	0.5	1	X	1	
AM	7:00 AM		11	3	27	3	35	32	44	2	1		132	290
	7:15 AM		29	4	26	7	33	27	57	2	0		157	342
	7:30 AM		14	14	34	1	54	44	72	3	2		137	375
	7:45 AM		12	10	30	2	31	54	76	2	4		146	367
	8:00 AM		8	1	45	4	25	56	57	1	9		116	322
	8:15 AM		19	10	36	4	58	40	55	2	4		104	332
	8:30 AM		15	7	42	6	64	39	77	4	9		142	405
	8:45 AM		9	5	39	4	47	31	68	3	5		146	357
	VOLUMES	0	117	54	279	31	347	323	506	19	34	0	1,080	2,790
	APPROACH %	0%	68%	32%	42%	5%	53%	38%	60%	2%	3%	0%	97%	
	APP/DEPART	171	/	1,520	657	/	84	848	/	839	1,114	/	347	0
	BEGIN PEAK HR		7:45 AM											
	VOLUMES	0	54	28	153	16	178	189	265	9	26	0	508	1,426
	APPROACH %	0%	66%	34%	44%	5%	51%	41%	57%	2%	5%	0%	95%	
	PEAK HR FACTOR		0.707			0.775			0.877			0.884		0.880
	APP/DEPART	82	/	751	347	/	51	463	/	446	534	/	178	0
PM	4:00 PM		13	17	44	5	64	71	111	33	6		121	485
	4:15 PM		6	2	53	4	61	110	117	4	8		121	486
	4:30 PM		7	7	46	7	66	116	132	10	5		137	533
	4:45 PM		6	2	51	5	78	95	110	8	6		123	484
	5:00 PM		5	4	47	12	77	102	105	12	8		118	490
	5:15 PM		13	6	45	3	92	100	106	7	6		124	502
	5:30 PM		8	6	44	8	66	101	86	5	4		122	450
	5:45 PM		4	4	63	6	56	89	81	8	6		80	397
	VOLUMES	0	62	48	393	50	560	784	848	87	49	0	946	3,827
	APPROACH %	0%	56%	44%	39%	5%	56%	46%	49%	5%	5%	0%	95%	
	APP/DEPART	110	/	1,792	1,003	/	186	1,719	/	1,289	995	/	560	0
	BEGIN PEAK HR		4:30 PM											
	VOLUMES	0	31	19	189	27	313	413	453	37	25	0	502	2,009
	APPROACH %	0%	62%	38%	36%	5%	59%	46%	50%	4%	5%	0%	95%	
	PEAK HR FACTOR		0.658			0.945			0.875			0.928		0.942
	APP/DEPART	50	/	946	529	/	89	903	/	661	527	/	313	0

	U-TURNS				
	NB	SB	EB	WB	TTL
	X	X	X	X	
7:00 AM	3				3
7:15 AM	8				8
7:30 AM	8				8
7:45 AM	3				3
8:00 AM	8				8
8:15 AM	8				8
8:30 AM	25				25
8:45 AM	12				12
VOLUMES	75	0	0	0	75
4:00 PM	8				8
4:15 PM	7				7
4:30 PM	9				9
4:45 PM	13				13
5:00 PM	8				8
5:15 PM	15				15
5:30 PM	14				14
5:45 PM	9				9
VOLUMES	83	0	0	0	83



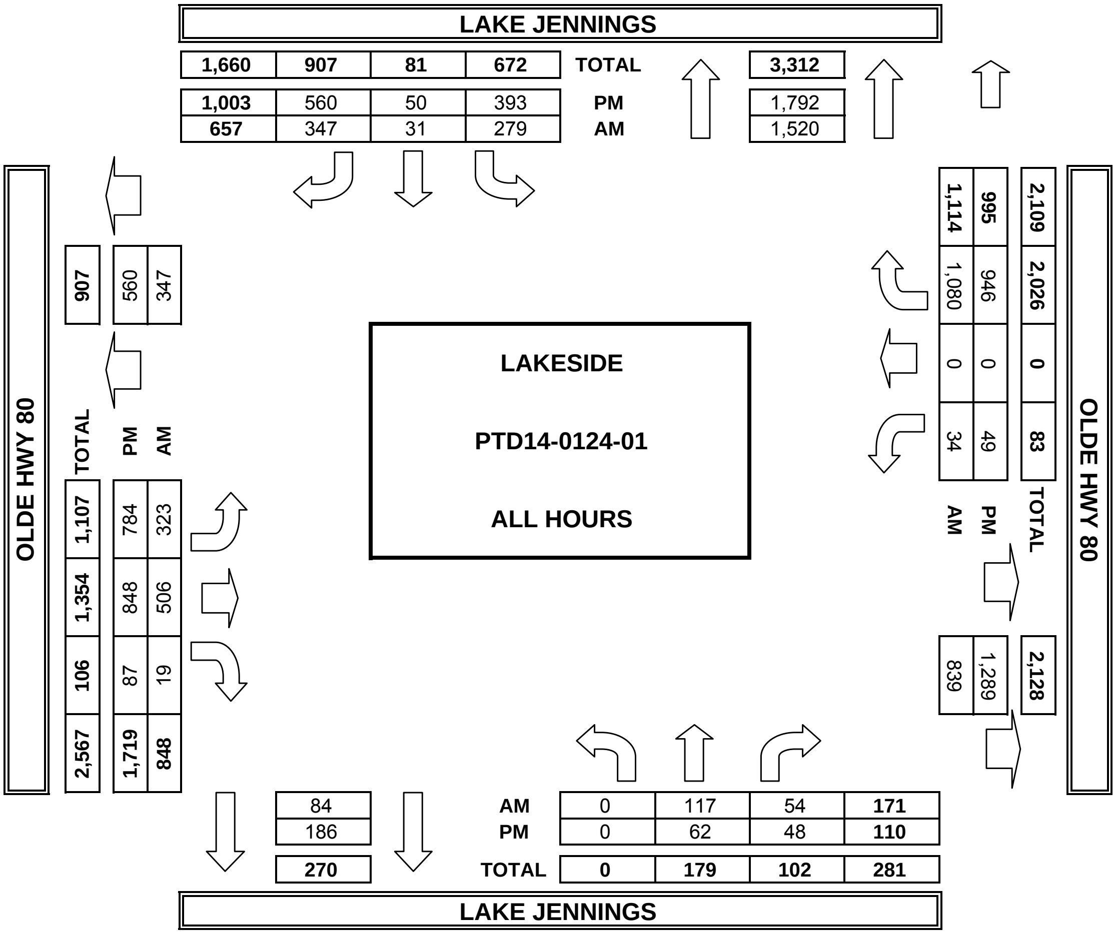
		PEDESTRIAN CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
AM	7:00 AM					0
	7:15 AM					0
	7:30 AM					0
	7:45 AM					0
	8:00 AM					0
	8:15 AM					0
	8:30 AM					0
	8:45 AM					0
	TOTAL	0	0	0	0	0
PM	4:00 PM					0
	4:15 PM					0
	4:30 PM					0
	4:45 PM					0
	5:00 PM					0
	5:15 PM					0
	5:30 PM					0
	5:45 PM					0
	TOTAL	0	0	0	0	0

		PEDESTRIAN ACTIVATIONS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
AM	7:00 AM					0
	7:15 AM					0
	7:30 AM					0
	7:45 AM					0
	8:00 AM					0
	8:15 AM					0
	8:30 AM					0
	8:45 AM					0
	TOTAL	0	0	0	0	0
PM	4:00 PM					0
	4:15 PM					0
	4:30 PM					0
	4:45 PM					0
	5:00 PM					0
	5:15 PM					0
	5:30 PM					0
	5:45 PM					0
	TOTAL	0	0	0	0	0

		BICYCLE CROSSINGS				
		NS	SS	ES	WS	TOTAL
AM	7:00 AM					0
	7:15 AM					0
	7:30 AM					0
	7:45 AM					0
	8:00 AM					0
	8:15 AM					0
	8:30 AM					0
	8:45 AM					0
	TOTAL	0	0	0	0	0
PM	4:00 PM					0
	4:15 PM					0
	4:30 PM					0
	4:45 PM					0
	5:00 PM					0
	5:15 PM					0
	5:30 PM					0
	5:45 PM					0
	TOTAL	0	0	0	0	0

PACIFIC TECHNICAL DATA

TURNING MOVEMENT COUNTS



LAKE JENNINGS

1,660	907	81	672	TOTAL	3,312
1,003	560	50	393	PM	1,792
657	347	31	279	AM	1,520

OLDE HWY 80

TOTAL	907	1,107	1,354	106	2,567
PM	560	784	848	87	1,719
AM	347	323	506	19	848

LAKESIDE

PTD14-0124-01

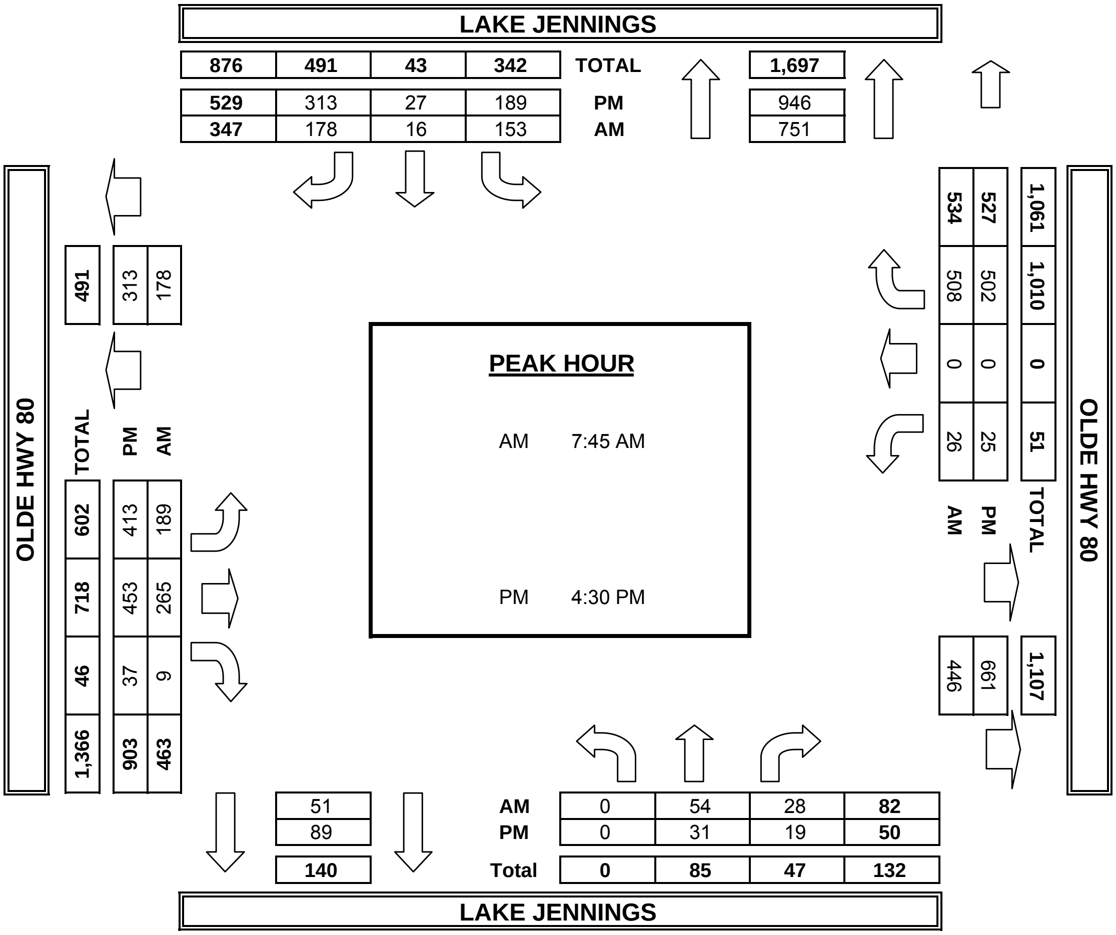
ALL HOURS

OLDE HWY 80

AM	1,114	1,080	0	34	839
PM	995	946	0	49	1,289
TOTAL	2,109	2,026	0	83	2,128

84	AM	0	117	54	171
186	PM	0	62	48	110
270	TOTAL	0	179	102	281

LAKE JENNINGS



LAKE JENNINGS

876	491	43	342	TOTAL	1,697
529	313	27	189	PM	946
347	178	16	153	AM	751

OLDE HWY 80

TOTAL	491	602	718	46	1,366
PM	313	413	453	37	903
AM	178	189	265	9	463

PEAK HOUR

AM 7:45 AM

PM 4:30 PM

OLDE HWY 80

AM	534	508	0	26	446
PM	527	502	0	25	661
TOTAL	1,061	1,010	0	51	1,107

51	AM	0	54	28	82
89	PM	0	31	19	50
140	Total	0	85	47	132

LAKE JENNINGS

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE: 1/23/14 THURSDAY	LOCATION:	LAKESIDE	PROJECT #:	PTD14-0124-01
	NORTH & SOUTH:	PECAN PARK WEST	LOCATION #:	6
	EAST & WEST:	OLDE HWY 80	CONTROL:	1-WAY STOP (NB)

NOTES:

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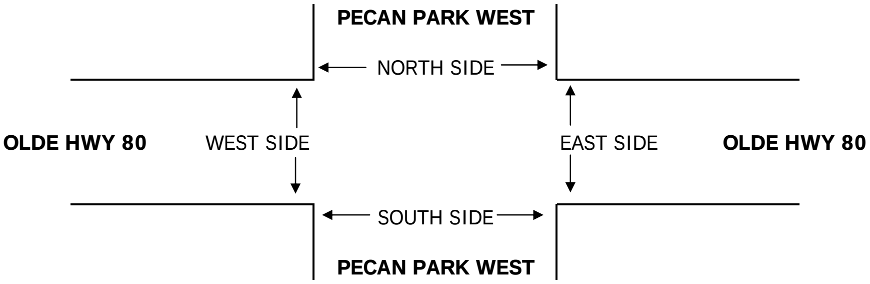
		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
		PECAN PARK WEST			PECAN PARK WEST			OLDE HWY 80			OLDE HWY 80			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	LANES:	0	1	0	X	X	X	X	1	0	1	1	X	
AM	7:00 AM	29	0	0					69	9	0	88		195
	7:15 AM	29	0	0					66	12	0	128		235
	7:30 AM	35	0	0					83	9	2	106		235
	7:45 AM	23	0	1					93	16	1	107		241
	8:00 AM	23	0	0					83	15	1	118		240
	8:15 AM	25	0	0					66	32	1	69		193
	8:30 AM	50	0	0					58	48	1	95		252
	8:45 AM	51	0	2					69	46	1	89		258
	VOLUMES	265	0	3	0	0	0	0	587	187	7	800	0	1,849
	APPROACH %	99%	0%	1%	0%	0%	0%	0%	76%	24%	1%	99%	0%	
	APP/DEPART	268	/	0	0	/	194	774	/	590	807	/	1,065	0
	BEGIN PEAK HR		7:15 AM											
	VOLUMES	110	0	1	0	0	0	0	325	52	4	459	0	951
	APPROACH %	99%	0%	1%	0%	0%	0%	0%	86%	14%	1%	99%	0%	
	PEAK HR FACTOR		0.793			0.000			0.865			0.904		0.987
	APP/DEPART	111	/	0	0	/	56	377	/	326	463	/	569	0
PM	4:00 PM	25	1	2					112	31	0	86		257
	4:15 PM	22	0	2					131	34	2	106		297
	4:30 PM	20	0	1					137	32	3	105		298
	4:45 PM	24	1	1					118	31	4	101		280
	5:00 PM	22	0	0					109	37	5	95		268
	5:15 PM	17	0	0					111	34	4	89		255
	5:30 PM	19	0	4					99	30	3	95		250
	5:45 PM	11	0	0					101	30	3	71		216
	VOLUMES	160	2	10	0	0	0	0	918	259	24	748	0	2,121
	APPROACH %	93%	1%	6%	0%	0%	0%	0%	78%	22%	3%	97%	0%	
	APP/DEPART	172	/	2	0	/	283	1,177	/	928	772	/	908	0
	BEGIN PEAK HR		4:15 PM											
	VOLUMES	88	1	4	0	0	0	0	495	134	14	407	0	1,143
	APPROACH %	95%	1%	4%	0%	0%	0%	0%	79%	21%	3%	97%	0%	
	PEAK HR FACTOR		0.894			0.000			0.930			0.975		0.959
	APP/DEPART	93	/	1	0	/	148	629	/	499	421	/	495	0

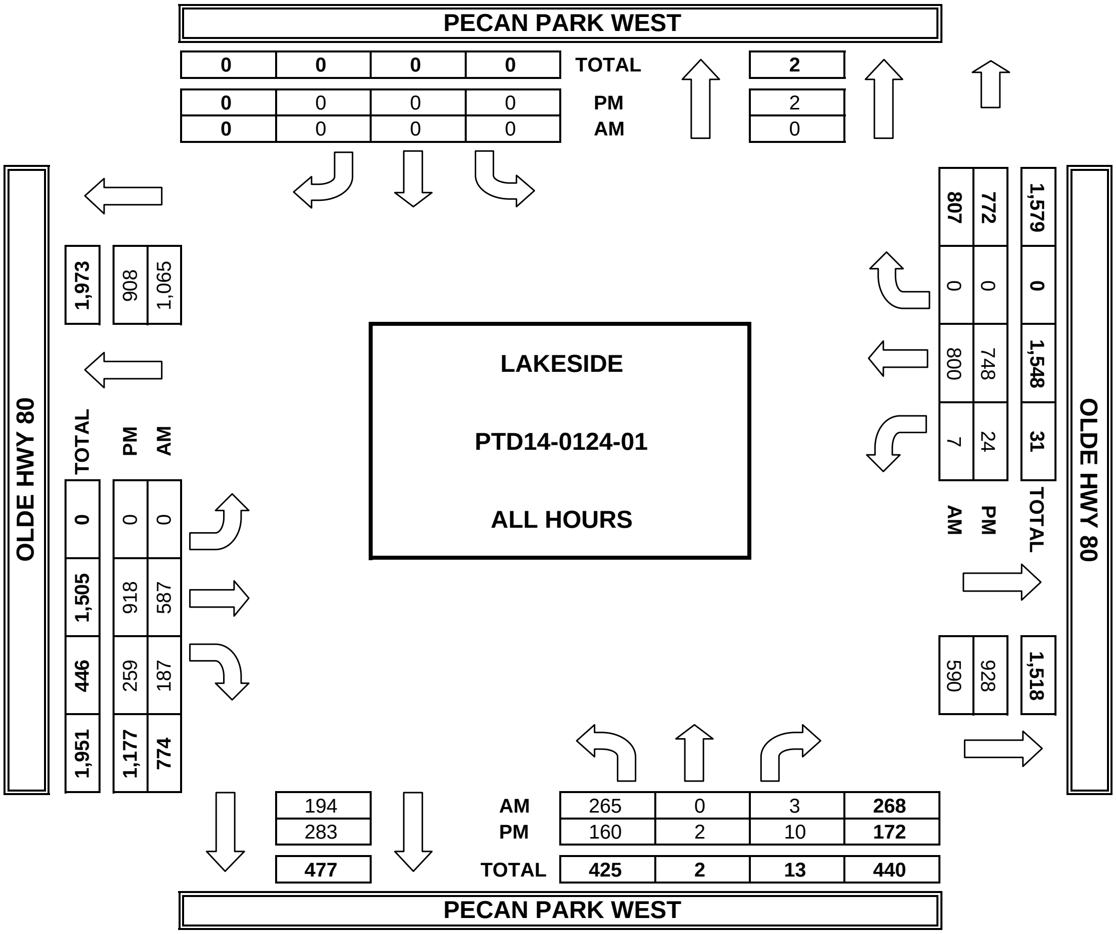
U-TURNS				
NB	SB	EB	WB	TTL
X	X	X	X	
				0
				0
				0
				0
				0
				0
				0
				0
0	0	0	0	0
				0
				0
				0
				0
				0
				0
				0
				0
0	0	0	0	0

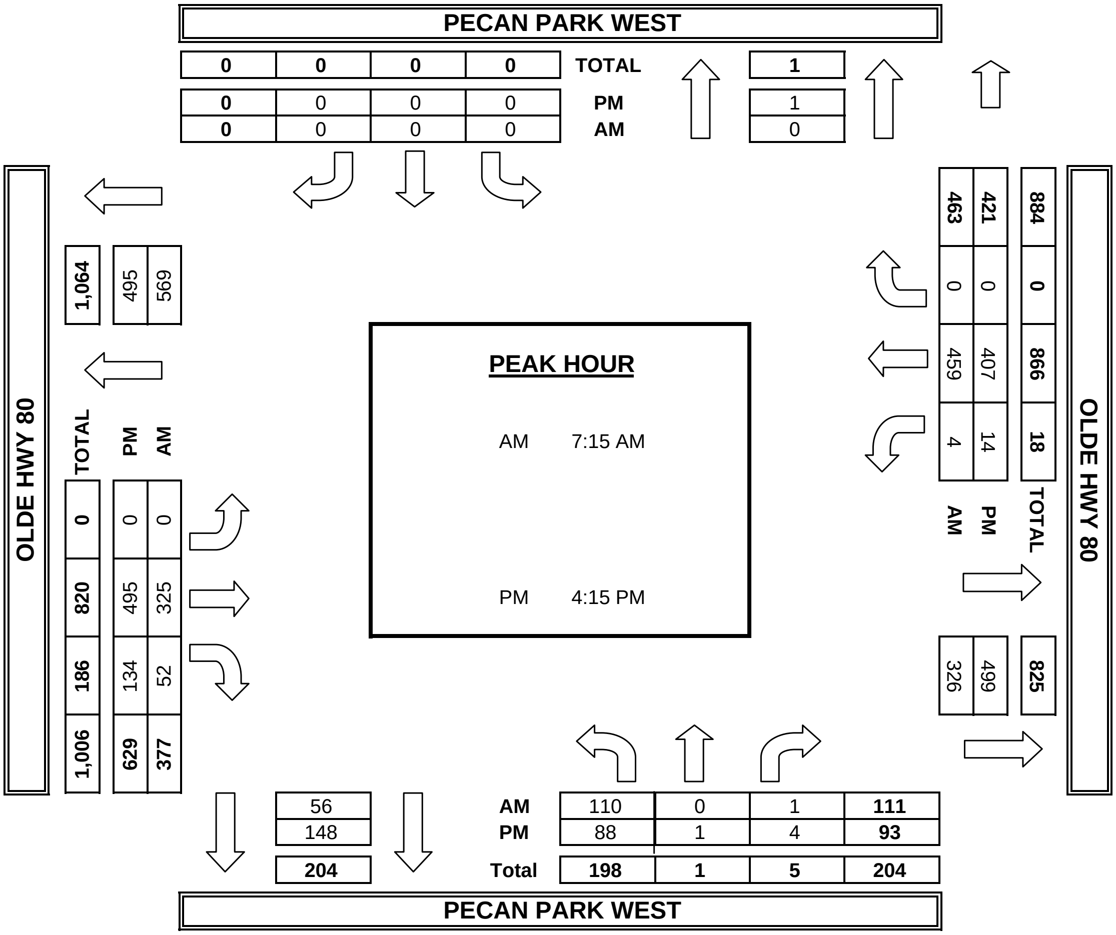


		PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM					0					0					0
	7:15 AM					0					0					0
	7:30 AM					0					0					0
	7:45 AM					0					0					0
	8:00 AM					0					0					0
	8:15 AM					0					0					0
	8:30 AM					0					0					0
	8:45 AM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM					0					0					0
	4:15 PM					0					0					0
	4:30 PM					0					0					0
	4:45 PM					0					0					0
	5:00 PM					0					0					0
	5:15 PM					0					0					0
	5:30 PM					0					0					0
	5:45 PM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PACIFIC TECHNICAL DATA

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE: 1/23/14 THURSDAY	LOCATION:	LAKESIDE	PROJECT #:	PTD14-0124-01
	NORTH & SOUTH:	PECAN PARK EAST	LOCATION #:	8
	EAST & WEST:	OLDE HWY 80	CONTROL:	1-WAY STOP (NB)

NOTES:

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PM
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OTHER

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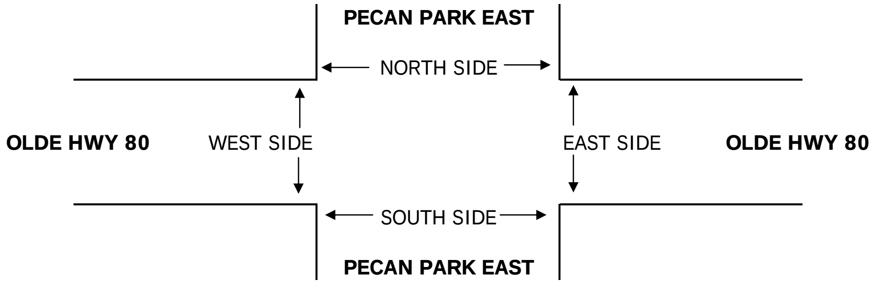
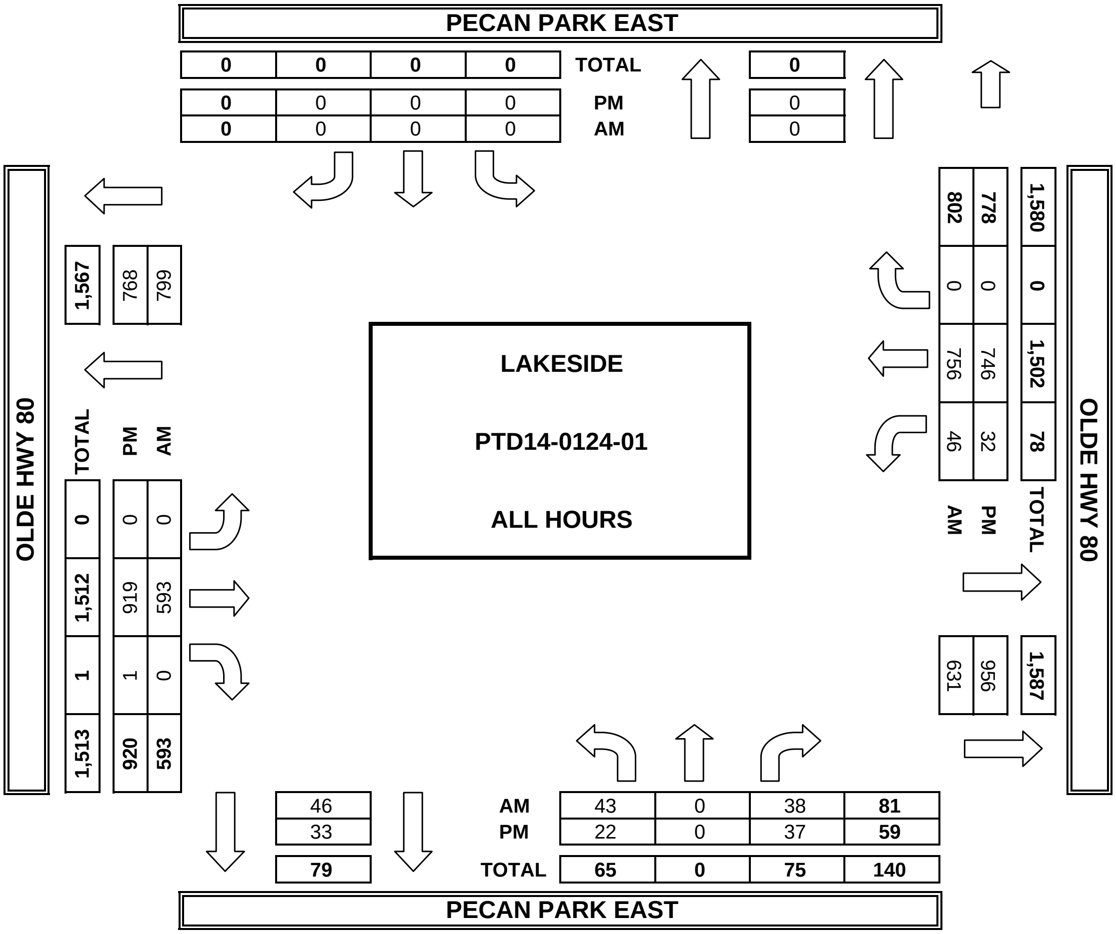
		NORTHBOUND PECAN PARK EAST			SOUTHBOUND PECAN PARK EAST			EASTBOUND OLDE HWY 80			WESTBOUND OLDE HWY 80				U-TURNS				
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL
	LANES:	0.5	X	0.5	X	X	X	X	1	0	1	1	X		X	X	X	X	
AM	7:00 AM	10		1					63	0	2	92		168					0
	7:15 AM	3		2					69	0	1	107		182					0
	7:30 AM	5		7					85	0	1	100		198					0
	7:45 AM	3		1					99	0	6	120		229					0
	8:00 AM	8		3					76	0	3	99		189					0
	8:15 AM	1		4					74	0	5	66		150					0
	8:30 AM	7		10					61	0	11	87		176					0
	8:45 AM	6		10					66	0	17	85		184					0
	VOLUMES	43	0	38	0	0	0	0	593	0	46	756	0	1,476	0	0	0	0	0
	APPROACH %	53%	0%	47%	0%	0%	0%	0%	100%	0%	6%	94%	0%						
	APP/DEPART	81	/	0	0	/	46	593	/	631	802	/	799	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	19	0	13	0	0	0	0	329	0	11	426	0	798					
	APPROACH %	59%	0%	41%	0%	0%	0%	0%	100%	0%	3%	97%	0%						
	PEAK HR FACTOR		0.667			0.000			0.831			0.867		0.871					
	APP/DEPART	32	/	0	0	/	11	329	/	342	437	/	445	0					
PM	4:00 PM	2		7					105	0	7	91		212					0
	4:15 PM	4		6					135	1	2	98		246					0
	4:30 PM	3		10					126	0	10	108		257					0
	4:45 PM	3		3					113	0	2	104		225					0
	5:00 PM	1		2					126	0	3	101		233					0
	5:15 PM	2		4					115	0	2	87		210					0
	5:30 PM	5		2					109	0	5	88		209					0
	5:45 PM	2		3					90	0	1	69		165					0
	VOLUMES	22	0	37	0	0	0	0	919	1	32	746	0	1,757	0	0	0	0	0
	APPROACH %	37%	0%	63%	0%	0%	0%	0%	100%	0%	4%	96%	0%						
	APP/DEPART	59	/	0	0	/	33	920	/	956	778	/	768	0					
	BEGIN PEAK HR		4:15 PM																
	VOLUMES	11	0	21	0	0	0	0	500	1	17	411	0	961					
	APPROACH %	34%	0%	66%	0%	0%	0%	0%	100%	0%	4%	96%	0%						
	PEAK HR FACTOR		0.615			0.000			0.921			0.907		0.935					
	APP/DEPART	32	/	0	0	/	18	501	/	521	428	/	422	0					

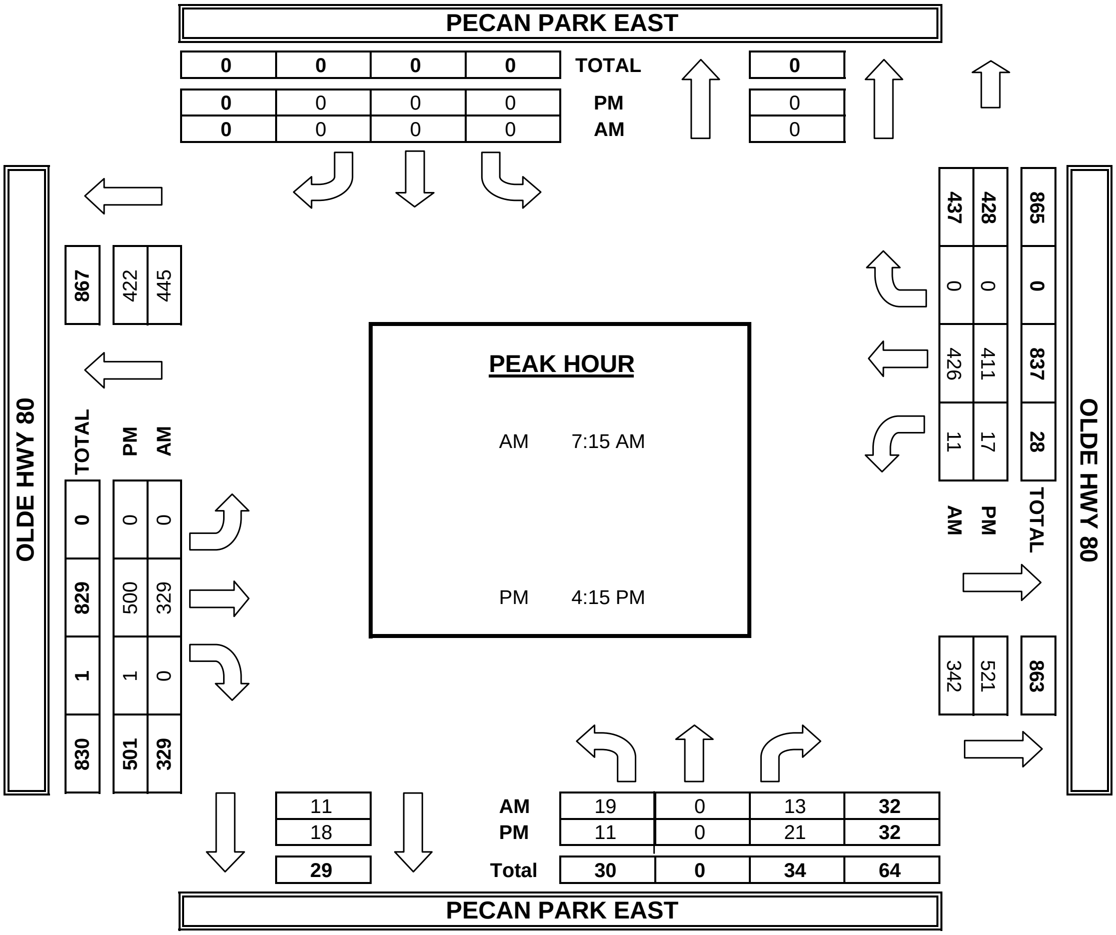


		PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM					0					0					0
	7:15 AM					0					0					0
	7:30 AM					0					0					0
	7:45 AM					0					0					0
	8:00 AM					0					0					0
	8:15 AM					0					0					0
	8:30 AM					0					0					0
	8:45 AM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM					0					0					0
	4:15 PM					0					0					0
	4:30 PM					0					0					0
	4:45 PM					0					0					0
	5:00 PM					0					0					0
	5:15 PM					0					0					0
	5:30 PM					0					0					0
	5:45 PM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PACIFIC TECHNICAL DATA

TURNING MOVEMENT COUNTS





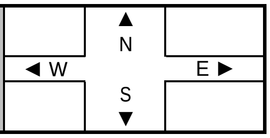
INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

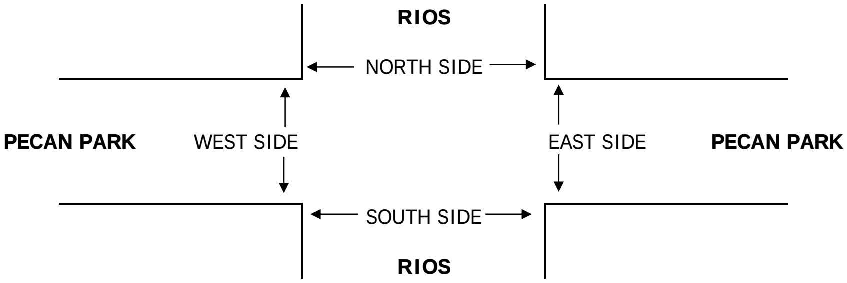
DATE: 1/23/14 THURSDAY	LOCATION:	LAKESIDE	PROJECT #:	PTD14-0124-01
	NORTH & SOUTH:	RIOS	LOCATION #:	7
	EAST & WEST:	PECAN PARK	CONTROL:	1-WAY STOP (NB)

NOTES:

AM
PM
MD
OTHER
OTHER



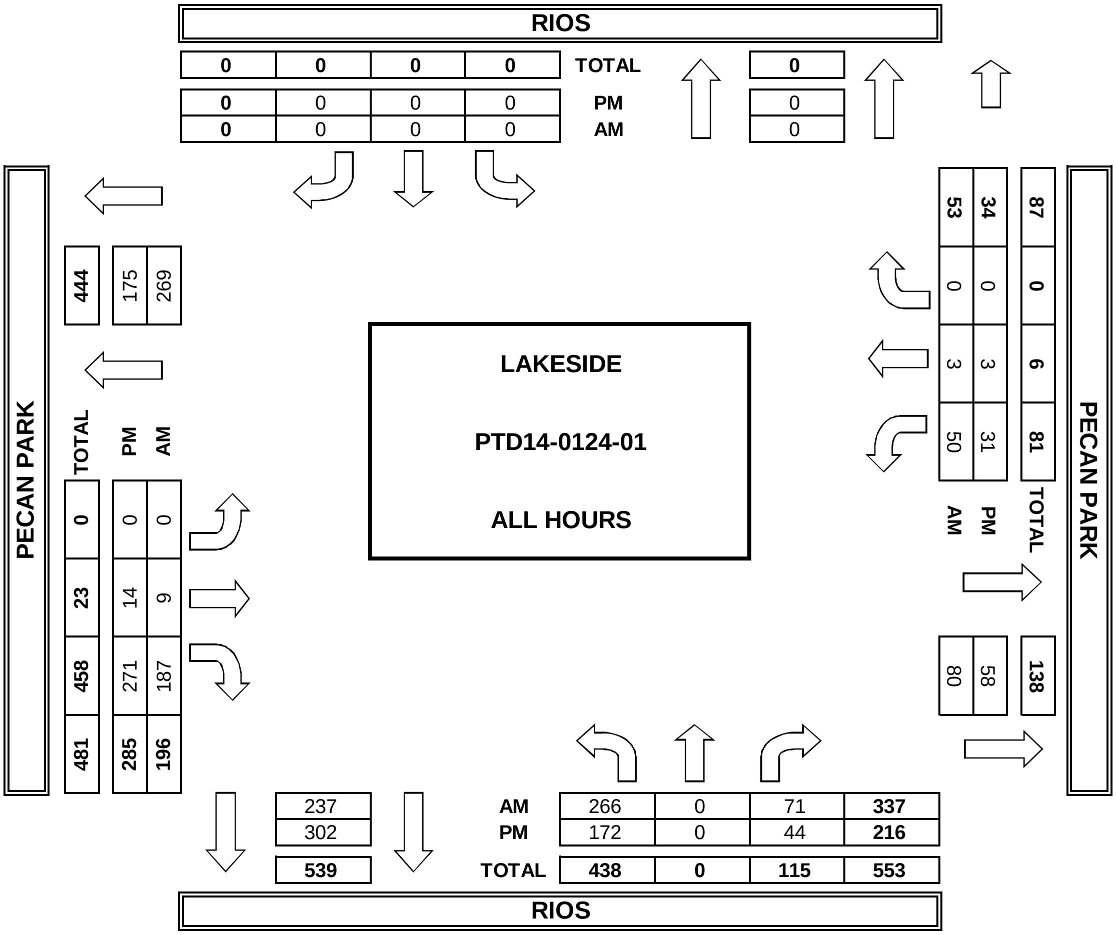
		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND				U-TURNS				
		RIOS			RIOS			PECAN PARK			PECAN PARK								
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL
	LANES:	0.5		0.5					1	0	0	1			X	X	X	X	
AM	7:00 AM	29		7					1	8	1	0		46					0
	7:15 AM	31		7					0	11	2	0		51					0
	7:30 AM	33		10					3	11	2	2		61					0
	7:45 AM	24		5					1	13	5	0		48					0
	8:00 AM	22		7					1	19	4	0		53					0
	8:15 AM	28		7					1	33	10	0		79					0
	8:30 AM	50		14					0	50	14	0		128					0
	8:45 AM	49		14					2	42	12	1		120					0
	VOLUMES	266	0	71	0	0	0	0	9	187	50	3	0	586	0	0	0	0	0
	APPROACH %	79%	0%	21%	0%	0%	0%	0%	5%	95%	94%	6%	0%						
	APP/DEPART	337	/	0	0	/	237	196	/	80	53	/	269	0					
	BEGIN PEAK HR		8:00 AM																
	VOLUMES	149	0	42	0	0	0	0	4	144	40	1	0	380					
	APPROACH %	78%	0%	22%	0%	0%	0%	0%	3%	97%	98%	2%	0%						
	PEAK HR FACTOR		0.746			0.000			0.740			0.732		0.742					
	APP/DEPART	191	/	0	0	/	184	148	/	46	41	/	150	0					
PM	4:00 PM	32		9					3	30	9	1		84					0
	4:15 PM	20		11					2	37	1	0		71					0
	4:30 PM	19		7					2	38	11	0		77					0
	4:45 PM	26		4					0	31	2	0		63					0
	5:00 PM	16		4					2	35	4	1		62					0
	5:15 PM	22		2					2	35	1	0		62					0
	5:30 PM	18		4					1	32	2	1		58					0
	5:45 PM	19		3					2	33	1	0		58					0
	VOLUMES	172	0	44	0	0	0	0	14	271	31	3	0	535	0	0	0	0	0
	APPROACH %	80%	0%	20%	0%	0%	0%	0%	5%	95%	91%	9%	0%						
	APP/DEPART	216	/	0	0	/	302	285	/	58	34	/	175	0					
	BEGIN PEAK HR		4:00 PM																
	VOLUMES	97	0	31	0	0	0	0	7	136	23	1	0	295					
	APPROACH %	76%	0%	24%	0%	0%	0%	0%	5%	95%	96%	4%	0%						
	PEAK HR FACTOR		0.780			0.000			0.894			0.545		0.878					
	APP/DEPART	128	/	0	0	/	159	143	/	38	24	/	98	0					



		PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM					0					0					0
	7:15 AM					0					0					0
	7:30 AM					0					0					0
	7:45 AM					0					0					0
	8:00 AM					0					0					0
	8:15 AM					0					0					0
	8:30 AM					0					0					0
	8:45 AM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM					0					0					0
	4:15 PM					0					0					0
	4:30 PM					0					0					0
	4:45 PM					0					0					0
	5:00 PM					0					0					0
	5:15 PM					0					0					0
	5:30 PM					0					0					0
	5:45 PM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PACIFIC TECHNICAL DATA

TURNING MOVEMENT COUNTS



LAKESIDE

PTD14-0124-01

ALL HOURS

RIOS (north)

TOTAL	0	0	0	0		0
PM	0	0	0	0		0
AM	0	0	0	0		0

PECAN PARK (east)

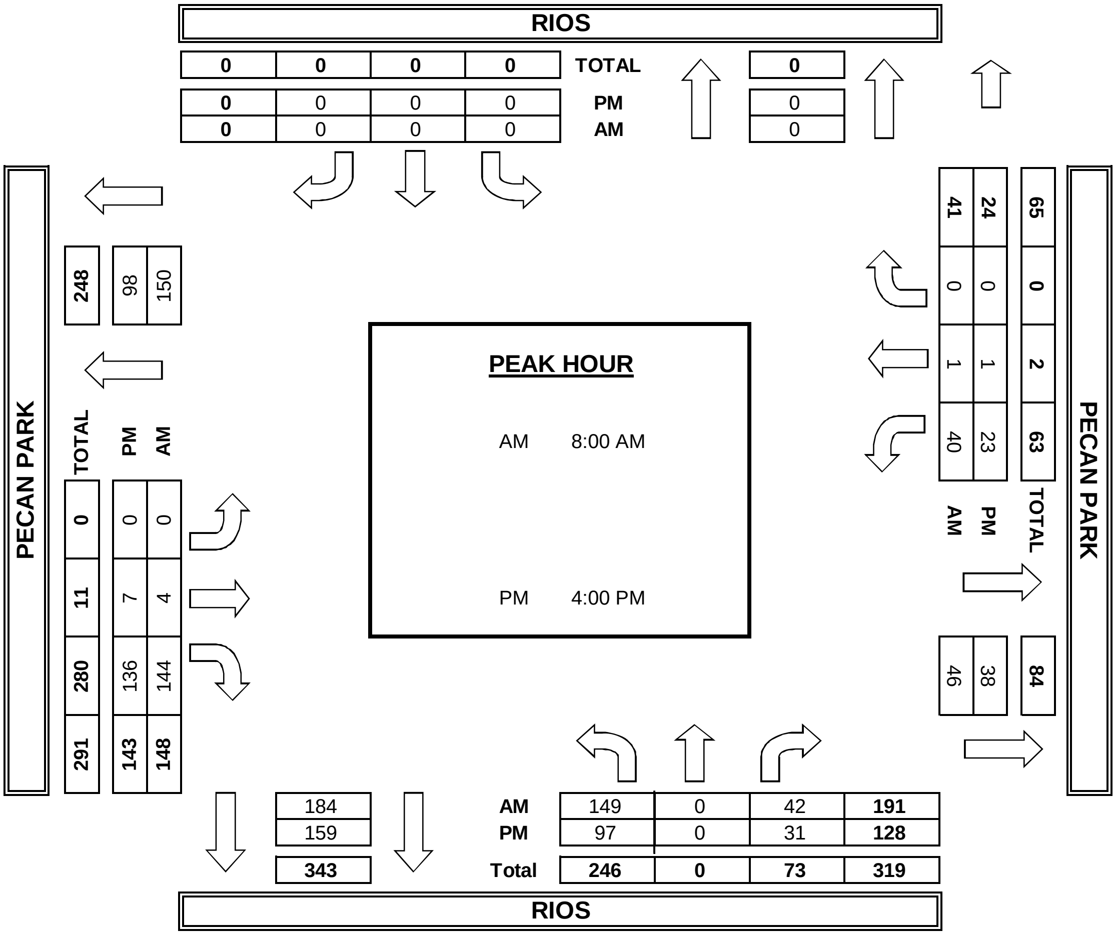
AM	53	0	3	50		80
PM	34	0	3	31		58
TOTAL	87	0	6	81		138

PECAN PARK (west)

TOTAL	444		0	23	458	481
PM	175		0	14	271	285
AM	269		0	9	187	196

RIOS (south)

AM	237		266	0	71	337
PM	302		172	0	44	216
TOTAL	539		438	0	115	553



PEAK HOUR

AM 8:00 AM

PM 4:00 PM

RIOS (north)

TOTAL	0	0	0	0		0
PM	0	0	0	0		0
AM	0	0	0	0		0

PECAN PARK (east)

AM	41	0	1	40		46
PM	24	0	1	23		38
TOTAL	65	0	2	63		84

PECAN PARK (west)

TOTAL	248		0	11	280	291
PM	98		0	7	136	143
AM	150		0	4	144	148

RIOS (south)

AM	184		149	0	42	191
PM	159		97	0	31	128
Total	343		246	0	73	319

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:	LOCATION:	LAKESIDE	PROJECT #:	PTD14-0124-01
1/29/14	NORTH & SOUTH:	SR-67	LOCATION #:	9
WEDNESDAY	EAST & WEST:	MAPLEVIEW	CONTROL:	SIGNAL

NOTES:

