

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 Trips	120 9,132	4% 365	60% 219	40% 146	10% 913	50% 457	50% 457
Gasoline with/Food Mart & Car Wash	12	Fueling Space	Rate Trips	155 1,860	8% 149	50% 75	50% 75	9% 167	50% 84	50% 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.