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		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
		SR-67			SR-67			MAPLEVIEW			MAPLEVIEW			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	LANES:	1	2	1	1	2	1	0.5	0.5	1	1.5	0.5	1	
AM	7:00 AM	2	208	65	31	156	15	37	10	1	148	20	37	730
	7:15 AM	6	204	108	23	142	50	44	14	2	176	22	33	824
	7:30 AM	3	212	114	27	174	27	36	19	2	171	15	25	825
	7:45 AM	8	209	136	24	157	16	32	16	1	189	28	29	845
	8:00 AM	6	198	124	28	160	13	37	17	2	167	39	35	826
	8:15 AM	6	175	117	32	182	29	29	27	3	135	19	22	776
	8:30 AM	7	149	126	23	175	22	29	13	4	145	21	19	733
	8:45 AM	8	117	95	23	145	10	17	15	5	135	26	20	616
	VOLUMES	46	1,472	885	211	1,291	182	261	131	20	1,266	190	220	6,175
	APPROACH %	2%	61%	37%	13%	77%	11%	63%	32%	5%	76%	11%	13%	
	APP/DEPART	2,403	/	1,953	1,684	/	2,577	412	/	1,227	1,676	/	418	0
	BEGIN PEAK HR		7:15 AM											
	VOLUMES	23	823	482	102	633	106	149	66	7	703	104	122	3,320
	APPROACH %	2%	62%	36%	12%	75%	13%	67%	30%	3%	76%	11%	13%	
	PEAK HR FACTOR		0.941			0.922			0.925			0.944		0.982
	APP/DEPART	1,328	/	1,094	841	/	1,343	222	/	650	929	/	233	0
PM	4:00 PM	8	228	185	44	204	36	21	21	2	148	9	21	927
	4:15 PM	6	219	188	65	246	29	18	29	2	121	16	23	962
	4:30 PM	3	234	164	49	213	19	21	28	2	125	22	18	898
	4:45 PM	3	243	181	41	237	28	22	23	3	133	20	21	955
	5:00 PM	2	210	189	45	241	29	26	24	5	139	25	26	961
	5:15 PM	5	198	143	71	219	31	15	31	3	131	30	19	896
	5:30 PM	5	201	175	49	202	25	15	22	2	127	14	18	855
	5:45 PM	2	196	161	51	221	31	18	26	3	118	18	21	866
	VOLUMES	34	1,729	1,386	415	1,783	228	156	204	22	1,042	154	167	7,320
	APPROACH %	1%	55%	44%	17%	73%	9%	41%	53%	6%	76%	11%	12%	
	APP/DEPART	3,149	/	2,052	2,426	/	2,847	382	/	2,005	1,363	/	416	0
	BEGIN PEAK HR		4:15 PM											
	VOLUMES	14	906	722	200	937	105	87	104	12	518	83	88	3,776
	APPROACH %	1%	55%	44%	16%	75%	8%	43%	51%	6%	75%	12%	13%	
	PEAK HR FACTOR		0.961			0.913			0.923			0.907		0.981
	APP/DEPART	1,642	/	1,081	1,242	/	1,467	203	/	1,026	689	/	202	0

U-TURNS				
NB	SB	EB	WB	TTL
X	X	X	X	
				0
				0
				0
				0
				0
				0
				0
				0
0	0	0	0	0
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				0
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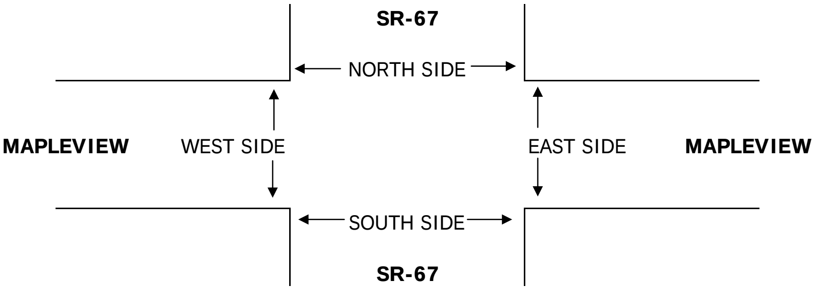
				0
				0
				0
				0
				0
0	0	0	0	0



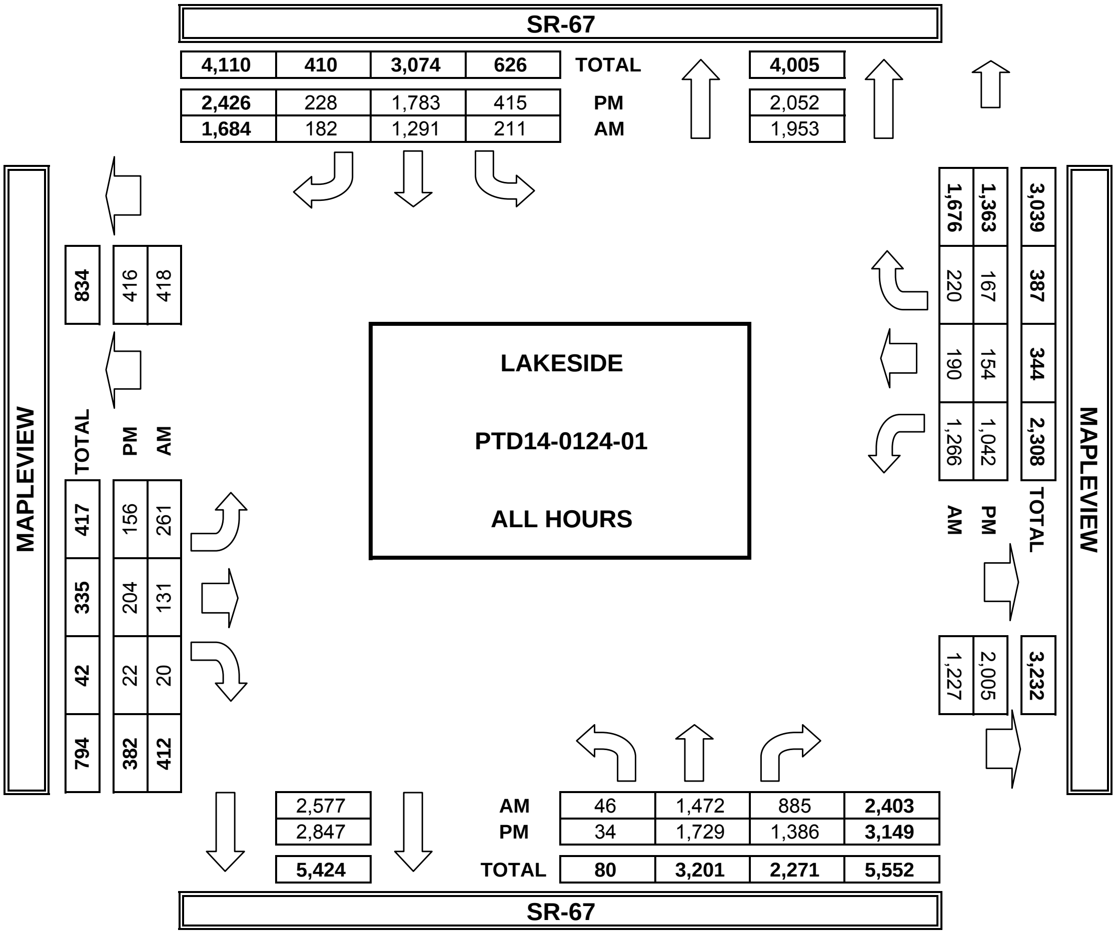
		PEDESTRIAN CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
AM	7:00 AM					0
	7:15 AM					0
	7:30 AM					0
	7:45 AM					0
	8:00 AM					0
	8:15 AM					0
	8:30 AM					0
	8:45 AM					0
	TOTAL	0	0	0	0	0
PM	4:00 PM					0
	4:15 PM					0
	4:30 PM					0
	4:45 PM					0
	5:00 PM					0
	5:15 PM					0
	5:30 PM					0
	5:45 PM					0
	TOTAL	0	0	0	0	0

		PEDESTRIAN ACTIVATIONS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
AM	7:00 AM					0
	7:15 AM					0
	7:30 AM					0
	7:45 AM					0
	8:00 AM					0
	8:15 AM					0
	8:30 AM					0
	8:45 AM					0
	TOTAL	0	0	0	0	0
PM	4:00 PM					0
	4:15 PM					0
	4:30 PM					0
	4:45 PM					0
	5:00 PM					0
	5:15 PM					0
	5:30 PM					0
	5:45 PM					0
	TOTAL	0	0	0	0	0

		BICYCLE CROSSINGS				
		NS	SS	ES	WS	TOTAL
AM	7:00 AM					0
	7:15 AM					0
	7:30 AM					0
	7:45 AM					0
	8:00 AM					0
	8:15 AM					0
	8:30 AM					0
	8:45 AM					0
	TOTAL	0	0	0	0	0
PM	4:00 PM					0
	4:15 PM					0
	4:30 PM					0
	4:45 PM					0
	5:00 PM					0
	5:15 PM					0
	5:30 PM					0
	5:45 PM					0
	TOTAL	0	0	0	0	0

PACIFIC TECHNICAL DATA

TURNING MOVEMENT COUNTS

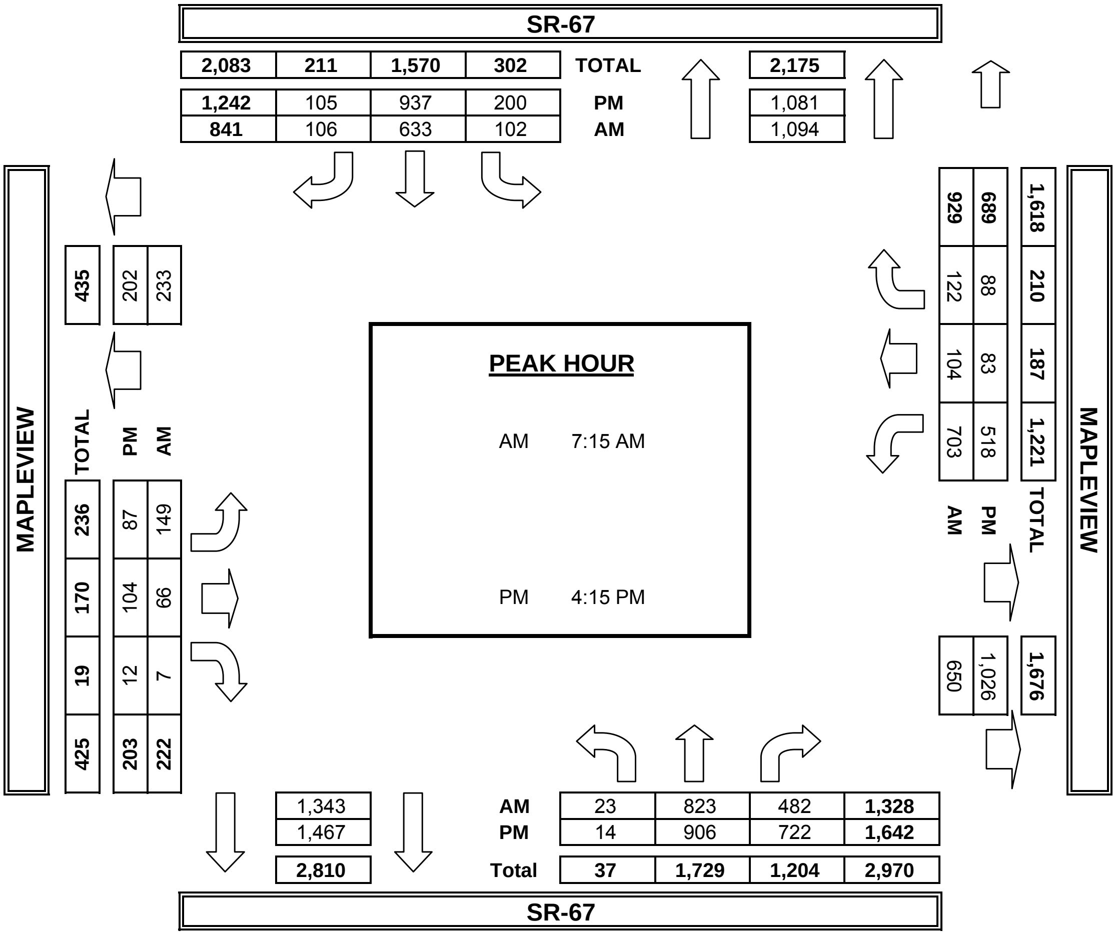


4,110	410	3,074	626	TOTAL	4,005
2,426	228	1,783	415	PM	2,052
1,684	182	1,291	211	AM	1,953

TOTAL	834	417	335	42	794
PM	416	156	204	22	382
AM	418	261	131	20	412

AM	1,676	220	190	1,266	1,227
PM	1,363	167	154	1,042	2,005
TOTAL	3,039	387	344	2,308	3,232

2,577	AM	46	1,472	885	2,403
2,847	PM	34	1,729	1,386	3,149
5,424	TOTAL	80	3,201	2,271	5,552



2,083	211	1,570	302	TOTAL	2,175
1,242	105	937	200	PM	1,081
841	106	633	102	AM	1,094

TOTAL	435	236	170	19	425
PM	202	87	104	12	203
AM	233	149	66	7	222

AM	929	122	104	703	650
PM	689	88	83	518	1,026
TOTAL	1,618	210	187	1,221	1,676

1,343	AM	23	823	482	1,328
1,467	PM	14	906	722	1,642
2,810	Total	37	1,729	1,204	2,970

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE: 1/29/14 WEDNESDAY	LOCATION:	LAKESIDE	PROJECT #: PTD14-0124-01
	NORTH & SOUTH:	MAINE	LOCATION #: 10
	EAST & WEST:	MAPLEVIEW	CONTROL: SIGNAL

NOTES:

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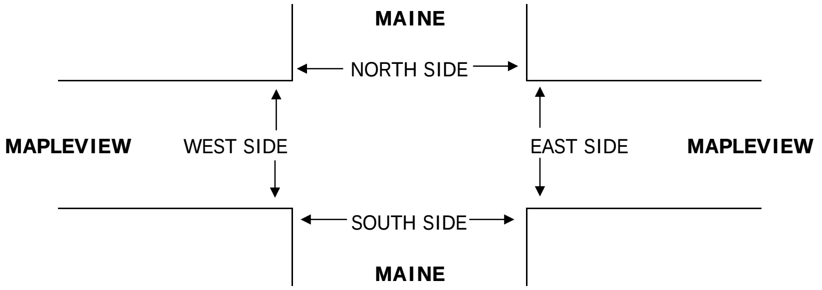
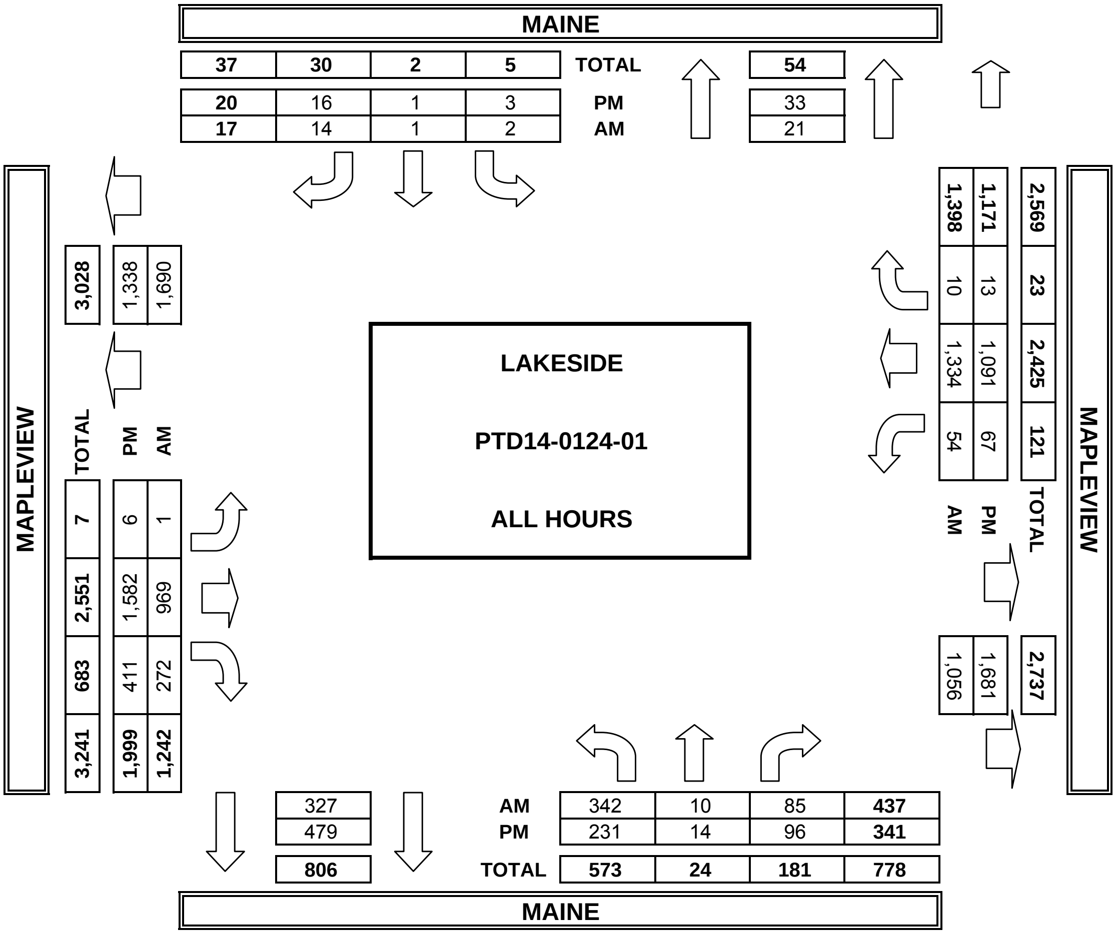
		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND				U-TURNS				
		MAINE			MAINE			MAPLEVIEW			MAPLEVIEW								
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL
	LANES:	0.5	0.5	1	0	1	0	0.5	1	1	0.5	1.5	1		X	X	X	X	
AM	7:00 AM	56	1	9	0	0	1	0	77	27	7	191	1	370					0
	7:15 AM	33	3	7	0	0	3	1	132	26	4	147	3	359					0
	7:30 AM	49	1	14	1	1	4	0	144	34	6	181	1	436					0
	7:45 AM	47	0	18	0	0	0	0	127	33	5	209	0	439					0
	8:00 AM	36	2	8	0	0	1	0	112	37	9	201	1	407					0
	8:15 AM	40	1	10	0	0	4	0	121	48	9	163	4	400					0
	8:30 AM	39	0	8	1	0	1	0	161	38	7	144	0	399					0
	8:45 AM	42	2	11	0	0	0	0	95	29	7	98	0	284					0
	VOLUMES	342	10	85	2	1	14	1	969	272	54	1,334	10	3,094	0	0	0	0	0
	APPROACH %	78%	2%	19%	12%	6%	82%	0%	78%	22%	4%	95%	1%						
	APP/DEPART	437	/	21	17	/	327	1,242	/	1,056	1,398	/	1,690	0					
	BEGIN PEAK HR		7:30 AM																
	VOLUMES	172	4	50	1	1	9	0	504	152	29	754	6	1,682					
	APPROACH %	76%	2%	22%	9%	9%	82%	0%	77%	23%	4%	96%	1%						
	PEAK HR FACTOR		0.869			0.458			0.921			0.922		0.958					
	APP/DEPART	226	/	10	11	/	182	656	/	555	789	/	935	0					
PM	4:00 PM	28	0	12	0	0	0	2	189	54	15	170	1	471					0
	4:15 PM	33	0	12	0	0	0	1	196	67	11	107	2	429					0
	4:30 PM	27	1	13	0	1	4	0	205	47	8	141	2	449					0
	4:45 PM	29	0	15	1	0	3	0	197	51	11	136	4	447					0
	5:00 PM	27	0	9	0	0	3	0	202	42	9	165	2	459					0
	5:15 PM	29	0	12	0	0	0	0	223	54	7	136	1	462					0
	5:30 PM	33	2	19	1	0	2	0	175	61	3	146	0	442					0
	5:45 PM	25	11	4	1	0	4	3	195	35	3	90	1	372					0
	VOLUMES	231	14	96	3	1	16	6	1,582	411	67	1,091	13	3,531	0	0	0	0	0
	APPROACH %	68%	4%	28%	15%	5%	80%	0%	79%	21%	6%	93%	1%						
	APP/DEPART	341	/	33	20	/	479	1,999	/	1,681	1,171	/	1,338	0					
	BEGIN PEAK HR		4:30 PM																
	VOLUMES	112	1	49	1	1	10	0	827	194	35	578	9	1,817					
	APPROACH %	69%	1%	30%	8%	8%	83%	0%	81%	19%	6%	93%	1%						
	PEAK HR FACTOR		0.920			0.600			0.921			0.884		0.983					
	APP/DEPART	162	/	10	12	/	230	1,021	/	877	622	/	700	0					

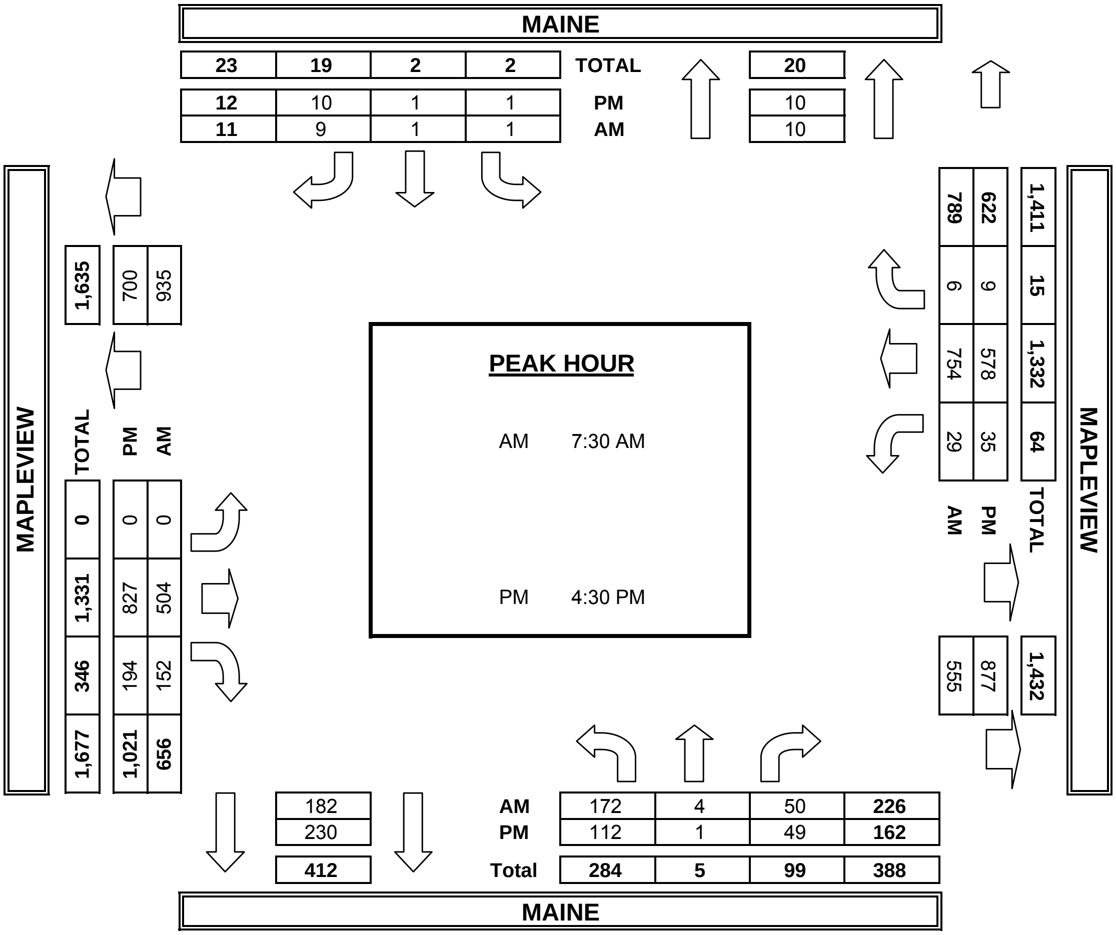


		PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM					0					0					0
	7:15 AM					0					0					0
	7:30 AM					0					0					0
	7:45 AM					0					0					0
	8:00 AM					0					0					0
	8:15 AM					0					0					0
	8:30 AM					0					0					0
	8:45 AM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM					0					0					0
	4:15 PM					0					0					0
	4:30 PM					0					0					0
	4:45 PM					0					0					0
	5:00 PM					0					0					0
	5:15 PM					0					0					0
	5:30 PM					0					0					0
	5:45 PM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PACIFIC TECHNICAL DATA

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:				
1/29/14	LOCATION:	LAKESIDE	PROJECT #:	PTD14-0124-01
WEDNESDAY	NORTH & SOUTH:	ASHWOOD	LOCATION #:	11
	EAST & WEST:	MAPLEVIEW	CONTROL:	SIGNAL

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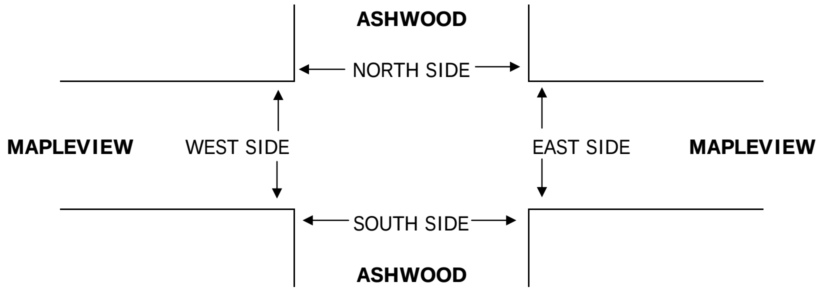
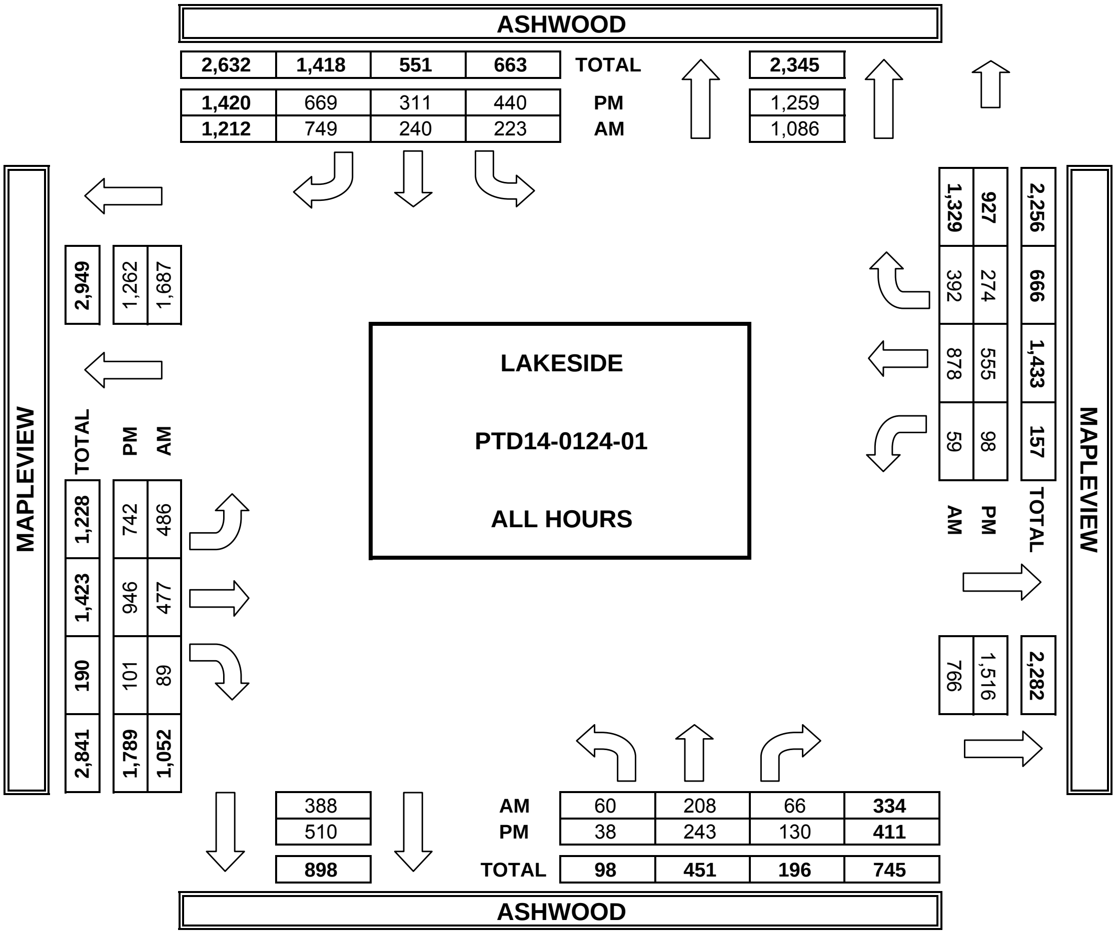
		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL	U-TURNS				
		ASHWOOD			ASHWOOD			MAPLEVIEW			MAPLEVIEW								
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL
	LANES:	0.5	0.5	0	1	1	0	1	2	0	1	2	1		X	X	X	X	
AM	7:00 AM	13	22	7	41	47	141	22	58	32	10	111	65	569				1	1
	7:15 AM	8	25	8	31	23	78	56	45	5	11	128	35	453			1		1
	7:30 AM	12	47	8	30	33	91	96	56	10	10	150	72	615			1		1
	7:45 AM	10	49	10	27	50	126	86	52	11	10	98	78	607			1		1
	8:00 AM	5	27	10	38	46	110	55	71	9	9	109	63	552				1	1
	8:15 AM	4	11	9	22	15	74	53	78	14	6	111	28	425					0
	8:30 AM	5	13	7	16	14	61	65	65	6	1	105	31	389					0
	8:45 AM	3	14	7	18	12	68	53	52	2	2	66	20	317					0
	VOLUMES	60	208	66	223	240	749	486	477	89	59	878	392	3,927	0	0	3	2	5
	APPROACH %	18%	62%	20%	18%	20%	62%	46%	45%	8%	4%	66%	29%						
	APP/DEPART	334	/	1,086	1,212	/	388	1,052	/	766	1,329	/	1,687	0					
	BEGIN PEAK HR		7:00 AM																
	VOLUMES	43	143	33	129	153	436	260	211	58	41	487	250	2,244					
	APPROACH %	20%	65%	15%	18%	21%	61%	49%	40%	11%	5%	63%	32%						
	PEAK HR FACTOR		0.793			0.784			0.816			0.838		0.912					
	APP/DEPART	219	/	653	718	/	252	529	/	373	778	/	966	0					
PM	4:00 PM	10	27	18	35	32	83	92	130	9	12	75	26	549			1		1
	4:15 PM	1	34	13	38	42	97	98	124	11	17	93	35	603			4		4
	4:30 PM	6	37	12	63	32	91	86	103	11	9	59	42	551					0
	4:45 PM	7	26	23	54	31	75	104	120	22	13	68	26	569					0
	5:00 PM	4	36	16	54	32	79	87	124	13	8	73	51	577			3		3
	5:15 PM	4	29	16	68	53	108	100	124	9	14	65	32	622					0
	5:30 PM	2	28	19	61	54	94	84	112	15	9	71	32	581			1		1
	5:45 PM	4	26	13	67	35	42	91	109	11	16	51	30	495					0
	VOLUMES	38	243	130	440	311	669	742	946	101	98	555	274	4,547	0	0	9	0	9
	APPROACH %	9%	59%	32%	31%	22%	47%	41%	53%	6%	11%	60%	30%						
	APP/DEPART	411	/	1,259	1,420	/	510	1,789	/	1,516	927	/	1,262	0					
	BEGIN PEAK HR		4:45 PM																
	VOLUMES	17	119	74	237	170	356	375	480	59	44	277	141	2,349					
	APPROACH %	8%	57%	35%	31%	22%	47%	41%	53%	6%	10%	60%	31%						
	PEAK HR FACTOR		0.938			0.833			0.929			0.875		0.944					
	APP/DEPART	210	/	635	763	/	273	914	/	791	462	/	650	0					

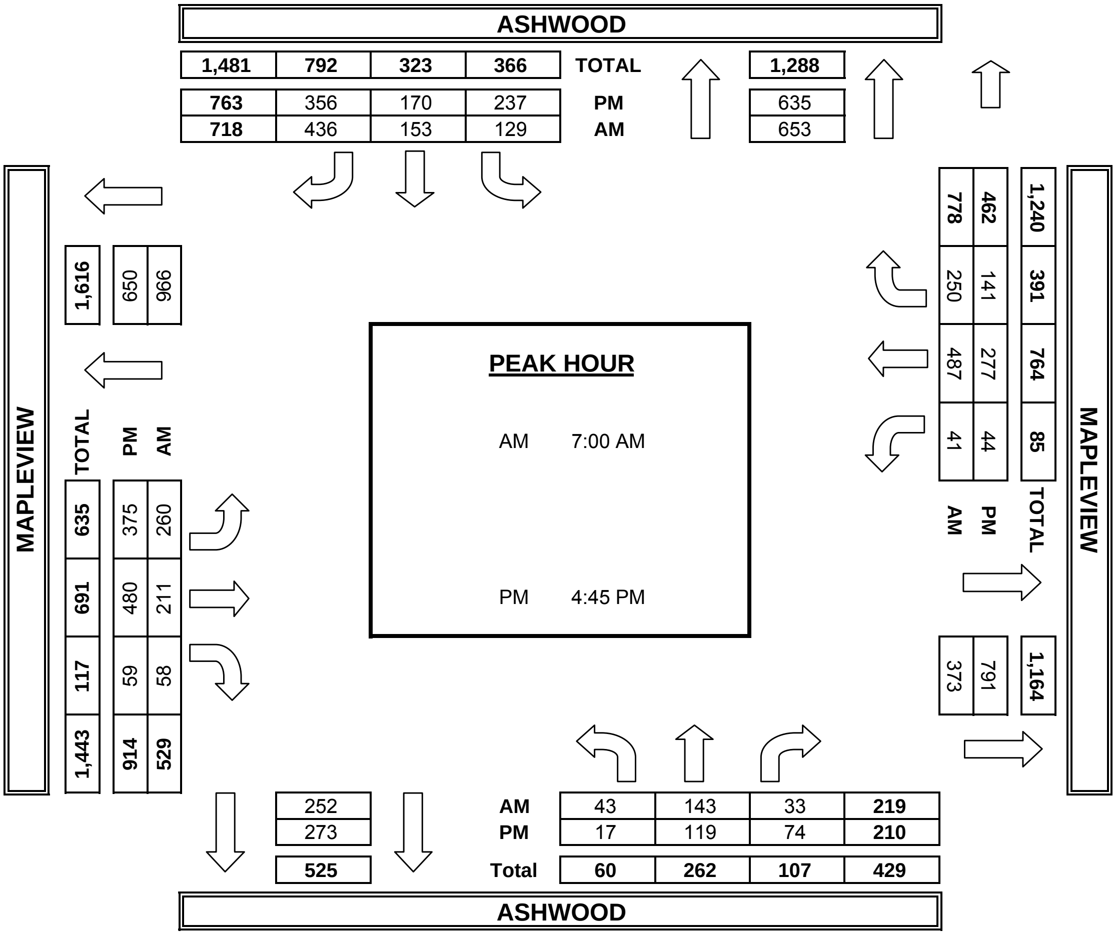


		PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM					0					0					0
	7:15 AM					0					0					0
	7:30 AM					0					0					0
	7:45 AM					0					0					0
	8:00 AM					0					0					0
	8:15 AM					0					0					0
	8:30 AM					0					0					0
	8:45 AM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM					0					0					0
	4:15 PM					0					0					0
	4:30 PM					0					0					0
	4:45 PM					0					0					0
	5:00 PM					0					0					0
	5:15 PM					0					0					0
	5:30 PM					0					0					0
	5:45 PM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PACIFIC TECHNICAL DATA

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:	LOCATION:	LAKESIDE	PROJECT #:	PTD14-0124-01
1/29/14	NORTH & SOUTH:	PINO	LOCATION #:	12
WEDNESDAY	EAST & WEST:	MAPLEVIEW / LAKE JENNINGS	CONTROL:	SIGNAL

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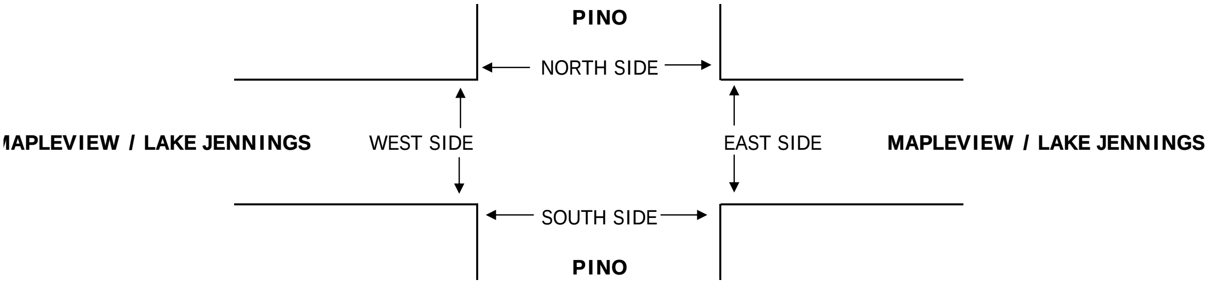
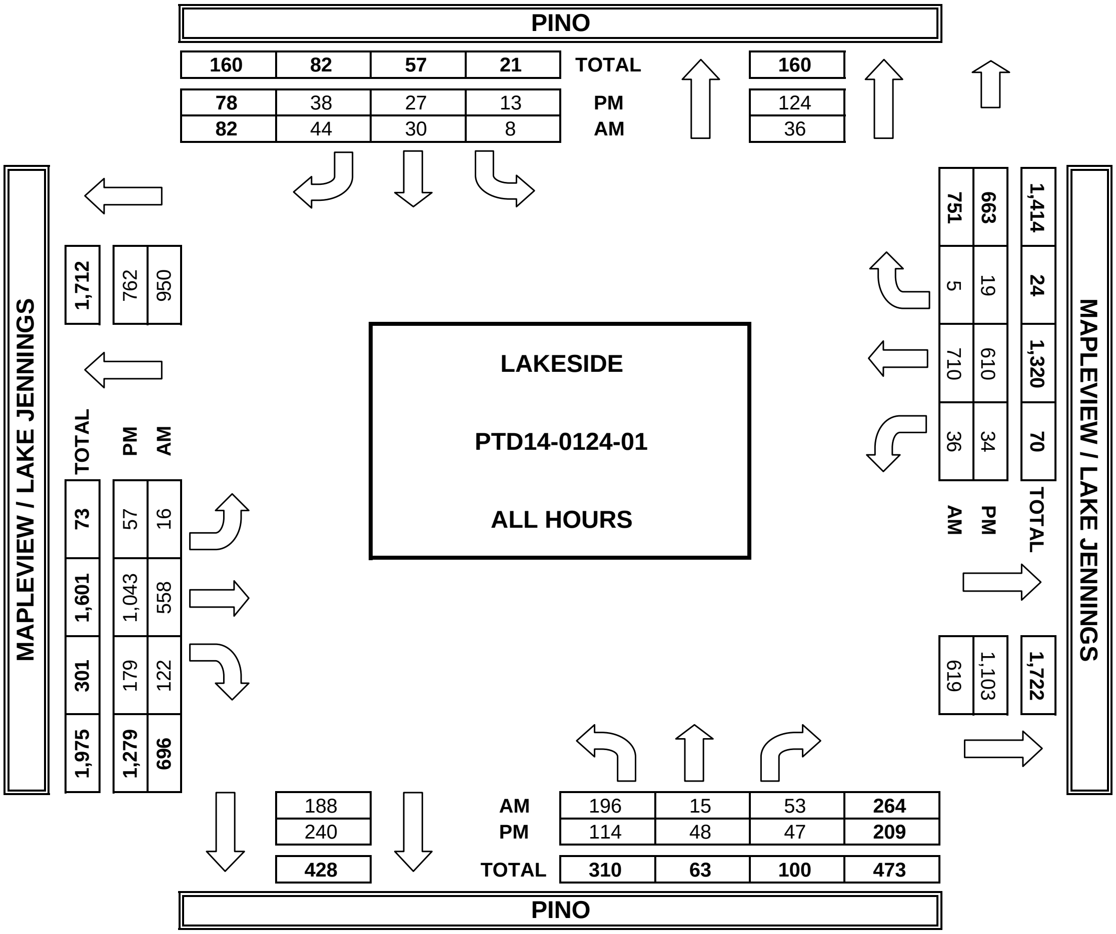
		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND				U-TURNS				
		PINO			PINO			MAPLEVIEW / LAKE JENNINGS			MAPLEVIEW / LAKE JENNINGS								
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL
	LANES:	0	1	0	0.5	0.5	1	1	2	0	1	2	1		X	X	X	X	
AM	7:00 AM	25	2	5	1	6	7	2	63	28	2	20	1	162					0
	7:15 AM	37	3	7	1	10	6	1	58	27	9	22	1	182					0
	7:30 AM	41	1	6	0	2	6	3	65	12	2	142	0	280					0
	7:45 AM	28	1	8	2	6	6	0	73	10	2	118	1	255					0
	8:00 AM	19	3	11	1	1	10	3	92	19	8	121	0	288					0
	8:15 AM	21	2	8	0	4	3	2	74	11	4	110	0	239					0
	8:30 AM	16	1	3	2	1	4	4	68	10	4	109	2	224			1		1
	8:45 AM	9	2	5	1	0	2	1	65	5	5	68	0	163					0
	VOLUMES	196	15	53	8	30	44	16	558	122	36	710	5	1,793	0	0	1	0	1
	APPROACH %	74%	6%	20%	10%	37%	54%	2%	80%	18%	5%	95%	1%						
	APP/DEPART	264	/	36	82	/	188	696	/	619	751	/	950	0					
	BEGIN PEAK HR		7:30 AM																
	VOLUMES	109	7	33	3	13	25	8	304	52	16	491	1	1,062					
	APPROACH %	73%	5%	22%	7%	32%	61%	2%	84%	14%	3%	97%	0%						
	PEAK HR FACTOR		0.776			0.732			0.798			0.882		0.922					
	APP/DEPART	149	/	16	41	/	81	364	/	340	508	/	625	0					
PM	4:00 PM	16	2	3	1	4	5	9	115	17	4	76	2	254					0
	4:15 PM	13	4	8	2	1	8	6	143	10	7	83	2	287					0
	4:30 PM	16	3	4	1	6	4	6	128	16	5	76	2	267					0
	4:45 PM	16	6	13	1	1	2	8	134	20	3	64	0	268					0
	5:00 PM	10	6	6	1	4	4	11	124	22	5	100	3	296					0
	5:15 PM	11	8	2	1	4	3	4	145	34	7	85	1	305					0
	5:30 PM	15	9	4	2	4	6	6	115	31	2	69	3	266					0
	5:45 PM	17	10	7	4	3	6	7	139	29	1	57	6	286					0
	VOLUMES	114	48	47	13	27	38	57	1,043	179	34	610	19	2,229	0	0	0	0	0
	APPROACH %	55%	23%	22%	17%	35%	49%	4%	82%	14%	5%	92%	3%						
	APP/DEPART	209	/	124	78	/	240	1,279	/	1,103	663	/	762	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	53	33	19	8	15	19	28	523	116	15	311	13	1,153					
	APPROACH %	50%	31%	18%	19%	36%	45%	4%	78%	17%	4%	92%	4%						
	PEAK HR FACTOR		0.772			0.808			0.911			0.785		0.945					
	APP/DEPART	105	/	74	42	/	146	667	/	550	339	/	383	0					



		PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM					0					0					0
	7:15 AM					0					0					0
	7:30 AM					0					0					0
	7:45 AM					0					0					0
	8:00 AM					0					0					0
	8:15 AM					0					0					0
	8:30 AM					0					0					0
	8:45 AM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM					0					0					0
	4:15 PM					0					0					0
	4:30 PM					0					0					0
	4:45 PM					0					0					0
	5:00 PM					0					0					0
	5:15 PM					0					0					0
	5:30 PM					0					0					0
	5:45 PM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PACIFIC TECHNICAL DATA

TURNING MOVEMENT COUNTS



LAKESIDE

PTD14-0124-01

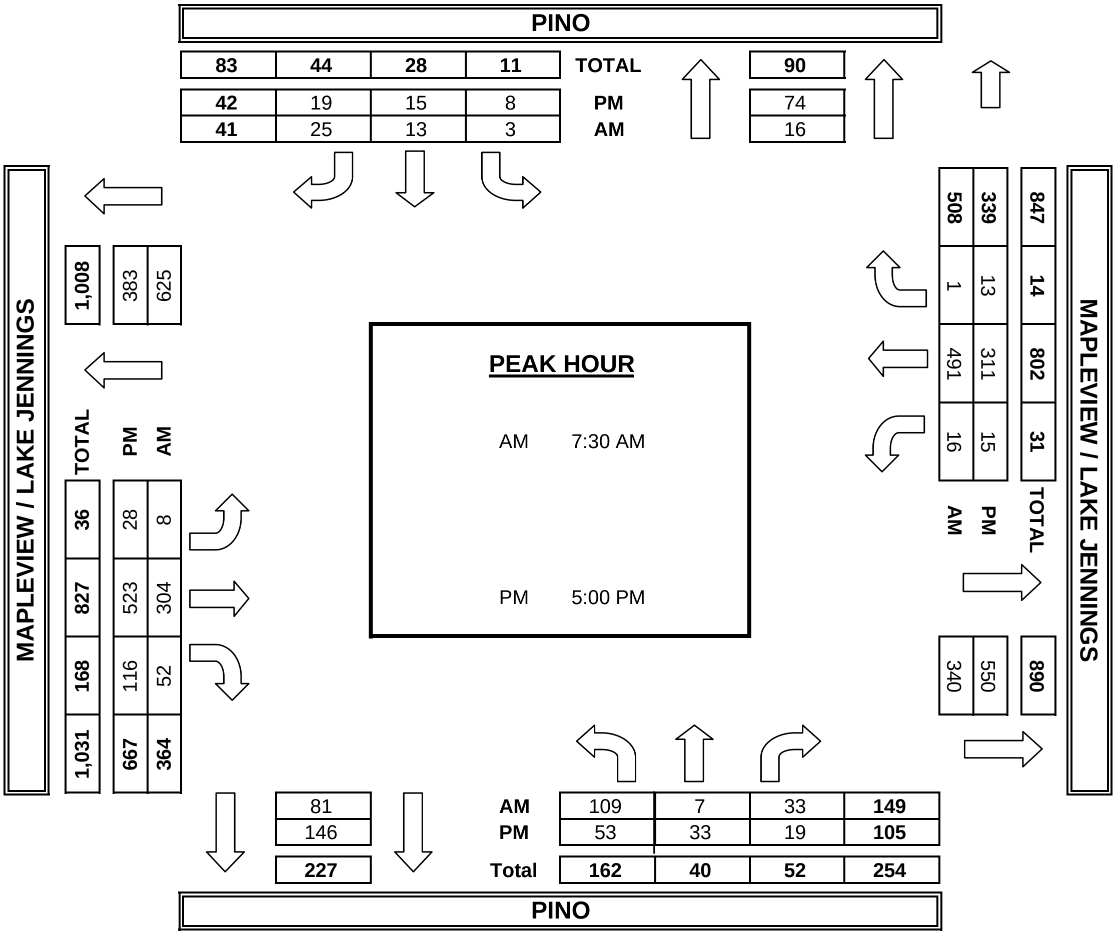
ALL HOURS

160	**82**	**57**	**21**	**TOTAL**		**160**
78	38	27	13	**PM**		124
82	44	30	8	**AM**		36

TOTAL	**1,712**	**73**	**1,601**	**301**	**1,975**
PM	762	57	1,043	179	**1,279**
AM	950	16	558	122	**696**

AM	**751**	5	710	36	619
PM	**663**	19	610	34	1,103
TOTAL	**1,414**	**24**	**1,320**	**70**	**1,722**

188		**AM**	196	15	53	**264**
240		**PM**	114	48	47	**209**
428		**TOTAL**	**310**	**63**	**100**	**473**



PEAK HOUR

AM 7:30 AM

PM 5:00 PM

83	**44**	**28**	**11**	**TOTAL**		**90**
42	19	15	8	**PM**		74
41	25	13	3	**AM**		16

TOTAL	**1,008**	**36**	**827**	**168**	**1,031**
PM	383	28	523	116	**667**
AM	625	8	304	52	**364**

AM	**508**	1	491	16	340
PM	**339**	13	311	15	550
TOTAL	**847**	**14**	**802**	**31**	**890**

81		**AM**	109	7	33	**149**
146		**PM**	53	33	19	**105**
227		**Total**	**162**	**40**	**52**	**254**

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:	LOCATION:	LAKESIDE	PROJECT #:	PTD14-0124-01
1/29/14	NORTH & SOUTH:	LOS COCHES	LOCATION #:	13
WEDNESDAY	EAST & WEST:	I-8 BUS ROUTE	CONTROL:	SIGNAL

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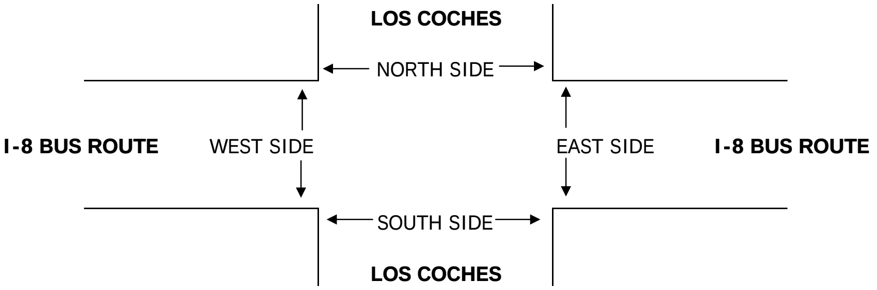
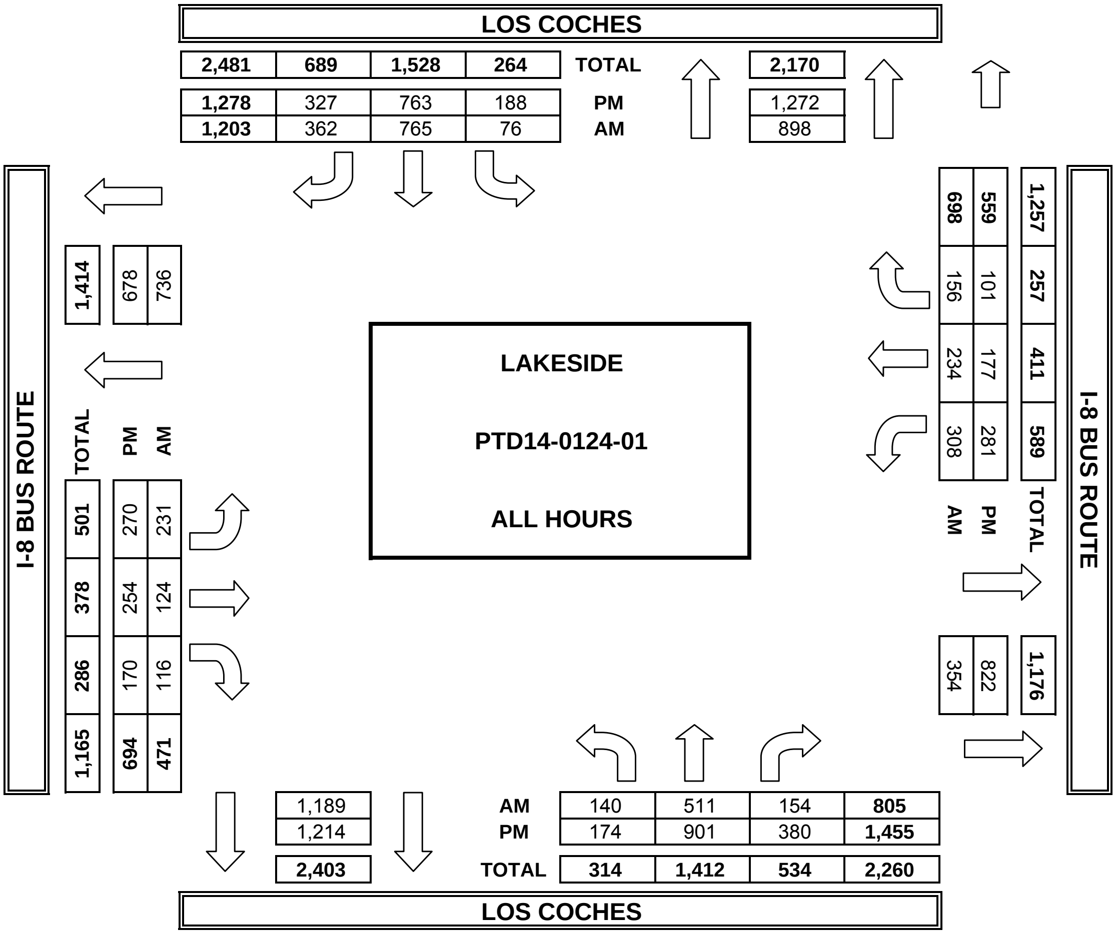
		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND				U-TURNS				
		LOS COCHES			LOS COCHES			I-8 BUS ROUTE			I-8 BUS ROUTE								
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL
	LANES:	1	1	1	1	1	1	1	1	1	0.5	0.5	1		X	X	X	X	
AM	7:00 AM	19	45	15	4	88	39	27	11	13	40	34	17	352		1			1
	7:15 AM	19	78	18	14	95	51	23	11	14	35	32	24	414					0
	7:30 AM	22	64	12	6	89	55	28	16	11	49	39	20	411				1	1
	7:45 AM	16	61	16	4	77	41	30	12	10	39	32	15	353					0
	8:00 AM	14	74	24	10	106	46	37	22	11	43	22	24	433					0
	8:15 AM	13	66	23	8	101	51	35	20	28	33	26	22	426					0
	8:30 AM	17	68	21	16	111	49	30	19	20	39	24	16	430					0
	8:45 AM	20	55	25	14	98	30	21	13	9	30	25	18	358					0
	VOLUMES	140	511	154	76	765	362	231	124	116	308	234	156	3,177	0	1	0	1	2
	APPROACH %	17%	63%	19%	6%	64%	30%	49%	26%	25%	44%	34%	22%						
	APP/DEPART	805	/	898	1,203	/	1,189	471	/	354	698	/	736	0					
	BEGIN PEAK HR		8:00 AM																
	VOLUMES	64	263	93	48	416	176	123	74	68	145	97	80	1,647					
	APPROACH %	15%	63%	22%	8%	65%	28%	46%	28%	26%	45%	30%	25%						
	PEAK HR FACTOR		0.938			0.909			0.798			0.904		0.951					
	APP/DEPART	420	/	466	640	/	629	265	/	215	322	/	337	0					
PM	4:00 PM	22	107	51	21	85	48	37	38	19	33	22	15	498					0
	4:15 PM	18	84	21	19	84	52	22	14	11	39	17	12	393					0
	4:30 PM	33	90	29	21	102	40	41	24	13	34	24	15	466					0
	4:45 PM	23	129	55	21	87	27	23	30	33	32	20	12	492					0
	5:00 PM	21	132	57	22	102	45	43	48	22	39	23	13	567					0
	5:15 PM	22	133	61	37	92	35	34	36	22	34	32	12	550					0
	5:30 PM	15	126	61	29	108	45	35	36	22	28	16	9	530					0
	5:45 PM	20	100	45	18	103	35	35	28	28	42	23	13	490					0
	VOLUMES	174	901	380	188	763	327	270	254	170	281	177	101	3,986	0	0	0	0	0
	APPROACH %	12%	62%	26%	15%	60%	26%	39%	37%	24%	50%	32%	18%						
	APP/DEPART	1,455	/	1,272	1,278	/	1,214	694	/	822	559	/	678	0					
	BEGIN PEAK HR		4:45 PM																
	VOLUMES	81	520	234	109	389	152	135	150	99	133	91	46	2,139					
	APPROACH %	10%	62%	28%	17%	60%	23%	35%	39%	26%	49%	34%	17%						
	PEAK HR FACTOR		0.966			0.893			0.850			0.865		0.943					
	APP/DEPART	835	/	701	650	/	621	384	/	493	270	/	324	0					

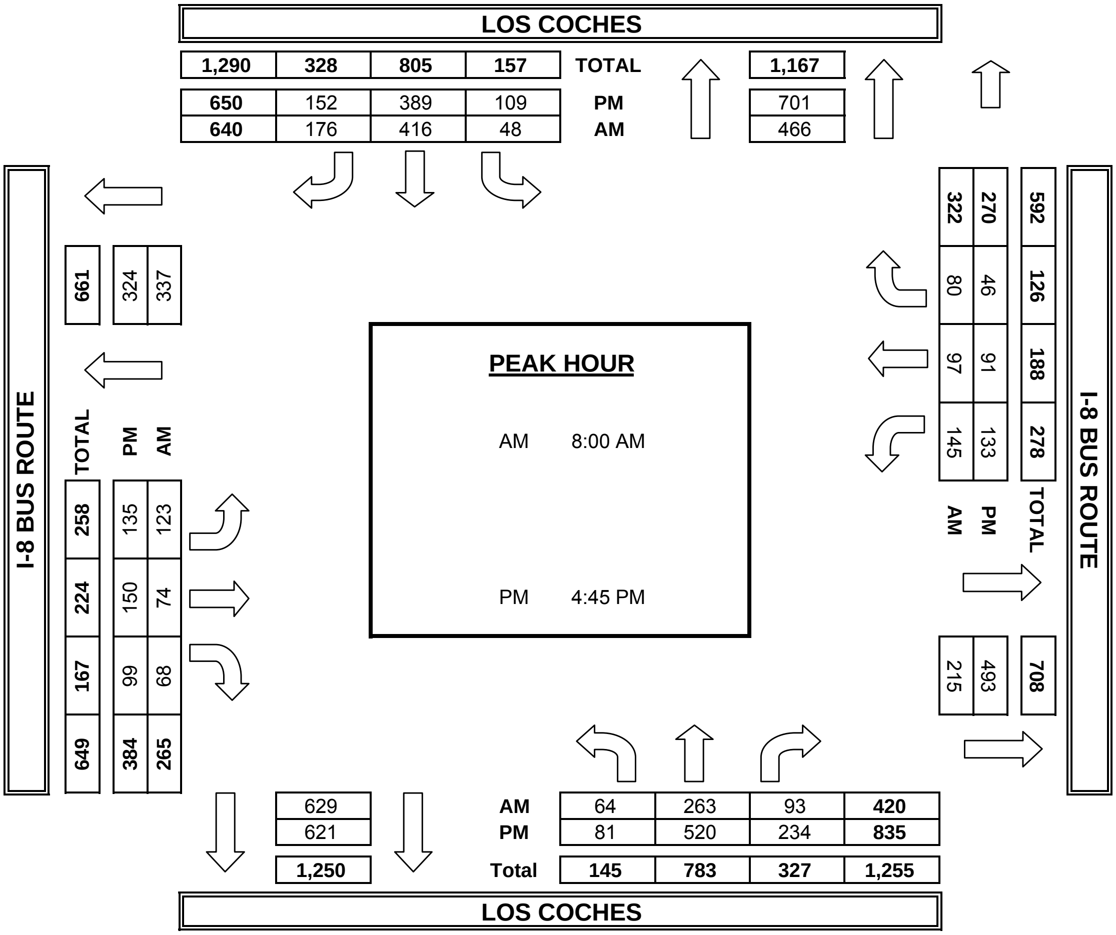


		PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM					0					0					0
	7:15 AM					0					0					0
	7:30 AM					0					0					0
	7:45 AM					0					0					0
	8:00 AM					0					0					0
	8:15 AM					0					0					0
	8:30 AM					0					0					0
	8:45 AM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM					0					0					0
	4:15 PM					0					0					0
	4:30 PM					0					0					0
	4:45 PM					0					0					0
	5:00 PM					0					0					0
	5:15 PM					0					0					0
	5:30 PM					0					0					0
	5:45 PM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PACIFIC TECHNICAL DATA

TURNING MOVEMENT COUNTS





THURSDAY, JANUARY 23RD, 2014 CITY: LAKESIDE PROJECT: PTD14-0124-01

LAKE JENNINGS S-O EL MONTE

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	11		10					12:00	68		59				
00:15	5		11					12:15	56		64				
00:30	8		3					12:30	58		73				
00:45	7	31	7	31			62	12:45	87	269	84	280			549
01:00	4		5					13:00	54		63				
01:15	2		8					13:15	66		80				
01:30	6		3					13:30	69		95				
01:45	2	14	7	23			37	13:45	92	281	92	330			611
02:00	4		3					14:00	81		100				
02:15	2		2					14:15	73		73				
02:30	4		7					14:30	88		111				
02:45	6	16	5	17			33	14:45	90	332	111	395			727
03:00	2		5					15:00	100		117				
03:15	4		8					15:15	97		141				
03:30	5		3					15:30	93		124				
03:45	13	24	10	26			50	15:45	113	403	128	510			913
04:00	13		6					16:00	95		148				
04:15	11		8					16:15	116		151				
04:30	11		7					16:30	91		162				
04:45	17	52	10	31			83	16:45	98	400	148	609			1009
05:00	29		16					17:00	96		178				
05:15	28		9					17:15	97		166				
05:30	43		23					17:30	103		161				
05:45	48	148	36	84			232	17:45	84	380	142	647			1027
06:00	55		30					18:00	90		158				
06:15	80		50					18:15	76		121				
06:30	98		58					18:30	68		127				
06:45	105	338	73	211			549	18:45	54	288	93	499			787
07:00	116		95					19:00	35		81				
07:15	162		88					19:15	43		56				
07:30	141		81					19:30	38		63				
07:45	144	563	82	346			909	19:45	38	154	63	263			417
08:00	119		98					20:00	44		56				
08:15	90		91					20:15	41		49				
08:30	89		80					20:30	28		51				
08:45	79	377	72	341			718	20:45	40	153	31	187			340
09:00	104		86					21:00	37		44				
09:15	98		65					21:15	19		32				
09:30	88		63					21:30	31		40				
09:45	77	367	55	269			636	21:45	21	108	24	140			248
10:00	69		70					22:00	16		29				
10:15	63		66					22:15	14		25				
10:30	57		48					22:30	14		26				
10:45	71	260	57	241			501	22:45	10	54	17	97			151
11:00	88		62					23:00	15		28				
11:15	51		83					23:15	9		10				
11:30	68		52					23:30	16		19				
11:45	77	284	74	271			555	23:45	7	47	17	74			121
Total Vol.		2474		1891			**4365**			2869		4031			**6900**

Daily Totals

NB	SB	EB	WB	**Combined**
5343	5922			**11265**

	AM			**PM**		
Split %	56.7%	43.3%	**38.7%**	41.6%	58.4%	**61.3%**
Peak Hour	07:15	07:30	**07:15**	15:30	16:30	**16:45**
Volume	566	352	**915**	417	654	**1047**
P.H.F.	0.87	0.90	**0.92**	0.88	0.92	**0.96**

THURSDAY, JANUARY 23RD, 2014 CITY: LAKESIDE PROJECT: PTD14-0124-01

LAKE JENNINGS N-O HARRITT

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	4		12					12:00	79		75				
00:15	11		14					12:15	66		66				
00:30	5		9					12:30	46		70				
00:45	7	27	3	38			65	12:45	64	255	75	286			541
01:00	9		5					13:00	82		97				
01:15	3		5					13:15	58		74				
01:30	3		8					13:30	65		80				
01:45	6	21	3	21			42	13:45	62	267	92	343			610
02:00	2		7					14:00	91		96				
02:15	3		4					14:15	84		108				
02:30	2		2					14:30	70		83				
02:45	6	13	7	20			33	14:45	88	333	109	396			729
03:00	6		5					15:00	89		109				
03:15	2		5					15:15	108		124				
03:30	5		9					15:30	84		141				
03:45	4	17	1	20			37	15:45	97	378	138	512			890
04:00	15		12					16:00	105		148				
04:15	14		7					16:15	121		151				
04:30	12		8					16:30	116		168				
04:45	11	52	7	34			86	16:45	98	440	151	618			1058
05:00	21		8					17:00	81		188				
05:15	27		17					17:15	121		152				
05:30	33		13					17:30	88		167				
05:45	43	124	24	62			186	17:45	91	381	148	655			1036
06:00	47		35					18:00	83		151				
06:15	55		42					18:15	83		155				
06:30	80		57					18:30	77		124				
06:45	114	296	57	191			487	18:45	68	311	135	565			876
07:00	121		90					19:00	50		102				
07:15	162		81					19:15	36		79				
07:30	144		96					19:30	42		68				
07:45	131	558	88	355			913	19:45	38	166	64	313			479
08:00	108		95					20:00	41		61				
08:15	88		81					20:15	40		52				
08:30	99		98					20:30	45		48				
08:45	84	379	77	351			730	20:45	32	158	52	213			371
09:00	93		101					21:00	42		31				
09:15	90		88					21:15	30		39				
09:30	99		72					21:30	27		36				
09:45	81	363	75	336			699	21:45	33	132	42	148			280
10:00	90		54					22:00	24		20				
10:15	65		77					22:15	16		31				
10:30	60		69					22:30	14		25				
10:45	56	271	58	258			529	22:45	15	69	29	105			174
11:00	65		64					23:00	14		16				
11:15	87		59					23:15	14		25				
11:30	55		84					23:30	9		11				
11:45	68	275	64	271			546	23:45	16	53	17	69			122
Total Vol.		2396		1957			**4353**			2943		4223			**7166**

Daily Totals

NB	SB	EB	WB	**Combined**
5339	6180			**11519**

	AM			**PM**		
Split %	55.0%	45.0%	**37.8%**	41.1%	58.9%	**62.2%**
Peak Hour	07:00	08:30	**07:00**	16:00	16:30	**16:30**
Volume	558	364	**913**	440	659	**1075**
P.H.F.	0.86	0.90	**0.94**	0.95	0.88	**0.95**

THURSDAY, JANUARY 23RD, 2014 CITY: LAKESIDE PROJECT: PTD14-0124-01

LAKE JENNINGS BTN HARRITT & BLOSSOM VALLEY

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	15		11					12:00	70		115				
00:15	20		16					12:15	87		84				
00:30	9		11					12:30	97		102				
00:45	12	56	15	53			109	12:45	85	339	86	387			726
01:00	12		12					13:00	67		74				
01:15	8		4					13:15	93		82				
01:30	10		9					13:30	100		104				
01:45	7	37	8	33			70	13:45	76	336	94	354			690
02:00	7		9					14:00	90		102				
02:15	6		7					14:15	90		113				
02:30	2		7					14:30	118		106				
02:45	4	19	2	25			44	14:45	98	396	114	435			831
03:00	4		3					15:00	102		92				
03:15	6		9					15:15	116		108				
03:30	6		9					15:30	112		110				
03:45	2	18	8	29			47	15:45	130	460	127	437			897
04:00	7		9					16:00	118		162				
04:15	5		3					16:15	129		151				
04:30	16		16					16:30	135		168				
04:45	14	42	8	36			78	16:45	105	487	177	658			1145
05:00	10		7					17:00	116		184				
05:15	10		13					17:15	135		175				
05:30	20		20					17:30	98		161				
05:45	27	67	26	66			133	17:45	90	439	152	672			1111
06:00	27		26					18:00	116		166				
06:15	41		45					18:15	124		178				
06:30	44		66					18:30	116		139				
06:45	61	173	53	190			363	18:45	121	477	147	630			1107
07:00	105		121					19:00	107		119				
07:15	161		106					19:15	96		129				
07:30	144		124					19:30	79		108				
07:45	135	545	98	449			994	19:45	62	344	77	433			777
08:00	121		105					20:00	57		68				
08:15	98		126					20:15	52		64				
08:30	105		114					20:30	60		59				
08:45	88	412	88	433			845	20:45	62	231	53	244			475
09:00	132		115					21:00	61		55				
09:15	124		95					21:15	52		55				
09:30	99		116					21:30	62		37				
09:45	102	457	101	427			884	21:45	40	215	42	189			404
10:00	108		94					22:00	49		38				
10:15	92		81					22:15	49		41				
10:30	83		80					22:30	40		21				
10:45	65	348	92	347			695	22:45	25	163	32	132			295
11:00	69		91					23:00	27		27				
11:15	71		72					23:15	14		29				
11:30	86		90					23:30	24		18				
11:45	90	316	79	332			648	23:45	16	81	30	104			185
Total Vol.		2490		2420			**4910**			3968		4675			**8643**

Daily Totals

NB	SB	EB	WB	**Combined**
6458	7095			**13553**

	AM			**PM**		
Split %	50.7%	49.3%	**36.2%**	45.9%	54.1%	**63.8%**
Peak Hour	07:15	07:30	**07:00**	15:45	16:30	**16:30**
Volume	561	453	**994**	512	704	**1195**
P.H.F.	0.87	0.90	**0.93**	0.97	0.96	**0.96**

THURSDAY, JANUARY 23RD, 2014 CITY: LAKESIDE PROJECT: PTD14-0124-01

LAKE JENNINGS BTN BLOSSOM VALLEY & I-8 WB RAMPS

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	21		18					12:00	116		138				
00:15	25		19					12:15	124		137				
00:30	19		10					12:30	119		148				
00:45	15	80	15	62			142	12:45	106	465	126	549			1014
01:00	11		19					13:00	114		114				
01:15	15		12					13:15	126		134				
01:30	10		11					13:30	117		127				
01:45	9	45	14	56			101	13:45	124	481	119	494			975
02:00	12		19					14:00	141		141				
02:15	5		6					14:15	135		135				
02:30	9		9					14:30	116		126				
02:45	5	31	4	38			69	14:45	121	513	116	518			1031
03:00	4		5					15:00	142		141				
03:15	6		4					15:15	135		135				
03:30	9		6					15:30	142		142				
03:45	8	27	9	24			51	15:45	165	584	162	580			1164
04:00	4		12					16:00	184		195				
04:15	9		11					16:15	212		216				
04:30	12		18					16:30	195		205				
04:45	18	43	19	60			103	16:45	199	790	218	834			1624
05:00	16		19					17:00	181		235				
05:15	19		24					17:15	188		202				
05:30	28		54					17:30	174		188				
05:45	33	96	77	174			270	17:45	159	702	191	816			1518
06:00	44		84					18:00	148		189				
06:15	51		116					18:15	141		170				
06:30	68		125					18:30	156		161				
06:45	98	261	168	493			754	18:45	129	574	142	662			1236
07:00	128		212					19:00	135		135				
07:15	141		215					19:15	122		141				
07:30	177		235					19:30	126		126				
07:45	161	607	188	850			1457	19:45	108	491	118	520			1011
08:00	135		191					20:00	122		105				
08:15	141		206					20:15	106		98				
08:30	118		189					20:30	98		70				
08:45	121	515	141	727			1242	20:45	97	423	84	357			780
09:00	115		126					21:00	91		65				
09:15	135		135					21:15	88		44				
09:30	116		121					21:30	95		54				
09:45	108	474	124	506			980	21:45	68	342	35	198			540
10:00	116		116					22:00	70		40				
10:15	98		108					22:15	54		28				
10:30	103		109					22:30	66		35				
10:45	111	428	116	449			877	22:45	35	225	29	132			357
11:00	121		125					23:00	40		40				
11:15	105		123					23:15	28		28				
11:30	121		135					23:30	22		21				
11:45	128	475	124	507			982	23:45	26	116	26	115			231
Total Vol.		3082		3946			**7028**			5706		5775			**11481**

Daily Totals

NB	SB	EB	WB	**Combined**
8788	9721			**18509**

	AM			**PM**		
Split %	43.9%	56.1%	**38.0%**	49.7%	50.3%	**62.0%**
Peak Hour	07:15	07:00	**07:00**	16:00	16:15	**16:15**
Volume	614	850	**1457**	790	874	**1661**
P.H.F.	0.87	0.90	**0.88**	0.93	0.93	**0.97**

THURSDAY, JANUARY 23RD, 2014 CITY: LAKESIDE PROJECT: PTD14-0124-01

LAKE JENNINGS BTN WB RAMPS & EB RAMPS

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	18		19					12:00	144		70				
00:15	19		20					12:15	162		84				
00:30	20		16					12:30	135		67				
00:45	15	72	11	66			138	12:45	177	618	70	291			909
01:00	11		15					13:00	162		66				
01:15	16		9					13:15	174		70				
01:30	9		9					13:30	151		84				
01:45	12	48	12	45			93	13:45	178	665	89	309			974
02:00	11		7					14:00	162		88				
02:15	9		9					14:15	155		81				
02:30	5		5					14:30	160		70				
02:45	9	34	10	31			65	14:45	175	652	84	323			975
03:00	5		5					15:00	162		116				
03:15	4		4					15:15	188		103				
03:30	9		6					15:30	203		121				
03:45	10	28	9	24			52	15:45	219	772	116	456			1228
04:00	15		10					16:00	218		115				
04:15	28		5					16:15	231		121				
04:30	22		19					16:30	266		124				
04:45	26	91	22	56			147	16:45	215	930	135	495			1425
05:00	35		28					17:00	235		141				
05:15	44		26					17:15	241		151				
05:30	51		35					17:30	218		116				
05:45	88	218	45	134			352	17:45	184	878	126	534			1412
06:00	95		44					18:00	184		114				
06:15	121		58					18:15	195		126				
06:30	135		66					18:30	189		106				
06:45	141	492	70	238			730	18:45	177	745	116	462			1207
07:00	168		68					19:00	161		88				
07:15	215		77					19:15	184		84				
07:30	205		84					19:30	141		75				
07:45	208	796	68	297			1093	19:45	135	621	84	331			952
08:00	181		84					20:00	105		68				
08:15	167		91					20:15	111		84				
08:30	15		105					20:30	95		77				
08:45	181	544	88	368			912	20:45	84	395	84	313			708
09:00	168		77					21:00	81		65				
09:15	151		84					21:15	70		41				
09:30	141		68					21:30	68		51				
09:45	135	595	70	299			894	21:45	77	296	42	199			495
10:00	152		84					22:00	84		35				
10:15	144		66					22:15	65		40				
10:30	152		62					22:30	58		28				
10:45	135	583	58	270			853	22:45	60	267	29	132			399
11:00	148		70					23:00	43		33				
11:15	133		65					23:15	51		31				
11:30	141		77					23:30	35		27				
11:45	151	573	69	281			854	23:45	26	155	17	108			263
Total Vol.		4074		2109			**6183**			6994		3953			**10947**

Daily Totals

NB	SB	EB	WB	**Combined**
11068	6062			**17130**

	AM			**PM**		
Split %	65.9%	34.1%	**36.1%**	63.9%	36.1%	**63.9%**
Peak Hour	07:15	08:00	**07:15**	16:30	16:30	**16:30**
Volume	809	368	**1122**	957	551	**1508**
P.H.F.	0.94	0.88	**0.96**	0.89	0.91	**0.96**

THURSDAY, JANUARY 23RD, 2014 CITY: LAKESIDE PROJECT: PTD14-0124-01

I-8 BUS ROUTE W-O LAKE JENNINGS

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			5		5			12:00			40		35		
00:15			8		4			12:15			53		44		
00:30			2		5			12:30			64		39		
00:45			3	18	5	19	37	12:45			52	209	48	166	375
01:00			1		3			13:00			55		33		
01:15			4		4			13:15			50		36		
01:30			1		4			13:30			65		49		
01:45			3	9	4	15	24	13:45			52	222	44	162	384
02:00			4		1			14:00			59		45		
02:15			0		1			14:15			59		54		
02:30			1		3			14:30			64		81		
02:45			6	11	4	9	20	14:45			51	233	44	224	457
03:00			0		1			15:00			58		67		
03:15			3		1			15:15			66		66		
03:30			4		4			15:30			85		62		
03:45			3	10	5	11	21	15:45			77	286	57	252	538
04:00			7		3			16:00			77		67		
04:15			9		1			16:15			75		62		
04:30			6		1			16:30			61		51		
04:45			9	31	8	13	44	16:45			65	278	63	243	521
05:00			14		6			17:00			66		54		
05:15			15		7			17:15			52		63		
05:30			21		13			17:30			48		67		
05:45			18	68	15	41	109	17:45			44	210	44	228	438
06:00			45		21			18:00			66		48		
06:15			34		15			18:15			55		51		
06:30			47		27			18:30			45		35		
06:45			75	201	36	99	300	18:45			40	206	44	178	384
07:00			68		44			19:00			36		36		
07:15			88		51			19:15			26		25		
07:30			91		58			19:30			21		26		
07:45			84	331	62	215	546	19:45			27	110	22	109	219
08:00			62		68			20:00			24		33		
08:15			68		55			20:15			30		32		
08:30			89		42			20:30			27		26		
08:45			55	274	60	225	499	20:45			17	98	19	110	208
09:00			52		55			21:00			15		21		
09:15			56		49			21:15			20		18		
09:30			37		44			21:30			15		19		
09:45			43	188	35	183	371	21:45			28	78	13	71	149
10:00			31		42			22:00			10		13		
10:15			44		36			22:15			16		13		
10:30			47		36			22:30			11		17		
10:45			39	161	50	164	325	22:45			14	51	7	50	101
11:00			61		45			23:00			8		9		
11:15			46		42			23:15			9		7		
11:30			34		38			23:30			6		8		
11:45			46	187	53	178	365	23:45			7	30	1	25	55
Total Vol.				1489		1172	**2661**					2011		1818	**3829**

Daily Totals

NB	SB	EB	WB	**Combined**
		3500	2990	**6490**

	AM			**PM**		
Split %	56.0%	44.0%	**41.0%**	52.5%	47.5%	**59.0%**
Peak Hour	07:00	07:30	**07:15**	15:30	14:30	**15:30**
Volume	331	243	**564**	314	258	**562**
P.H.F.	0.91	0.89	**0.95**	0.92	0.80	**0.96**

THURSDAY, JANUARY 23RD, 2014 CITY: LAKESIDE PROJECT: PTD14-0124-01

RIDGE HILL W-O LAKE JENNINGS

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			2		2			12:00			7		10		
00:15			0		1			12:15			7		6		
00:30			0		0			12:30			8		17		
00:45			0	2	1	4	6	12:45			16	38	18	51	89
01:00			1		1			13:00			9		10		
01:15			1		0			13:15			9		16		
01:30			0		3			13:30			6		7		
01:45			1	3	1	5	8	13:45			10	34	8	41	75
02:00			0		1			14:00			14		12		
02:15			0		0			14:15			7		10		
02:30			0		0			14:30			11		22		
02:45			0	0	3	4	4	14:45			13	45	8	52	97
03:00			0		1			15:00			11		11		
03:15			1		1			15:15			19		25		
03:30			1		2			15:30			14		20		
03:45			1	3	1	5	8	15:45			15	59	24	80	139
04:00			2		3			16:00			31		39		
04:15			2		0			16:15			9		18		
04:30			2		0			16:30			15		22		
04:45			2	8	0	3	11	16:45			8	63	21	100	163
05:00			3		0			17:00			9		35		
05:15			7		2			17:15			20		15		
05:30			4		2			17:30			15		18		
05:45			5	19	1	5	24	17:45			7	51	20	88	139
06:00			8		3			18:00			8		26		
06:15			11		0			18:15			10		17		
06:30			19		5			18:30			16		21		
06:45			30	68	8	16	84	18:45			9	43	12	76	119
07:00			18		9			19:00			10		15		
07:15			33		10			19:15			5		8		
07:30			31		7			19:30			0		18		
07:45			27	109	7	33	142	19:45			8	23	9	50	73
08:00			12		12			20:00			11		12		
08:15			26		11			20:15			1		9		
08:30			22		21			20:30			3		10		
08:45			15	75	11	55	130	20:45			5	20	5	36	56
09:00			14		15			21:00			8		6		
09:15			10		14			21:15			5		11		
09:30			10		5			21:30			9		7		
09:45			9	43	6	40	83	21:45			4	26	4	28	54
10:00			9		8			22:00			2		7		
10:15			12		6			22:15			1		3		
10:30			8		9			22:30			1		2		
10:45			10	39	11	34	73	22:45			2	6	2	14	20
11:00			9		10			23:00			1		2		
11:15			4		6			23:15			0		3		
11:30			7		6			23:30			3		3		
11:45			11	31	8	30	61	23:45			0	4	0	8	12
Total Vol.				400		234	**634**					412		624	**1036**

Daily Totals

NB	SB	EB	WB	**Combined**
		812	858	**1670**

	AM			PM		
Split %	63.1%	36.9%	**38.0%**	39.8%	60.2%	**62.0%**
Peak Hour	06:45	08:30	**06:45**	15:15	15:15	**15:15**
Volume	112	61	**146**	79	108	**187**
P.H.F.	0.85	0.73	**0.85**	0.64	0.69	**0.67**

TUESDAY, JANUARY 28TH, 2014 CITY: LAKESIDE PROJECT: PTD14-0124-01

OLDE HWY 80 E-0 LAKE JENNINGS

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			14		5			12:00			106		112		
00:15			8		4			12:15			101		120		
00:30			7		1			12:30			143		115		
00:45			0	29	6	16	45	12:45			104	454	110	457	911
01:00			3		4			13:00			112		111		
01:15			4		5			13:15			135		104		
01:30			3		1			13:30			109		90		
01:45			2	12	4	14	26	13:45			147	503	119	424	927
02:00			6		2			14:00			140		118		
02:15			5		1			14:15			127		136		
02:30			4		10			14:30			141		136		
02:45			2	17	4	17	34	14:45			141	549	138	528	1077
03:00			5		5			15:00			161		122		
03:15			2		5			15:15			162		158		
03:30			4		5			15:30			161		123		
03:45			3	14	4	19	33	15:45			162	646	141	544	1190
04:00			2		10			16:00			184		131		
04:15			3		15			16:15			177		135		
04:30			8		15			16:30			195		151		
04:45			7	20	14	54	74	16:45			161	717	138	555	1272
05:00			14		27			17:00			151		122		
05:15			12		22			17:15			162		131		
05:30			22		69			17:30			148		119		
05:45			31	79	68	186	265	17:45			144	605	88	460	1065
06:00			55		68			18:00			127		98		
06:15			45		96			18:15			124		98		
06:30			49		129			18:30			122		98		
06:45			49	198	116	409	607	18:45			113	486	89	383	869
07:00			80		141			19:00			77		59		
07:15			89		151			19:15			72		49		
07:30			116		148			19:30			75		57		
07:45			121	406	156	596	1002	19:45			79	303	50	215	518
08:00			105		135			20:00			83		42		
08:15			116		109			20:15			76		49		
08:30			128		144			20:30			55		51		
08:45			115	464	151	539	1003	20:45			53	267	47	189	456
09:00			107		158			21:00			54		37		
09:15			77		124			21:15			42		27		
09:30			83		97			21:30			49		29		
09:45			75	342	105	484	826	21:45			44	189	39	132	321
10:00			71		80			22:00			33		18		
10:15			64		82			22:15			30		30		
10:30			75		101			22:30			28		35		
10:45			80	290	105	368	658	22:45			37	128	19	102	230
11:00			98		100			23:00			22		19		
11:15			102		104			23:15			14		15		
11:30			104		103			23:30			26		11		
11:45			109	413	112	419	832	23:45			9	71	10	55	126
Total Vol.				2284		3121	**5405**					4918		4044	**8962**

Daily Totals

NB	SB	EB	WB	**Combined**
		7202	7165	**14367**

	AM			**PM**		
Split %	42.3%	57.7%	**37.6%**	54.9%	45.1%	**62.4%**
Peak Hour	07:45	07:00	**08:15**	15:45	15:45	**15:45**
Volume	470	596	**1028**	718	558	**1276**
P.H.F.	0.92	0.96	**0.94**	0.92	0.92	**0.92**

TUESDAY, JANUARY 28TH, 2014 CITY: LAKESIDE PROJECT: PTD14-0124-01

OLDE HWY 80 BTN PECAN PARK WEST & PECAN PARK EAST

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			29		1			12:00			73		83		
00:15			5		4			12:15			86		93		
00:30			5		5			12:30			111		89		
00:45			7	46	3	13	59	12:45			86	356	85	350	706
01:00			3		1			13:00			90		73		
01:15			2		2			13:15			102		68		
01:30			2		2			13:30			99		60		
01:45			1	8	1	6	14	13:45			110	401	71	272	673
02:00			5		0			14:00			91		96		
02:15			6		4			14:15			95		100		
02:30			1		1			14:30			97		96		
02:45			5	17	1	6	23	14:45			74	357	82	374	731
03:00			3		4			15:00			103		63		
03:15			4		4			15:15			133		90		
03:30			1		4			15:30			132		77		
03:45			3	11	5	17	28	15:45			109	477	130	360	837
04:00			7		2			16:00			115		98		
04:15			0		12			16:15			131		105		
04:30			6		8			16:30			122		111		
04:45			6	19	10	32	51	16:45			115	483	121	435	918
05:00			19		12			17:00			128		101		
05:15			16		22			17:15			109		88		
05:30			13		41			17:30			116		81		
05:45			29	77	42	117	194	17:45			98	451	77	347	798
06:00			50		52			18:00			103		76		
06:15			42		56			18:15			75		63		
06:30			46		91			18:30			98		47		
06:45			48	186	95	294	480	18:45			61	337	50	236	573
07:00			66		105			19:00			68		49		
07:15			71		116			19:15			57		28		
07:30			84		116			19:30			47		37		
07:45			95	316	121	458	774	19:45			46	218	33	147	365
08:00			88		105			20:00			49		18		
08:15			71		88			20:15			45		27		
08:30			66		91			20:30			35		13		
08:45			64	289	95	379	668	20:45			37	166	23	81	247
09:00			56		92			21:00			25		15		
09:15			52		70			21:15			34		18		
09:30			61		81			21:30			36		21		
09:45			54	223	78	321	544	21:45			20	115	7	61	176
10:00			59		64			22:00			24		8		
10:15			60		64			22:15			21		9		
10:30			58		84			22:30			12		9		
10:45			70	247	72	284	531	22:45			9	66	5	31	97
11:00			66		93			23:00			12		9		
11:15			61		69			23:15			12		10		
11:30			78		72			23:30			18		4		
11:45			56	261	95	329	590	23:45			6	48	1	24	72
Total Vol.				1700		2256	**3956**					3475		2718	**6193**

Daily Totals

NB	SB	EB	WB	**Combined**
		5175	4974	**10149**

	AM			**PM**		
Split %	43.0%	57.0%	**39.0%**	56.1%	43.9%	**61.0%**
Peak Hour	07:15	07:00	**07:15**	16:15	15:45	**16:15**
Volume	338	458	**796**	496	444	**934**
P.H.F.	0.89	0.95	**0.92**	0.95	0.85	**0.99**

THURSDAY, JANUARY 23RD, 2014 CITY: LAKESIDE PROJECT: PTD14-0124-01

OLDE HWY 80 E-O PECAN PARK EAST

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			8		1			12:00			70		80		
00:15			6		4			12:15			86		100		
00:30			4		5			12:30			101		78		
00:45			7	25	4	14	39	12:45			83	340	84	342	682
01:00			3		1			13:00			86		78		
01:15			2		2			13:15			100		62		
01:30			2		2			13:30			89		64		
01:45			1	8	1	6	14	13:45			108	383	72	276	659
02:00			5		0			14:00			85		93		
02:15			4		5			14:15			92		110		
02:30			1		0			14:30			86		97		
02:45			5	15	1	6	21	14:45			80	343	86	386	729
03:00			4		4			15:00			97		70		
03:15			4		5			15:15			136		84		
03:30			1		4			15:30			139		74		
03:45			5	14	3	16	30	15:45			98	470	132	360	830
04:00			6		2			16:00			114		91		
04:15			0		12			16:15			148		105		
04:30			4		9			16:30			131		111		
04:45			5	15	10	33	48	16:45			126	519	116	423	942
05:00			15		13			17:00			121		101		
05:15			13		22			17:15			122		95		
05:30			12		38			17:30			103		95		
05:45			21	61	45	118	179	17:45			101	447	77	368	815
06:00			43		46			18:00			97		72		
06:15			41		54			18:15			76		58		
06:30			39		90			18:30			96		46		
06:45			47	170	97	287	457	18:45			64	333	48	224	557
07:00			68		91			19:00			68		52		
07:15			77		103			19:15			49		26		
07:30			84		111			19:30			45		40		
07:45			111	340	121	426	766	19:45			42	204	35	153	357
08:00			89		105			20:00			50		16		
08:15			77		88			20:15			38		31		
08:30			75		90			20:30			34		13		
08:45			71	312	106	389	701	20:45			35	157	23	83	240
09:00			64		100			21:00			25		14		
09:15			54		67			21:15			34		20		
09:30			53		80			21:30			32		20		
09:45			53	224	76	323	547	21:45			21	112	7	61	173
10:00			61		65			22:00			27		10		
10:15			58		60			22:15			19		8		
10:30			57		82			22:30			13		9		
10:45			67	243	78	285	528	22:45			10	69	6	33	102
11:00			67		90			23:00			13		8		
11:15			63		69			23:15			12		10		
11:30			75		66			23:30			18		4		
11:45			58	263	96	321	584	23:45			5	48	1	23	71
Total Vol.				1690		2224	**3914**					3425		2732	**6157**

Daily Totals

NB	SB	EB	WB	**Combined**
		5115	4956	**10071**

		AM				**PM**	
Split %		43.2%	56.8%	**38.9%**		55.6%	44.4%	**61.1%**
Peak Hour		07:15	07:15	**07:15**		16:15	15:45	**16:15**
Volume		361	440	**801**		526	439	**959**
P.H.F.		0.81	0.91	**0.86**		0.89	0.83	**0.95**

TUESDAY, JANUARY 28TH, 2014 CITY: LAKESIDE PROJECT: PTD14-0124-01

OLDE HWY 80 BTN BOND & CHIMNEY

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			9		2			12:00			77		88		
00:15			7		4			12:15			81		101		
00:30			5		3			12:30			105		77		
00:45			4	25	5	14	39	12:45			89	352	81	347	699
01:00			3		2			13:00			88		70		
01:15			2		4			13:15			103		62		
01:30			4		2			13:30			95		66		
01:45			2	11	1	9	20	13:45			116	402	70	268	670
02:00			1		1			14:00			80		91		
02:15			1		4			14:15			89		101		
02:30			3		1			14:30			88		94		
02:45			5	10	3	9	19	14:45			81	338	81	367	705
03:00			4		4			15:00			95		65		
03:15			4		3			15:15			131		88		
03:30			3		5			15:30			141		78		
03:45			2	13	6	18	31	15:45			90	457	131	362	819
04:00			4		2			16:00			110		90		
04:15			1		8			16:15			141		101		
04:30			2		11			16:30			135		113		
04:45			6	13	12	33	46	16:45			121	507	114	418	925
05:00			12		14			17:00			128		95		
05:15			14		18			17:15			116		90		
05:30			11		35			17:30			101		84		
05:45			18	55	44	111	166	17:45			98	443	84	353	796
06:00			37		51			18:00			90		81		
06:15			44		58			18:15			88		50		
06:30			36		92			18:30			81		51		
06:45			41	158	96	297	455	18:45			77	336	40	222	558
07:00			66		99			19:00			62		48		
07:15			78		116			19:15			51		31		
07:30			81		105			19:30			48		42		
07:45			116	341	122	442	783	19:45			50	211	36	157	368
08:00			90		108			20:00			43		15		
08:15			75		95			20:15			39		24		
08:30			88		92			20:30			40		20		
08:45			76	329	101	396	725	20:45			31	153	18	77	230
09:00			68		95			21:00			26		11		
09:15			55		66			21:15			31		19		
09:30			48		78			21:30			33		10		
09:45			51	222	71	310	532	21:45			27	117	7	47	164
10:00			66		66			22:00			21		9		
10:15			62		62			22:15			20		7		
10:30			58		81			22:30			15		5		
10:45			61	247	70	279	526	22:45			11	67	9	30	97
11:00			66		85			23:00			9		5		
11:15			64		66			23:15			10		7		
11:30			78		67			23:30			16		3		
11:45			60	268	91	309	577	23:45			5	40	2	17	57
Total Vol.				1692		2227	**3919**					3423		2665	**6088**

Daily Totals

NB	SB	EB	WB	**Combined**
		5115	4892	**10007**

	AM			**PM**		
Split %	43.2%	56.8%	**39.2%**	56.2%	43.8%	**60.8%**
Peak Hour	07:45	07:15	**07:15**	16:15	15:45	**16:15**
Volume	369	451	**816**	525	435	**948**
P.H.F.	0.80	0.92	**0.86**	0.93	0.83	**0.96**

THURSDAY, JANUARY 23RD, 2014 CITY: LAKESIDE PROJECT: PTD14-0124-01

OLDE HWY 80 BTN CHIMNEY & FLINN CREST

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			8		1			12:00			58		61		
00:15			4		3			12:15			69		65		
00:30			5		4			12:30			77		58		
00:45			8	25	4	12	37	12:45			75	279	57	241	520
01:00			3		1			13:00			68		57		
01:15			2		2			13:15			82		55		
01:30			3		2			13:30			68		51		
01:45			1	9	1	6	15	13:45			83	301	54	217	518
02:00			4		0			14:00			95		70		
02:15			5		4			14:15			77		100		
02:30			1		0			14:30			71		88		
02:45			5	15	0	4	19	14:45			66	309	66	324	633
03:00			2		4			15:00			73		51		
03:15			1		3			15:15			124		64		
03:30			1		5			15:30			114		57		
03:45			3	7	2	14	21	15:45			91	402	81	253	655
04:00			4		2			16:00			98		66		
04:15			0		12			16:15			99		80		
04:30			4		6			16:30			116		70		
04:45			4	12	10	30	42	16:45			102	415	78	294	709
05:00			7		10			17:00			111		68		
05:15			9		17			17:15			102		57		
05:30			6		33			17:30			107		48		
05:45			16	38	39	99	137	17:45			100	420	46	219	639
06:00			34		40			18:00			93		51		
06:15			21		45			18:15			66		43		
06:30			25		73			18:30			82		33		
06:45			28	108	83	241	349	18:45			62	303	38	165	468
07:00			42		56			19:00			54		38		
07:15			45		67			19:15			54		20		
07:30			50		70			19:30			40		25		
07:45			81	218	85	278	496	19:45			42	190	23	106	296
08:00			65		81			20:00			43		14		
08:15			49		121			20:15			39		24		
08:30			42		102			20:30			31		10		
08:45			61	217	81	385	602	20:45			32	145	17	65	210
09:00			50		89			21:00			28		13		
09:15			33		56			21:15			28		11		
09:30			39		67			21:30			28		11		
09:45			44	166	59	271	437	21:45			21	105	5	40	145
10:00			39		51			22:00			23		8		
10:15			53		44			22:15			16		6		
10:30			44		64			22:30			16		8		
10:45			53	189	66	225	414	22:45			6	61	6	28	89
11:00			46		63			23:00			11		5		
11:15			56		52			23:15			10		7		
11:30			60		55			23:30			16		3		
11:45			48	210	67	237	447	23:45			7	44	1	16	60
Total Vol.				1214		1802	**3016**					2974		1968	**4942**

Daily Totals

NB	SB	EB	WB	**Combined**
		4188	3770	**7958**

		AM			**PM**	
Split %	40.3%	59.7%	**37.9%**	60.2%	39.8%	**62.1%**
Peak Hour	11:45	08:15	**07:45**	16:30	14:00	**16:15**
Volume	252	393	**626**	431	324	**724**
P.H.F.	0.82	0.81	**0.92**	0.93	0.81	**0.97**

TUESDAY, JANUARY 28TH, 2014 CITY: LAKESIDE PROJECT: PTD14-0124-01

OLDE HWY 80 BTN FLINN CREST & MARINA

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			10		2			12:00			51		60		
00:15			7		2			12:15			66		65		
00:30			5		5			12:30			70		51		
00:45			4	26	4	13	39	12:45			78	265	44	220	485
01:00			6		3			13:00			51		58		
01:15			4		1			13:15			77		55		
01:30			2		1			13:30			75		51		
01:45			1	13	2	7	20	13:45			69	272	48	212	484
02:00			2		1			14:00			95		62		
02:15			1		2			14:15			88		88		
02:30			1		1			14:30			65		51		
02:45			4	8	0	4	12	14:45			67	315	68	269	584
03:00			3		3			15:00			68		52		
03:15			2		4			15:15			105		50		
03:30			3		4			15:30			98		53		
03:45			3	11	2	13	24	15:45			87	358	69	224	582
04:00			4		4			16:00			85		58		
04:15			2		8			16:15			95		66		
04:30			4		10			16:30			103		70		
04:45			5	15	9	31	46	16:45			101	384	75	269	653
05:00			6		11			17:00			97		66		
05:15			7		18			17:15			104		51		
05:30			6		24			17:30			88		48		
05:45			11	30	38	91	121	17:45			91	380	35	200	580
06:00			27		44			18:00			88		42		
06:15			26		41			18:15			70		31		
06:30			24		58			18:30			68		33		
06:45			28	105	60	203	308	18:45			51	277	35	141	418
07:00			44		51			19:00			44		31		
07:15			48		66			19:15			42		20		
07:30			41		62			19:30			40		19		
07:45			69	202	77	256	458	19:45			37	163	26	96	259
08:00			77		78			20:00			31		15		
08:15			55		105			20:15			38		21		
08:30			40		95			20:30			25		19		
08:45			59	231	80	358	589	20:45			28	122	21	76	198
09:00			48		78			21:00			22		13		
09:15			38		66			21:15			29		11		
09:30			31		54			21:30			23		9		
09:45			39	156	58	256	412	21:45			20	94	5	38	132
10:00			42		51			22:00			18		9		
10:15			50		40			22:15			19		7		
10:30			44		52			22:30			12		5		
10:45			58	194	62	205	399	22:45			8	57	6	27	84
11:00			57		58			23:00			10		7		
11:15			55		54			23:15			7		8		
11:30			58		58			23:30			9		3		
11:45			51	221	55	225	446	23:45			8	34	2	20	54
Total Vol.				1212		1662	**2874**					2721		1792	**4513**

Daily Totals

NB	SB	EB	WB	**Combined**
		3933	3454	**7387**

	AM			**PM**		
Split %	42.2%	57.8%	**38.9%**	60.3%	39.7%	**61.1%**
Peak Hour	07:30	08:00	**07:45**	16:30	16:15	**16:15**
Volume	242	358	**596**	405	277	**673**
P.H.F.	0.79	0.85	**0.93**	0.97	0.92	**0.96**

THURSDAY, JANUARY 23RD, 2014 CITY: LAKESIDE PROJECT: PTD14-0124-01

OLDE HWY 80 E-O MARINA SPRINGS

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			9		1			12:00			47		57		
00:15			4		2			12:15			63		58		
00:30			2		4			12:30			69		49		
00:45			8	23	4	11	34	12:45			72	251	49	213	464
01:00			2		1			13:00			59		55		
01:15			1		1			13:15			80		48		
01:30			1		0			13:30			69		49		
01:45			1	5	1	3	8	13:45			68	276	48	200	476
02:00			4		0			14:00			89		56		
02:15			5		3			14:15			78		96		
02:30			0		0			14:30			66		48		
02:45			6	15	0	3	18	14:45			67	300	61	261	561
03:00			2		4			15:00			59		40		
03:15			1		3			15:15			107		54		
03:30			1		2			15:30			95		50		
03:45			3	7	2	11	18	15:45			90	351	77	221	572
04:00			3		2			16:00			81		56		
04:15			1		11			16:15			91		68		
04:30			2		8			16:30			111		69		
04:45			3	9	6	27	36	16:45			93	376	64	257	633
05:00			5		9			17:00			93		61		
05:15			10		17			17:15			105		55		
05:30			5		25			17:30			95		41		
05:45			14	34	33	84	118	17:45			87	380	38	195	575
06:00			33		39			18:00			80		50		
06:15			18		40			18:15			60		39		
06:30			27		65			18:30			74		26		
06:45			25	103	62	206	309	18:45			47	261	30	145	406
07:00			40		50			19:00			49		35		
07:15			45		57			19:15			40		15		
07:30			49		58			19:30			39		19		
07:45			77	211	76	241	452	19:45			35	163	22	91	254
08:00			68		70			20:00			35		12		
08:15			47		112			20:15			37		25		
08:30			41		86			20:30			26		11		
08:45			62	218	70	338	556	20:45			27	125	16	64	189
09:00			45		76			21:00			26		14		
09:15			32		51			21:15			22		10		
09:30			30		56			21:30			21		9		
09:45			42	149	56	239	388	21:45			18	87	5	38	125
10:00			33		45			22:00			23		5		
10:15			51		37			22:15			15		5		
10:30			36		54			22:30			13		8		
10:45			51	171	63	199	370	22:45			4	55	5	23	78
11:00			44		53			23:00			9		5		
11:15			59		50			23:15			9		7		
11:30			51		51			23:30			13		2		
11:45			46	200	54	208	408	23:45			6	37	1	15	52
Total Vol.				1145		1570	**2715**					2662		1723	**4385**

Daily Totals

NB	SB	EB	WB	**Combined**
		3807	3293	**7100**

	AM			**PM**		
Split %	42.2%	57.8%	**38.2%**	60.7%	39.3%	**61.8%**
Peak Hour	07:30	07:45	**07:45**	16:30	15:45	**16:30**
Volume	241	344	**577**	402	270	**651**
P.H.F.	0.78	0.77	**0.91**	0.91	0.88	**0.90**

TUESDAY, JANUARY 28TH, 2014 CITY: LAKESIDE PROJECT: PTD14-0124-01

RIOS S-O PECAN PARK

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	3		3					12:00	20		16				
00:15	1		2					12:15	18		21				
00:30	2		2					12:30	19		20				
00:45	4	10	3	10			20	12:45	22	79	17	74			153
01:00	0		1					13:00	7		25				
01:15	2		1					13:15	22		17				
01:30	0		1					13:30	23		18				
01:45	1	3	1	4			7	13:45	22	74	22	82			156
02:00	2		2					14:00	13		28				
02:15	0		2					14:15	22		28				
02:30	0		0					14:30	26		38				
02:45	1	3	0	4			7	14:45	28	89	41	135			224
03:00	2		0					15:00	30		62				
03:15	0		3					15:15	89		50				
03:30	3		0					15:30	44		40				
03:45	4	9	1	4			13	15:45	37	200	40	192			392
04:00	3		1					16:00	51		44				
04:15	7		1					16:15	44		48				
04:30	7		1					16:30	31		51				
04:45	3	20	0	3			23	16:45	33	159	32	175			334
05:00	9		0					17:00	28		39				
05:15	14		2					17:15	21		40				
05:30	19		4					17:30	26		31				
05:45	23	65	0	6			71	17:45	21	96	32	142			238
06:00	19		4					18:00	14		32				
06:15	27		5					18:15	19		28				
06:30	36		8					18:30	19		30				
06:45	38	120	7	24			144	18:45	18	70	28	118			188
07:00	38		10					19:00	11		28				
07:15	40		11					19:15	8		25				
07:30	44		15					19:30	15		20				
07:45	31	153	19	55			208	19:45	7	41	18	91			132
08:00	28		21					20:00	9		20				
08:15	31		44					20:15	6		17				
08:30	66		68					20:30	7		14				
08:45	60	185	51	184			369	20:45	3	25	14	65			90
09:00	67		69					21:00	4		15				
09:15	37		20					21:15	6		16				
09:30	20		10					21:30	5		12				
09:45	19	143	14	113			256	21:45	6	21	16	59			80
10:00	24		20					22:00	3		10				
10:15	22		13					22:15	5		5				
10:30	11		9					22:30	7		10				
10:45	25	82	11	53			135	22:45	5	20	9	34			54
11:00	17		20					23:00	5		11				
11:15	18		32					23:15	3		4				
11:30	30		15					23:30	0		7				
11:45	29	94	20	87			181	23:45	1	9	0	22			31
Total Vol.		887		547			**1434**			883		1189			**2072**

Daily Totals

NB	SB	EB	WB	Combined
1770	1736			**3506**

	AM			PM		
Split %	61.9%	38.1%	**40.9%**	42.6%	57.4%	**59.1%**
Peak Hour	08:30	08:15	**08:15**	15:15	14:45	**15:15**
Volume	230	232	**456**	221	193	**395**
P.H.F.	0.86	0.84	**0.84**	0.58	0.78	**0.71**

WEDNESDAY, JANUARY 29TH, 2014 CITY: LAKESIDE PROJECT: PTD14-0124-01

MAPLEVIEW BTN MAINE & ASHWOOD

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			51		49			12:00			137		122		
00:15			37		56			12:15			136		119		
00:30			37		51			12:30			127		149		
00:45			33	158	50	206	364	12:45			145	545	112	502	1047
01:00			25		35			13:00			155		124		
01:15			23		44			13:15			160		159		
01:30			25		39			13:30			178		166		
01:45			39	112	46	164	276	13:45			178	671	137	586	1257
02:00			15		40			14:00			172		141		
02:15			13		45			14:15			196		167		
02:30			18		24			14:30			208		184		
02:45			12	58	38	147	205	14:45			214	790	159	651	1441
03:00			12		39			15:00			238		137		
03:15			10		41			15:15			207		162		
03:30			10		40			15:30			184		147		
03:45			15	47	39	159	206	15:45			222	851	131	577	1428
04:00			15		34			16:00			205		188		
04:15			8		41			16:15			218		135		
04:30			11		65			16:30			222		168		
04:45			22	56	63	203	259	16:45			215	860	161	652	1512
05:00			22		82			17:00			212		177		
05:15			32		119			17:15			235		151		
05:30			32		125			17:30			208		154		
05:45			64	150	142	468	618	17:45			206	861	101	583	1444
06:00			64		151			18:00			212		116		
06:15			81		162			18:15			205		106		
06:30			108		177			18:30			219		109		
06:45			114	367	161	651	1018	18:45			184	820	92	423	1243
07:00			98		205			19:00			196		104		
07:15			141		168			19:15			151		107		
07:30			155		195			19:30			165		76		
07:45			141	535	222	790	1325	19:45			174	686	100	387	1073
08:00			135		218			20:00			136		101		
08:15			134		181			20:15			130		122		
08:30			184		161			20:30			124		85		
08:45			116	569	110	670	1239	20:45			104	494	77	385	879
09:00			137		174			21:00			119		65		
09:15			129		155			21:15			104		55		
09:30			128		147			21:30			118		60		
09:45			134	528	129	605	1133	21:45			122	463	51	231	694
10:00			113		131			22:00			101		51		
10:15			126		164			22:15			92		61		
10:30			116		120			22:30			68		61		
10:45			132	487	117	532	1019	22:45			69	330	58	231	561
11:00			126		118			23:00			76		66		
11:15			168		136			23:15			57		69		
11:30			143		136			23:30			42		47		
11:45			183	620	141	531	1151	23:45			64	239	39	221	460
Total Vol.				3687		5126	**8813**					7610		5429	**13039**

Daily Totals

NB	SB	EB	WB	**Combined**
		11297	10555	**21852**

	AM			PM		
Split %	41.8%	58.2%	**40.3%**	58.4%	41.6%	**59.7%**
Peak Hour	11:15	07:30	**07:30**	16:30	16:30	**16:30**
Volume	631	816	**1381**	884	657	**1541**
P.H.F.	0.86	0.92	**0.95**	0.94	0.93	**0.99**

WEDNESDAY, JANUARY 29TH, 2014 CITY: LAKESIDE PROJECT: PTD14-0124-01

MAPLEVIEW BTN ASHWOOD & PINO

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			20		6			12:00			65		61		
00:15			15		14			12:15			61		61		
00:30			13		14			12:30			87		98		
00:45			10	58	3	37	95	12:45			84	297	69	289	586
01:00			10		7			13:00			78		67		
01:15			7		8			13:15			103		64		
01:30			2		12			13:30			80		85		
01:45			9	28	5	32	60	13:45			134	395	84	300	695
02:00			7		8			14:00			98		74		
02:15			10		6			14:15			93		87		
02:30			9		4			14:30			120		110		
02:45			4	30	3	21	51	14:45			153	464	100	371	835
03:00			5		4			15:00			159		86		
03:15			4		7			15:15			130		82		
03:30			7		6			15:30			98		92		
03:45			6	22	14	31	53	15:45			136	523	87	347	870
04:00			9		14			16:00			151		98		
04:15			4		8			16:15			155		105		
04:30			10		19			16:30			156		111		
04:45			6	29	27	68	97	16:45			167	629	81	395	1024
05:00			18		28			17:00			168		110		
05:15			18		35			17:15			199		98		
05:30			20		44			17:30			154		91		
05:45			39	95	51	158	253	17:45			177	698	88	387	1085
06:00			39		48			18:00			153		74		
06:15			47		55			18:15			151		80		
06:30			43		68			18:30			137		45		
06:45			63	192	84	255	447	18:45			99	540	63	262	802
07:00			88		66			19:00			89		48		
07:15			81		70			19:15			84		61		
07:30			84		191			19:30			76		37		
07:45			89	342	162	489	831	19:45			89	338	42	188	526
08:00			115		166			20:00			76		33		
08:15			81		135			20:15			67		35		
08:30			90		131			20:30			58		46		
08:45			77	363	88	520	883	20:45			47	248	32	146	394
09:00			65		97			21:00			43		22		
09:15			80		108			21:15			43		24		
09:30			68		97			21:30			47		18		
09:45			46	259	90	392	651	21:45			42	175	28	92	267
10:00			58		75			22:00			42		22		
10:15			63		80			22:15			41		15		
10:30			55		74			22:30			36		15		
10:45			90	266	56	285	551	22:45			30	149	18	70	219
11:00			72		81			23:00			20		16		
11:15			78		79			23:15			26		12		
11:30			68		71			23:30			14		14		
11:45			67	285	81	312	597	23:45			12	72	8	50	122
Total Vol.				1969		2600	**4569**					4528		2897	**7425**

Daily Totals

NB	SB	EB	WB	**Combined**
		6497	5497	**11994**

	AM			**PM**		
Split %	43.1%	56.9%	**38.1%**	61.0%	39.0%	**61.9%**
Peak Hour	07:45	07:30	**07:30**	17:00	16:15	**16:30**
Volume	375	654	**1023**	698	407	**1090**
P.H.F.	0.82	0.86	**0.91**	0.88	0.92	**0.92**

WEDNESDAY, JANUARY 29TH, 2014 CITY: LAKESIDE PROJECT: PTD14-0124-01

LAKE JENNINGS BTN PINO & EL MONTE

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	10		20					12:00	55		53				
00:15	14		9					12:15	57		52				
00:30	5		11					12:30	69		79				
00:45	4	33	12	52			85	12:45	62	243	68	252			495
01:00	14		9					13:00	52		69				
01:15	12		6					13:15	82		82				
01:30	4		3					13:30	62		71				
01:45	6	36	7	25			61	13:45	63	259	92	314			573
02:00	7		7					14:00	65		73				
02:15	12		8					14:15	77		76				
02:30	5		8					14:30	63		113				
02:45	6	30	4	27			57	14:45	62	267	115	377			644
03:00	4		4					15:00	72		130				
03:15	2		4					15:15	98		109				
03:30	3		4					15:30	87		76				
03:45	4	13	5	17			30	15:45	78	335	134	449			784
04:00	7		9					16:00	81		121				
04:15	6		3					16:15	95		155				
04:30	14		8					16:30	98		141				
04:45	11	38	7	27			65	16:45	70	344	140	557			901
05:00	6		18					17:00	116		138				
05:15	16		16					17:15	90		142				
05:30	21		22					17:30	84		135				
05:45	27	70	41	97			167	17:45	61	351	141	556			907
06:00	33		34					18:00	72		141				
06:15	51		47					18:15	103		117				
06:30	56		43					18:30	75		113				
06:45	55	195	54	178			373	18:45	65	315	83	454			769
07:00	44		68					19:00	67		74				
07:15	31		70					19:15	36		68				
07:30	126		74					19:30	57		63				
07:45	131	332	88	300			632	19:45	45	205	70	275			480
08:00	138		105					20:00	55		56				
08:15	116		81					20:15	35		53				
08:30	105		88					20:30	34		47				
08:45	80	439	70	344			783	20:45	26	150	35	191			341
09:00	89		61					21:00	30		36				
09:15	90		71					21:15	33		36				
09:30	102		66					21:30	27		35				
09:45	83	364	43	241			605	21:45	18	108	31	138			246
10:00	102		56					22:00	25		31				
10:15	76		57					22:15	15		33				
10:30	85		59					22:30	21		33				
10:45	74	337	77	249			586	22:45	22	83	22	119			202
11:00	72		59					23:00	15		16				
11:15	56		71					23:15	11		19				
11:30	53		62					23:30	15		13				
11:45	73	254	60	252			506	23:45	9	50	9	57			107
Total Vol.		2141		1809			**3950**			2710		3739			**6449**

Daily Totals

NB	SB	EB	WB	**Combined**
4851	5548			**10399**

	AM			**PM**		
Split %	54.2%	45.8%	**38.0%**	42.0%	58.0%	**62.0%**
Peak Hour	07:30	07:45	**07:30**	16:15	16:15	**16:15**
Volume	511	362	**859**	379	574	**953**
P.H.F.	0.93	0.86	**0.88**	0.85	0.93	**0.94**

WEDNESDAY, JANUARY 29TH, 2014 CITY: LAKESIDE PROJECT: PTD14-0124-01

I-8 BUS ROUTE E-O LOS COCHES

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			16		5			12:00			83		69		
00:15			7		7			12:15			48		68		
00:30			13		2			12:30			72		64		
00:45			18	54	6	20	74	12:45			82	285	65	266	551
01:00			9		5			13:00			63		67		
01:15			3		5			13:15			64		83		
01:30			4		2			13:30			83		59		
01:45			6	22	4	16	38	13:45			78	288	61	270	558
02:00			1		2			14:00			100		58		
02:15			2		4			14:15			79		59		
02:30			2		4			14:30			83		77		
02:45			5	10	1	11	21	14:45			80	342	90	284	626
03:00			1		3			15:00			96		74		
03:15			2		4			15:15			113		82		
03:30			4		2			15:30			104		64		
03:45			3	10	4	13	23	15:45			112	425	56	276	701
04:00			3		4			16:00			108		88		
04:15			3		6			16:15			62		61		
04:30			3		5			16:30			77		70		
04:45			3	12	15	30	42	16:45			105	352	68	287	639
05:00			3		19			17:00			121		75		
05:15			4		17			17:15			142		81		
05:30			8		35			17:30			133		60		
05:45			19	34	50	121	155	17:45			90	486	77	293	779
06:00			18		51			18:00			87		71		
06:15			15		56			18:15			99		81		
06:30			15		54			18:30			95		48		
06:45			23	71	82	243	314	18:45			95	376	56	256	632
07:00			33		98			19:00			92		48		
07:15			48		90			19:15			64		37		
07:30			35		116			19:30			57		41		
07:45			40	156	80	384	540	19:45			50	263	30	156	419
08:00			51		81			20:00			48		40		
08:15			55		84			20:15			37		35		
08:30			62		82			20:30			46		27		
08:45			48	216	77	324	540	20:45			52	183	23	125	308
09:00			49		101			21:00			53		39		
09:15			43		96			21:15			39		33		
09:30			47		88			21:30			44		25		
09:45			43	182	49	334	516	21:45			37	173	23	120	293
10:00			47		73			22:00			22		13		
10:15			58		65			22:15			19		23		
10:30			68		67			22:30			24		26		
10:45			52	225	61	266	491	22:45			25	90	18	80	170
11:00			71		75			23:00			21		21		
11:15			65		84			23:15			20		7		
11:30			67		57			23:30			13		7		
11:45			61	264	57	273	537	23:45			13	67	5	40	107
Total Vol.				1256		2035	**3291**					3330		2453	**5783**

Daily Totals

NB	SB	EB	WB	**Combined**
		4586	4488	**9074**

	AM			**PM**		
Split %	38.2%	61.8%	**36.3%**	57.6%	42.4%	**63.7%**
Peak Hour	11:15	06:45	**08:15**	16:45	14:30	**16:45**
Volume	276	386	**558**	501	323	**785**
P.H.F.	0.83	0.83	**0.93**	0.88	0.90	**0.88**

WEDNESDAY, FEBRUARY 26, 2014 CITY: LAKESIDE PROJECT: PTD14-0124-01

JULIAN W-O LAKE JENNINGS PARK

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			2		1			12:00			37		45		
00:15			4		1			12:15			52		44		
00:30			0		0			12:30			31		37		
00:45			1	7	1	3	10	12:45			30	150	35	161	311
01:00			0		1			13:00			30		41		
01:15			2		3			13:15			47		28		
01:30			1		1			13:30			39		28		
01:45			2	5	0	5	10	13:45			39	155	32	129	284
02:00			1		0			14:00			28		24		
02:15			0		0			14:15			35		25		
02:30			3		0			14:30			48		29		
02:45			2	6	1	1	7	14:45			29	140	24	102	242
03:00			0		0			15:00			37		37		
03:15			1		0			15:15			39		29		
03:30			2		4			15:30			41		29		
03:45			5	8	2	6	14	15:45			37	154	38	133	287
04:00			1		0			16:00			41		29		
04:15			1		3			16:15			40		38		
04:30			2		3			16:30			55		37		
04:45			3	7	2	8	15	16:45			53	189	38	142	331
05:00			3		1			17:00			55		38		
05:15			8		3			17:15			55		38		
05:30			9		8			17:30			52		32		
05:45			16	36	8	20	56	17:45			53	215	51	159	374
06:00			12		10			18:00			51		30		
06:15			9		14			18:15			44		32		
06:30			28		19			18:30			32		30		
06:45			37	86	28	71	157	18:45			31	158	26	118	276
07:00			29		31			19:00			31		23		
07:15			49		30			19:15			25		19		
07:30			33		49			19:30			26		18		
07:45			50	161	35	145	306	19:45			21	103	21	81	184
08:00			31		47			20:00			20		12		
08:15			32		47			20:15			17		11		
08:30			44		48			20:30			22		21		
08:45			26	133	32	174	307	20:45			12	71	15	59	130
09:00			36		32			21:00			9		11		
09:15			34		28			21:15			13		11		
09:30			16		20			21:30			12		11		
09:45			38	124	26	106	230	21:45			10	44	5	38	82
10:00			28		15			22:00			3		8		
10:15			23		23			22:15			4		6		
10:30			24		17			22:30			6		9		
10:45			19	94	23	78	172	22:45			10	23	8	31	54
11:00			29		28			23:00			3		2		
11:15			24		26			23:15			3		3		
11:30			17		21			23:30			3		4		
11:45			20	90	34	109	199	23:45			5	14	3	12	26
Total Vol.				757		726	**1483**					1416		1165	**2581**

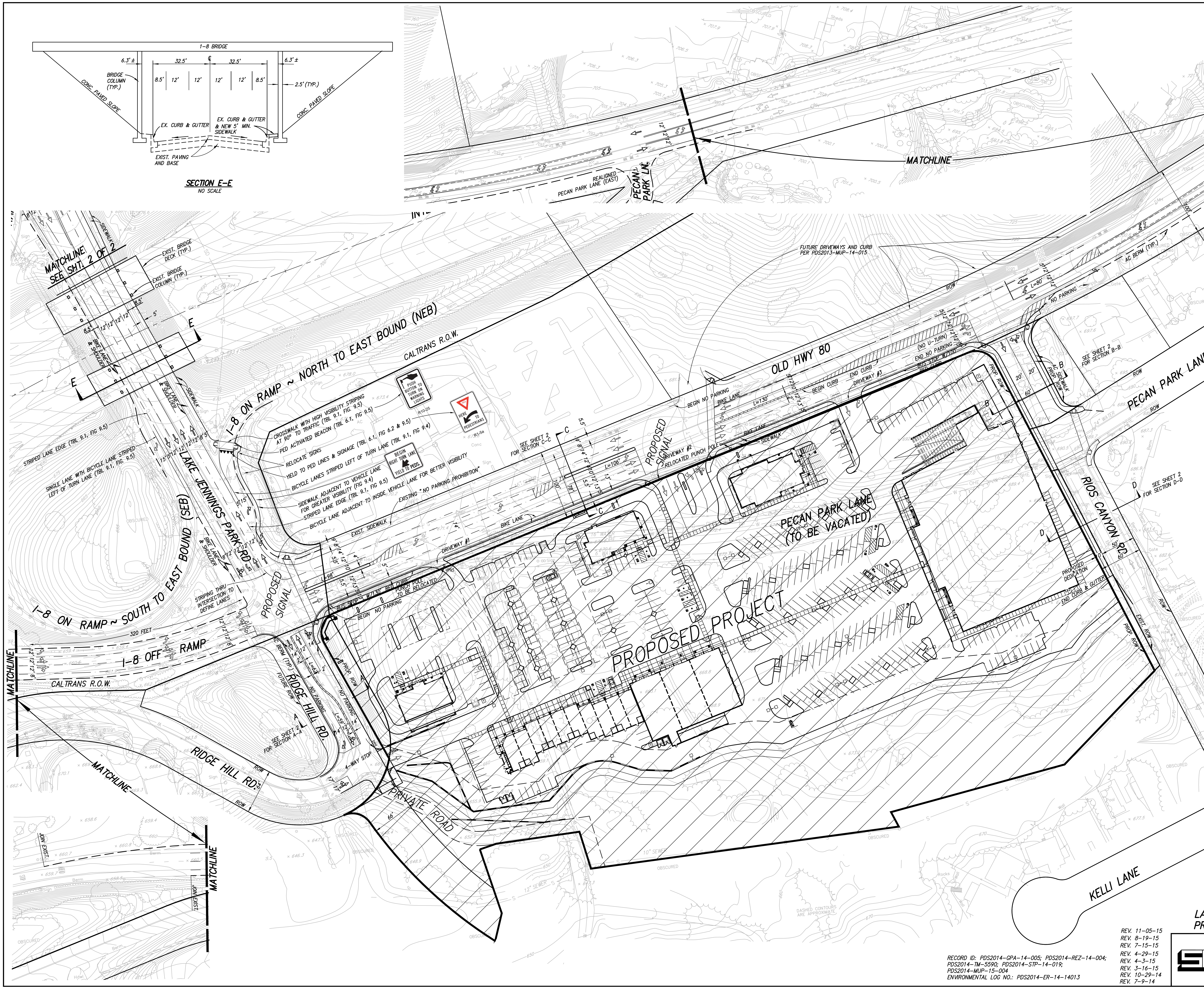
Daily Totals

NB	SB	EB	WB	**Combined**
		2173	1891	**4064**

	AM			PM		
Split %	51.0%	49.0%	**36.5%**	54.9%	45.1%	**63.5%**
Peak Hour	07:15	07:30	**07:45**	16:30	12:00	**17:00**
Volume	163	178	**334**	218	161	**374**
P.H.F.	0.82	0.91	**0.91**	0.99	0.89	**0.90**

APPENDIX D

PROPOSED ROADWAY IMPROVEMENTS & SIGHT DISTANCE ANALYSIS



LEGEND:

PROPOSED PROJECT BOUNDARY	▬▬▬
AC BERM	— — —
CONCRETE CURB	———
STRIPING	—— · ——
TRAFFIC ARROWS	⇨

NOTES:

1. FINAL DESIGN TO BE TO THE SATISFACTION OF THE COUNTY ENGINEER.
2. FINGER ISLANDS IN OLDE HWY 80 ARE NOT TO EXCEED 200' IN LENGTH.
3. ALL REFERENCES TO FIGURES AND TABLES CAN BE FOUND IN THE CALTRANS 2010 PUBLICATION "COMPLETE INTERSECTIONS: A GUIDE TO RECONSTRUCTING INTERSECTIONS AND INTERCHANGES FOR BICYCLISTS AND PEDESTRIANS"

RECORD ID: PDS2014-GPA-14-005; PDS2014-REZ-14-004;
PDS2014-TM-5590; PDS2014-STP-14-019;
PDS2014-MUP-15-004
ENVIRONMENTAL LOG NO.: PDS2014-ER-14-14013

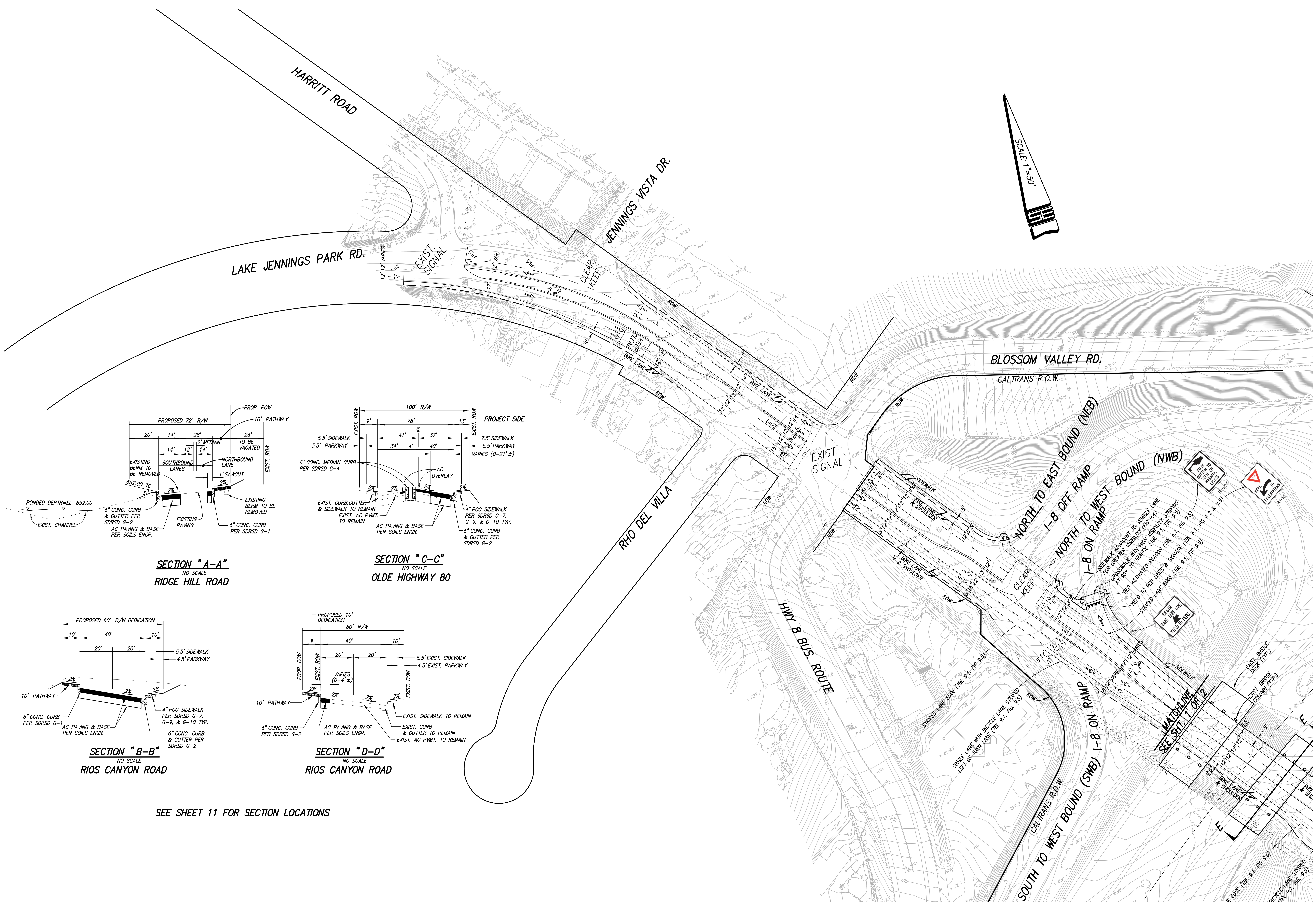
REV. 11-05-15
REV. 8-19-15
REV. 7-15-15
REV. 4-29-15
REV. 4-3-15
REV. 3-16-15
REV. 10-29-14
REV. 7-9-14

LAKE JENNINGS MARKETPLACE
PROPOSED ROADWAY PLAN

SHT. 1 OF 2

STUART ENGINEERING
7525 METROPOLITAN DRIVE STE. 308
SAN DIEGO, CA 92108 (619) 296-1010
FAX (619) 296-9276 EMAIL: stuart@inetworld.net

DESIGNER: N.H.
DRAWN: JR
DATE: 03-26-14
JOB NO.: 921-13-05



SECTION "A-A"
NO SCALE
RIDGE HILL ROAD

SECTION "C-C"
NO SCALE
OLDE HIGHWAY 80

SECTION "B-B"
NO SCALE
RIOS CANYON ROAD

SECTION "D-D"
NO SCALE
RIOS CANYON ROAD

SEE SHEET 11 FOR SECTION LOCATIONS

RECORD ID: PDS2014-GPA-14-005; PDS2014-REZ-14-004;
PDS2014-TM-5590; PDS2014-STP-14-019;
PDS2014-MUP-15-004
ENVIRONMENTAL LOG NO.: PDS2014-ER-14-14013

REV. 11-05-15
REV. 8-19-15
REV. 7-15-15
REV. 4-29-15
REV. 4-3-15
REV. 3-16-15
REV. 10-29-14
REV. 7-9-14

LAKE JENNINGS MARKETPLACE
PROPOSED ROADWAY PLAN

SHT. 2 OF 2

STUART ENGINEERING
7525 METROPOLITAN DRIVE STE. 308
SAN DIEGO, CA 92108 (619) 296-1010
FAX (619) 296-9276 EMAIL: stuart@inetworld.net

DESIGNER: N.H.
DRAWN: JR
DATE: 03-26-14
JOB NO.: 921-13-05

October 29, 2014 921-13-06

County of San Diego
Planning and Development Services
Attn: Ed Sinsay
5201 Ruffin Rd.
San Diego, CA 92123

SUBJECT: Olde Highway 80 and Ridge Hill Road TM-5590

Physically, along Olde Highway 80, there is a minimum of five-hundred fifty feet (550') of unobstructed sight distance in both directions from the two proposed driveway openings, per the Design Standards of Section 6.1.E of the County of San Diego Public Road Standards (approved March 2012). Said lines of sight fall within the existing right-of-way and a clear space easement is not required. The sight distance of adjacent driveways and street openings within five-hundred fifty feet (550') beyond all existing road improvements on Olde Highway 80 will not be adversely affected by this project.

Physically, along Ridge Hill Road, there is a minimum of three hundred feet (300') of unobstructed sight distance in both directions from the proposed driveway opening, per the Design Standards of Section 6.1.E of the County of San Diego Public Road Standards (approved March 2012). Said lines of sight fall within the existing right-of-way and a clear space easement is not required. The sight distance of adjacent driveways and street openings within three hundred feet (300') beyond all existing road improvements on Ridge Hill Road will not be adversely affected by this project.

REGISTERED PROFESSIONAL ENGINEER
STUART PEACE
No. 27232
Exp. 3-31-15
CIVIL
STATE OF CALIFORNIA

Stuart Peace 10-29-14

STUART PEACE R.C.E. NO. 27232
MY REGISTRATION EXPIRES 3/31/15

ENC./ LAKE JENNINGS MARKETPLACE SIGHT DISTANCE EXHIBIT

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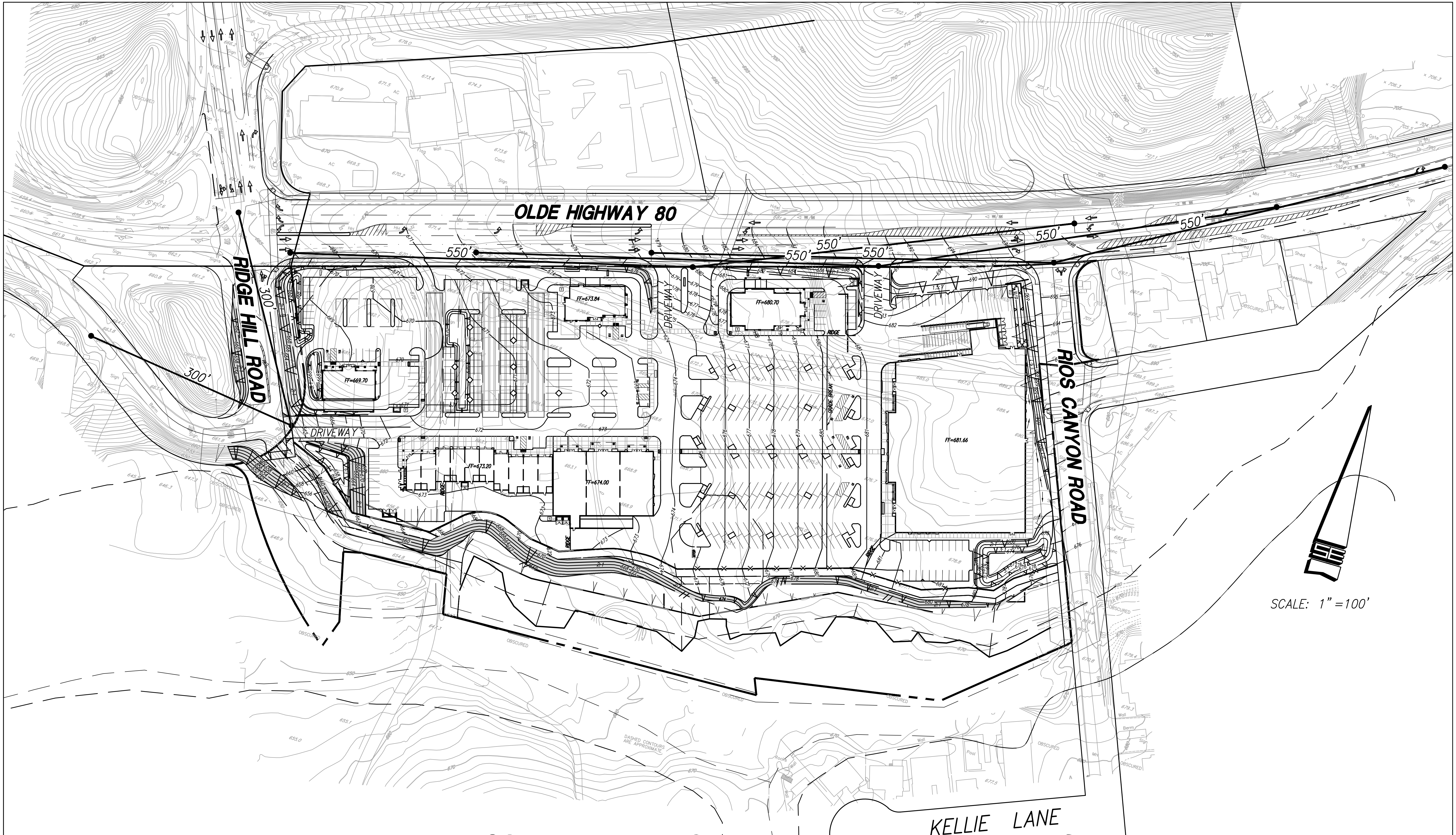

LAKE JENNINGS MARKETPLACE
SIGHT DISTANCE EXHIBIT

STUART ENGINEERING
7525 METROPOLITAN DRIVE STE. 308
SAN DIEGO, CA 92108 (619) 296-1010
FAX (619) 296-9276 EMAIL: SE@stuartengineering.com

DESIGNER: N.H.
DRAWN: N.H.
DATE: 10-29-14
JOB NO.: 921-13-06

Civil Engineering/Surveying/Planning
STUART ENGINEERING
PEACE ENGINEERING, INC.,
A CALIFORNIA CORPORATION
7525 Metropolitan Drive, Suite 308
San Diego, California 92108
(619) 296-1010 FAX (619) 296-9276
SE@stuartengineering.com

July 16, 2015 921-13-06

County of San Diego
Planning and Development Services
Attn: Ed Sinsay
5201 Ruffin Rd.
San Diego, CA 92123

SUBJECT: Olde Highway 80 and Pecan Park Lane [East] TM-5590

Physically, along Olde Highway 80, there is a minimum of five-hundred fifty feet (550') of unobstructed sight distance in both directions from the proposed re-alignment of Pecan Park Lane [East], per the Design Standards of Section 6.1.E of the County of San Diego Public Road Standards (approved March 2012). Said lines of sight fall within the existing right-of-way and a clear space easement is not required. The sight distance of adjacent driveways and street openings within five-hundred fifty feet (550') beyond all existing road improvements on Olde Highway 80 will not be adversely affected by this project.

STUART PEACE
No. 27232
Exp. 3-31-17

Stuart Peace 7/16/2015

STUART PEACE R.C.E. NO. 27232
MY REGISTRATION EXPIRES 3/31/17

ENC./ LAKE JENNINGS MARKETPLACE PECAN PARK LANE [EAST] SIGHT DISTANCE EXHIBIT

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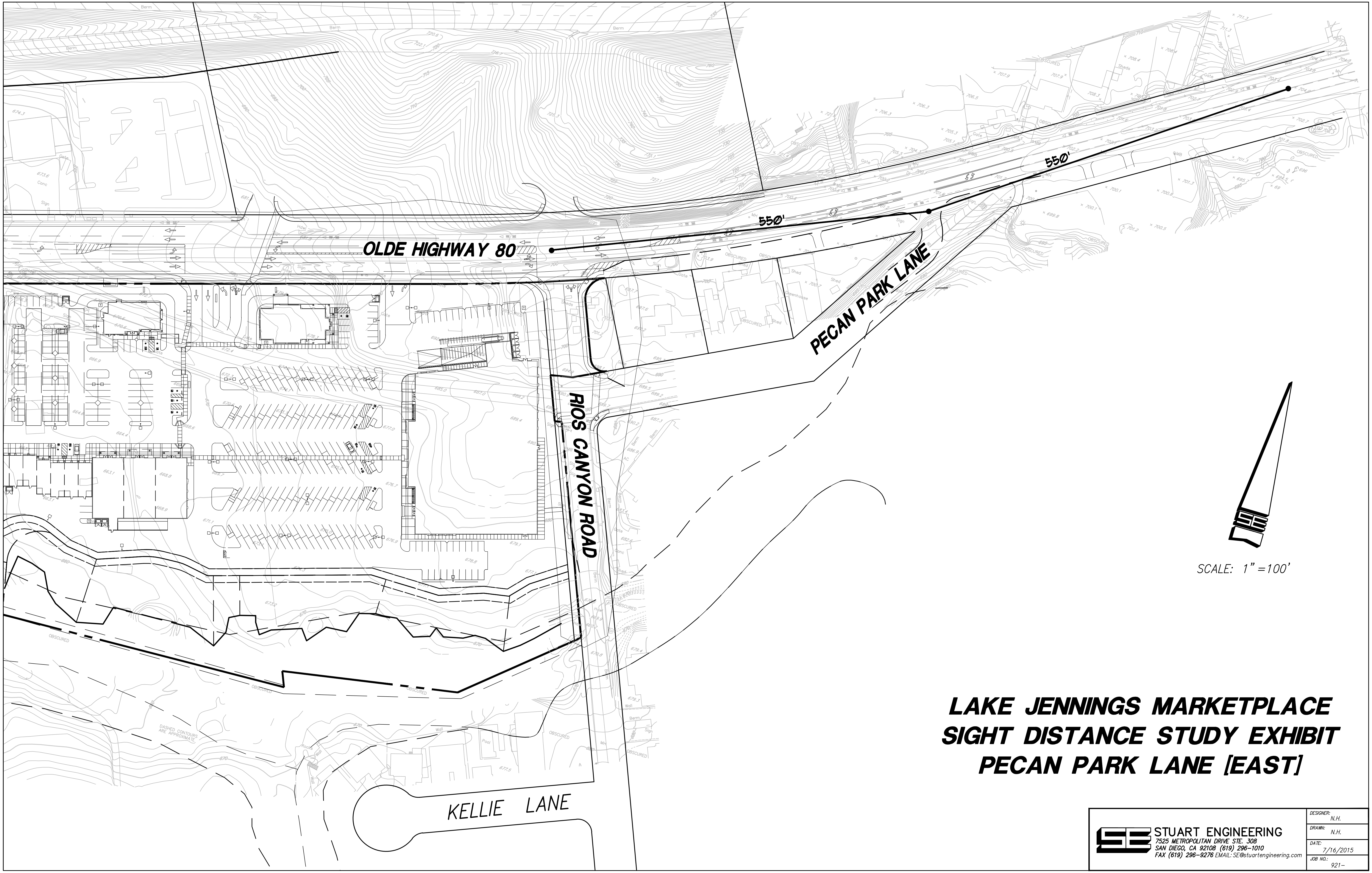

LAKE JENNINGS MARKETPLACE
SIGHT DISTANCE STUDY EXHIBIT
PECAN PARK LANE [EAST]

STUART ENGINEERING
7525 METROPOLITAN DRIVE STE. 308
SAN DIEGO, CA 92108 (619) 296-1010
FAX (619) 296-9276 EMAIL: SE@stuartengineering.com

DESIGNER: N.H.
DRAWN: N.H.
DATE: 7/16/2015
JOB NO.: 921-

APPENDIX E

EXISTING CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

3: Mapleview Street & Ashwood Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↑	↱		✥			↰↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.85		0.98			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99			0.98	1.00
Satd. Flow (prot)	1770	3425		1770	3539	1583		1807			1821	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.88			0.61	1.00
Satd. Flow (perm)	1770	3425		1770	3539	1583		1607			1139	1583
Volume (vph)	260	211	58	41	487	250	43	143	33	129	153	436
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	274	222	61	43	513	263	45	151	35	136	161	459
RTOR Reduction (vph)	0	27	0	0	0	235	0	8	0	0	0	274
Lane Group Flow (vph)	274	256	0	43	513	28	0	223	0	0	297	185
Turn Type	Prot			Prot		Over	pm+pt			pm+pt		Over
Protected Phases	7	4		3	8	1	5	2		1	6	7
Permitted Phases							2			6		
Actuated Green, G (s)	17.0	31.5		2.8	17.3	7.3		17.9			30.6	17.0
Effective Green, g (s)	18.4	32.9		4.2	18.7	8.7		19.3			32.0	18.4
Actuated g/C Ratio	0.23	0.41		0.05	0.23	0.11		0.24			0.39	0.23
Clearance Time (s)	5.4	5.4		5.4	5.4	5.4		5.4			5.4	5.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	402	1389		92	816	170		382			523	359
v/s Ratio Prot	c0.15	0.07		0.02	c0.14	0.02					c0.06	0.12
v/s Ratio Perm								0.14			c0.16	
v/c Ratio	0.68	0.18		0.47	0.63	0.17		0.58			0.57	0.52
Uniform Delay, d1	28.7	15.5		37.4	28.1	32.9		27.4			19.2	27.5
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	4.7	0.1		3.7	1.5	0.5		2.3			1.4	1.3
Delay (s)	33.4	15.5		41.1	29.6	33.4		29.6			20.6	28.7
Level of Service	C	B		D	C	C		C			C	C
Approach Delay (s)		24.3			31.4			29.6			25.5	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	27.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	81.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↑	↱		✥			↰↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85		0.97			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.96			0.99	1.00
Satd. Flow (prot)	1770	3461		1770	3539	1583		1743			1846	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.80			0.97	1.00
Satd. Flow (perm)	1770	3461		1770	3539	1583		1451			1809	1583
Volume (vph)	8	304	52	16	491	1	109	7	33	3	13	25
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	8	320	55	17	517	1	115	7	35	3	14	26
RTOR Reduction (vph)	0	18	0	0	0	1	0	8	0	0	0	13
Lane Group Flow (vph)	8	357	0	17	517	0	0	149	0	0	17	13
Turn Type	Prot			Prot		Perm	Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases						8	2			6		6
Actuated Green, G (s)	1.0	13.2		1.2	13.4	13.4		29.8			29.8	29.8
Effective Green, g (s)	2.4	14.6		2.6	14.8	14.8		31.2			31.2	31.2
Actuated g/C Ratio	0.04	0.24		0.04	0.25	0.25		0.52			0.52	0.52
Clearance Time (s)	5.4	5.4		5.4	5.4	5.4		5.4			5.4	5.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	70	837		76	867	388		750			934	818
v/s Ratio Prot	0.00	0.10		c0.01	c0.15							
v/s Ratio Perm						0.00		c0.10			0.01	0.01
v/c Ratio	0.11	0.43		0.22	0.60	0.00		0.20			0.02	0.02
Uniform Delay, d1	28.0	19.4		27.9	20.2	17.2		7.9			7.1	7.1
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	0.7	0.4		1.5	1.1	0.0		0.6			0.0	0.0
Delay (s)	28.7	19.7		29.4	21.3	17.2		8.5			7.2	7.2
Level of Service	C	B		C	C	B		A			A	A
Approach Delay (s)		19.9			21.5			8.5			7.2	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	18.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	60.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	35.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

```
--------------------------------------------------------------------------------
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
             2000 HCM 4-Way Stop Method (Base Volume Alternative)
********************************************************************************
Intersection #1 Lake Jennings Park Road &  El Monte Rd [EX AM PH]
********************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.699
Loss Time (sec):       0                Average Delay (sec/veh):        14.5
Optimal Cycle:         0                Level Of Service:                  B
********************************************************************************
Street Name:      Lake Jennings Park Rd                  El Monte Rd
Approach:      North Bound      South Bound       East Bound        West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Ignore
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        1  0  0  1  0    1  0  1  1  0    0  1  0  0  1    0  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     137  393    22    17  198    16    57   26    96    34   37    23
Growth 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
Initial Bse:  137  393    22    17  198    16    57   26    96    34   37    23
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00
PHF Adj:     0.95 0.95  0.95  0.95 0.95  0.95  0.95 0.95  0.95  0.95 0.95  0.00
PHF Volume:   144  414    23    18  208    17    60   27   101    36   39     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  144  414    23    18  208    17    60   27   101    36   39     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00
FinalVolume:  144  414    23    18  208    17    60   27   101    36   39     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 0.95  0.05  1.00 1.85  0.15  0.69 0.31  1.00  0.48 0.52  1.00
Final Sat.:   567  592    33   479  962    78   329  150   556   223  242   527
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.25 0.70  0.70  0.04 0.22  0.22  0.18 0.18  0.18  0.16 0.16  0.00
Crit Moves:       ****             ****             ****             ****
Delay/Veh:   11.0 20.0  20.0  10.2 11.1  11.0  11.2 11.2  10.0  11.1 11.1   0.0
Delay 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
AdjDel/Veh:  11.0 20.0  20.0  10.2 11.1  11.0  11.2 11.2  10.0  11.1 11.1   0.0
LOS by Move:    B    C     C     B    B     B     B    B     A     B    B     *
ApproachDel:      17.7             11.0             10.6             11.1
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:       17.7             11.0             10.6             11.1
LOS by Appr:         C                B                B                B
AllWayAvgQ:   0.3  2.0   2.0   0.0  0.3   0.2   0.2  0.2   0.2   0.2  0.2   0.0
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

6: Harritt Rd & Lake Jennings Park Road

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↑	↱	↰	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.97		1.00	0.85	1.00	1.00
Flt Protected	0.96		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1736		1863	1583	1770	1863
Flt Permitted	0.96		1.00	1.00	0.95	1.00
Satd. Flow (perm)	1736		1863	1583	1770	1863
Volume (vph)	96	30	503	38	17	329
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	101	32	529	40	18	346
RTOR Reduction (vph)	15	0	0	10	0	0
Lane Group Flow (vph)	118	0	529	30	18	346
Turn Type				pt+ov	Prot	
Protected Phases	8		2	2 8	1	6
Permitted Phases						
Actuated Green, G (s)	9.1		42.3	56.8	10.1	57.8
Effective Green, g (s)	10.5		43.7	58.2	11.5	59.2
Actuated g/C Ratio	0.14		0.56	0.75	0.15	0.76
Clearance Time (s)	5.4		5.4		5.4	5.4
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	235		1048	1186	262	1419
v/s Ratio Prot	c0.07		c0.28	0.02	0.01	c0.19
v/s Ratio Perm						
v/c Ratio	0.50		0.50	0.03	0.07	0.24
Uniform Delay, d1	31.2		10.4	2.5	28.5	2.7
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.7		1.7	0.0	0.5	0.1
Delay (s)	32.9		12.1	2.5	29.0	2.8
Level of Service	C		B	A	C	A
Approach Delay (s)	32.9		11.4			4.1
Approach LOS	C		B			A

Intersection Summary			
HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	77.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	40.3%	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		↰	↱		✥		↰	↱		↰	↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85		0.98		1.00	0.98		1.00	1.00	0.85
Flt Protected		0.98	1.00		0.97		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1824	1583		1760		1770	1817		1770	1863	1583
Flt Permitted		0.98	1.00		0.97		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1824	1583		1760		1770	1817		1770	1863	1583
Volume (vph)	48	65	206	226	54	59	105	413	81	45	403	54
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	51	68	217	238	57	62	111	435	85	47	424	57
RTOR Reduction (vph)	0	0	190	0	8	0	0	8	0	0	0	21
Lane Group Flow (vph)	0	119	27	0	349	0	111	512	0	47	424	36
Turn Type	Split		Perm	Split			Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)		8.2	8.2		17.7		5.1	26.8		2.0	23.7	23.7
Effective Green, g (s)		9.6	9.6		19.1		6.5	28.2		3.4	25.1	25.1
Actuated g/C Ratio		0.13	0.13		0.25		0.09	0.37		0.04	0.33	0.33
Clearance Time (s)		5.4	5.4		5.4		5.4	5.4		5.4	5.4	5.4
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		229	199		441		151	672		79	613	521
v/s Ratio Prot		c0.07			c0.20		c0.06	c0.28		0.03	0.23	
v/s Ratio Perm			0.02									0.02
v/c Ratio		0.52	0.14		0.79		0.74	0.76		0.59	0.69	0.07
Uniform Delay, d1		31.2	29.7		26.7		34.1	21.1		35.8	22.2	17.6
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		2.0	0.3		9.3		16.9	5.1		11.5	3.4	0.1
Delay (s)		33.2	30.0		36.1		50.9	26.2		47.2	25.6	17.6
Level of Service		C	C		D		D	C		D	C	B
Approach Delay (s)		31.1			36.1			30.6			26.7	
Approach LOS		C			D			C			C	

Intersection Summary

HCM Average Control Delay	30.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	76.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↰		↱		↑	↱		↑	↱
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	0	0	15	0	265	0	329	461	0	294	532
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	0	16	0	279	0	346	485	0	309	560
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)											333	
pX, platoon unblocked												
vC, conflicting volume	935	1141	309	656	1216	346	869			832		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	935	1141	309	656	1216	346	869			832		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	96	100	60	100			100		
cM capacity (veh/h)	147	201	731	379	181	697	775			801		

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	16	279	346	485	309	560
Volume Left	16	0	0	0	0	0
Volume Right	0	279	0	485	0	560
cSH	379	697	1700	1700	1700	1700
Volume to Capacity	0.04	0.40	0.20	0.29	0.18	0.33
Queue Length 95th (ft)	3	48	0	0	0	0
Control Delay (s)	14.9	13.6	0.0	0.0	0.0	0.0
Lane LOS	B	B				
Approach Delay (s)	13.6		0.0		0.0	
Approach LOS	B					

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	40.4%	ICU Level of Service	A
Analysis Period (min)	15		

Ex AM Peak Hour
9: I-8 EB Off Ramp & Lake Jennings Park Road

W/O Project
7/21/2015

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰		↱		↱			↰	↱
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	189	265	9	26	0	508	0	54	28	153	16	178
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	199	279	9	27	0	535	0	57	29	161	17	187

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total (vph)	199	288	27	535	86	178	187
Volume Left (vph)	199	0	27	0	0	161	0
Volume Right (vph)	0	9	0	535	29	0	187
Hadj (s)	0.53	0.01	0.23	-0.57	-0.17	0.22	-0.57
Departure Headway (s)	5.8	5.3	5.6	3.2	5.2	5.5	3.2
Degree Utilization, x	0.32	0.42	0.04	0.48	0.13	0.27	0.17
Capacity (veh/h)	602	662	593	1116	636	620	1121
Control Delay (s)	10.3	10.9	8.8	9.1	9.0	10.5	6.8
Approach Delay (s)	10.7		9.1		9.0	8.6	
Approach LOS	B		A		A	A	

Intersection Summary			
Delay	9.5		
HCM Level of Service	A		
Intersection Capacity Utilization	60.3%	ICU Level of Service	B
Analysis Period (min)	15		

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱		↰	↑	↰	↱
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	325	52	4	459	110	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	342	55	4	483	116	1
Pedestrians	10			10	10	
Lane Width (ft)	12.0			13.0	14.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	1			1	1	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			407		881	389
vC1, stage 1 conf vol			0			
vC2, stage 2 conf vol			0			
vCu, unblocked vol			407		881	389
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)			3.1			
tF (s)			2.2		3.5	3.3
p0 queue free %			100		63	100
cM capacity (veh/h)			937		310	647

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2
Volume Total	397	4	483	116	1
Volume Left	0	4	0	116	0
Volume Right	55	0	0	0	1
cSH	1700	937	1700	310	647
Volume to Capacity	0.23	0.00	0.28	0.37	0.00
Queue Length 95th (ft)	0	0	0	42	0
Control Delay (s)	0.0	8.9	0.0	23.4	10.6
Lane LOS		A		C	B
Approach Delay (s)	0.0	0.1		23.3	
Approach LOS				C	

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	39.0%	ICU Level of Service	A
Analysis Period (min)	15		

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱			↰	↰↱	
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	4	144	40	1	149	42
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	4	152	42	1	157	44
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			156		165	80
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			156		165	80
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		80	95
cM capacity (veh/h)			1424		801	980

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	156	43	201
Volume Left	0	42	157
Volume Right	152	0	44
cSH	1700	1424	834
Volume to Capacity	0.09	0.03	0.24
Queue Length 95th (ft)	0	2	24
Control Delay (s)	0.0	7.4	10.7
Lane LOS		A	B
Approach Delay (s)	0.0	7.4	10.7
Approach LOS			B

Intersection Summary			
Average Delay	6.2		
Intersection Capacity Utilization	33.3%	ICU Level of Service	A
Analysis Period (min)	15		

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱		↰	↑	↰↱	
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	329	0	11	426	19	13
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	346	0	12	448	20	14
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			346		818	346
vC1, stage 1 conf vol			0			
vC2, stage 2 conf vol			0			
vCu, unblocked vol			346		818	346
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)			3.1			
tF (s)			2.2		3.5	3.3
p0 queue free %			99		94	98
cM capacity (veh/h)			964		341	697

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	346	12	448	34
Volume Left	0	12	0	20
Volume Right	0	0	0	14
cSH	1700	964	1700	431
Volume to Capacity	0.20	0.01	0.26	0.08
Queue Length 95th (ft)	0	1	0	6
Control Delay (s)	0.0	8.8	0.0	14.1
Lane LOS		A		B
Approach Delay (s)	0.0	0.2		14.1
Approach LOS				B

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	32.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↑	↱		✥			↰	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85		0.95			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00			0.97	1.00
Satd. Flow (prot)	1770	3481		1770	3539	1583		1767			1810	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.95			0.51	1.00
Satd. Flow (perm)	1770	3481		1770	3539	1583		1681			943	1583
Volume (vph)	375	480	59	44	277	141	17	119	74	237	170	356
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	395	505	62	46	292	148	18	125	78	249	179	375
RTOR Reduction (vph)	0	10	0	0	0	135	0	22	0	0	0	147
Lane Group Flow (vph)	395	557	0	46	292	13	0	199	0	0	428	228
Turn Type	Prot			Prot		Over	pm+pt			pm+pt		Over
Protected Phases	7	4		3	8	1	5	2		1	6	7
Permitted Phases							2			6		
Actuated Green, G (s)	20.3	31.5		2.8	14.0	5.7		19.7			30.8	20.3
Effective Green, g (s)	21.7	32.9		4.2	15.4	7.1		21.1			32.2	21.7
Actuated g/C Ratio	0.27	0.40		0.05	0.19	0.09		0.26			0.40	0.27
Clearance Time (s)	5.4	5.4		5.4	5.4	5.4		5.4			5.4	5.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	472	1409		91	670	138		436			449	423
v/s Ratio Prot	c0.22	c0.16		0.03	0.08	0.01					c0.08	0.14
v/s Ratio Perm								0.12			c0.29	
v/c Ratio	0.84	0.40		0.51	0.44	0.09		0.46			0.95	0.54
Uniform Delay, d1	28.1	17.1		37.5	29.1	34.1		25.3			23.8	25.5
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	12.2	0.2		4.4	0.5	0.3		0.8			30.6	1.3
Delay (s)	40.3	17.3		41.9	29.6	34.4		26.0			54.4	26.8
Level of Service	D	B		D	C	C		C			D	C
Approach Delay (s)		26.8			32.2			26.0			41.5	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM Average Control Delay	32.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	81.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↑	↱		✥			↰	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.85		0.98			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.98	1.00
Satd. Flow (prot)	1770	3443		1770	3539	1583		1773			1832	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.88			0.94	1.00
Satd. Flow (perm)	1770	3443		1770	3539	1583		1591			1751	1583
Volume (vph)	28	523	116	15	311	13	53	33	19	8	15	19
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	29	551	122	16	327	14	56	35	20	8	16	20
RTOR Reduction (vph)	0	23	0	0	0	10	0	7	0	0	0	10
Lane Group Flow (vph)	29	650	0	16	327	4	0	104	0	0	24	10
Turn Type	Prot			Prot		Perm	Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases						8	2			6		6
Actuated Green, G (s)	2.7	17.8		1.2	16.3	16.3		30.0			30.0	30.0
Effective Green, g (s)	4.1	19.2		2.6	17.7	17.7		31.4			31.4	31.4
Actuated g/C Ratio	0.06	0.29		0.04	0.27	0.27		0.48			0.48	0.48
Clearance Time (s)	5.4	5.4		5.4	5.4	5.4		5.4			5.4	5.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	111	1014		71	961	430		766			843	762
v/s Ratio Prot	c0.02	c0.19		0.01	0.09							
v/s Ratio Perm						0.00		c0.07			0.01	0.01
v/c Ratio	0.26	0.64		0.23	0.34	0.01		0.14			0.03	0.01
Uniform Delay, d1	29.1	20.0		30.3	19.1	17.3		9.4			8.9	8.8
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	1.3	1.4		1.6	0.2	0.0		0.4			0.1	0.0
Delay (s)	30.4	21.4		31.9	19.3	17.4		9.7			8.9	8.8
Level of Service	C	C		C	B	B		A			A	A
Approach Delay (s)		21.8			19.8			9.7			8.9	
Approach LOS		C			B			A			A	

Intersection Summary			
HCM Average Control Delay	19.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	65.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	42.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

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                      Level Of Service Computation Report
             2000 HCM 4-Way Stop Method (Base Volume Alternative)
********************************************************************************
Intersection #2 Lake Jennings Park Road &  El Monte Rd [EX PM PH]
********************************************************************************
Cycle (sec):          100                 Critical Vol./Cap.(X):         0.549
Loss Time (sec):        0                 Average Delay (sec/veh):        13.9
Optimal Cycle:          0                 Level Of Service:                  B
********************************************************************************
Street Name:      Lake Jennings Park Rd                  El Monte Rd
Approach:      North Bound      South Bound       East Bound        West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include           Ignore
Min. Green:     0    0     0    0    0     0    0    0     0    0    0     0
Lanes:        1  0  0  1  0   1  0  1  1  0   0  1  0  0  1   0  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      84  267    21    23  441    33    41   31   158    51   37    27
Growth 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
Initial Bse:   84  267    21    23  441    33    41   31   158    51   37    27
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00
PHF Adj:     0.95 0.95  0.95  0.95 0.95  0.95  0.95 0.95  0.95  0.95 0.95  0.00
PHF Volume:    88  281    22    24  464    35    43   33   166    54   39     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   88  281    22    24  464    35    43   33   166    54   39     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00
FinalVolume:   88  281    22    24  464    35    43   33   166    54   39     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 0.93  0.07  1.00 1.86  0.14  0.57 0.43  1.00  0.58 0.42  1.00
Final Sat.:   504  512    40   484  983    74   264  200   533   254  185   496
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.18 0.55  0.55  0.05 0.47  0.47  0.16 0.16  0.31  0.21 0.21  0.00
Crit Moves:       ****             ****                   ****        ****
Delay/Veh:   11.0 16.0  16.0  10.2 14.9  14.7  11.4 11.4  11.7  12.2 12.2   0.0
Delay 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
AdjDel/Veh:  11.0 16.0  16.0  10.2 14.9  14.7  11.4 11.4  11.7  12.2 12.2   0.0
LOS by Move:    B    C     C     B    B     B     B    B     B     B    B     *
ApproachDel:      14.9             14.6              11.6             12.2
Delay Adj:        1.00             1.00              1.00             1.00
ApprAdjDel:       14.9             14.6              11.6             12.2
LOS by Appr:        B                B                 B                B
AllWayAvgQ:   0.2  1.1   1.1   0.0  0.8   0.8   0.2  0.2   0.4   0.2  0.2   0.0
********************************************************************************
Note: Queue reported is the number of cars per lane.
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6: Harritt Rd & Lake Jennings Park Road

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↱		↑	↱	↰	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.97		1.00	0.85	1.00	1.00
Flt Protected	0.96		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1741		1863	1583	1770	1863
Flt Permitted	0.96		1.00	1.00	0.95	1.00
Satd. Flow (perm)	1741		1863	1583	1770	1863
Volume (vph)	76	20	376	100	43	606
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	80	21	396	105	45	638
RTOR Reduction (vph)	12	0	0	27	0	0
Lane Group Flow (vph)	89	0	396	78	45	638
Turn Type				pt+ov	Prot	
Protected Phases	8		2	2 8	1	6
Permitted Phases						
Actuated Green, G (s)	8.3		42.3	56.0	10.1	57.8
Effective Green, g (s)	9.7		43.7	57.4	11.5	59.2
Actuated g/C Ratio	0.13		0.57	0.75	0.15	0.77
Clearance Time (s)	5.4		5.4		5.4	5.4
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	220		1059	1182	265	1434
v/s Ratio Prot	c0.05		0.21	0.05	0.03	c0.34
v/s Ratio Perm						
v/c Ratio	0.40		0.37	0.07	0.17	0.44
Uniform Delay, d1	30.9		9.1	2.6	28.5	3.1
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.2		1.0	0.0	1.4	0.2
Delay (s)	32.1		10.1	2.6	29.9	3.3
Level of Service	C		B	A	C	A
Approach Delay (s)	32.1		8.5			5.1
Approach LOS	C		A			A

Intersection Summary			
HCM Average Control Delay	8.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	76.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	44.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Ex PM Peak Hour W/O Project
7: I-8 Business Route & Lake Jennings Park Road 7/7/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		✥		↰	↱		↰	↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85		0.99		1.00	0.96		1.00	1.00	0.85
Flt Protected		0.97	1.00		0.96		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1804	1583		1772		1770	1787		1770	1863	1583
Flt Permitted		0.97	1.00		0.96		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1804	1583		1772		1770	1787		1770	1863	1583
Volume (vph)	61	32	163	158	24	15	136	470	176	52	536	71
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	64	34	172	166	25	16	143	495	185	55	564	75
RTOR Reduction (vph)	0	0	149	0	3	0	0	13	0	0	0	19
Lane Group Flow (vph)	0	98	23	0	204	0	143	667	0	55	564	56
Turn Type	Split		Perm	Split			Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)		9.5	9.5		13.8		7.4	33.2		2.3	28.1	28.1
Effective Green, g (s)		10.9	10.9		15.2		8.8	34.6		3.7	29.5	29.5
Actuated g/C Ratio		0.14	0.14		0.19		0.11	0.43		0.05	0.37	0.37
Clearance Time (s)		5.4	5.4		5.4		5.4	5.4		5.4	5.4	5.4
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		245	215		335		194	769		81	684	581
v/s Ratio Prot		c0.05			c0.11		c0.08	c0.37		0.03	0.30	
v/s Ratio Perm			0.01									0.04
v/c Ratio		0.40	0.11		0.61		0.74	0.87		0.68	0.82	0.10
Uniform Delay, d1		31.8	30.5		29.9		34.7	20.8		37.8	23.1	16.7
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		1.1	0.2		3.1		13.6	10.2		20.3	8.0	0.1
Delay (s)		32.8	30.7		33.0		48.3	31.0		58.0	31.1	16.8
Level of Service		C	C		C		D	C		E	C	B
Approach Delay (s)		31.5			33.0			34.0			31.7	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	32.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	80.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

8: I-8 WB On Ramp & Lake Jennings Park Road

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↰		↱		↑	↱		↑	↱
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	0	0	16	0	193	0	589	359	0	510	321
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	0	17	0	203	0	620	378	0	537	338
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)											333	
pX, platoon unblocked	0.81	0.81	0.81	0.81	0.81		0.81					
vC, conflicting volume	1360	1535	537	1157	1495	620	875			998		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1444	1660	429	1193	1610	620	845			998		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	87	100	58	100			100		
cM capacity (veh/h)	52	79	508	133	85	488	641			694		

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	17	203	620	378	537	338
Volume Left	17	0	0	0	0	0
Volume Right	0	203	0	378	0	338
cSH	133	488	1700	1700	1700	1700
Volume to Capacity	0.13	0.42	0.36	0.22	0.32	0.20
Queue Length 95th (ft)	11	51	0	0	0	0
Control Delay (s)	36.1	17.5	0.0	0.0	0.0	0.0
Lane LOS	E	C				
Approach Delay (s)	19.0		0.0		0.0	
Approach LOS	C					

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	49.6%	ICU Level of Service	A
Analysis Period (min)	15		

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰		↱		↱			↰	↱
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	413	453	37	25	0	502	0	31	19	189	27	313
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	435	477	39	26	0	528	0	33	20	199	28	329

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total (vph)	435	516	26	528	53	227	329
Volume Left (vph)	435	0	26	0	0	199	0
Volume Right (vph)	0	39	0	528	20	0	329
Hadj (s)	0.53	-0.02	0.23	-0.57	-0.19	0.21	-0.57
Departure Headway (s)	6.0	5.4	6.1	3.2	6.0	6.0	3.2
Degree Utilization, x	0.72	0.78	0.04	0.47	0.09	0.38	0.29
Capacity (veh/h)	592	654	550	1116	570	574	1113
Control Delay (s)	21.6	23.3	9.4	9.0	9.6	12.7	7.5
Approach Delay (s)	22.5		9.0		9.6	9.6	
Approach LOS	C		A		A	A	

Intersection Summary			
Delay	15.3		
HCM Level of Service	C		
Intersection Capacity Utilization	71.2%	ICU Level of Service	C
Analysis Period (min)	15		

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱		↰	↑	↰	↱
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	495	134	14	407	88	4
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	521	141	15	428	93	4
Pedestrians	10			10	10	
Lane Width (ft)	12.0			13.0	14.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	1			1	1	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			672		1069	612
vC1, stage 1 conf vol			0			
vC2, stage 2 conf vol			0			
vCu, unblocked vol			672		1069	612
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)			3.1			
tF (s)			2.2		3.5	3.3
p0 queue free %			98		61	99
cM capacity (veh/h)			858		236	484

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2
Volume Total	662	15	428	93	4
Volume Left	0	15	0	93	0
Volume Right	141	0	0	0	4
cSH	1700	858	1700	236	484
Volume to Capacity	0.39	0.02	0.25	0.39	0.01
Queue Length 95th (ft)	0	1	0	44	1
Control Delay (s)	0.0	9.3	0.0	29.7	12.5
Lane LOS		A		D	B
Approach Delay (s)	0.0	0.3		29.0	
Approach LOS				D	

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	48.4%	ICU Level of Service	A
Analysis Period (min)	15		

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱			↰	Y	
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	7	136	23	1	97	31
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	7	143	24	1	102	33
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			151		128	79
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			151		128	79
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		88	97
cM capacity (veh/h)			1431		851	982

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	151	25	135
Volume Left	0	24	102
Volume Right	143	0	33
cSH	1700	1431	880
Volume to Capacity	0.09	0.02	0.15
Queue Length 95th (ft)	0	1	13
Control Delay (s)	0.0	7.3	9.8
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	9.8
Approach LOS			A

Intersection Summary			
Average Delay	4.9		
Intersection Capacity Utilization	29.4%	ICU Level of Service	A
Analysis Period (min)	15		

12: Olde Hwy 80 & Pecan Park

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱		↰	↑	↰↱	
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	500	1	17	411	11	21
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	526	1	18	433	12	22
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			527		995	527
vC1, stage 1 conf vol			0			
vC2, stage 2 conf vol			0			
vCu, unblocked vol			527		995	527
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)			3.1			
tF (s)			2.2		3.5	3.3
p0 queue free %			98		96	96
cM capacity (veh/h)			905		266	551

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	527	18	433	34
Volume Left	0	18	0	12
Volume Right	1	0	0	22
cSH	1700	905	1700	403
Volume to Capacity	0.31	0.02	0.25	0.08
Queue Length 95th (ft)	0	2	0	7
Control Delay (s)	0.0	9.1	0.0	14.8
Lane LOS		A		B
Approach Delay (s)	0.0	0.4		14.8
Approach LOS				B

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	36.4%	ICU Level of Service	A
Analysis Period (min)	15		

APPENDIX F

EXISTING WITH PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

Ex AM Peak Hour W/ Project

1: Mapleview Street & Ashwood Street

HCM Signalized Intersection Capacity Analysis

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↑	↱		✥			↰↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.85		0.98			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99			0.98	1.00
Satd. Flow (prot)	1770	3430		1770	3539	1583		1806			1820	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.88			0.59	1.00
Satd. Flow (perm)	1770	3430		1770	3539	1583		1603			1099	1583
Volume (vph)	260	223	58	42	496	253	43	143	34	133	153	436
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	274	235	61	44	522	266	45	151	36	140	161	459
RTOR Reduction (vph)	0	25	0	0	0	237	0	8	0	0	0	269
Lane Group Flow (vph)	274	271	0	44	522	29	0	224	0	0	301	190
Turn Type	Prot			Prot		Over	pm+pt			pm+pt		Over
Protected Phases	7	4		3	8	1	5	2		1	6	7
Permitted Phases							2			6		
Actuated Green, G (s)	16.9	31.7		2.8	17.6	7.3		16.9			29.6	16.9
Effective Green, g (s)	18.3	33.1		4.2	19.0	8.7		18.3			31.0	18.3
Actuated g/C Ratio	0.23	0.41		0.05	0.24	0.11		0.23			0.39	0.23
Clearance Time (s)	5.4	5.4		5.4	5.4	5.4		5.4			5.4	5.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	403	1414		93	837	172		365			502	361
v/s Ratio Prot	c0.15	0.08		0.02	c0.15	0.02					c0.06	0.12
v/s Ratio Perm								0.14			c0.17	
v/c Ratio	0.68	0.19		0.47	0.62	0.17		0.61			0.60	0.53
Uniform Delay, d1	28.3	15.1		37.0	27.4	32.5		27.8			19.7	27.2
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	4.5	0.1		3.8	1.5	0.5		3.1			1.9	1.4
Delay (s)	32.8	15.1		40.7	28.9	33.0		30.9			21.6	28.6
Level of Service	C	B		D	C	C		C			C	C
Approach Delay (s)		23.6			30.8			30.9			25.8	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	27.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	80.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

	⤴	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↑	↱		✥			↰	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85		0.97			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.96			0.99	1.00
Satd. Flow (prot)	1770	3465		1770	3539	1583		1743			1846	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.80			0.97	1.00
Satd. Flow (perm)	1770	3465		1770	3539	1583		1451			1809	1583
Volume (vph)	8	322	52	16	504	1	109	7	33	3	13	25
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	8	339	55	17	531	1	115	7	35	3	14	26
RTOR Reduction (vph)	0	17	0	0	0	1	0	8	0	0	0	13
Lane Group Flow (vph)	8	377	0	17	531	0	0	149	0	0	17	13
Turn Type	Prot			Prot		Perm	Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases						8	2			6		6
Actuated Green, G (s)	1.0	13.3		1.2	13.5	13.5		29.3			29.3	29.3
Effective Green, g (s)	2.4	14.7		2.6	14.9	14.9		30.7			30.7	30.7
Actuated g/C Ratio	0.04	0.24		0.04	0.25	0.25		0.51			0.51	0.51
Clearance Time (s)	5.4	5.4		5.4	5.4	5.4		5.4			5.4	5.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	71	849		77	879	393		742			926	810
v/s Ratio Prot	0.00	0.11		c0.01	c0.15							
v/s Ratio Perm						0.00		c0.10			0.01	0.01
v/c Ratio	0.11	0.44		0.22	0.60	0.00		0.20			0.02	0.02
Uniform Delay, d1	27.8	19.2		27.7	19.9	17.0		8.0			7.2	7.2
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	0.7	0.4		1.5	1.2	0.0		0.6			0.0	0.0
Delay (s)	28.5	19.6		29.2	21.1	17.0		8.6			7.3	7.3
Level of Service	C	B		C	C	B		A			A	A
Approach Delay (s)		19.7			21.4			8.6			7.3	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	18.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	35.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

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--------------------------------------------------------------------------------
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
             2000 HCM 4-Way Stop Method (Base Volume Alternative)
********************************************************************************
Intersection #3 Lake Jennings Park Road &  El Monte Rd [EX AM PH WP]
********************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.728
Loss Time (sec):       0                Average Delay (sec/veh):        15.3
Optimal Cycle:         0                Level Of Service:                  C
********************************************************************************
Street Name:      Lake Jennings Park Rd                  El Monte Rd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Ignore
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        1  0  0  1  0    1  0  1  1  0    0  1  0  0  1    0  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     141  406    22    17  217    16    57   26   101    34   37    23
Growth 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
Initial Bse:  141  406    22    17  217    16    57   26   101    34   37    23
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00
PHF Adj:     0.95 0.95  0.95  0.95 0.95  0.95  0.95 0.95  0.95  0.95 0.95  0.00
PHF Volume:   148  427    23    18  228    17    60   27   106    36   39     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  148  427    23    18  228    17    60   27   106    36   39     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00
FinalVolume:  148  427    23    18  228    17    60   27   106    36   39     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 0.95  0.05  1.00 1.86  0.14  0.69 0.31  1.00  0.48 0.52  1.00
Final Sat.:   562  587    32   474  958    71   325  148   548   219  238   518
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.26 0.73  0.73  0.04 0.24  0.24  0.18 0.18  0.19  0.16 0.16  0.00
Crit Moves:       ****             ****                   ****       ****
Delay/Veh:   11.1 21.7  21.7  10.2 11.4  11.3  11.4 11.4  10.2  11.3 11.3   0.0
Delay 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
AdjDel/Veh:  11.1 21.7  21.7  10.2 11.4  11.3  11.4 11.4  10.2  11.3 11.3   0.0
LOS by Move:    B    C     C     B    B     B     B    B     B     B    B     *
ApproachDel:      19.1             11.3             10.7             11.3
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:       19.1             11.3             10.7             11.3
LOS by Appr:         C                B                B                B
AllWayAvgQ:   0.3  2.3   2.3   0.0  0.3   0.3   0.2  0.2   0.2   0.2  0.2   0.0
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↱		↑	↱	↰	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.97		1.00	0.85	1.00	1.00
Flt Protected	0.96		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1738		1863	1583	1770	1863
Flt Permitted	0.96		1.00	1.00	0.95	1.00
Satd. Flow (perm)	1738		1863	1583	1770	1863
Volume (vph)	101	30	538	42	17	376
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	106	32	566	44	18	396
RTOR Reduction (vph)	14	0	0	11	0	0
Lane Group Flow (vph)	124	0	566	33	18	396
Turn Type				pt+ov	Prot	
Protected Phases	8		2	2 8	1	6
Permitted Phases						
Actuated Green, G (s)	9.2		42.3	56.9	10.1	57.8
Effective Green, g (s)	10.6		43.7	58.3	11.5	59.2
Actuated g/C Ratio	0.14		0.56	0.75	0.15	0.76
Clearance Time (s)	5.4		5.4		5.4	5.4
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	237		1046	1186	262	1418
v/s Ratio Prot	c0.07		c0.30	0.02	0.01	c0.21
v/s Ratio Perm						
v/c Ratio	0.52		0.54	0.03	0.07	0.28
Uniform Delay, d1	31.3		10.7	2.5	28.5	2.8
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	2.1		2.0	0.0	0.5	0.1
Delay (s)	33.3		12.7	2.5	29.0	2.9
Level of Service	C		B	A	C	A
Approach Delay (s)	33.3		12.0			4.1
Approach LOS	C		B			A

Intersection Summary			
HCM Average Control Delay	11.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	77.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	42.4%	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		↰	↱		✥		↰	↱		↰	↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85		0.98		1.00	0.98		1.00	1.00	0.85
Flt Protected		0.98	1.00		0.97		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1824	1583		1761		1770	1818		1770	1863	1583
Flt Permitted		0.98	1.00		0.97		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1824	1583		1761		1770	1818		1770	1863	1583
Volume (vph)	48	65	227	234	54	59	121	457	87	45	462	54
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	51	68	239	246	57	62	127	481	92	47	486	57
RTOR Reduction (vph)	0	0	205	0	8	0	0	7	0	0	0	19
Lane Group Flow (vph)	0	119	34	0	357	0	127	566	0	47	486	38
Turn Type	Split		Perm	Split			Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)		10.4	10.4		17.8		6.7	30.7		2.2	26.2	26.2
Effective Green, g (s)		11.8	11.8		19.2		8.1	32.1		3.6	27.6	27.6
Actuated g/C Ratio		0.14	0.14		0.23		0.10	0.39		0.04	0.33	0.33
Clearance Time (s)		5.4	5.4		5.4		5.4	5.4		5.4	5.4	5.4
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		260	226		409		173	706		77	622	528
v/s Ratio Prot		c0.07			c0.20		c0.07	c0.31		0.03	0.26	
v/s Ratio Perm			0.02									0.02
v/c Ratio		0.46	0.15		0.87		0.73	0.80		0.61	0.78	0.07
Uniform Delay, d1		32.5	31.1		30.6		36.3	22.5		38.9	24.8	18.8
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		1.3	0.3		18.1		14.9	6.5		13.5	6.3	0.1
Delay (s)		33.8	31.4		48.6		51.1	29.0		52.3	31.2	18.9
Level of Service		C	C		D		D	C		D	C	B
Approach Delay (s)		32.2			48.6			33.0			31.7	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM Average Control Delay	35.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	82.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↰		↱		↑	↱		↑	↱
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	0	0	23	0	265	0	395	524	0	382	532
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	0	24	0	279	0	416	552	0	402	560
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						13						
Median type		None			None							
Median storage veh)												
Upstream signal (ft)											333	
pX, platoon unblocked												
vC, conflicting volume	957	818	402	818	818	416	402			416		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	957	818	402	818	818	416	402			416		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	92	100	56	100			100		
cM capacity (veh/h)	133	311	648	295	311	637	1157			1143		

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	303	416	552	402	560
Volume Left	24	0	0	0	0
Volume Right	279	0	552	0	560
cSH	692	1700	1700	1700	1700
Volume to Capacity	0.44	0.24	0.32	0.24	0.33
Queue Length 95th (ft)	56	0	0	0	0
Control Delay (s)	15.3	0.0	0.0	0.0	0.0
Lane LOS	C				
Approach Delay (s)	15.3	0.0		0.0	
Approach LOS	C				

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		

7: I-8 EB Off Ramp & Lake Jennings Park Road

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰		↱		↱			↰	↱
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	189	362	22	26	0	657	0	84	28	264	31	178
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	199	381	23	27	0	692	0	88	29	278	33	187

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total (vph)	199	404	27	692	118	311	187
Volume Left (vph)	199	0	27	0	0	278	0
Volume Right (vph)	0	23	0	692	29	0	187
Hadj (s)	0.53	-0.01	0.23	-0.57	-0.12	0.21	-0.57
Departure Headway (s)	6.4	5.8	6.5	3.2	5.9	5.9	3.2
Degree Utilization, x	0.35	0.66	0.05	0.61	0.19	0.51	0.17
Capacity (veh/h)	550	595	492	1118	561	585	1121
Control Delay (s)	11.6	18.0	9.8	11.2	10.4	14.8	6.8
Approach Delay (s)	15.9		11.1		10.4	11.8	
Approach LOS	C		B		B	B	

Intersection Summary			
Delay	12.7		
HCM Level of Service	B		
Intersection Capacity Utilization	70.5%	ICU Level of Service	C
Analysis Period (min)	15		

8: Ridge Hill Road/D4 & Lake Jennings Park Road

HCM Unsignalized Intersection Capacity Analysis

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰↑	↑↱		↰↱	
Sign Control		Stop	Stop		Stop	
Volume (vph)	82	15	11	30	28	42
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	86	16	12	32	29	44

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total (vph)	102	43	74
Volume Left (vph)	86	0	29
Volume Right (vph)	0	32	44
Hadj (s)	0.20	-0.41	-0.25
Departure Headway (s)	4.3	3.8	4.0
Degree Utilization, x	0.12	0.05	0.08
Capacity (veh/h)	818	931	868
Control Delay (s)	7.9	6.9	7.3
Approach Delay (s)	7.9	6.9	7.3
Approach LOS	A	A	A

Intersection Summary			
Delay	7.5		
HCM Level of Service	A		
Intersection Capacity Utilization	22.8%	ICU Level of Service	A
Analysis Period (min)	15		

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↱			↑↑		
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	559	31	0	686	0	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	588	33	0	722	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)				364		
pX, platoon unblocked					0.96	
vC, conflicting volume			621		966	311
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			621		924	311
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			956		258	685

Direction, Lane #	EB 1	EB 2	WB 1	WB 2
Volume Total	392	229	361	361
Volume Left	0	0	0	0
Volume Right	0	33	0	0
cSH	1700	1700	1700	1700
Volume to Capacity	0.23	0.13	0.21	0.21
Queue Length 95th (ft)	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0
Lane LOS				
Approach Delay (s)	0.0		0.0	
Approach LOS				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	22.3%	ICU Level of Service	A
Analysis Period (min)	15		

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↱		↰	↑↑	↰	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	14	12	12	12	12
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frpb, ped/bikes	0.99		1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.96		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3354		1770	3539	1770	1535
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	3354		1770	3539	1770	1535
Volume (vph)	393	166	42	537	149	22
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	414	175	44	565	157	23
RTOR Reduction (vph)	30	0	0	0	0	19
Lane Group Flow (vph)	559	0	44	565	157	4
Confl. Peds. (#/hr)		10	10		10	10
Turn Type			Prot			Perm
Protected Phases	2		1	6	3	
Permitted Phases						3
Actuated Green, G (s)	55.9		5.2	66.5	12.7	12.7
Effective Green, g (s)	57.3		6.6	67.9	14.1	14.1
Actuated g/C Ratio	0.64		0.07	0.75	0.16	0.16
Clearance Time (s)	5.4		5.4	5.4	5.4	5.4
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2135		130	2670	277	240
v/s Ratio Prot	c0.17		c0.02	0.16	c0.09	
v/s Ratio Perm						0.00
v/c Ratio	0.26		0.34	0.21	0.57	0.02
Uniform Delay, d1	7.1		39.6	3.2	35.1	32.1
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3		1.6	0.0	2.7	0.0
Delay (s)	7.4		41.2	3.3	37.8	32.1
Level of Service	A		D	A	D	C
Approach Delay (s)	7.4			6.0	37.0	
Approach LOS	A			A	D	

Intersection Summary			
HCM Average Control Delay	10.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	39.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

11: Olde Hwy 80 & Driveway 3

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↱			↑		↱
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	403	12	0	579	0	9
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	424	13	0	609	0	9
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)	205					
pX, platoon unblocked			0.95		0.95	0.95
vC, conflicting volume			437		1040	218
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			355		990	126
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	99
cM capacity (veh/h)			1141		231	857

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	283	154	609	9
Volume Left	0	0	0	0
Volume Right	0	13	0	9
cSH	1700	1700	1700	857
Volume to Capacity	0.17	0.09	0.36	0.01
Queue Length 95th (ft)	0	0	0	1
Control Delay (s)	0.0	0.0	0.0	9.2
Lane LOS				A
Approach Delay (s)	0.0		0.0	9.2
Approach LOS				A

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	33.8%	ICU Level of Service	A
Analysis Period (min)	15		

12: Olde Hwy 80 & Rios Canyon Road

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↱		↰	↑	↰↱	
Sign Control	Stop			Stop	Stop	
Volume (vph)	349	64	11	458	121	32
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	367	67	12	482	127	34

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total (vph)	245	190	12	482	161
Volume Left (vph)	0	0	12	0	127
Volume Right (vph)	0	67	0	0	34
Hadj (s)	0.03	-0.21	0.53	0.03	0.07
Departure Headway (s)	5.6	5.4	6.1	5.6	6.1
Degree Utilization, x	0.38	0.28	0.02	0.75	0.27
Capacity (veh/h)	614	646	570	629	528
Control Delay (s)	10.9	9.3	8.0	22.0	11.4
Approach Delay (s)	10.2		21.6		11.4
Approach LOS	B		C		B

Intersection Summary			
Delay	15.5		
HCM Level of Service	C		
Intersection Capacity Utilization	40.9%	ICU Level of Service	A
Analysis Period (min)	15		

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱			↰	Y	
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	370	5	5	457	0	5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	389	5	5	481	0	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			395		884	392
vC1, stage 1 conf vol			0			
vC2, stage 2 conf vol			0			
vCu, unblocked vol			395		884	392
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)			3.1			
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	99
cM capacity (veh/h)			948		314	657

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	395	486	5
Volume Left	0	5	0
Volume Right	5	0	5
cSH	1700	948	657
Volume to Capacity	0.23	0.01	0.01
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.0	0.2	10.5
Lane LOS		A	B
Approach Delay (s)	0.0	0.2	10.5
Approach LOS			B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	38.0%	ICU Level of Service	A
Analysis Period (min)	15		

102: Pecan Park Lane East & Rios Canyon Road

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↱			↰
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	10	0	153	5	0	75
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	0	161	5	0	79
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	243	164			166	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	243	164			166	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	746	881			1412	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	11	166	79
Volume Left	11	0	0
Volume Right	0	5	0
cSH	746	1700	1412
Volume to Capacity	0.01	0.10	0.00
Queue Length 95th (ft)	1	0	0
Control Delay (s)	9.9	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.9	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	18.4%	ICU Level of Service	A
Analysis Period (min)	15		

Ex PM Peak Hour W/ Project

1: Mapleview Street & Ashwood Street HCM Signalized Intersection Capacity Analysis

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↑	↱		✥			↰	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85		0.95			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00			0.97	1.00
Satd. Flow (prot)	1770	3484		1770	3539	1583		1765			1809	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.95			0.49	1.00
Satd. Flow (perm)	1770	3484		1770	3539	1583		1678			912	1583
Volume (vph)	375	504	59	46	301	149	17	119	76	245	170	356
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	395	531	62	48	317	157	18	125	80	258	179	375
RTOR Reduction (vph)	0	10	0	0	0	143	0	23	0	0	0	144
Lane Group Flow (vph)	395	583	0	48	317	14	0	200	0	0	437	231
Turn Type	Prot			Prot		Over	pm+pt			pm+pt		Over
Protected Phases	7	4		3	8	1	5	2		1	6	7
Permitted Phases							2			6		
Actuated Green, G (s)	20.2	32.0		2.8	14.6	5.7		18.8			29.9	20.2
Effective Green, g (s)	21.6	33.4		4.2	16.0	7.1		20.2			31.3	21.6
Actuated g/C Ratio	0.27	0.41		0.05	0.20	0.09		0.25			0.39	0.27
Clearance Time (s)	5.4	5.4		5.4	5.4	5.4		5.4			5.4	5.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	473	1438		92	700	139		419			432	423
v/s Ratio Prot	c0.22	c0.17		0.03	0.09	0.01					c0.09	0.15
v/s Ratio Perm								0.12			c0.30	
v/c Ratio	0.84	0.41		0.52	0.45	0.10		0.48			1.01	0.55
Uniform Delay, d1	28.0	16.7		37.4	28.6	34.0		25.9			24.8	25.4
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	12.1	0.2		5.3	0.5	0.3		0.9			46.2	1.4
Delay (s)	40.0	16.9		42.6	29.1	34.3		26.7			71.0	26.9
Level of Service	D	B		D	C	C		C			E	C
Approach Delay (s)		26.2			31.9			26.7			50.6	
Approach LOS		C			C			C			D	

Intersection Summary

HCM Average Control Delay	35.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	80.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	76.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↑	↱		✥			↰↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.85		0.98			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.98	1.00
Satd. Flow (prot)	1770	3448		1770	3539	1583		1773			1832	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.87			0.94	1.00
Satd. Flow (perm)	1770	3448		1770	3539	1583		1590			1751	1583
Volume (vph)	28	558	116	15	346	13	53	33	19	8	15	19
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	29	587	122	16	364	14	56	35	20	8	16	20
RTOR Reduction (vph)	0	21	0	0	0	10	0	7	0	0	0	11
Lane Group Flow (vph)	29	688	0	16	364	4	0	104	0	0	24	9
Turn Type	Prot			Prot		Perm	Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases						8	2			6		6
Actuated Green, G (s)	2.7	18.5		1.2	17.0	17.0		29.5			29.5	29.5
Effective Green, g (s)	4.1	19.9		2.6	18.4	18.4		30.9			30.9	30.9
Actuated g/C Ratio	0.06	0.30		0.04	0.28	0.28		0.47			0.47	0.47
Clearance Time (s)	5.4	5.4		5.4	5.4	5.4		5.4			5.4	5.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	111	1049		70	996	445		751			827	748
v/s Ratio Prot	c0.02	c0.20		0.01	0.10							
v/s Ratio Perm						0.00		c0.07			0.01	0.01
v/c Ratio	0.26	0.66		0.23	0.37	0.01		0.14			0.03	0.01
Uniform Delay, d1	29.2	19.8		30.4	18.8	16.9		9.7			9.2	9.2
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	1.3	1.5		1.7	0.2	0.0		0.4			0.1	0.0
Delay (s)	30.5	21.3		32.1	19.1	16.9		10.1			9.3	9.2
Level of Service	C	C		C	B	B		B			A	A
Approach Delay (s)		21.6			19.5			10.1			9.2	
Approach LOS		C			B			B			A	

Intersection Summary			
HCM Average Control Delay	19.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	65.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	42.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

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                      Level Of Service Computation Report
             2000 HCM 4-Way Stop Method (Base Volume Alternative)
********************************************************************************
Intersection #4 Lake Jennings Park Road &  El Monte Rd [EX PM PH WP]
********************************************************************************
Cycle (sec):          100               Critical Vol./Cap.(X):         0.632
Loss Time (sec):        0               Average Delay (sec/veh):        15.6
Optimal Cycle:          0               Level Of Service:                  C
********************************************************************************
Street Name:      Lake Jennings Park Rd                  El Monte Rd
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Ignore
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        1  0  0  1  0    1  0  1  1  0    0  1  0  0  1    0  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      94  304    21    23  478    33    41   31   168    51   37    27
Growth 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
Initial Bse:   94  304    21    23  478    33    41   31   168    51   37    27
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00
PHF Adj:     0.95 0.95  0.95  0.95 0.95  0.95  0.95 0.95  0.95  0.95 0.95  0.00
PHF Volume:    99  320    22    24  503    35    43   33   177    54   39     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   99  320    22    24  503    35    43   33   177    54   39     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00
FinalVolume:   99  320    22    24  503    35    43   33   177    54   39     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 0.94  0.06  1.00 1.87  0.13  0.57 0.43  1.00  0.58 0.42  1.00
Final Sat.:   495  507    35   471  962    67   257  194   517   246  179   477
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.20 0.63  0.63  0.05 0.52  0.52  0.17 0.17  0.34  0.22 0.22  0.00
Crit Moves:       ****             ****                   ****        ****
Delay/Veh:   11.4 19.0  19.0  10.5 16.5  16.3  11.7 11.7  12.4  12.6 12.6   0.0
Delay 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
AdjDel/Veh:  11.4 19.0  19.0  10.5 16.5  16.3  11.7 11.7  12.4  12.6 12.6   0.0
LOS by Move:    B    C     C     B    C     C     B    B     B     B    B     *
ApproachDel:      17.3             16.2             12.2             12.6
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:       17.3             16.2             12.2             12.6
LOS by Appr:         C                C                B                B
AllWayAvgQ:   0.2  1.5   1.5   0.1  1.0   1.0   0.2  0.2   0.4   0.2  0.2   0.0
********************************************************************************
Note: Queue reported is the number of cars per lane.
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4: Harritt Rd & Lake Jennings Park Road

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↱		↑	↱	↰	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.97		1.00	0.85	1.00	1.00
Flt Protected	0.96		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1745		1863	1583	1770	1863
Flt Permitted	0.96		1.00	1.00	0.95	1.00
Satd. Flow (perm)	1745		1863	1583	1770	1863
Volume (vph)	86	20	463	110	43	693
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	91	21	487	116	45	729
RTOR Reduction (vph)	10	0	0	29	0	0
Lane Group Flow (vph)	102	0	487	87	45	729
Turn Type				pt+ov	Prot	
Protected Phases	8		2	2 8	1	6
Permitted Phases						
Actuated Green, G (s)	10.1		41.9	57.4	10.0	57.3
Effective Green, g (s)	11.5		43.3	58.8	11.4	58.7
Actuated g/C Ratio	0.15		0.55	0.75	0.15	0.75
Clearance Time (s)	5.4		5.4		5.4	5.4
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	257		1032	1190	258	1398
v/s Ratio Prot	c0.06		0.26	0.06	0.03	c0.39
v/s Ratio Perm						
v/c Ratio	0.40		0.47	0.07	0.17	0.52
Uniform Delay, d1	30.2		10.5	2.5	29.3	4.0
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0		1.5	0.0	1.5	0.4
Delay (s)	31.2		12.1	2.6	30.7	4.3
Level of Service	C		B	A	C	A
Approach Delay (s)	31.2		10.3			5.9
Approach LOS	C		B			A

Intersection Summary			
HCM Average Control Delay	9.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	78.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.1%	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		↰	↱		✥		↰	↱		↰	↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85		0.99		1.00	0.96		1.00	1.00	0.85
Flt Protected		0.97	1.00		0.96		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1804	1583		1772		1770	1794		1770	1863	1583
Flt Permitted		0.97	1.00		0.96		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1804	1583		1772		1770	1794		1770	1863	1583
Volume (vph)	61	32	203	172	24	15	176	580	190	52	646	71
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	64	34	214	181	25	16	185	611	200	55	680	75
RTOR Reduction (vph)	0	0	185	0	3	0	0	11	0	0	0	16
Lane Group Flow (vph)	0	98	29	0	219	0	185	800	0	55	680	59
Turn Type	Split		Perm	Split			Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)		9.6	9.6		14.2		6.6	34.1		2.3	29.8	29.8
Effective Green, g (s)		11.0	11.0		15.6		8.0	35.5		3.7	31.2	31.2
Actuated g/C Ratio		0.13	0.13		0.19		0.10	0.43		0.05	0.38	0.38
Clearance Time (s)		5.4	5.4		5.4		5.4	5.4		5.4	5.4	5.4
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		243	213		338		173	779		80	711	604
v/s Ratio Prot		c0.05			c0.12		c0.10	c0.45		0.03	0.37	
v/s Ratio Perm			0.02									0.04
v/c Ratio		0.40	0.14		0.65		1.07	1.03		0.69	0.96	0.10
Uniform Delay, d1		32.4	31.2		30.6		36.9	23.1		38.5	24.6	16.3
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		1.1	0.3		4.2		88.1	39.2		21.8	23.3	0.1
Delay (s)		33.5	31.5		34.8		125.0	62.3		60.3	48.0	16.3
Level of Service		C	C		C		F	E		E	D	B
Approach Delay (s)		32.1			34.8			74.0			45.9	
Approach LOS		C			C			E			D	

Intersection Summary			
HCM Average Control Delay	54.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	81.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Ex PM Peak Hour W/ Project

6: I-8 WB On Ramp & Lake Jennings Park Road

HCM Unsignalized Intersection Capacity Analysis

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↰		↱		↑	↱		↑	↱
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	0	0	36	0	193	0	802	562	0	723	321
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	0	38	0	203	0	844	592	0	761	338
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						13						
Median type		None			None							
Median storage veh)												
Upstream signal (ft)											333	
pX, platoon unblocked	0.69	0.69	0.69	0.69	0.69		0.69					
vC, conflicting volume	1707	1605	761	1605	1605	844	761			844		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2031	1883	651	1883	1883	844	651			844		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	0	100	44	100			100		
cM capacity (veh/h)	13	49	321	37	49	363	641			792		

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	241	844	592	761	338
Volume Left	38	0	0	0	0
Volume Right	203	0	592	0	338
cSH	235	1700	1700	1700	1700
Volume to Capacity	1.02	0.50	0.35	0.45	0.20
Queue Length 95th (ft)	247	0	0	0	0
Control Delay (s)	72.8	0.0	0.0	0.0	0.0
Lane LOS	F				
Approach Delay (s)	72.8	0.0		0.0	
Approach LOS	F				

Intersection Summary			
Average Delay	6.3		
Intersection Capacity Utilization	60.8%	ICU Level of Service	B
Analysis Period (min)	15		

Ex PM Peak Hour
7: I-8 EB Off Ramp & Lake Jennings Park Road

W/ Project
7/21/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰		↱		↑↱			↰↑	↱
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	413	632	61	25	0	866	0	103	19	394	55	313
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	435	665	64	26	0	912	0	108	20	415	58	329

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total (vph)	435	729	26	912	128	473	329
Volume Left (vph)	435	0	26	0	0	415	0
Volume Right (vph)	0	64	0	912	20	0	329
Hadj (s)	0.53	-0.03	0.23	-0.57	-0.06	0.21	-0.57
Departure Headway (s)	7.1	6.5	7.6	3.2	6.8	6.3	3.2
Degree Utilization, x	0.85	1.32	0.06	0.81	0.24	0.83	0.29
Capacity (veh/h)	504	565	436	1122	506	563	1113
Control Delay (s)	37.7	174.4	11.0	18.2	12.0	33.1	7.5
Approach Delay (s)	123.4		18.0		12.0	22.6	
Approach LOS	F		C		B	C	

Intersection Summary			
Delay	59.4		
HCM Level of Service	F		
Intersection Capacity Utilization	96.1%	ICU Level of Service	F
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰↑	↑↱		↰↱	
Sign Control		Stop	Stop		Stop	
Volume (vph)	50	28	28	72	52	89
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	53	29	29	76	55	94

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total (vph)	82	105	148
Volume Left (vph)	53	0	55
Volume Right (vph)	0	76	94
Hadj (s)	0.16	-0.40	-0.27
Departure Headway (s)	4.5	3.9	4.0
Degree Utilization, x	0.10	0.11	0.17
Capacity (veh/h)	771	871	850
Control Delay (s)	8.0	7.4	7.8
Approach Delay (s)	8.0	7.4	7.8
Approach LOS	A	A	A

Intersection Summary			
Delay	7.7		
HCM Level of Service	A		
Intersection Capacity Utilization	25.9%	ICU Level of Service	A
Analysis Period (min)	15		

9: Olde Hwy 80 & Driveway 1

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↱			↑↑		
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	970	57	0	868	0	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1021	60	0	914	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)				364		
pX, platoon unblocked					0.94	
vC, conflicting volume			1081		1508	541
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1081		1477	541
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			641		110	486

Direction, Lane #	EB 1	EB 2	WB 1	WB 2
Volume Total	681	400	457	457
Volume Left	0	0	0	0
Volume Right	0	60	0	0
cSH	1700	1700	1700	1700
Volume to Capacity	0.40	0.24	0.27	0.27
Queue Length 95th (ft)	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0
Lane LOS				
Approach Delay (s)	0.0		0.0	
Approach LOS				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	32.0%	ICU Level of Service	A
Analysis Period (min)	15		

Ex PM Peak Hour
W/ Project

10: Olde Hwy 80 & Driveway 2
HCM Signalized Intersection Capacity Analysis

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↱		↰	↑↑	↰	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	14	12	12	12	12
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frpb, ped/bikes	0.99		1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.95		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3341		1770	3539	1770	1538
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	3341		1770	3539	1770	1538
Volume (vph)	665	305	77	504	364	54
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	700	321	81	531	383	57
RTOR Reduction (vph)	50	0	0	0	0	41
Lane Group Flow (vph)	971	0	81	531	383	16
Confl. Peds. (#/hr)		10	10		10	10
Turn Type			Prot			Perm
Protected Phases	2		1	6	8	
Permitted Phases						8
Actuated Green, G (s)	43.8		6.6	55.8	23.4	23.4
Effective Green, g (s)	45.2		8.0	57.2	24.8	24.8
Actuated g/C Ratio	0.50		0.09	0.64	0.28	0.28
Clearance Time (s)	5.4		5.4	5.4	5.4	5.4
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1678		157	2249	488	424
v/s Ratio Prot	c0.29		c0.05	0.15	c0.22	
v/s Ratio Perm						0.01
v/c Ratio	0.58		0.52	0.24	0.78	0.04
Uniform Delay, d1	15.7		39.2	7.0	30.1	23.9
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.5		2.8	0.1	8.1	0.0
Delay (s)	17.2		42.0	7.1	38.2	23.9
Level of Service	B		D	A	D	C
Approach Delay (s)	17.2			11.7	36.4	
Approach LOS	B			B	D	

Intersection Summary			
HCM Average Control Delay	19.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↱			↑		↱
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	697	22	0	581	0	23
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	734	23	0	612	0	24
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)	205					
pX, platoon unblocked			0.81		0.81	0.81
vC, conflicting volume			757		1357	378
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			468		1207	2
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	97
cM capacity (veh/h)			884		143	878

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	489	268	612	24
Volume Left	0	0	0	0
Volume Right	0	23	0	24
cSH	1700	1700	1700	878
Volume to Capacity	0.29	0.16	0.36	0.03
Queue Length 95th (ft)	0	0	0	2
Control Delay (s)	0.0	0.0	0.0	9.2
Lane LOS				A
Approach Delay (s)	0.0		0.0	9.2
Approach LOS				A

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	33.9%	ICU Level of Service	A
Analysis Period (min)	15		

12: Olde Hwy 80 & Rios Canyon Road

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↱		↰	↑	↰↱	
Sign Control	Stop			Stop	Stop	
Volume (vph)	554	166	17	470	111	32
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	583	175	18	495	117	34

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total (vph)	389	369	18	495	151
Volume Left (vph)	0	0	18	0	117
Volume Right (vph)	0	175	0	0	34
Hadj (s)	0.03	-0.30	0.53	0.03	0.05
Departure Headway (s)	5.7	5.4	6.5	6.0	6.6
Degree Utilization, x	0.61	0.55	0.03	0.82	0.28
Capacity (veh/h)	616	659	532	589	515
Control Delay (s)	16.2	13.5	8.5	29.5	12.1
Approach Delay (s)	14.9		28.8		12.1
Approach LOS	B		D		B

Intersection Summary			
Delay	19.6		
HCM Level of Service	C		
Intersection Capacity Utilization	41.2%	ICU Level of Service	A
Analysis Period (min)	15		

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱			↰	Y	
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	567	5	5	468	0	6
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	597	5	5	493	0	6
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			602		1103	599
vC1, stage 1 conf vol			0			
vC2, stage 2 conf vol			0			
vCu, unblocked vol			602		1103	599
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)			3.1			
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	99
cM capacity (veh/h)			883		233	501

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	602	498	6
Volume Left	0	5	0
Volume Right	5	0	6
cSH	1700	883	501
Volume to Capacity	0.35	0.01	0.01
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.0	0.2	12.3
Lane LOS		A	B
Approach Delay (s)	0.0	0.2	12.3
Approach LOS			B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	40.1%	ICU Level of Service	A
Analysis Period (min)	15		

Ex PM Peak Hour
W/ Project

102: Pecan Park Lane & Rios Canyon Road

HCM Unsignalized Intersection Capacity Analysis

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↱		↱			↰
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	10	0	143	6	0	183
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	0	151	6	0	193
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	346	154			157	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	346	154			157	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	100			100	
cM capacity (veh/h)	650	892			1423	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	11	157	193
Volume Left	11	0	0
Volume Right	0	6	0
cSH	650	1700	1423
Volume to Capacity	0.02	0.09	0.00
Queue Length 95th (ft)	1	0	0
Control Delay (s)	10.6	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.6	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	19.6%	ICU Level of Service	A
Analysis Period (min)	15		

APPENDIX G

CUMULATIVE WITHOUT PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

Table 4 - Trip Generation Rates for Tractor Supply Project

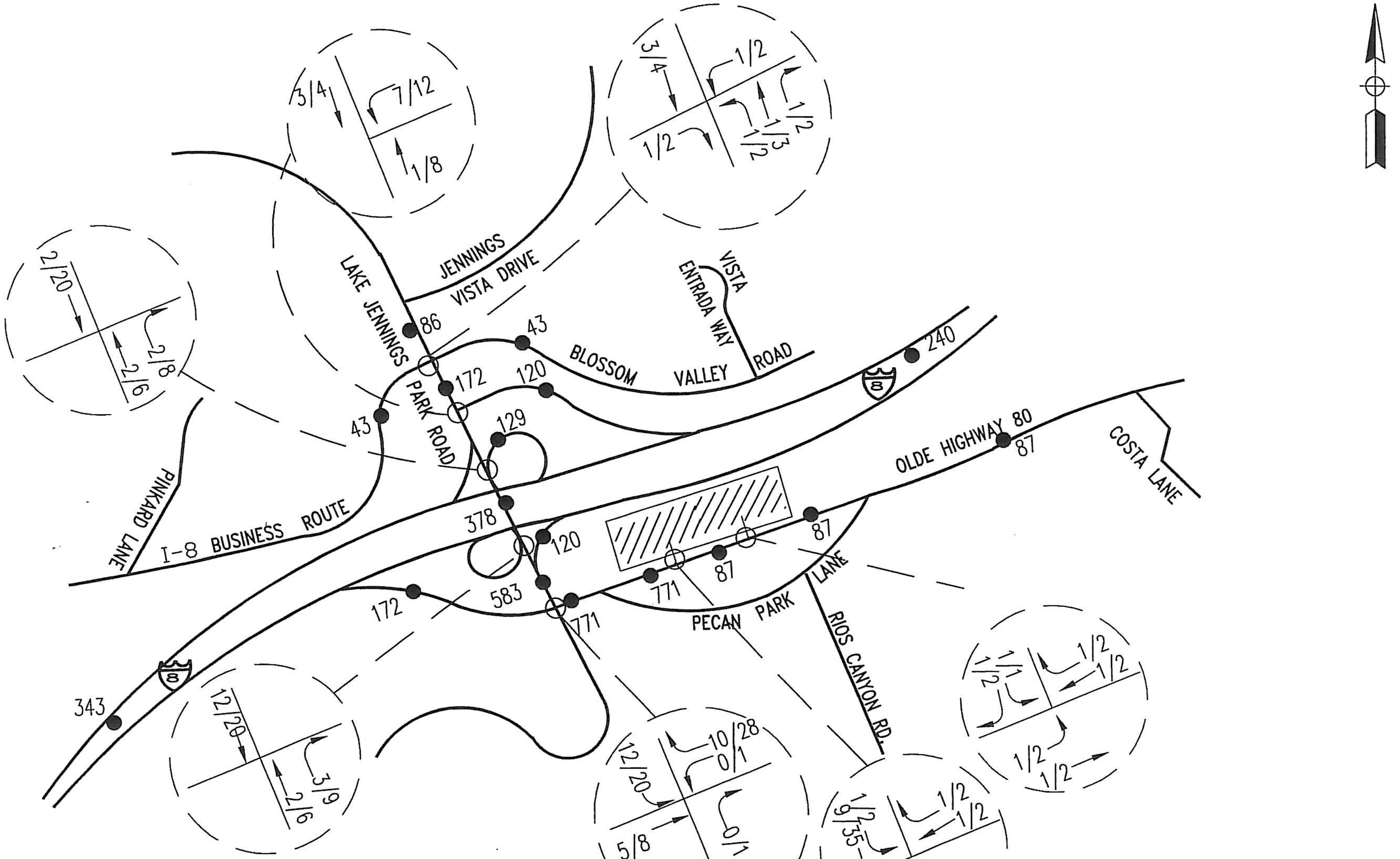
Land Use	Unit	Trip Generation Rates						
		Daily	AM Peak Hour			PM Peak Hour		
			Total % of Daily	% In	% Out	Total % of Daily	% In	% Out
Specialty Store	KSF	40 00	3%	60%	40%	9%	50%	50%
Storage/Display	KSF	5 0	13%	70%	30%	15%	40%	60%

KSF =1,000 square feet; Storage/Display KSF=2.0

Table 5 - Tractor Supply Project Trip Generation Summary

Land Use	# of Units	Unit	Total Trip Generation						
			Daily	AM Peak Hour			PM Peak Hour		
				Total	In	Out	Total	In	Out
Specialty Store	19,169	KSF	767	23	16	7	69	35	34
Storage/Display	17,957.5	KSF	90	12	8	4	14	6	8
Total Project Trips		**KSF**	**857**	**35**	**24**	**11**	**83**	**41**	**42**

KSF =1000 square feet;



LEGEND

XX/YY – AM/PM PEAK HOUR TURN VOLUMES

● Z,ZZZ – AVERAGE DAILY TRAFFIC

⟶ – DIRECTION OF TRAVEL

▨ – PROJECT SITE

Darnell & ASSOCIATES, INC.

130706 –FIGURES BB.dwg 3–25–14 JAM

FIGURE 6

PROJECT TRAFFIC VOLUMES

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑↱		↰	↑↑	↱		✥			↰↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.85		0.98			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99			0.98	1.00
Satd. Flow (prot)	1770	3425		1770	3539	1583		1807			1821	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.88			0.59	1.00
Satd. Flow (perm)	1770	3425		1770	3539	1583		1599			1094	1583
Volume (vph)	273	222	61	43	512	263	45	150	35	135	161	458
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	287	234	64	45	539	277	47	158	37	142	169	482
RTOR Reduction (vph)	0	27	0	0	0	248	0	8	0	0	0	273
Lane Group Flow (vph)	287	271	0	45	539	29	0	234	0	0	311	209
Turn Type	Prot			Prot		Over	pm+pt			pm+pt		Over
Protected Phases	7	4		3	8	1	5	2		1	6	7
Permitted Phases							2			6		
Actuated Green, G (s)	17.6	32.4		2.8	17.6	7.3		17.9			30.6	17.6
Effective Green, g (s)	19.0	33.8		4.2	19.0	8.7		19.3			32.0	19.0
Actuated g/C Ratio	0.23	0.41		0.05	0.23	0.11		0.24			0.39	0.23
Clearance Time (s)	5.4	5.4		5.4	5.4	5.4		5.4			5.4	5.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	410	1412		91	820	168		376			504	367
v/s Ratio Prot	c0.16	0.08		0.03	c0.15	0.02					c0.07	0.13
v/s Ratio Perm								0.15			c0.18	
v/c Ratio	0.70	0.19		0.49	0.66	0.17		0.62			0.62	0.57
Uniform Delay, d1	28.9	15.4		37.9	28.5	33.4		28.1			20.1	27.9
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	5.2	0.1		4.2	1.9	0.5		3.2			2.2	2.1
Delay (s)	34.1	15.4		42.0	30.5	33.9		31.3			22.3	30.0
Level of Service	C	B		D	C	C		C			C	C
Approach Delay (s)		24.6			32.2			31.3			27.0	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	28.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	82.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

4: Mapleview Street & Pino Drive

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑↱		↰	↑↑	↱		✥			↰↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85		0.97			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97			0.99	1.00
Satd. Flow (prot)	1770	3461		1770	3539	1583		1746			1850	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.80			0.98	1.00
Satd. Flow (perm)	1770	3461		1770	3539	1583		1453			1819	1583
Volume (vph)	8	319	55	17	516	1	114	12	35	3	18	26
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	8	336	58	18	543	1	120	13	37	3	19	27
RTOR Reduction (vph)	0	18	0	0	0	1	0	8	0	0	0	13
Lane Group Flow (vph)	8	376	0	18	543	0	0	162	0	0	22	14
Turn Type	Prot			Prot		Perm	Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases						8	2			6		6
Actuated Green, G (s)	1.0	13.8		1.2	14.0	14.0		29.8			29.8	29.8
Effective Green, g (s)	2.4	15.2		2.6	15.4	15.4		31.2			31.2	31.2
Actuated g/C Ratio	0.04	0.25		0.04	0.25	0.25		0.51			0.51	0.51
Clearance Time (s)	5.4	5.4		5.4	5.4	5.4		5.4			5.4	5.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	70	862		75	893	400		743			930	810
v/s Ratio Prot	0.00	0.11		c0.01	c0.15							
v/s Ratio Perm						0.00		c0.11			0.01	0.01
v/c Ratio	0.11	0.44		0.24	0.61	0.00		0.22			0.02	0.02
Uniform Delay, d1	28.3	19.3		28.2	20.1	17.0		8.2			7.4	7.3
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	0.7	0.4		1.7	1.2	0.0		0.7			0.0	0.0
Delay (s)	29.0	19.6		29.9	21.3	17.0		8.9			7.4	7.4
Level of Service	C	B		C	C	B		A			A	A
Approach Delay (s)		19.8			21.6			8.9			7.4	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	18.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	61.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	36.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

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--------------------------------------------------------------------------------
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                      Level Of Service Computation Report
             2000 HCM 4-Way Stop Method (Base Volume Alternative)
********************************************************************************
Intersection #5 Lake Jennings Park Road &  El Monte Rd [NT AM PH]
********************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.757
Loss Time (sec):       0                Average Delay (sec/veh):        16.3
Optimal Cycle:         0                Level Of Service:                  C
********************************************************************************
Street Name:      Lake Jennings Park Rd                  El Monte Rd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Ignore
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        1  0  0  1  0    1  0  1  1  0    0  1  0  0  1    0  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     145  417    24    18  217    17    60   27   102    40   39    24
Growth 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
Initial Bse:  145  417    24    18  217    17    60   27   102    40   39    24
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00
PHF Adj:     0.95 0.95  0.95  0.95 0.95  0.95  0.95 0.95  0.95  0.95 0.95  0.00
PHF Volume:   153  439    25    19  228    18    63   28   107    42   41     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  153  439    25    19  228    18    63   28   107    42   41     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00
FinalVolume:  153  439    25    19  228    18    63   28   107    42   41     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 0.95  0.05  1.00 1.85  0.15  0.69 0.31  1.00  0.51 0.49  1.00
Final Sat.:   556  580    33   468  939    74   322  145   541   229  223   512
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.27 0.76  0.76  0.04 0.24  0.24  0.20 0.20  0.20  0.18 0.18  0.00
Crit Moves:       ****             ****                       ****  ****
Delay/Veh:   11.4 23.7  23.7  10.4 11.6  11.5  11.6 11.6  10.3  11.6 11.6   0.0
Delay 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
AdjDel/Veh:  11.4 23.7  23.7  10.4 11.6  11.5  11.6 11.6  10.3  11.6 11.6   0.0
LOS by Move:    B    C     C     B    B     B     B    B     B     B    B     *
ApproachDel:      20.7             11.5             10.9             11.6
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:       20.7             11.5             10.9             11.6
LOS by Appr:         C                B                B                B
AllWayAvgQ:   0.4  2.6   2.6   0.0  0.3   0.3   0.2  0.2   0.2   0.2  0.2   0.0
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	ⵖ		↑	↱	↰	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.97		1.00	0.85	1.00	1.00
Flt Protected	0.96		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1736		1863	1583	1770	1863
Flt Permitted	0.96		1.00	1.00	0.95	1.00
Satd. Flow (perm)	1736		1863	1583	1770	1863
Volume (vph)	101	32	534	40	18	355
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	106	34	562	42	19	374
RTOR Reduction (vph)	15	0	0	11	0	0
Lane Group Flow (vph)	125	0	562	31	19	374
Turn Type				pt+ov	Prot	
Protected Phases	8		2	2 8	1	6
Permitted Phases						
Actuated Green, G (s)	9.3		42.3	57.0	10.1	57.8
Effective Green, g (s)	10.7		43.7	58.4	11.5	59.2
Actuated g/C Ratio	0.14		0.56	0.75	0.15	0.76
Clearance Time (s)	5.4		5.4		5.4	5.4
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	238		1045	1187	261	1416
v/s Ratio Prot	c0.07		c0.30	0.02	0.01	c0.20
v/s Ratio Perm						
v/c Ratio	0.53		0.54	0.03	0.07	0.26
Uniform Delay, d1	31.2		10.8	2.5	28.6	2.8
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	2.1		2.0	0.0	0.5	0.1
Delay (s)	33.3		12.7	2.5	29.1	2.9
Level of Service	C		B	A	C	A
Approach Delay (s)	33.3		12.0			4.2
Approach LOS	C		B			A

Intersection Summary			
HCM Average Control Delay	11.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	77.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	42.3%	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		↰	↱		✣		↰	↱		↰	↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85		0.97		1.00	0.98		1.00	1.00	0.85
Flt Protected		0.98	1.00		0.97		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1826	1583		1756		1770	1817		1770	1863	1583
Flt Permitted		0.98	1.00		0.97		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1826	1583		1756		1770	1817		1770	1863	1583
Volume (vph)	50	73	216	237	57	72	110	434	85	59	423	57
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	53	77	227	249	60	76	116	457	89	62	445	60
RTOR Reduction (vph)	0	0	192	0	10	0	0	8	0	0	0	21
Lane Group Flow (vph)	0	130	35	0	375	0	116	538	0	62	445	39
Turn Type	Split		Perm	Split			Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)		10.8	10.8		18.4		5.3	25.5		2.9	23.1	23.1
Effective Green, g (s)		12.2	12.2		19.8		6.7	26.9		4.3	24.5	24.5
Actuated g/C Ratio		0.15	0.15		0.25		0.08	0.34		0.05	0.31	0.31
Clearance Time (s)		5.4	5.4		5.4		5.4	5.4		5.4	5.4	5.4
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		281	244		439		150	617		96	576	490
v/s Ratio Prot		c0.07			c0.21		c0.07	c0.30		0.04	0.24	
v/s Ratio Perm			0.02									0.02
v/c Ratio		0.46	0.14		0.85		0.77	0.87		0.65	0.77	0.08
Uniform Delay, d1		30.5	29.0		28.3		35.5	24.5		36.7	24.8	19.4
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		1.2	0.3		14.9		21.6	12.9		14.0	6.4	0.1
Delay (s)		31.7	29.3		43.3		57.1	37.4		50.7	31.2	19.4
Level of Service		C	C		D		E	D		D	C	B
Approach Delay (s)		30.2			43.3			40.9			32.1	
Approach LOS		C			D			D			C	

Intersection Summary			
HCM Average Control Delay	36.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	79.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↰		↱		↑	↱		↑	↱
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	0	0	16	0	278	0	346	484	0	309	559
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	0	17	0	293	0	364	509	0	325	588
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)											333	
pX, platoon unblocked												
vC, conflicting volume	982	1199	325	689	1278	364	914			874		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	982	1199	325	689	1278	364	914			874		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	95	100	57	100			100		
cM capacity (veh/h)	130	185	716	360	166	681	746			772		

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	17	293	364	509	325	588
Volume Left	17	0	0	0	0	0
Volume Right	0	293	0	509	0	588
cSH	360	681	1700	1700	1700	1700
Volume to Capacity	0.05	0.43	0.21	0.30	0.19	0.35
Queue Length 95th (ft)	4	54	0	0	0	0
Control Delay (s)	15.5	14.2	0.0	0.0	0.0	0.0
Lane LOS	C	B				
Approach Delay (s)	14.3		0.0		0.0	
Approach LOS	B					

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	42.1%	ICU Level of Service	A
Analysis Period (min)	15		

9: I-8 EB Off Ramp & Lake Jennings Park Road

7/21/2015

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰		↱		↱			↰	↱
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	199	278	9	27	0	534	0	57	29	161	17	187
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	209	293	9	28	0	562	0	60	31	169	18	197

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total (vph)	209	302	28	562	91	187	197
Volume Left (vph)	209	0	28	0	0	169	0
Volume Right (vph)	0	9	0	562	31	0	197
Hadj (s)	0.53	0.01	0.23	-0.57	-0.17	0.21	-0.57
Departure Headway (s)	5.9	5.3	5.7	3.2	5.3	5.5	3.2
Degree Utilization, x	0.34	0.45	0.04	0.50	0.13	0.29	0.17
Capacity (veh/h)	598	656	582	1116	626	613	1121
Control Delay (s)	10.7	11.4	9.0	9.4	9.2	10.8	6.9
Approach Delay (s)	11.1		9.3		9.2	8.8	
Approach LOS	B		A		A	A	

Intersection Summary			
Delay	9.8		
HCM Level of Service	A		
Intersection Capacity Utilization	62.6%	ICU Level of Service	B
Analysis Period (min)	15		

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱		↰	↑	↰	↱
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	344	55	4	484	116	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	362	58	4	509	122	1
Pedestrians	10			10	10	
Lane Width (ft)	12.0			13.0	14.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	1			1	1	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			430		929	411
vC1, stage 1 conf vol			0			
vC2, stage 2 conf vol			0			
vCu, unblocked vol			430		929	411
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)			3.1			
tF (s)			2.2		3.5	3.3
p0 queue free %			100		58	100
cM capacity (veh/h)			929		290	629

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2
Volume Total	420	4	509	122	1
Volume Left	0	4	0	122	0
Volume Right	58	0	0	0	1
cSH	1700	929	1700	290	629
Volume to Capacity	0.25	0.00	0.30	0.42	0.00
Queue Length 95th (ft)	0	0	0	50	0
Control Delay (s)	0.0	8.9	0.0	26.1	10.7
Lane LOS		A		D	B
Approach Delay (s)	0.0	0.1		26.0	
Approach LOS				D	

Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	40.5%	ICU Level of Service	A
Analysis Period (min)	15		

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱			↰	Y	
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	4	151	42	1	156	44
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	4	159	44	1	164	46
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			163		173	84
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			163		173	84
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		79	95
cM capacity (veh/h)			1415		791	976

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	163	45	211
Volume Left	0	44	164
Volume Right	159	0	46
cSH	1700	1415	826
Volume to Capacity	0.10	0.03	0.25
Queue Length 95th (ft)	0	2	25
Control Delay (s)	0.0	7.5	10.8
Lane LOS		A	B
Approach Delay (s)	0.0	7.5	10.8
Approach LOS			B

Intersection Summary			
Average Delay	6.3		
Intersection Capacity Utilization	34.2%	ICU Level of Service	A
Analysis Period (min)	15		

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱		↰	↑	Y	
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	346	0	12	447	20	14
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	364	0	13	471	21	15
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			364		860	364
vC1, stage 1 conf vol			0			
vC2, stage 2 conf vol			0			
vCu, unblocked vol			364		860	364
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)			3.1			
tF (s)			2.2		3.5	3.3
p0 queue free %			99		93	98
cM capacity (veh/h)			958		322	681

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	364	13	471	36
Volume Left	0	13	0	21
Volume Right	0	0	0	15
cSH	1700	958	1700	411
Volume to Capacity	0.21	0.01	0.28	0.09
Queue Length 95th (ft)	0	1	0	7
Control Delay (s)	0.0	8.8	0.0	14.6
Lane LOS		A		B
Approach Delay (s)	0.0	0.2		14.6
Approach LOS				B

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	33.5%	ICU Level of Service	A
Analysis Period (min)	15		

NT PM Peak Hour
W/O Project

3: Mapleview Street & Ashwood Street
HCM Signalized Intersection Capacity Analysis

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↑	↱		✥			↰	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85		0.95			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00			0.97	1.00
Satd. Flow (prot)	1770	3481		1770	3539	1583		1767			1810	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.94			0.46	1.00
Satd. Flow (perm)	1770	3481		1770	3539	1583		1672			856	1583
Volume (vph)	394	504	62	46	291	148	18	125	78	249	179	374
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	415	531	65	48	306	156	19	132	82	262	188	394
RTOR Reduction (vph)	0	10	0	0	0	140	0	23	0	0	0	146
Lane Group Flow (vph)	415	586	0	48	306	16	0	210	0	0	450	248
Turn Type	Prot			Prot		Over	pm+pt			pm+pt		Over
Protected Phases	7	4		3	8	1	5	2		1	6	7
Permitted Phases							2			6		
Actuated Green, G (s)	21.2	32.8		2.9	14.5	7.1		17.8			30.3	21.2
Effective Green, g (s)	22.6	34.2		4.3	15.9	8.5		19.2			31.7	22.6
Actuated g/C Ratio	0.27	0.42		0.05	0.19	0.10		0.23			0.39	0.27
Clearance Time (s)	5.4	5.4		5.4	5.4	5.4		5.4			5.4	5.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	487	1448		93	685	164		391			429	435
v/s Ratio Prot	c0.23	c0.17		0.03	0.09	0.01					c0.11	0.16
v/s Ratio Perm								0.13			c0.30	
v/c Ratio	0.85	0.40		0.52	0.45	0.10		0.54			1.05	0.57
Uniform Delay, d1	28.2	16.9		37.9	29.3	33.4		27.6			25.2	25.6
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	13.5	0.2		4.8	0.5	0.3		1.4			56.9	1.8
Delay (s)	41.7	17.0		42.7	29.7	33.6		29.0			82.1	27.4
Level of Service	D	B		D	C	C		C			F	C
Approach Delay (s)		27.2			32.1			29.0			56.6	
Approach LOS		C			C			C			E	

Intersection Summary			
HCM Average Control Delay	37.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	82.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	78.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↑	↱		↰↑↱			↰↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.85		0.98			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.99	1.00
Satd. Flow (prot)	1770	3443		1770	3539	1583		1774			1838	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.87			0.95	1.00
Satd. Flow (perm)	1770	3443		1770	3539	1583		1587			1769	1583
Volume (vph)	29	549	122	16	327	14	56	37	20	8	21	20
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	31	578	128	17	344	15	59	39	21	8	22	21
RTOR Reduction (vph)	0	22	0	0	0	11	0	7	0	0	0	11
Lane Group Flow (vph)	31	684	0	17	344	4	0	112	0	0	30	10
Turn Type	Prot			Prot		Perm	Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases						8	2			6		6
Actuated Green, G (s)	2.7	18.4		1.2	16.9	16.9		30.0			30.0	30.0
Effective Green, g (s)	4.1	19.8		2.6	18.3	18.3		31.4			31.4	31.4
Actuated g/C Ratio	0.06	0.30		0.04	0.28	0.28		0.48			0.48	0.48
Clearance Time (s)	5.4	5.4		5.4	5.4	5.4		5.4			5.4	5.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	110	1036		70	984	440		757			844	755
v/s Ratio Prot	c0.02	c0.20		0.01	0.10							
v/s Ratio Perm						0.00		c0.07			0.02	0.01
v/c Ratio	0.28	0.66		0.24	0.35	0.01		0.15			0.04	0.01
Uniform Delay, d1	29.4	20.1		30.6	19.0	17.2		9.7			9.1	9.0
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	1.4	1.5		1.8	0.2	0.0		0.4			0.1	0.0
Delay (s)	30.9	21.6		32.5	19.2	17.2		10.1			9.2	9.1
Level of Service	C	C		C	B	B		B			A	A
Approach Delay (s)		22.0			19.7			10.1			9.2	
Approach LOS		C			B			B			A	

Intersection Summary			
HCM Average Control Delay	19.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	65.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

```
--------------------------------------------------------------------------------
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
             2000 HCM 4-Way Stop Method (Base Volume Alternative)
********************************************************************************
Intersection #6 Lake Jennings Park Road &  El Monte Rd [NT PM PH]
********************************************************************************
Cycle (sec):         100              Critical Vol./Cap.(X):         0.605
Loss Time (sec):       0              Average Delay (sec/veh):        15.2
Optimal Cycle:         0              Level Of Service:                  C
********************************************************************************
Street Name:     Lake Jennings Park Road                  El Monte Rd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Ignore
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        1  0  0  1  0    1  0  1  1  0    0  1  0  0  1    0  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      90  288    22    24  466    35    43   33   168    56   39    28
Growth 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
Initial Bse:   90  288    22    24  466    35    43   33   168    56   39    28
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00
PHF Adj:     0.95 0.95  0.95  0.95 0.95  0.95  0.95 0.95  0.95  0.95 0.95  0.00
PHF Volume:    95  303    23    25  491    37    45   35   177    59   41     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   95  303    23    25  491    37    45   35   177    59   41     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00
FinalVolume:   95  303    23    25  491    37    45   35   177    59   41     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 0.93  0.07  1.00 1.86  0.14  0.57 0.43  1.00  0.59 0.41  1.00
Final Sat.:   493  501    38   472  957    72   257  197   520   252  176   482
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.19 0.60  0.60  0.05 0.51  0.51  0.18 0.18  0.34  0.23 0.23  0.00
Crit Moves:       ****             ****                   ****        ****
Delay/Veh:   11.4 18.1  18.1  10.5 16.2  16.0  11.7 11.7  12.3  12.7 12.7   0.0
Delay 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
AdjDel/Veh:  11.4 18.1  18.1  10.5 16.2  16.0  11.7 11.7  12.3  12.7 12.7   0.0
LOS by Move:    B    C     C     B    C     C     B    B     B     B    B     *
ApproachDel:      16.6             15.9              12.1             12.7
Delay Adj:        1.00             1.00              1.00             1.00
ApprAdjDel:       16.6             15.9              12.1             12.7
LOS by Appr:         C                C                 B                B
AllWayAvgQ:   0.2  1.3   1.3   0.1  1.0   0.9   0.2  0.2   0.4   0.3  0.3   0.0
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↑	↱	↰	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.97		1.00	0.85	1.00	1.00
Flt Protected	0.96		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1742		1863	1583	1770	1863
Flt Permitted	0.96		1.00	1.00	0.95	1.00
Satd. Flow (perm)	1742		1863	1583	1770	1863
Volume (vph)	80	21	403	105	45	640
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	84	22	424	111	47	674
RTOR Reduction (vph)	12	0	0	28	0	0
Lane Group Flow (vph)	94	0	424	83	47	674
Turn Type				pt+ov	Prot	
Protected Phases	8		2	2 8	1	6
Permitted Phases						
Actuated Green, G (s)	8.4		42.3	56.1	10.1	57.8
Effective Green, g (s)	9.8		43.7	57.5	11.5	59.2
Actuated g/C Ratio	0.13		0.57	0.75	0.15	0.77
Clearance Time (s)	5.4		5.4		5.4	5.4
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	222		1057	1182	264	1432
v/s Ratio Prot	c0.05		0.23	0.05	0.03	c0.36
v/s Ratio Perm						
v/c Ratio	0.42		0.40	0.07	0.18	0.47
Uniform Delay, d1	31.0		9.3	2.6	28.6	3.2
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.3		1.1	0.0	1.5	0.2
Delay (s)	32.3		10.5	2.6	30.1	3.5
Level of Service	C		B	A	C	A
Approach Delay (s)	32.3		8.8			5.2
Approach LOS	C		A			A

Intersection Summary			
HCM Average Control Delay	8.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	77.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.1%	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		↰	↱		✥		↰	↱		↰	↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85		0.97		1.00	0.96		1.00	1.00	0.85
Flt Protected		0.97	1.00		0.97		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1808	1583		1754		1770	1787		1770	1863	1583
Flt Permitted		0.97	1.00		0.97		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1808	1583		1754		1770	1787		1770	1863	1583
Volume (vph)	64	42	171	167	25	44	143	494	185	75	563	75
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	67	44	180	176	26	46	151	520	195	79	593	79
RTOR Reduction (vph)	0	0	154	0	10	0	0	14	0	0	0	20
Lane Group Flow (vph)	0	111	26	0	238	0	151	701	0	79	593	59
Turn Type	Split		Perm	Split			Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)		10.1	10.1		15.1		7.4	31.2		3.1	26.9	26.9
Effective Green, g (s)		11.5	11.5		16.5		8.8	32.6		4.5	28.3	28.3
Actuated g/C Ratio		0.14	0.14		0.20		0.11	0.40		0.06	0.35	0.35
Clearance Time (s)		5.4	5.4		5.4		5.4	5.4		5.4	5.4	5.4
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		256	224		357		192	718		98	650	552
v/s Ratio Prot		c0.06			c0.14		c0.09	c0.39		0.04	0.32	
v/s Ratio Perm			0.02									0.04
v/c Ratio		0.43	0.11		0.67		0.79	0.98		0.81	0.91	0.11
Uniform Delay, d1		31.8	30.4		29.8		35.2	23.9		37.9	25.2	17.9
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		1.2	0.2		4.7		18.8	27.6		36.6	17.2	0.1
Delay (s)		33.0	30.6		34.5		54.1	51.4		74.5	42.4	17.9
Level of Service		C	C		C		D	D		E	D	B
Approach Delay (s)		31.5			34.5			51.9			43.2	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	44.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	81.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

8: I-8 WB On Ramp & Lake Jennings Park Road

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↰		↱		↑	↱		↑	↱
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	0	0	17	0	203	0	619	377	0	536	337
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	0	18	0	214	0	652	397	0	564	355
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)											333	
pX, platoon unblocked	0.78	0.78	0.78	0.78	0.78		0.78					
vC, conflicting volume	1429	1613	564	1216	1571	652	919			1048		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1550	1784	442	1276	1730	652	896			1048		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	84	100	54	100			100		
cM capacity (veh/h)	39	64	481	112	69	468	592			664		

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	18	214	652	397	564	355
Volume Left	18	0	0	0	0	0
Volume Right	0	214	0	397	0	355
cSH	112	468	1700	1700	1700	1700
Volume to Capacity	0.16	0.46	0.38	0.23	0.33	0.21
Queue Length 95th (ft)	14	59	0	0	0	0
Control Delay (s)	43.1	19.0	0.0	0.0	0.0	0.0
Lane LOS	E	C				
Approach Delay (s)	20.8		0.0		0.0	
Approach LOS	C					

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		

NT PM Peak Hour W/O Project

9: I-8 EB Off Ramp & Lake Jennings Park Road 7/21/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰		↱		↱			↰	↱
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	434	476	39	26	0	527	0	33	20	199	28	329
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	457	501	41	27	0	555	0	35	21	209	29	346

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total (vph)	457	542	27	555	56	239	346
Volume Left (vph)	457	0	27	0	0	209	0
Volume Right (vph)	0	41	0	555	21	0	346
Hadj (s)	0.53	-0.02	0.23	-0.57	-0.19	0.21	-0.57
Departure Headway (s)	6.0	5.5	6.2	3.2	6.1	6.1	3.2
Degree Utilization, x	0.76	0.82	0.05	0.49	0.09	0.40	0.31
Capacity (veh/h)	588	650	542	1116	568	571	1113
Control Delay (s)	24.7	27.6	9.5	9.3	9.7	13.2	7.6
Approach Delay (s)	26.2		9.3		9.7	9.9	
Approach LOS	D		A		A	A	

Intersection Summary			
Delay	17.1		
HCM Level of Service	C		
Intersection Capacity Utilization	73.9%	ICU Level of Service	D
Analysis Period (min)	15		

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱		↰	↑	↰	↱
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	524	141	15	430	92	4
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	552	148	16	453	97	4
Pedestrians	10			10	10	
Lane Width (ft)	12.0			13.0	14.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	1			1	1	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			710		1130	646
vC1, stage 1 conf vol			0			
vC2, stage 2 conf vol			0			
vCu, unblocked vol			710		1130	646
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)			3.1			
tF (s)			2.2		3.5	3.3
p0 queue free %			98		55	99
cM capacity (veh/h)			849		217	463

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2
Volume Total	700	16	453	97	4
Volume Left	0	16	0	97	0
Volume Right	148	0	0	0	4
cSH	1700	849	1700	217	463
Volume to Capacity	0.41	0.02	0.27	0.45	0.01
Queue Length 95th (ft)	0	1	0	53	1
Control Delay (s)	0.0	9.3	0.0	34.3	12.8
Lane LOS		A		D	B
Approach Delay (s)	0.0	0.3		33.4	
Approach LOS				D	

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	50.5%	ICU Level of Service	A
Analysis Period (min)	15		

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱			↰	↰↱	
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	7	143	24	1	102	33
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	7	151	25	1	107	35
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			158		134	83
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			158		134	83
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		87	96
cM capacity (veh/h)			1422		844	977

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	158	26	142
Volume Left	0	25	107
Volume Right	151	0	35
cSH	1700	1422	873
Volume to Capacity	0.09	0.02	0.16
Queue Length 95th (ft)	0	1	14
Control Delay (s)	0.0	7.3	9.9
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	9.9
Approach LOS			A

Intersection Summary			
Average Delay	4.9		
Intersection Capacity Utilization	30.2%	ICU Level of Service	A
Analysis Period (min)	15		

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱		↰	↑	Y	
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	525	1	18	432	12	22
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	553	1	19	455	13	23
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			554		1046	553
vC1, stage 1 conf vol			0			
vC2, stage 2 conf vol			0			
vCu, unblocked vol			554		1046	553
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)			3.1			
tF (s)			2.2		3.5	3.3
p0 queue free %			98		95	96
cM capacity (veh/h)			897		248	533

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	554	19	455	36
Volume Left	0	19	0	13
Volume Right	1	0	0	23
cSH	1700	897	1700	379
Volume to Capacity	0.33	0.02	0.27	0.09
Queue Length 95th (ft)	0	2	0	8
Control Delay (s)	0.0	9.1	0.0	15.5
Lane LOS		A		C
Approach Delay (s)	0.0	0.4		15.5
Approach LOS				C

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	37.7%	ICU Level of Service	A
Analysis Period (min)	15		

APPENDIX H

CUMULATIVE WITH PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

NT AM Peak Hour W/ Project

1: Mapleview Street & Ashwood Street HCM Signalized Intersection Capacity Analysis

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↑	↱		↰↑↱			↰↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.85		0.98			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99			0.98	1.00
Satd. Flow (prot)	1770	3430		1770	3539	1583		1806			1821	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.87			0.56	1.00
Satd. Flow (perm)	1770	3430		1770	3539	1583		1594			1051	1583
Volume (vph)	273	234	61	44	521	266	45	150	36	139	161	458
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	287	246	64	46	548	280	47	158	38	146	169	482
RTOR Reduction (vph)	0	26	0	0	0	250	0	8	0	0	0	270
Lane Group Flow (vph)	287	284	0	46	548	30	0	235	0	0	315	212
Turn Type	Prot			Prot		Over	pm+pt			pm+pt		Over
Protected Phases	7	4		3	8	1	5	2		1	6	7
Permitted Phases							2			6		
Actuated Green, G (s)	17.5	32.8		2.8	18.1	7.3		16.9			29.6	17.5
Effective Green, g (s)	18.9	34.2		4.2	19.5	8.7		18.3			31.0	18.9
Actuated g/C Ratio	0.23	0.42		0.05	0.24	0.11		0.22			0.38	0.23
Clearance Time (s)	5.4	5.4		5.4	5.4	5.4		5.4			5.4	5.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	411	1441		91	848	169		358			483	368
v/s Ratio Prot	c0.16	0.08		0.03	c0.15	0.02					c0.07	0.13
v/s Ratio Perm								0.15			c0.18	
v/c Ratio	0.70	0.20		0.51	0.65	0.18		0.66			0.65	0.58
Uniform Delay, d1	28.6	14.9		37.6	27.8	33.1		28.7			20.8	27.7
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	5.1	0.1		4.4	1.7	0.5		4.3			3.2	2.2
Delay (s)	33.8	15.0		42.0	29.5	33.6		33.0			23.9	29.9
Level of Service	C	B		D	C	C		C			C	C
Approach Delay (s)		24.0			31.5			33.0			27.5	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	28.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	81.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

2: Mapleview Street & Pino Drive

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↑	↱		✥			↰	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85		0.97			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97			0.99	1.00
Satd. Flow (prot)	1770	3465		1770	3539	1583		1746			1850	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.80			0.98	1.00
Satd. Flow (perm)	1770	3465		1770	3539	1583		1452			1818	1583
Volume (vph)	8	337	55	17	529	1	114	12	35	3	18	26
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	8	355	58	18	557	1	120	13	37	3	19	27
RTOR Reduction (vph)	0	16	0	0	0	1	0	8	0	0	0	13
Lane Group Flow (vph)	8	397	0	18	557	0	0	162	0	0	22	14
Turn Type	Prot			Prot		Perm	Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases						8	2			6		6
Actuated Green, G (s)	1.0	13.9		1.2	14.1	14.1		29.3			29.3	29.3
Effective Green, g (s)	2.4	15.3		2.6	15.5	15.5		30.7			30.7	30.7
Actuated g/C Ratio	0.04	0.25		0.04	0.26	0.26		0.51			0.51	0.51
Clearance Time (s)	5.4	5.4		5.4	5.4	5.4		5.4			5.4	5.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	70	875		76	905	405		736			921	802
v/s Ratio Prot	0.00	0.11		c0.01	c0.16							
v/s Ratio Perm						0.00		c0.11			0.01	0.01
v/c Ratio	0.11	0.45		0.24	0.62	0.00		0.22			0.02	0.02
Uniform Delay, d1	28.1	19.1		28.0	19.9	16.8		8.3			7.5	7.4
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	0.7	0.4		1.6	1.3	0.0		0.7			0.0	0.0
Delay (s)	28.8	19.5		29.7	21.2	16.8		9.0			7.5	7.5
Level of Service	C	B		C	C	B		A			A	A
Approach Delay (s)		19.7			21.4			9.0			7.5	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	18.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	60.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	37.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

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                      Level Of Service Computation Report
             2000 HCM 4-Way Stop Method (Base Volume Alternative)
********************************************************************************
Intersection #7 Lake Jennings Rd & El Monte Rd [NT AM PH + P]
********************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.749
Loss Time (sec):       0                Average Delay (sec/veh):        16.0
Optimal Cycle:         0                Level Of Service:                  C
********************************************************************************
Street Name:         Lake Jennings Rd                    El Monte Rd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include           Ignore
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        1  0  0  1  0    1  0  1  1  0    0  1  0  0  1    0  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     144  414    23    18  211    17    60   27   101    40   39    24
Growth 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
Initial Bse:  144  414    23    18  211    17    60   27   101    40   39    24
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00
PHF Adj:     0.95 0.95  0.95  0.95 0.95  0.95  0.95 0.95  0.95  0.95 0.95  0.00
PHF Volume:   152  436    24    19  222    18    63   28   106    42   41     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  152  436    24    19  222    18    63   28   106    42   41     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00
FinalVolume:  152  436    24    19  222    18    63   28   106    42   41     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 0.95  0.05  1.00 1.85  0.15  0.69 0.31  1.00  0.51 0.49  1.00
Final Sat.:   558  582    32   469  940    76   324  146   543   231  225   514
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.27 0.75  0.75  0.04 0.24  0.23  0.20 0.20  0.20  0.18 0.18  0.00
Crit Moves:       ****             ****                   ****  ****
Delay/Veh:   11.3 23.1  23.1  10.4 11.5  11.4  11.6 11.6  10.3  11.5 11.5   0.0
Delay 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
AdjDel/Veh:  11.3 23.1  23.1  10.4 11.5  11.4  11.6 11.6  10.3  11.5 11.5   0.0
LOS by Move:    B    C     C     B    B     B     B    B     B     B    B     *
ApproachDel:      20.2             11.4             10.9             11.5
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:       20.2             11.4             10.9             11.5
LOS by Appr:         C                B                B                B
AllWayAvgQ:   0.4  2.5   2.5   0.0  0.3   0.3   0.2  0.2   0.2   0.2  0.2   0.0
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
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4: Harritt Rd & Lake Jennings Rd

HCM Signalized Intersection Capacity Analysis

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↱		↑	↱	↰	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.97		1.00	0.85	1.00	1.00
Flt Protected	0.96		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1738		1863	1583	1770	1863
Flt Permitted	0.96		1.00	1.00	0.95	1.00
Satd. Flow (perm)	1738		1863	1583	1770	1863
Volume (vph)	106	32	568	44	18	397
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	112	34	598	46	19	418
RTOR Reduction (vph)	13	0	0	11	0	0
Lane Group Flow (vph)	133	0	598	35	19	418
Turn Type				pt+ov	Prot	
Protected Phases	8		2	2 8	1	6
Permitted Phases						
Actuated Green, G (s)	11.2		41.9	58.5	10.0	57.3
Effective Green, g (s)	12.6		43.3	59.9	11.4	58.7
Actuated g/C Ratio	0.16		0.55	0.76	0.14	0.74
Clearance Time (s)	5.4		5.4		5.4	5.4
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	276		1017	1196	254	1379
v/s Ratio Prot	c0.08		c0.32	0.02	0.01	c0.22
v/s Ratio Perm						
v/c Ratio	0.48		0.59	0.03	0.07	0.30
Uniform Delay, d1	30.4		12.0	2.4	29.4	3.4
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.3		2.5	0.0	0.6	0.1
Delay (s)	31.7		14.5	2.4	30.0	3.6
Level of Service	C		B	A	C	A
Approach Delay (s)	31.7		13.7			4.7
Approach LOS	C		B			A

Intersection Summary			
HCM Average Control Delay	12.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	79.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	44.4%	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		↰	↱		✥		↰	↱		↰	↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85		0.97		1.00	0.98		1.00	1.00	0.85
Flt Protected		0.98	1.00		0.97		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1826	1583		1757		1770	1818		1770	1863	1583
Flt Permitted		0.98	1.00		0.97		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1826	1583		1757		1770	1818		1770	1863	1583
Volume (vph)	50	73	238	246	57	72	127	482	92	59	491	57
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	53	77	251	259	60	76	134	507	97	62	517	60
RTOR Reduction (vph)	0	0	210	0	9	0	0	8	0	0	0	18
Lane Group Flow (vph)	0	130	41	0	386	0	134	596	0	62	517	42
Turn Type	Split		Perm	Split			Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)		11.1	11.1		18.7		6.6	30.2		3.1	26.7	26.7
Effective Green, g (s)		12.5	12.5		20.1		8.0	31.6		4.5	28.1	28.1
Actuated g/C Ratio		0.15	0.15		0.24		0.09	0.37		0.05	0.33	0.33
Clearance Time (s)		5.4	5.4		5.4		5.4	5.4		5.4	5.4	5.4
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		269	234		417		167	678		94	618	525
v/s Ratio Prot		c0.07			c0.22		c0.08	c0.33		0.04	0.28	
v/s Ratio Perm			0.03									0.03
v/c Ratio		0.48	0.18		0.93		0.80	0.88		0.66	0.84	0.08
Uniform Delay, d1		33.1	31.6		31.6		37.6	24.8		39.3	26.2	19.4
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		1.4	0.4		26.2		23.5	12.5		15.5	9.6	0.1
Delay (s)		34.5	32.0		57.8		61.1	37.3		54.8	35.8	19.5
Level of Service		C	C		E		E	D		D	D	B
Approach Delay (s)		32.8			57.8			41.6			36.1	
Approach LOS		C			E			D			D	

Intersection Summary			
HCM Average Control Delay	41.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	84.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

6: I-8 WB On Ramp & Lake Jennings Rd

HCM Unsignalized Intersection Capacity Analysis

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↰		↱		↑	↱		↑	↱
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	0	0	31	0	278	0	416	549	0	406	559
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	0	33	0	293	0	438	578	0	427	588
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						13						
Median type		None			None							
Median storage veh)												
Upstream signal (ft)											333	
pX, platoon unblocked												
vC, conflicting volume	1012	865	427	865	865	438	427			438		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1012	865	427	865	865	438	427			438		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	88	100	53	100			100		
cM capacity (veh/h)	115	292	627	274	292	619	1132			1122		

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	325	438	578	427	588
Volume Left	33	0	0	0	0
Volume Right	293	0	578	0	588
cSH	688	1700	1700	1700	1700
Volume to Capacity	0.47	0.26	0.34	0.25	0.35
Queue Length 95th (ft)	64	0	0	0	0
Control Delay (s)	16.3	0.0	0.0	0.0	0.0
Lane LOS	C				
Approach Delay (s)	16.3	0.0		0.0	
Approach LOS	C				

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	45.8%	ICU Level of Service	A
Analysis Period (min)	15		

NT AM Peak Hour
7: I-8 EB Off Ramp & Lake Jennings Park Road

W/ Project
7/21/2015

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰		↱		↱			↰	↱
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	199	380	22	27	0	693	0	87	29	284	32	187
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	209	400	23	28	0	729	0	92	31	299	34	197

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total (vph)	209	423	28	729	122	333	197
Volume Left (vph)	209	0	28	0	0	299	0
Volume Right (vph)	0	23	0	729	31	0	197
Hadj (s)	0.53	0.00	0.23	-0.57	-0.12	0.21	-0.57
Departure Headway (s)	6.5	5.9	6.7	3.2	6.1	6.0	3.2
Degree Utilization, x	0.38	0.70	0.05	0.65	0.21	0.55	0.17
Capacity (veh/h)	542	587	477	1119	547	579	1121
Control Delay (s)	12.2	20.3	10.0	11.9	10.6	16.1	6.9
Approach Delay (s)	17.6		11.8		10.6	12.6	
Approach LOS	C		B		B	B	

Intersection Summary			
Delay	13.8		
HCM Level of Service	B		
Intersection Capacity Utilization	73.5%	ICU Level of Service	D
Analysis Period (min)	15		

8: Ridge Hill Road/D4 & Lake Jennings Rd

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰	↱		Y	
Sign Control		Stop	Stop		Stop	
Volume (vph)	86	15	11	30	28	44
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	91	16	12	32	29	46

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total (vph)	106	43	76
Volume Left (vph)	91	0	29
Volume Right (vph)	0	32	46
Hadj (s)	0.20	-0.41	-0.25
Departure Headway (s)	4.3	3.8	4.0
Degree Utilization, x	0.13	0.05	0.08
Capacity (veh/h)	817	928	868
Control Delay (s)	7.9	6.9	7.3
Approach Delay (s)	7.9	6.9	7.3
Approach LOS	A	A	A

Intersection Summary			
Delay	7.5		
HCM Level of Service	A		
Intersection Capacity Utilization	23.1%	ICU Level of Service	A
Analysis Period (min)	15		

9: Olde Hwy 80 & Driveway 1

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↱			↑↑		
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	599	31	0	715	0	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	631	33	0	753	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)				364		
pX, platoon unblocked					0.87	
vC, conflicting volume			663		1023	332
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			663		877	332
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			922		250	664

Direction, Lane #	EB 1	EB 2	WB 1	WB 2
Volume Total	420	243	376	376
Volume Left	0	0	0	0
Volume Right	0	33	0	0
cSH	1700	1700	1700	1700
Volume to Capacity	0.25	0.14	0.22	0.22
Queue Length 95th (ft)	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0
Lane LOS				
Approach Delay (s)	0.0		0.0	
Approach LOS				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	23.1%	ICU Level of Service	A
Analysis Period (min)	15		

10: Olde Hwy 80 & Driveway 2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱			↰↑	↱		✥	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	14	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			1.00	0.97		1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.98	1.00		1.00	
Frt	1.00	0.96		1.00	1.00			1.00	0.85		0.88	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		1.00	
Satd. Flow (prot)	1770	3352		1770	3538			1737	1535		1628	
Flt Permitted	0.95	1.00		0.95	1.00			0.75	1.00		0.99	
Satd. Flow (perm)	1770	3352		1770	3538			1373	1535		1618	
Volume (vph)	20	413	166	42	565	1	149	0	22	1	0	9
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	21	435	175	44	595	1	157	0	23	1	0	9
RTOR Reduction (vph)	0	45	0	0	0	0	0	0	12	0	5	0
Lane Group Flow (vph)	21	565	0	44	596	0	0	157	11	0	5	0
Confl. Peds. (#/hr)			10	10			10		10			
Turn Type	Prot			Prot			Prot		Perm	Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			
Actuated Green, G (s)	3.1	29.5		6.5	32.9			47.8	47.8		47.8	
Effective Green, g (s)	4.5	30.9		7.9	34.3			49.2	49.2		49.2	
Actuated g/C Ratio	0.04	0.31		0.08	0.34			0.49	0.49		0.49	
Clearance Time (s)	5.4	5.4		5.4	5.4			5.4	5.4		5.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	80	1036		140	1214			676	755		796	
v/s Ratio Prot	0.01	c0.17		0.02	c0.17							
v/s Ratio Perm								c0.11	0.01		0.00	
v/c Ratio	0.26	0.55		0.31	0.49			0.23	0.01		0.01	
Uniform Delay, d1	46.1	28.7		43.5	26.0			14.6	13.0		12.9	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	1.8	2.1		1.3	0.3			0.2	0.0		0.0	
Delay (s)	47.9	30.8		44.8	26.3			14.7	13.0		13.0	
Level of Service	D	C		D	C			B	B		B	
Approach Delay (s)		31.3			27.5			14.5			13.0	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	27.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

NT AM Peak Hour

W/ Project

11: Olde Hwy 80 & Driveway 3

HCM Unsignalized Intersection Capacity Analysis

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↱			↑		↱
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	424	12	0	608	0	9
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	446	13	0	640	0	9
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)	205					
pX, platoon unblocked			0.87		0.87	0.87
vC, conflicting volume			459		1093	229
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			228		957	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	99
cM capacity (veh/h)			1163		222	943

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	298	161	640	9
Volume Left	0	0	0	0
Volume Right	0	13	0	9
cSH	1700	1700	1700	943
Volume to Capacity	0.18	0.09	0.38	0.01
Queue Length 95th (ft)	0	0	0	1
Control Delay (s)	0.0	0.0	0.0	8.9
Lane LOS				A
Approach Delay (s)	0.0		0.0	8.9
Approach LOS				A

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	35.3%	ICU Level of Service	A
Analysis Period (min)	15		

12: Olde Hwy 80 &

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰↑↑↱		↰	↑↱			✥		↰	↑↱	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	1	366	67	12	480	1	127	0	34	1	0	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	385	71	13	505	1	134	0	36	1	0	1

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total (vph)	194	263	13	506	169	1	1
Volume Left (vph)	1	0	13	0	134	1	0
Volume Right (vph)	0	71	0	1	36	0	1
Hadj (s)	0.04	-0.15	0.53	0.03	0.07	0.53	-0.67
Departure Headway (s)	5.7	5.6	6.2	5.7	6.8	7.9	6.6
Degree Utilization, x	0.31	0.41	0.02	0.80	0.32	0.00	0.00
Capacity (veh/h)	600	630	561	620	497	413	481
Control Delay (s)	10.1	11.1	8.1	26.2	12.9	9.7	8.5
Approach Delay (s)	10.7		25.8		12.9	9.1	
Approach LOS	B		D		B	A	

Intersection Summary			
Delay	17.8		
HCM Level of Service	C		
Intersection Capacity Utilization	48.0%	ICU Level of Service	A
Analysis Period (min)	15		

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱			↰	Y	
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	390	5	5	481	0	5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	411	5	5	506	0	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			416		930	413
vC1, stage 1 conf vol			0			
vC2, stage 2 conf vol			0			
vCu, unblocked vol			416		930	413
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)			3.1			
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	99
cM capacity (veh/h)			941		295	639

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	416	512	5
Volume Left	0	5	0
Volume Right	5	0	5
cSH	1700	941	639
Volume to Capacity	0.24	0.01	0.01
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.0	0.2	10.7
Lane LOS		A	B
Approach Delay (s)	0.0	0.2	10.7
Approach LOS			B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	39.3%	ICU Level of Service	A
Analysis Period (min)	15		

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↱			↰
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	10	0	161	5	0	79
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	0	169	5	0	83
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	255	172			175	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	255	172			175	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	733	872			1402	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	11	175	83
Volume Left	11	0	0
Volume Right	0	5	0
cSH	733	1700	1402
Volume to Capacity	0.01	0.10	0.00
Queue Length 95th (ft)	1	0	0
Control Delay (s)	10.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	10.0	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	18.8%	ICU Level of Service	A
Analysis Period (min)	15		

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↑	↱		✥			↰↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85		0.95			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00			0.97	1.00
Satd. Flow (prot)	1770	3484		1770	3539	1583		1766			1809	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.94			0.44	1.00
Satd. Flow (perm)	1770	3484		1770	3539	1583		1668			818	1583
Volume (vph)	394	528	62	48	315	156	18	125	80	257	179	374
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	415	556	65	51	332	164	19	132	84	271	188	394
RTOR Reduction (vph)	0	10	0	0	0	147	0	23	0	0	0	143
Lane Group Flow (vph)	415	611	0	51	332	17	0	212	0	0	459	251
Turn Type	Prot			Prot		Over	pm+pt			pm+pt		Over
Protected Phases	7	4		3	8	1	5	2		1	6	7
Permitted Phases							2			6		
Actuated Green, G (s)	21.2	33.3		2.9	15.0	7.1		16.8			29.3	21.2
Effective Green, g (s)	22.6	34.7		4.3	16.4	8.5		18.2			30.7	22.6
Actuated g/C Ratio	0.28	0.42		0.05	0.20	0.10		0.22			0.38	0.28
Clearance Time (s)	5.4	5.4		5.4	5.4	5.4		5.4			5.4	5.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	490	1480		93	710	165		372			410	438
v/s Ratio Prot	c0.23	c0.18		0.03	0.09	0.01					c0.12	0.16
v/s Ratio Perm								0.13			c0.30	
v/c Ratio	0.85	0.41		0.55	0.47	0.10		0.57			1.12	0.57
Uniform Delay, d1	27.9	16.4		37.8	28.8	33.1		28.3			25.5	25.4
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	12.8	0.2		6.5	0.5	0.3		2.0			81.1	1.8
Delay (s)	40.7	16.6		44.2	29.3	33.4		30.3			106.6	27.2
Level of Service	D	B		D	C	C		C			F	C
Approach Delay (s)		26.2			31.9			30.3			69.9	
Approach LOS		C			C			C			E	

Intersection Summary			
HCM Average Control Delay	41.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	81.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	80.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↑	↱		✥			↰↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.85		0.98			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.99	1.00
Satd. Flow (prot)	1770	3448		1770	3539	1583		1774			1838	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.87			0.95	1.00
Satd. Flow (perm)	1770	3448		1770	3539	1583		1586			1768	1583
Volume (vph)	29	584	122	16	362	14	56	37	20	8	21	20
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	31	615	128	17	381	15	59	39	21	8	22	21
RTOR Reduction (vph)	0	21	0	0	0	11	0	7	0	0	0	11
Lane Group Flow (vph)	31	722	0	17	381	4	0	112	0	0	30	10
Turn Type	Prot			Prot		Perm	Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases						8	2			6		6
Actuated Green, G (s)	2.7	19.1		1.2	17.6	17.6		29.5			29.5	29.5
Effective Green, g (s)	4.1	20.5		2.6	19.0	19.0		30.9			30.9	30.9
Actuated g/C Ratio	0.06	0.31		0.04	0.29	0.29		0.47			0.47	0.47
Clearance Time (s)	5.4	5.4		5.4	5.4	5.4		5.4			5.4	5.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	110	1071		70	1019	456		743			828	741
v/s Ratio Prot	c0.02	c0.21		0.01	0.11							
v/s Ratio Perm						0.00		c0.07			0.02	0.01
v/c Ratio	0.28	0.67		0.24	0.37	0.01		0.15			0.04	0.01
Uniform Delay, d1	29.5	19.8		30.7	18.8	16.8		10.0			9.5	9.4
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	1.4	1.7		1.8	0.2	0.0		0.4			0.1	0.0
Delay (s)	31.0	21.5		32.6	19.0	16.8		10.5			9.6	9.4
Level of Service	C	C		C	B	B		B			A	A
Approach Delay (s)		21.9			19.5			10.5			9.5	
Approach LOS		C			B			B			A	

Intersection Summary			
HCM Average Control Delay	19.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	66.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

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                      Level Of Service Computation Report
             2000 HCM 4-Way Stop Method (Base Volume Alternative)
********************************************************************************
Intersection #8 Lake Jennings Rd & El Monte Rd [NT PM PH + P]
********************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.594
Loss Time (sec):       0                Average Delay (sec/veh):        15.0
Optimal Cycle:         0                Level Of Service:                  C
********************************************************************************
Street Name:         Lake Jennings Rd                    El Monte Rd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include           Ignore
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        1  0  0  1  0    1  0  1  1  0    0  1  0  0  1    0  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      88  283    22    24  467    35    43   33   166    56   39    28
Growth 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
Initial Bse:   88  283    22    24  467    35    43   33   166    56   39    28
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00
PHF Adj:     0.95 0.95  0.95  0.95 0.95  0.95  0.95 0.95  0.95  0.95 0.95  0.00
PHF Volume:    93  298    23    25  492    37    45   35   175    59   41     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   93  298    23    25  492    37    45   35   175    59   41     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00
FinalVolume:   93  298    23    25  492    37    45   35   175    59   41     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 0.93  0.07  1.00 1.86  0.14  0.57 0.43  1.00  0.59 0.41  1.00
Final Sat.:   493  501    39   473  961    73   257  197   521   253  176   484
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.19 0.59  0.59  0.05 0.51  0.51  0.18 0.18  0.34  0.23 0.23  0.00
Crit Moves:       ****             ****                   ****       ****
Delay/Veh:   11.3 17.7  17.7  10.5 16.1  15.9  11.7 11.7  12.2  12.7 12.7   0.0
Delay 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
AdjDel/Veh:  11.3 17.7  17.7  10.5 16.1  15.9  11.7 11.7  12.2  12.7 12.7   0.0
LOS by Move:    B    C     C     B    C     C     B    B     B     B    B     *
ApproachDel:      16.3             15.8             12.1             12.7
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:       16.3             15.8             12.1             12.7
LOS by Appr:         C                C                B                B
AllWayAvgQ:   0.2  1.3   1.3   0.1  1.0   0.9   0.2  0.2   0.4   0.3  0.3   0.0
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
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	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↱		↑	↱	↰	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.97		1.00	0.85	1.00	1.00
Flt Protected	0.96		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1745		1863	1583	1770	1863
Flt Permitted	0.96		1.00	1.00	0.95	1.00
Satd. Flow (perm)	1745		1863	1583	1770	1863
Volume (vph)	90	21	487	115	45	732
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	95	22	513	121	47	771
RTOR Reduction (vph)	11	0	0	30	0	0
Lane Group Flow (vph)	106	0	513	91	47	771
Turn Type				pt+ov	Prot	
Protected Phases	8		2	2 8	1	6
Permitted Phases						
Actuated Green, G (s)	10.2		41.9	57.5	10.0	57.3
Effective Green, g (s)	11.6		43.3	58.9	11.4	58.7
Actuated g/C Ratio	0.15		0.55	0.75	0.15	0.75
Clearance Time (s)	5.4		5.4		5.4	5.4
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	259		1030	1191	258	1397
v/s Ratio Prot	c0.06		0.28	0.06	0.03	c0.41
v/s Ratio Perm						
v/c Ratio	0.41		0.50	0.08	0.18	0.55
Uniform Delay, d1	30.2		10.8	2.5	29.4	4.2
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.1		1.7	0.0	1.5	0.5
Delay (s)	31.3		12.5	2.6	30.9	4.7
Level of Service	C		B	A	C	A
Approach Delay (s)	31.3		10.6			6.2
Approach LOS	C		B			A

Intersection Summary			
HCM Average Control Delay	9.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	78.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.5%	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		↰	↱		✥		↰	↱		↰	↑	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85		0.98		1.00	0.96		1.00	1.00	0.85
Flt Protected		0.97	1.00		0.96		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1808	1583		1755		1770	1794		1770	1863	1583
Flt Permitted		0.97	1.00		0.96		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1808	1583		1755		1770	1794		1770	1863	1583
Volume (vph)	64	42	213	182	25	44	185	615	201	75	680	75
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	67	44	224	192	26	46	195	647	212	79	716	79
RTOR Reduction (vph)	0	0	192	0	9	0	0	12	0	0	0	17
Lane Group Flow (vph)	0	111	32	0	255	0	195	847	0	79	716	62
Turn Type	Split		Perm	Split			Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)		10.2	10.2		15.4		6.6	32.1		3.1	28.6	28.6
Effective Green, g (s)		11.6	11.6		16.8		8.0	33.5		4.5	30.0	30.0
Actuated g/C Ratio		0.14	0.14		0.20		0.10	0.41		0.05	0.36	0.36
Clearance Time (s)		5.4	5.4		5.4		5.4	5.4		5.4	5.4	5.4
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		255	223		358		172	729		97	678	576
v/s Ratio Prot		c0.06			c0.15		c0.11	c0.47		0.04	0.38	
v/s Ratio Perm			0.02									0.04
v/c Ratio		0.44	0.14		0.71		1.13	1.16		0.81	1.06	0.11
Uniform Delay, d1		32.4	31.0		30.6		37.2	24.5		38.5	26.2	17.3
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		1.2	0.3		6.6		109.1	87.7		38.7	50.3	0.1
Delay (s)		33.6	31.3		37.1		146.3	112.1		77.3	76.5	17.4
Level of Service		C	C		D		F	F		E	E	B
Approach Delay (s)		32.1			37.1			118.4			71.2	
Approach LOS		C			D			F			E	

Intersection Summary			
HCM Average Control Delay	82.2	HCM Level of Service	F
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	82.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	79.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↰		↱		↑	↱		↑	↱
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	0	0	44	0	203	0	799	542	0	707	337
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	0	46	0	214	0	841	571	0	744	355
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						13						
Median type		None			None							
Median storage veh)												
Upstream signal (ft)											333	
pX, platoon unblocked	0.68	0.68	0.68	0.68	0.68		0.68					
vC, conflicting volume	1692	1585	744	1585	1585	841	744			841		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2017	1860	624	1860	1860	841	624			841		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	0	100	41	100			100		
cM capacity (veh/h)	12	50	330	38	50	365	652			794		

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	260	841	571	744	355
Volume Left	46	0	0	0	0
Volume Right	214	0	571	0	355
cSH	215	1700	1700	1700	1700
Volume to Capacity	1.21	0.49	0.34	0.44	0.21
Queue Length 95th (ft)	328	0	0	0	0
Control Delay (s)	90.4	0.0	0.0	0.0	0.0
Lane LOS	F				
Approach Delay (s)	90.4	0.0		0.0	
Approach LOS	F				

Intersection Summary			
Average Delay	8.5		
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
Analysis Period (min)	15		

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰		↱		↱			↰	↱
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	434	663	63	27	0	919	0	105	21	424	56	329
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	457	698	66	28	0	967	0	111	22	446	59	346

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total (vph)	457	764	28	967	133	505	346
Volume Left (vph)	457	0	28	0	0	446	0
Volume Right (vph)	0	66	0	967	22	0	346
Hadj (s)	0.53	-0.03	0.23	-0.57	-0.07	0.21	-0.57
Departure Headway (s)	7.2	6.6	7.7	3.2	6.9	6.4	3.2
Degree Utilization, x	0.91	1.41	0.06	0.86	0.25	0.89	0.31
Capacity (veh/h)	489	544	433	1115	501	561	1113
Control Delay (s)	47.6	213.1	11.2	21.9	12.3	41.1	7.6
Approach Delay (s)	151.2		21.6		12.3	27.5	
Approach LOS	F		C		B	D	

Intersection Summary			
Delay	72.2		
HCM Level of Service	F		
Intersection Capacity Utilization	100.8%	ICU Level of Service	G
Analysis Period (min)	15		

8: Ridge Hill Road/D4 & Lake Jennings Rd

	↗	→	←	↖	↘	↙
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰	↱		Y	
Sign Control		Stop	Stop		Stop	
Volume (vph)	53	28	28	72	52	93
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	56	29	29	76	55	98

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total (vph)	85	105	153
Volume Left (vph)	56	0	55
Volume Right (vph)	0	76	98
Hadj (s)	0.16	-0.40	-0.28
Departure Headway (s)	4.5	3.9	4.0
Degree Utilization, x	0.11	0.11	0.17
Capacity (veh/h)	769	867	850
Control Delay (s)	8.0	7.4	7.9
Approach Delay (s)	8.0	7.4	7.9
Approach LOS	A	A	A

Intersection Summary			
Delay	7.8		
HCM Level of Service	A		
Intersection Capacity Utilization	26.3%	ICU Level of Service	A
Analysis Period (min)	15		

9: Olde Hwy 80 & Driveway 1

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↱			↑↑		
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	1039	57	0	897	0	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1094	60	0	944	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)				364		
pX, platoon unblocked					0.90	
vC, conflicting volume			1154		1596	577
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1154		1553	577
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			601		94	460

Direction, Lane #	EB 1	EB 2	WB 1	WB 2
Volume Total	729	425	472	472
Volume Left	0	0	0	0
Volume Right	0	60	0	0
cSH	1700	1700	1700	1700
Volume to Capacity	0.43	0.25	0.28	0.28
Queue Length 95th (ft)	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0
Lane LOS				
Approach Delay (s)	0.0		0.0	
Approach LOS				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	33.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱			↰	↱		✥	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	14	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			1.00	0.97		1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99	1.00		1.00	
Frt	1.00	0.95		1.00	1.00			1.00	0.85		0.87	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		1.00	
Satd. Flow (prot)	1770	3345		1770	3537			1746	1543		1620	
Flt Permitted	0.95	1.00		0.95	1.00			0.73	1.00		0.98	
Satd. Flow (perm)	1770	3345		1770	3537			1345	1543		1597	
Volume (vph)	35	699	305	77	531	2	364	0	54	2	0	35
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	37	736	321	81	559	2	383	0	57	2	0	37
RTOR Reduction (vph)	0	46	0	0	0	0	0	0	39	0	25	0
Lane Group Flow (vph)	37	1011	0	81	561	0	0	383	18	0	14	0
Confl. Peds. (#/hr)			10	10			10		10			
Turn Type	Prot			Prot			Prot		Perm	Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			
Actuated Green, G (s)	4.4	27.9		8.4	31.9			22.2	22.2		22.2	
Effective Green, g (s)	5.8	29.3		9.8	33.3			23.6	23.6		23.6	
Actuated g/C Ratio	0.08	0.39		0.13	0.45			0.32	0.32		0.32	
Clearance Time (s)	5.4	5.4		5.4	5.4			5.4	5.4		5.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	137	1312		232	1577			425	487		505	
v/s Ratio Prot	0.02	c0.30		0.05	c0.16							
v/s Ratio Perm								c0.28	0.01		0.01	
v/c Ratio	0.27	0.77		0.35	0.36			0.90	0.04		0.03	
Uniform Delay, d1	32.5	19.8		29.5	13.6			24.4	17.7		17.6	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	1.1	2.9		0.9	0.1			21.8	0.0		0.0	
Delay (s)	33.5	22.6		30.5	13.8			46.2	17.7		17.7	
Level of Service	C	C		C	B			D	B		B	
Approach Delay (s)		23.0			15.9			42.5			17.7	
Approach LOS		C			B			D			B	

Intersection Summary			
HCM Average Control Delay	24.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	74.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	70.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↱			↑		↱
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	733	22	0	610	0	23
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	772	23	0	642	0	24
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)	205					
pX, platoon unblocked			0.75		0.75	0.75
vC, conflicting volume			795		1425	397
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			400		1237	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	97
cM capacity (veh/h)			870		127	817

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	514	280	642	24
Volume Left	0	0	0	0
Volume Right	0	23	0	24
cSH	1700	1700	1700	817
Volume to Capacity	0.30	0.16	0.38	0.03
Queue Length 95th (ft)	0	0	0	2
Control Delay (s)	0.0	0.0	0.0	9.5
Lane LOS				A
Approach Delay (s)	0.0		0.0	9.5
Approach LOS				A

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	35.4%	ICU Level of Service	A
Analysis Period (min)	15		

12: Olde Hwy 80 &

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰↱		↰	↱			✥		↰	↱	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	2	581	173	18	493	2	116	0	34	1	0	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	2	612	182	19	519	2	122	0	36	1	0	2

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total (vph)	308	488	19	521	158	1	2
Volume Left (vph)	2	0	19	0	122	1	0
Volume Right (vph)	0	182	0	2	36	0	2
Hadj (s)	0.04	-0.23	0.53	0.03	0.05	0.53	-0.67
Departure Headway (s)	5.8	5.6	6.6	6.1	7.2	8.5	7.3
Degree Utilization, x	0.50	0.75	0.03	0.88	0.32	0.00	0.00
Capacity (veh/h)	600	634	524	581	477	392	452
Control Delay (s)	13.2	22.2	8.6	37.5	13.6	10.3	9.1
Approach Delay (s)	18.7		36.4		13.6	9.5	
Approach LOS	C		E		B	A	

Intersection Summary			
Delay	24.6		
HCM Level of Service	C		
Intersection Capacity Utilization	48.1%	ICU Level of Service	A
Analysis Period (min)	15		

13: Olde Hwy 80 & Pecan Park Lane East

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱			↰	Y	
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	596	5	5	493	0	6
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	627	5	5	519	0	6
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			633		1159	630
vC1, stage 1 conf vol			0			
vC2, stage 2 conf vol			0			
vCu, unblocked vol			633		1159	630
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)			3.1			
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	99
cM capacity (veh/h)			875		215	482

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	633	524	6
Volume Left	0	5	0
Volume Right	5	0	6
cSH	1700	875	482
Volume to Capacity	0.37	0.01	0.01
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.0	0.2	12.6
Lane LOS		A	B
Approach Delay (s)	0.0	0.2	12.6
Approach LOS			B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	41.7%	ICU Level of Service	A
Analysis Period (min)	15		

102: Pecan Park Lane East & Rios Canyon

HCM Unsignalized Intersection Capacity Analysis

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↱			↰
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	10	0	150	0	0	191
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	0	158	0	0	201
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	359	158			158	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	359	158			158	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	100			100	
cM capacity (veh/h)	640	887			1422	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	11	158	201
Volume Left	11	0	0
Volume Right	0	0	0
cSH	640	1700	1422
Volume to Capacity	0.02	0.09	0.00
Queue Length 95th (ft)	1	0	0
Control Delay (s)	10.7	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.7	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	20.1%	ICU Level of Service	A
Analysis Period (min)	15		

APPENDIX I

TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet
(Average Traffic Estimate Form)

COUNT DATE ______
CALC JaT DATE 9/10/14
CHK ______ DATE ______

DIST ______ CO ______ RTE ______ PM ______

Major St: Olde Hwy. 80
Minor St: Lk. Jenning mktpl. dwy. #2

Critical Approach Speed ______ mph
Critical Approach Speed ______ mph

Speed limit or critical speed on major street traffic > 64 km/h (40 mph)........ ☐ or
In built up area of isolated community of < 10,000 population..................... ☐ } RURAL (R)
☐ URBAN (U)

(Based on Estimated Average Daily Traffic - See Note)

	(21363 + 15911)/2 = 18637 Minimum Requirements EADT		dwy/2 8574/2 = 4287	
URBAN.................... RURAL....................				
CONDITION A - Minimum Vehicular Volume	Vehicles Per Day Avg. on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied ✓ Not Satisfied ______				
Number of lanes for moving traffic on each approach Major Street / Minor Street	Urban	Rural	Urban	Rural
1 .... 1	8,000	5,600	2,400	1,680
[✓ 2 or More] .... [✓ 1]	[✓ 9,600]	[✓ 6,720]	[✓ 2,400]	[✓ 1,680]
~~2 or More~~ .... 2 or More	9,600	6,720	3,200	2,240
1 .... 2 or More	8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic	Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied ______ Not Satisfied ______				
Number of lanes for moving traffic on each approach Major Street / Minor Street	Urban	Rural	Urban	Rural
1 .... 1	12,000	8,400	1,200	850
2 or More 1	14,400	10,080	1,200	850
2 or More .... 2 or More	14,400	10,080	1,600	1,120
1 .... 2 or More	12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B Satisfied ______ Not Satisfied ______ No one condition satisfied, but following conditions fulfilled 80% or more.......... ______ A ______ B	2 CONDITIONS 80%		2 CONDITIONS 80%	

Note: **To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.**

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 9-4
TRAFFIC SIGNAL WARRANTS

I-8 EB Off Ramp at Old Hwy. 80 / Lk. Jennings
Cumulative w/ Project Conditions

(Based on Estimated Average Daily Traffic - See Note)

URBAN .... RURAL ....

1. Minimum Vehicular

Satisfied ✓ Not Satisfied ___________

Minimum Requirements
EADT

Number of lanes for moving traffic on each approach		Old Hwy 80 Vehicles per day on major street (total of both approaches)		Lk. Jennings Pk. Vehicles per day on higher-volume minor street approach (one direction only)	
		23,400		23,700/2 = 11,850	
Major Street	Minor Street	Urban	Rural	Urban	Rural
1	1	8,000	5,600	2,400	1,680
2 or more	1	9,600	6,720	2,400	1,680
[✓ 2 or more]	[✓ 2 or more]	[✓ 9,600]	[✓ 6,720]	[✓ 3,200]	[✓ 2,240]
1	2 or more	8,000	5,600	3,200	2,240

2. Interuption of Continuous Traffic

Satisfied ✓ Not Satisfied ___________

Number of lanes for moving traffic on each approach		Vehicles per day on major street (total of both approaches)		Vehicles per day on higher-volume minor street approach (one direction only)	
Major Street	Minor Street	Urban	Rural	Urban	Rural
1	1	12,000	8,400	1,200	850
2 or more	1	14,400	10,080	1,200	850
[✓ 2 or more]	[✓ 2 or more]	[✓ 14,400]	[✓ 10,080]	[✓ 1,600]	[✓ 1,120]
1	2 or more	12,000	8,400	1,600	1,120

3. Combination

Satisfied ___________ Not Satisfied ___________

No one warrant satisfied, but following warrants fulfilled 80% or more .... ___________ ___________
1 2

2 Warrants	2 Warrants

NOTE: To be used only for NEW INTERSECTIONS or other locations where actual traffic volumes cannot be counted.

"diverted" trips are considered in addition to the "primary" amount of trips. In essence, there are an overall 10,992 daily trips at the project's driveways and lesser amount further away at the off-site locations with the reduction of the passer-by and diverted trips. The project's primary trips at the off-site analysis locations include 4,683 daily trips with 203 AM peak hour trips and 464 PM peak hour trips, based on the adjustments of the passer-by and diverted trip reduction.

In other words, the 4,683 "primary" daily trips account for all new trips that travel to and from the project site and does not include trips that are already existing on the roadway network that are just - "passing-by" or "diverting" a short distance to the project site before returning to their original trip route. Therefore, the net impact to the community as a whole consists of the 4.683 daily trips.

Table 1-1
Project Trip Generation

Land Use	Intensity	Units	Rate/ Trips	Daily	AM Peak Hour			PM Peak Hour		
					Total	In	Out	Total	In	Out
Neighborhood Shopping Center*	76100	Square Feet	Rate	120	4%	60%	40%	10%	50%	50%
			Trips	9,132	365	219	146	913	457	457
Gasoline with/Food Mart & Car Wash	12	Fueling Space	Rate	155	8%	50%	50%	9%	50%	50%
			Trips	1,860	149	75	75	167	84	84
Total Primary + Diverted + Passby				**10,992**	**514**	**294**	**221**	**1080**	**541**	**541**
Neighborhood Shopping Center*	78%	Passby Trip Reduction	Rate							
			Trips	7,123	285	171	114	712	356	356
Gasoline with/Food Mart & Car Wash	72%	Passby Trip Reduction	Rate							
			Trips	1,339	107	54	54	120	60	60
Total Primary + Diverted				**8,462**	**392**	**225**	**168**	**832**	**417**	**417**
Neighborhood Shopping Center*	47%	Diverted Trip Reduction	Rate							
			Trips	4,292	172	103	69	429	215	215
Gasoline with/Food Mart & Car Wash	21%	Diverted Trip Reduction	Rate							
			Trips	391	31	16	16	35	18	18
Total Primary				**4,683**	**203**	**119**	**84**	**464**	**232**	**232**

* includes 3 ksf from gas store

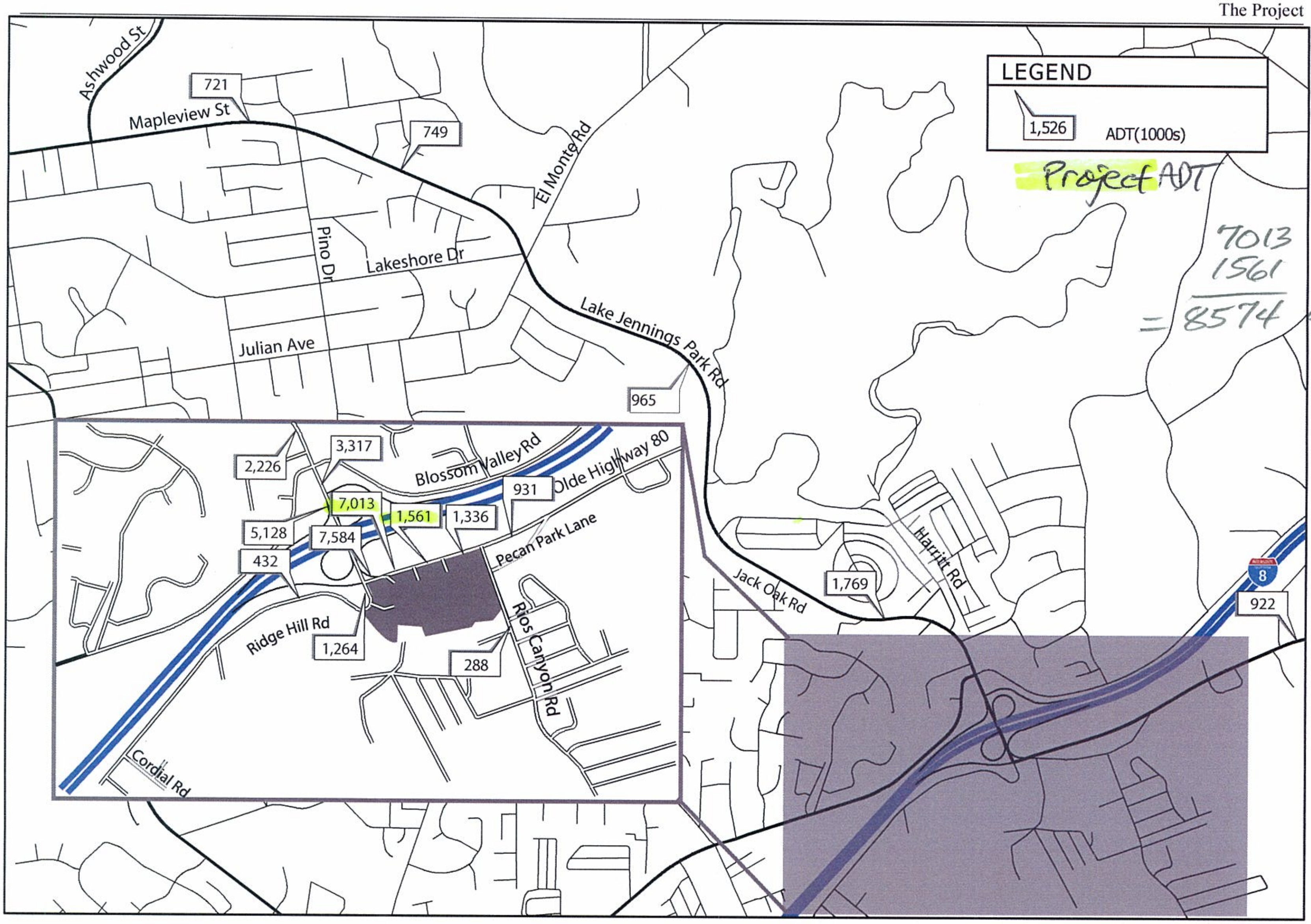
Source: SANDAG (Not So) Brief Guide of Vehicular Traffic Generation Rates

Note: Numbers may not total due to rounding

1.5 TRIP DISTRIBUTION AND ASSIGNMENT

Trip distribution and assignment is the process of identifying the probable destinations, directions and traffic routes that project related traffic will likely affect. Trip distribution and assignment information can be estimated from observed traffic patterns, experience or through use of a computerized travel forecast model. Once the proposed developments trips have been estimated, they are assigned to the study area network. The trip distribution and assignment for this project is based on SANDAG's computerized travel forecast model (Series 12 Select Zone analysis). Appendix B contains the select zone model plots.

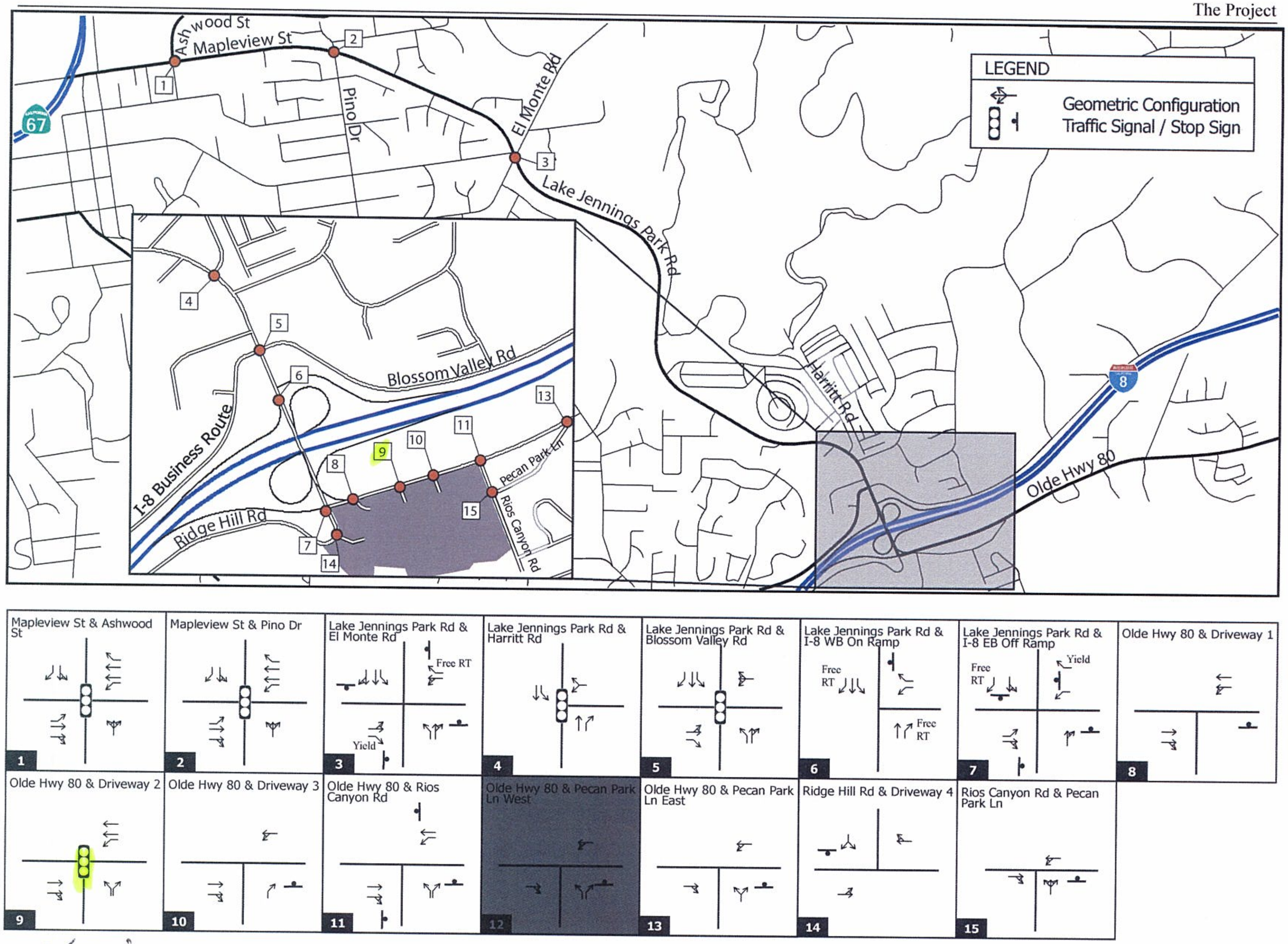
The trip distribution and assignment for the project-related trips is shown in Figure 1-3. Figure 1-4 shows the project-only daily trips while Figures 1-5 and 1-6 show project-only AM and PM peak hour trips, respectively.



Project ADT

7013
1561
= 8574 Dwy#2

Figure 1-4
Project Daily Roadway Segment Volumes



w/proj.

Figure 3-2
Existing Geometric Configuration

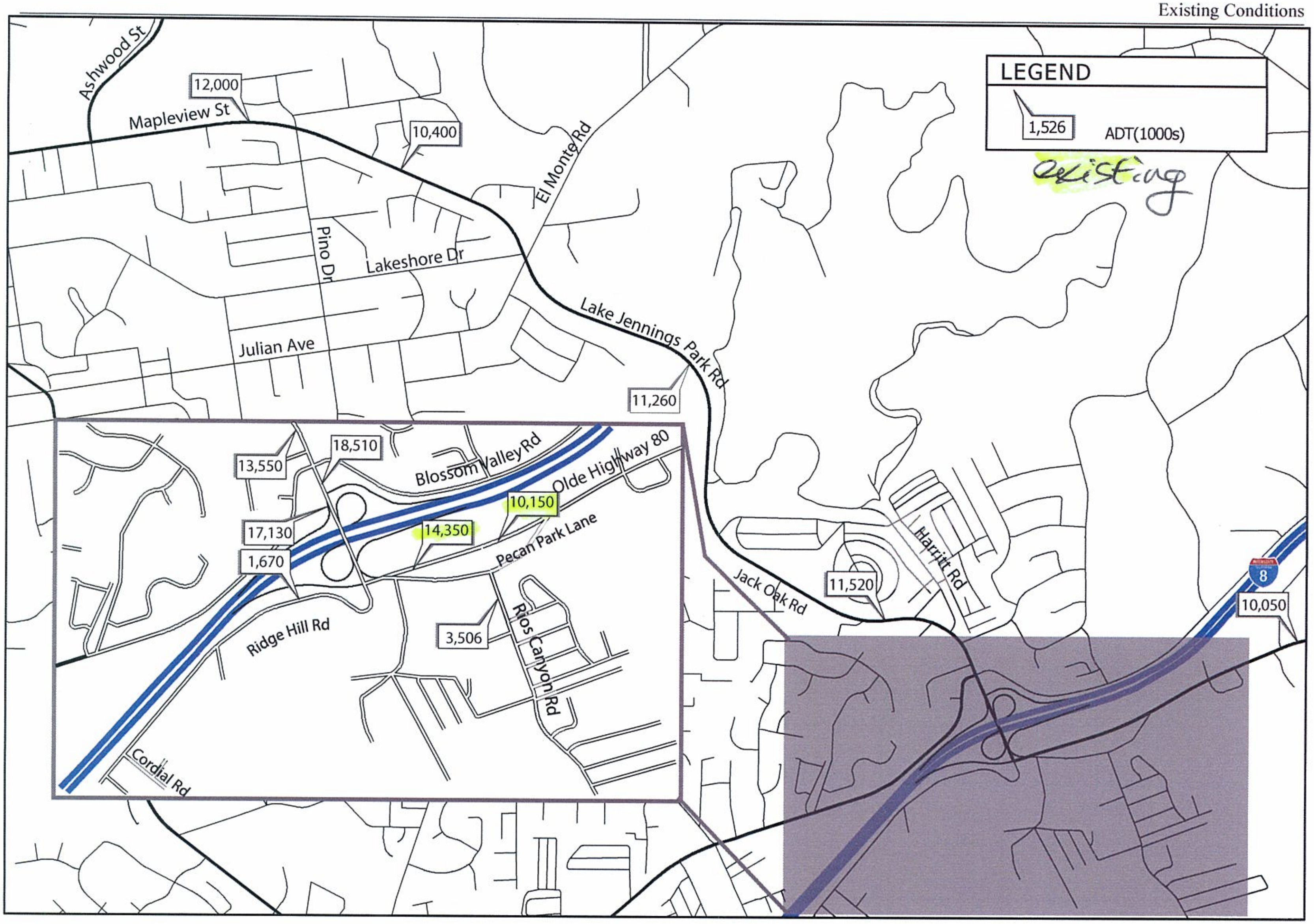


Figure 3-3
Existing Daily Roadway Segment Volumes

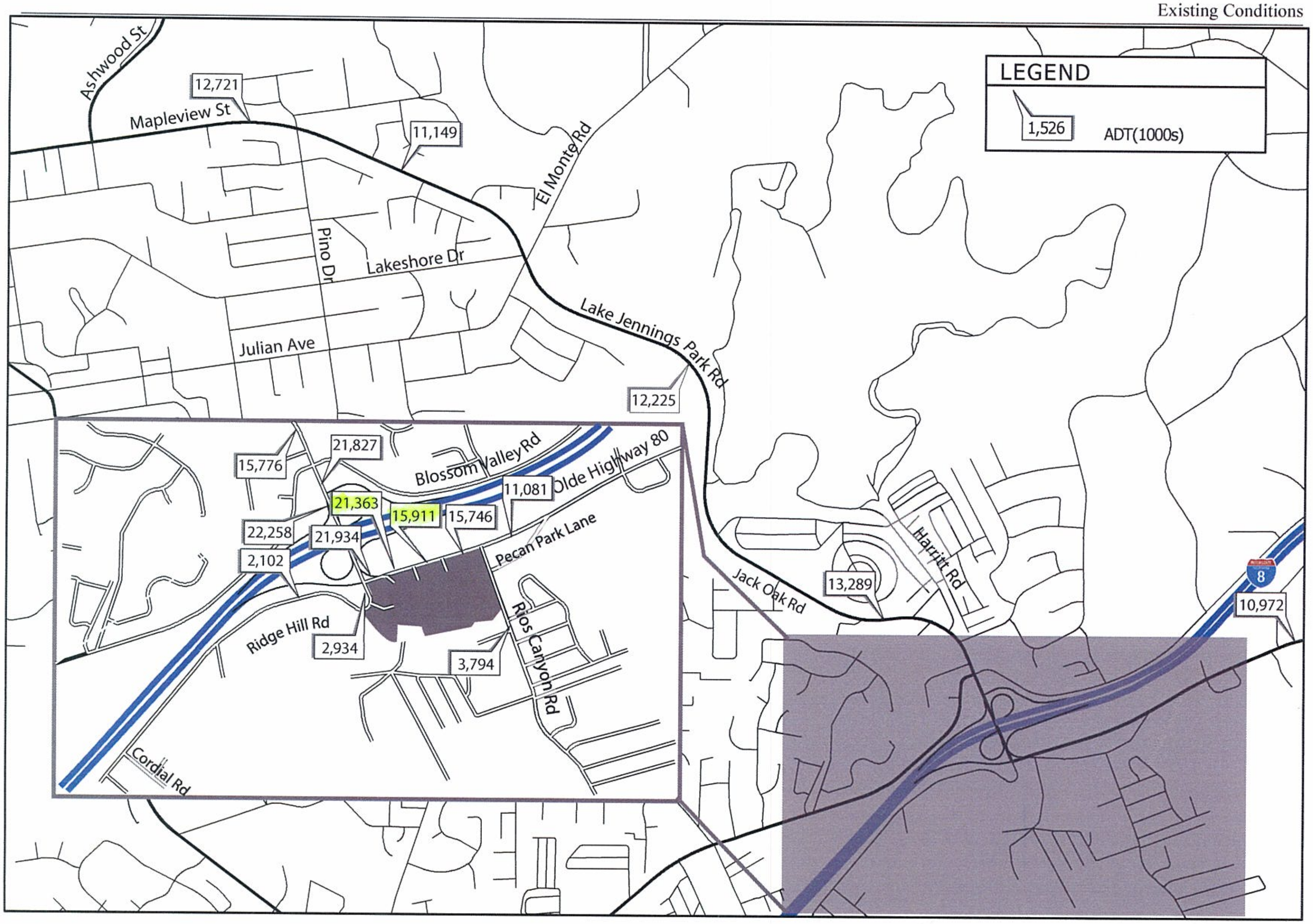


Figure 3-6
Existing With Project Daily Roadway Segment Volumes

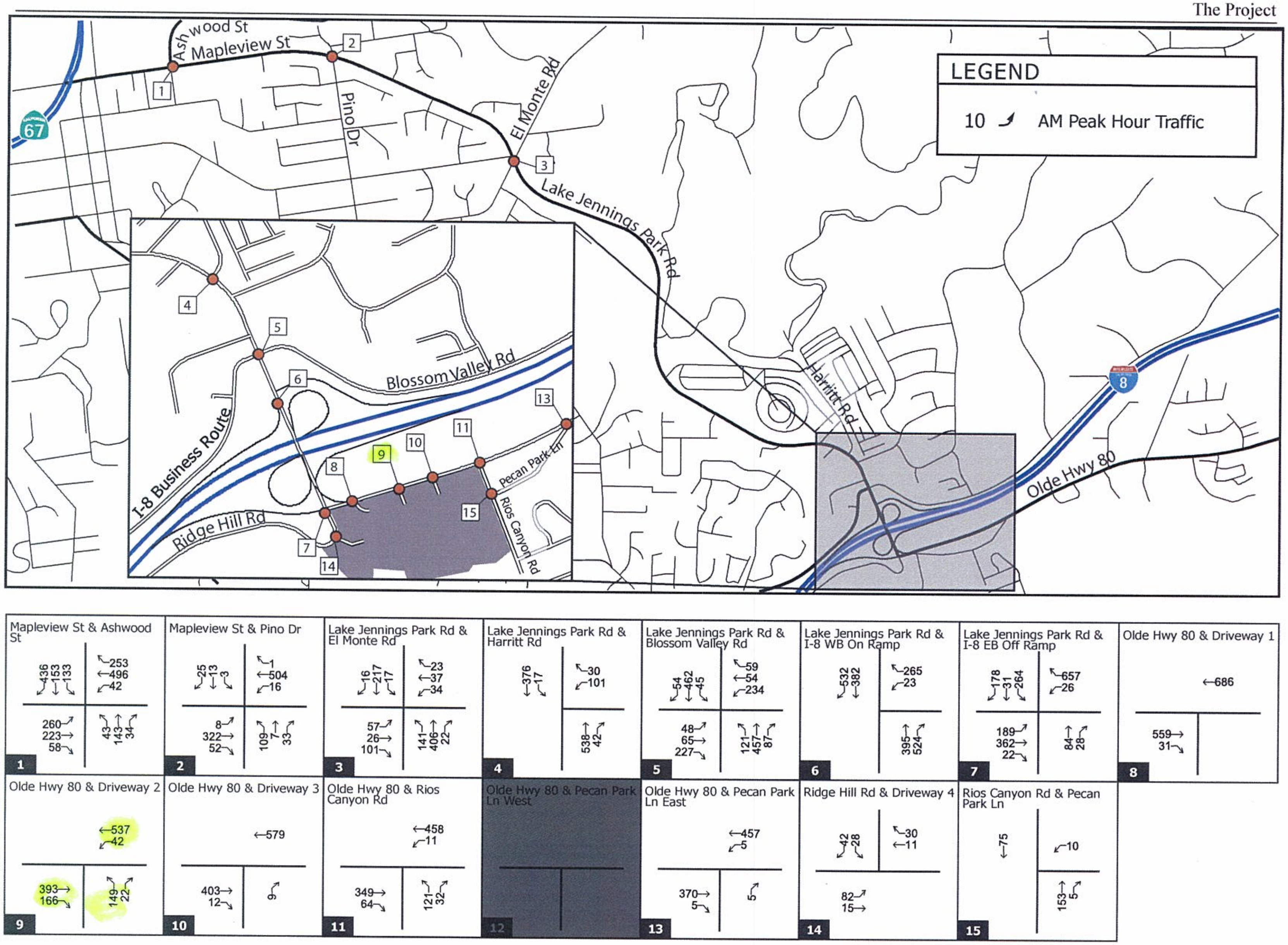


Figure 3-7
Existing With Project AM Peak Hour Intersection Volumes

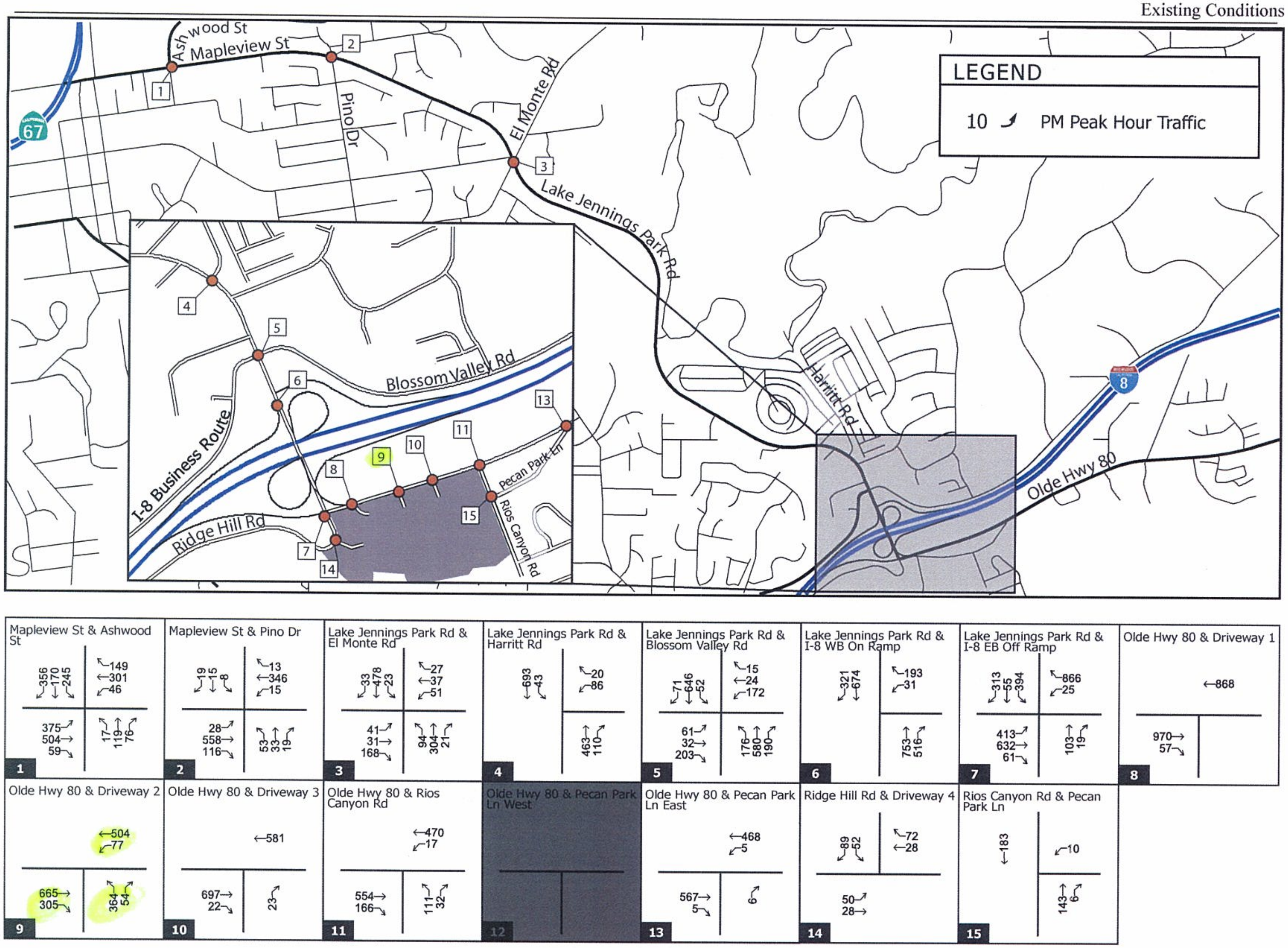
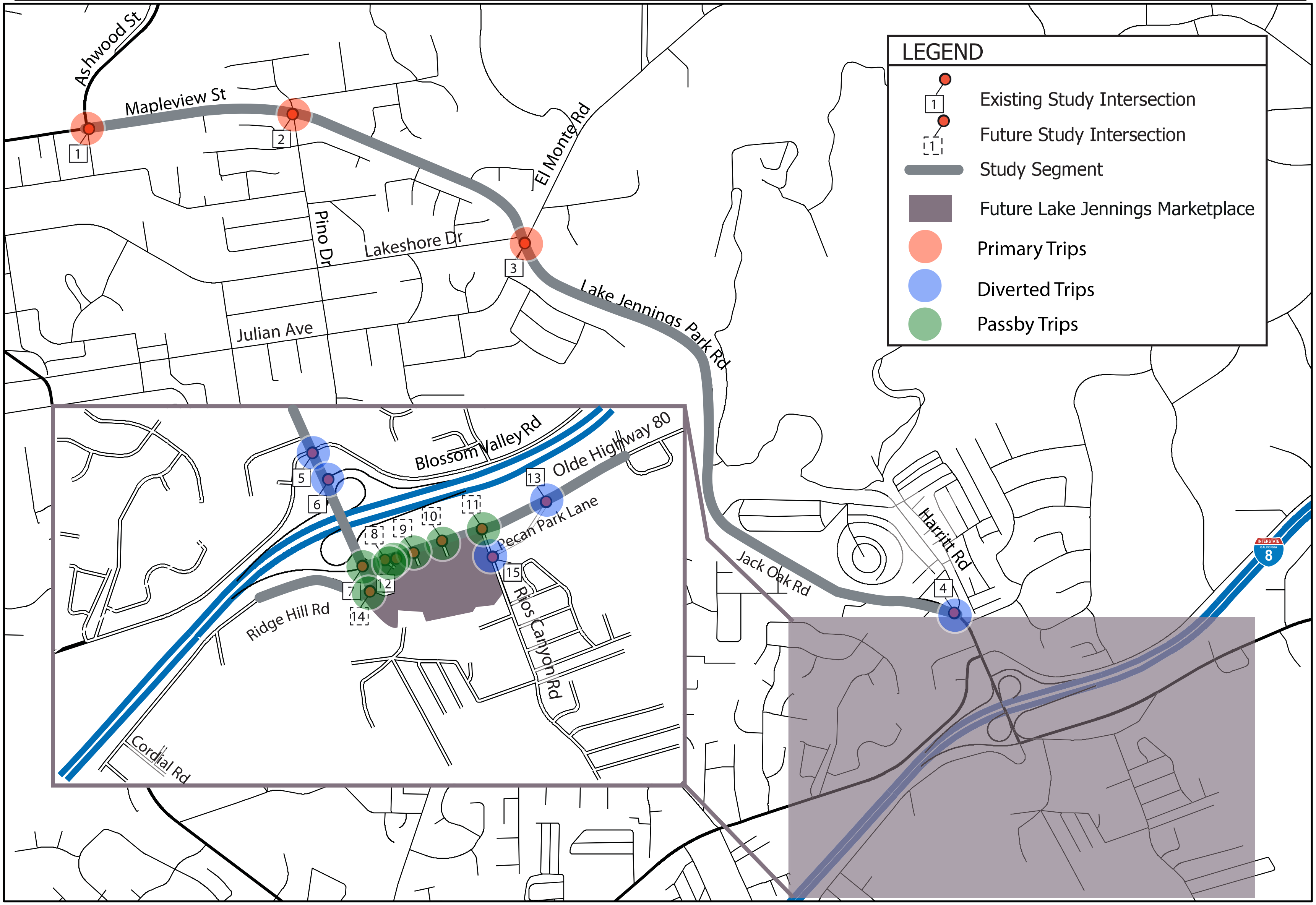


Figure 3-8

Existing With Project PM Peak Hour Intersection Volumes

APPENDIX J

TRIP DIVERSION & PASSER BY AREAS



Trip Diversion and Passby Areas

APPENDIX K

MITIGATIONS MEASURES & RESULTS

6: I-8 WB On Ramp & Lake Jennings Park Road

HCM Unsignalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↰		↱		↑↑	↱		↑↑	↱
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	0	0	23	0	265	0	395	524	0	382	532
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	0	24	0	279	0	416	552	0	402	560
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						13						
Median type		None			None							
Median storage veh)												
Upstream signal (ft)								855			333	
pX, platoon unblocked												
vC, conflicting volume	749	818	201	617	818	208	402			416		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	749	818	201	617	818	208	402			416		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	94	100	65	100			100		
cM capacity (veh/h)	195	309	806	374	309	798	1153			1140		

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	303	208	208	552	201	201	560
Volume Left	24	0	0	0	0	0	0
Volume Right	279	0	0	552	0	0	560
cSH	867	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.35	0.12	0.12	0.32	0.12	0.12	0.33
Queue Length 95th (ft)	39	0	0	0	0	0	0
Control Delay (s)	12.2	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B						
Approach Delay (s)	12.2	0.0			0.0		
Approach LOS	B						

Intersection Summary

Average Delay	1.7		
Intersection Capacity Utilization	36.3%	ICU Level of Service	A
Analysis Period (min)	15		

Ex AM Peak Hour
W/ Project MITIGATION

7: I-8 EB Off Ramp & Lake Jennings Park Road
HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰		↱↱		↑↱		↰	↰	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	14	12	12	14	12	15	12
Total Lost time (s)	4.0	4.0		4.0		4.0		4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00		0.88		0.95		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00		1.00		0.99		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00		1.00		1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00		0.85		0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95		1.00		1.00		0.95	0.96	1.00
Satd. Flow (prot)	1770	1847		1770		2972		3389		1681	1871	1583
Flt Permitted	0.95	1.00		0.95		1.00		1.00		0.95	0.96	1.00
Satd. Flow (perm)	1770	1847		1770		2972		3389		1681	1871	1583
Volume (vph)	189	362	22	26	0	657	0	84	28	264	31	178
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	199	381	23	27	0	692	0	88	29	278	33	187
RTOR Reduction (vph)	0	3	0	0	0	524	0	26	0	0	0	0
Lane Group Flow (vph)	199	401	0	27	0	168	0	91	0	144	167	187
Confl. Peds. (#/hr)				10		10			10	10		
Turn Type	Prot			Prot		Over				Split		Free
Protected Phases	7	4		3		6		2		6	6	
Permitted Phases												Free
Actuated Green, G (s)	23.3	16.9		1.4		12.1		3.7		12.1	12.1	54.1
Effective Green, g (s)	24.3	17.9		2.4		13.1		4.7		13.1	13.1	54.1
Actuated g/C Ratio	0.45	0.33		0.04		0.24		0.09		0.24	0.24	1.00
Clearance Time (s)	5.0	5.0		5.0		5.0		5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	795	611		79		720		294		407	453	1583
v/s Ratio Prot	c0.11	c0.22		0.02		0.06		c0.03		0.09	c0.09	
v/s Ratio Perm												0.12
v/c Ratio	0.25	0.66		0.34		0.23		0.31		0.35	0.37	0.12
Uniform Delay, d1	9.2	15.5		25.1		16.5		23.2		17.0	17.1	0.0
Progression Factor	1.00	1.00		1.00		1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	0.2	2.6		2.6		0.2		0.6		0.5	0.5	0.2
Delay (s)	9.4	18.0		27.7		16.6		23.8		17.5	17.6	0.2
Level of Service	A	B		C		B		C		B	B	A
Approach Delay (s)		15.2			17.0			23.8			11.0	
Approach LOS		B			B			C			B	

Intersection Summary			
HCM Average Control Delay	15.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	54.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	51.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Ex PM Peak Hour W/ Project

6: I-8 WB On Ramp & Lake Jennings Park Road

HCM Unsignalized Intersection Capacity Analysis

	⤴	→	⤵	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↰		↱		↑↑	↱		↑↑	↱
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	0	0	36	0	193	0	802	562	0	723	321
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	0	38	0	203	0	844	592	0	761	338
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						13						
Median type		None			None							
Median storage veh)												
Upstream signal (ft)								855			333	
pX, platoon unblocked												
vC, conflicting volume	1285	1605	381	1225	1605	422	761			844		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1285	1605	381	1225	1605	422	761			844		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	72	100	65	100			100		
cM capacity (veh/h)	79	104	617	135	104	580	847			788		

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	241	422	422	592	381	381	338
Volume Left	38	0	0	0	0	0	0
Volume Right	203	0	0	592	0	0	338
cSH	688	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.35	0.25	0.25	0.35	0.22	0.22	0.20
Queue Length 95th (ft)	39	0	0	0	0	0	0
Control Delay (s)	18.8	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	C						
Approach Delay (s)	18.8	0.0			0.0		
Approach LOS	C						

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	40.8%	ICU Level of Service	A
Analysis Period (min)	15		

7: I-8 EB Off Ramp & Lake Jennings Park Road

HCM Signalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰		↱↱		↑↱		↰	↰	↱
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	14	12	12	14	12	15	12
Total Lost time (s)	4.0	4.0		4.0		4.0		4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00		0.88		0.95		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00		1.00		1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00		1.00		1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00		0.85		0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95		1.00		1.00		0.95	0.96	1.00
Satd. Flow (prot)	1770	1838		1770		2972		3442		1681	1874	1583
Flt Permitted	0.95	1.00		0.95		1.00		1.00		0.95	0.96	1.00
Satd. Flow (perm)	1770	1838		1770		2972		3442		1681	1874	1583
Volume (vph)	413	632	61	25	0	866	0	103	19	394	55	313
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	435	665	64	26	0	912	0	108	20	415	58	329
RTOR Reduction (vph)	0	3	0	0	0	509	0	18	0	0	0	0
Lane Group Flow (vph)	435	726	0	26	0	403	0	110	0	219	254	329
Confl. Peds. (#/hr)				10		10			10	10		
Turn Type	Prot			Prot		Over				Split		Free
Protected Phases	7	4		3		6		2		6	6	
Permitted Phases												Free
Actuated Green, G (s)	38.9	32.1		1.8		14.5		6.2		14.5	14.5	74.6
Effective Green, g (s)	39.9	33.1		2.8		15.5		7.2		15.5	15.5	74.6
Actuated g/C Ratio	0.53	0.44		0.04		0.21		0.10		0.21	0.21	1.00
Clearance Time (s)	5.0	5.0		5.0		5.0		5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	947	816		66		618		332		349	389	1583
v/s Ratio Prot	c0.25	c0.39		0.01		0.14		c0.03		0.13	c0.14	
v/s Ratio Perm												0.21
v/c Ratio	0.46	0.89		0.39		0.65		0.33		0.63	0.65	0.21
Uniform Delay, d1	10.7	19.1		35.1		27.1		31.5		26.9	27.1	0.0
Progression Factor	1.00	1.00		1.00		1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	0.4	11.6		3.8		2.5		0.6		3.5	3.9	0.3
Delay (s)	11.1	30.7		38.9		29.5		32.0		30.4	31.0	0.3
Level of Service	B	C		D		C		C		C	C	A
Approach Delay (s)		23.3			29.8			32.0			18.2	
Approach LOS		C			C			C			B	

Intersection Summary			
HCM Average Control Delay	24.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	74.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	71.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

5: Lake Jennings Park Road & Blossom Valley

8/13/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		✥		↰	↑↱		↰	↑↱	
Volume (vph)	50	73	238	246	57	72	127	482	92	59	491	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.97		1.00	0.98		1.00	0.98	
Flt Protected		0.98	1.00		0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1826	1583		1757		1770	3454		1770	3484	
Flt Permitted		0.98	1.00		0.97		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1826	1583		1757		1770	3454		1770	3484	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	53	77	251	259	60	76	134	507	97	62	517	60
RTOR Reduction (vph)	0	0	212	0	9	0	0	18	0	0	9	0
Lane Group Flow (vph)	0	130	39	0	386	0	134	586	0	62	568	0
Turn Type	Split	NA	Perm	Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)		11.0	11.0		19.0		11.2	24.5		4.2	17.5	
Effective Green, g (s)		12.4	12.4		20.4		12.6	25.9		5.6	18.9	
Actuated g/C Ratio		0.15	0.15		0.25		0.16	0.32		0.07	0.24	
Clearance Time (s)		5.4	5.4		5.4		5.4	5.4		5.4	5.4	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		281	244		446		277	1114		123	820	
v/s Ratio Prot		c0.07			c0.22		c0.08	0.17		0.04	c0.16	
v/s Ratio Perm			0.02									
v/c Ratio		0.46	0.16		0.87		0.48	0.53		0.50	0.69	
Uniform Delay, d1		30.9	29.4		28.6		30.9	22.2		36.0	28.0	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.2	0.3		16.0		1.3	0.5		3.2	2.5	
Delay (s)		32.1	29.7		44.6		32.2	22.6		39.2	30.6	
Level of Service		C	C		D		C	C		D	C	
Approach Delay (s)		30.6			44.6			24.4			31.4	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	31.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	80.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	61.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

6: I-8 WB On Ramp & Lake Jennings Rd

HCM Unsignalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↰		↱		↑↑	↱		↑↑	↱
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	0	0	31	0	278	0	416	549	0	406	559
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	0	33	0	293	0	438	578	0	427	588
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						13						
Median type		None			None							
Median storage veh)												
Upstream signal (ft)								855			333	
pX, platoon unblocked												
vC, conflicting volume	646	865	214	652	865	219	427			438		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	646	865	214	652	865	219	427			438		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	91	100	63	100			100		
cM capacity (veh/h)	224	290	791	353	290	785	1128			1118		

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	325	219	219	578	214	214	588
Volume Left	33	0	0	0	0	0	0
Volume Right	293	0	0	578	0	0	588
cSH	873	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.37	0.13	0.13	0.34	0.13	0.13	0.35
Queue Length 95th (ft)	43	0	0	0	0	0	0
Control Delay (s)	12.7	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B						
Approach Delay (s)	12.7	0.0			0.0		
Approach LOS	B						

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	37.9%	ICU Level of Service	A
Analysis Period (min)	15		

7: Lake Jennings Park Road & I-8 EB Off Ramp

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↑↱		↰		↱↱		↑↱		↰	↰	
Volume (vph)	199	380	22	27	0	693	0	87	29	287	32	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	14	12	12	14	12	15	12
Total Lost time (s)	5.4	5.4		5.4		5.4		5.4		5.4	5.4	
Lane Util. Factor	0.91	0.91		1.00		0.88		0.95		0.95	0.95	
Frpb, ped/bikes	1.00	1.00		1.00		0.96		0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00		1.00		1.00		1.00	1.00	
Frt	1.00	0.99		1.00		0.85		0.96		1.00	1.00	
Flt Protected	0.95	1.00		0.95		1.00		1.00		0.95	0.96	
Satd. Flow (prot)	1610	3356		1770		2864		3387		1681	1872	
Flt Permitted	0.95	1.00		0.95		1.00		1.00		0.95	0.96	
Satd. Flow (perm)	1610	3356		1770		2864		3387		1681	1872	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	209	400	23	28	0	729	0	92	31	302	34	0
RTOR Reduction (vph)	0	5	0	0	0	559	0	28	0	0	0	0
Lane Group Flow (vph)	188	439	0	28	0	170	0	95	0	166	170	0
Confl. Peds. (#/hr)				10		10			10	10		
Turn Type	Split	NA		Prot		Perm		NA		Split	NA	
Protected Phases	2	2		1				8		4	4	
Permitted Phases						4		8				
Actuated Green, G (s)	12.5	12.5		1.4		12.4		5.4		12.4	12.4	
Effective Green, g (s)	12.5	12.5		1.4		12.4		5.4		12.4	12.4	
Actuated g/C Ratio	0.23	0.23		0.03		0.23		0.10		0.23	0.23	
Clearance Time (s)	5.4	5.4		5.4		5.4		5.4		5.4	5.4	
Vehicle Extension (s)	3.0	3.0		3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	377	787		46		666		343		391	435	
v/s Ratio Prot	0.12	c0.13		c0.02				c0.03		c0.10	0.09	
v/s Ratio Perm						0.06						
v/c Ratio	0.50	0.56		0.61		0.25		0.28		0.42	0.39	
Uniform Delay, d1	17.7	18.0		25.7		16.7		22.1		17.4	17.3	
Progression Factor	1.00	1.00		1.00		1.00		1.00		1.00	1.00	
Incremental Delay, d2	1.0	0.9		20.7		0.2		0.4		0.7	0.6	
Delay (s)	18.7	18.8		46.4		16.9		22.6		18.2	17.8	
Level of Service	B	B		D		B		C		B	B	
Approach Delay (s)		18.8			18.0			22.6			18.0	
Approach LOS		B			B			C			B	

Intersection Summary

HCM 2000 Control Delay	18.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	53.3	Sum of lost time (s)	21.6
Intersection Capacity Utilization	56.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

NT + P + Mit | PM PH

5: Lake Jennings Park Road & Blossom Valley

8/13/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰↑	↱		↰↑↱		↰	↑↱		↰	↑↱	
Volume (vph)	64	42	213	182	25	44	185	615	201	75	680	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.98		1.00	0.96		1.00	0.99	
Flt Protected		0.97	1.00		0.96		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1808	1583		1755		1770	3408		1770	3486	
Flt Permitted		0.97	1.00		0.96		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1808	1583		1755		1770	3408		1770	3486	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	67	44	224	192	26	46	195	647	212	79	716	79
RTOR Reduction (vph)	0	0	190	0	9	0	0	36	0	0	10	0
Lane Group Flow (vph)	0	111	34	0	255	0	195	823	0	79	785	0
Turn Type	Split	NA	Perm	Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)		9.7	9.7		13.9		8.6	24.4		3.2	19.0	
Effective Green, g (s)		11.1	11.1		15.3		10.0	25.8		4.6	20.4	
Actuated g/C Ratio		0.15	0.15		0.21		0.14	0.35		0.06	0.28	
Clearance Time (s)		5.4	5.4		5.4		5.4	5.4		5.4	5.4	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		275	241		368		243	1207		111	976	
v/s Ratio Prot		c0.06			c0.15		c0.11	0.24		0.04	c0.23	
v/s Ratio Perm			0.02									
v/c Ratio		0.40	0.14		0.69		0.80	0.68		0.71	0.80	
Uniform Delay, d1		27.9	26.7		26.6		30.4	20.0		33.4	24.3	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.0	0.3		5.5		17.2	1.6		19.3	4.9	
Delay (s)		28.8	27.0		32.1		47.6	21.6		52.8	29.2	
Level of Service		C	C		C		D	C		D	C	
Approach Delay (s)		27.6			32.1			26.4			31.4	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	28.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	72.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	62.2%	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				↰		↱		↑↑	↱		↑↑	↱
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	0	0	44	0	203	0	799	542	0	707	337
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	0	46	0	214	0	841	571	0	744	355
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						13						
Median type		None			None							
Median storage veh)												
Upstream signal (ft)								855			333	
pX, platoon unblocked	0.93	0.93	0.93	0.93	0.93		0.93					
vC, conflicting volume	1165	1585	372	1213	1585	421	744			841		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1103	1555	252	1155	1555	421	651			841		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	67	100	63	100			100		
cM capacity (veh/h)	98	104	696	141	104	582	867			790		

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	260	421	421	571	372	372	355
Volume Left	46	0	0	0	0	0	0
Volume Right	214	0	0	571	0	0	355
cSH	708	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.37	0.25	0.25	0.34	0.22	0.22	0.21
Queue Length 95th (ft)	42	0	0	0	0	0	0
Control Delay (s)	19.7	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	C						
Approach Delay (s)	19.7	0.0			0.0		
Approach LOS	C						

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	41.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↑↱		↰		↱↱		↑↱		↰	↰	
Volume (vph)	434	663	63	27	0	919	0	105	21	424	56	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	14	12	12	14	12	15	12
Total Lost time (s)	5.4	5.4		5.4		5.4		5.4		5.4	5.4	
Lane Util. Factor	0.91	0.91		1.00		0.88		0.95		0.95	0.95	
Frpb, ped/bikes	1.00	1.00		1.00		0.96		1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00		1.00		1.00		1.00	1.00	
Frt	1.00	0.99		1.00		0.85		0.98		1.00	1.00	
Flt Protected	0.95	1.00		0.95		1.00		1.00		0.95	0.96	
Satd. Flow (prot)	1610	3337		1770		2848		3437		1681	1875	
Flt Permitted	0.95	1.00		0.95		1.00		1.00		0.95	0.96	
Satd. Flow (perm)	1610	3337		1770		2848		3437		1681	1875	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	457	698	66	28	0	967	0	111	22	446	59	0
RTOR Reduction (vph)	0	7	0	0	0	411	0	20	0	0	0	0
Lane Group Flow (vph)	398	816	0	28	0	556	0	113	0	250	255	0
Confl. Peds. (#/hr)				10		10			10	10		
Turn Type	Split	NA		Prot		Perm		NA		Split	NA	
Protected Phases	2	2		1				8		4	4	
Permitted Phases						4		8				
Actuated Green, G (s)	23.6	23.6		1.3		19.0		6.1		19.0	19.0	
Effective Green, g (s)	23.6	23.6		1.3		19.0		6.1		19.0	19.0	
Actuated g/C Ratio	0.33	0.33		0.02		0.27		0.09		0.27	0.27	
Clearance Time (s)	5.4	5.4		5.4		5.4		5.4		5.4	5.4	
Vehicle Extension (s)	3.0	3.0		3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	530	1099		32		755		292		446	497	
v/s Ratio Prot	c0.25	0.24		c0.02				c0.03		0.15	0.14	
v/s Ratio Perm						c0.20						
v/c Ratio	0.75	0.74		0.88		0.74		0.39		0.56	0.51	
Uniform Delay, d1	21.4	21.3		35.1		24.0		31.0		22.7	22.4	
Progression Factor	1.00	1.00		1.00		1.00		1.00		1.00	1.00	
Incremental Delay, d2	5.9	2.8		107.3		3.7		0.9		1.6	0.9	
Delay (s)	27.3	24.1		142.3		27.8		31.8		24.3	23.3	
Level of Service	C	C		F		C		C		C	C	
Approach Delay (s)		25.1			31.0			31.8			23.8	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	27.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	71.6	Sum of lost time (s)	21.6
Intersection Capacity Utilization	75.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

APPENDIX L

TRAFFIC CONTROL PLAN

Content to be provided

APPENDIX M

DESIGN EXCEPTIONS

County of San Diego

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ASSISTANT DIRECTOR
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August 17, 2015

South Coast Development, LLC
Attn: Lee Vance
P.O. Box 1053
Solana Beach, CA 92075

REQUEST FOR EXCEPTIONS TO PUBLIC ROAD STANDARDS – "LAKE JENNINGS MARKET PLACE - ***PDS2014-TM-5590"***

Dear Mr. Vance:

Department of Planning & Development Services (PDS) has reviewed your request for a design exception to Public Road Standards dated July 15, 2015. The request is to waive the 300-foot driveway separation requirements of Section 6.1.C.2 for the intersection of Olde Highway 80 and proposed re-alignment of Pecan Park Lane (East) and existing driveways along both sides of Olde Highway 80.

PDS is able to support your request for modification of the above mentioned standard. Adequate sight distance along Olde Highway 80 at the proposed re-alignment of Pecan Park Lane (East) intersection and existing driveways have been certified per Public Road Standards. The request was reviewed and supported by the County of San Diego Department of Public Works, Traffic Engineer section.

If you have any questions or need additional information related to this request, please contact Ed Sinsay, LD Manager at (858) 694-2486.

Sincerely,

DARREN GRETLER, Assistant Director
Planning & Development Services

DG: EMS: SH

cc: PDS2014-TM-5590 File
David Sibbet, PL Project Manager

NATURE OF REQUEST

The Department of Planning & Development Services (PDS) received a Request for Design Exception to Public Road Standards by South Coast Development, LLC for Lake Jennings Market Place, dated July 15, 2015. The request is to waive the 300-foot driveway separation requirements of Section 6.1.C.2.

BACKGROUND:

The proposed project, Lake Jennings Marketplace is a 76,100 square foot commercial shopping center with associated parking, landscaping, and signage. The project includes six buildings on six individual lots. The six buildings include: 43,000 square foot market or grocery store, 4,500 square foot financial building, 3,500 square foot fast food restaurant with drive-through, 43,800 square foot pad for gas station with a car wash, 9,600 square foot restaurant/retail building, and 12,500 square foot restaurant/retail building. The project also includes an open space easement along the southern property boundary to include the Los Coches Creek and associated buffer.

The project site is located off of Olde Highway 80 near Lake Jennings Park Road in the Lakeside Community Planning area, within unincorporated San Diego County. The project proposes four access points: one from Ridge Hill Road located on the west side of the project, a right-in only approximately 200 feet east from Lake Jennings Park Road, a full signalized intersection entry half way along the project frontage, and a second non-signalized entry near the northeast corner of the property.

Applicant's request is based on the following:

1. There are numerous existing driveways on both sides of Olde Highway 80 within 300 feet of the proposed re-alignment of Pecan Park Lane (East) connecting to Olde Highway 80 that do not meet 300 foot separation.

2. The Engineer of Work (EOW) has certified adequate unobstructed sight distance in both directions along Olde Highway 80 from the intersection of the proposed re-alignment of Pecan Park Lane (East) per Section 6.1 Table 5 of the County Public Road Standards, dated July 16, 2015 by Stuart Peace.

3. The design exception request is based on the project applicant's desire to limit impacts to the community during the construction time of the project. Pecan Park Lane (West) will be closed and traffic will be temporarily routed to Pecan Park Lane (East). In recognition of the acute angle that Pecan Park Lane (East) intersects with Olde Highway 80, the applicant is re-aligning Pecan Park Lane (East) such that it intersects Olde Highway 80 in a more standard configuration during the time that traffic is temporarily routed to Pecan Park Lane (East).

PROJECT MANAGEMENT TEAM REVIEW:
It is recommended that the Director of Planning & Services support this request. Decision is based upon the following:

1. County Public Road Standards Section 6.7.I.5 indicates: "Along County maintained roads, driveway separation from other driveways and roads shall conform to Section 6.1.C.1 and Section 6.1.C.2. The proposed driveway will be considered a non-Mobility Element road. If conformance with Section 6.1.C.1 and Section 6.1.C.2 cannot be achieved because of factors such as limited property frontage, topography, or available sight distance, then a modification of this standard may be granted provided the proposed driveway is located at the location which would cause the least traffic impact." County Public Road Standards Section 6.1.C.2 indicates: "Minimum distance between roads entering into other roads shall be as follows: 1. Non-Mobility Element roads entering into a Mobility Element road shall have their centerlines separated by at least 300 feet."

2. The project provides adequate sight distance from the proposed re-alignment of Pecan Park Lane (East) intersection in both directions along Olde Highway 80.

3. County of San Diego - Traffic Engineer section has reviewed and supported the request.

4. PDS Project Planning Manager, David Sibbet, concurs with the applicant's request.

RECOMMENDATION:
The Project Team recommends supporting the applicant's request.

[✓ Request Recommended]/
Not Recommended:

Date: 8/20/15
EDWIN M. SINSAY

[✓ Request Recommended]/
Not Recommended:

Date: 8/24/2015
DARREN M. GRETLER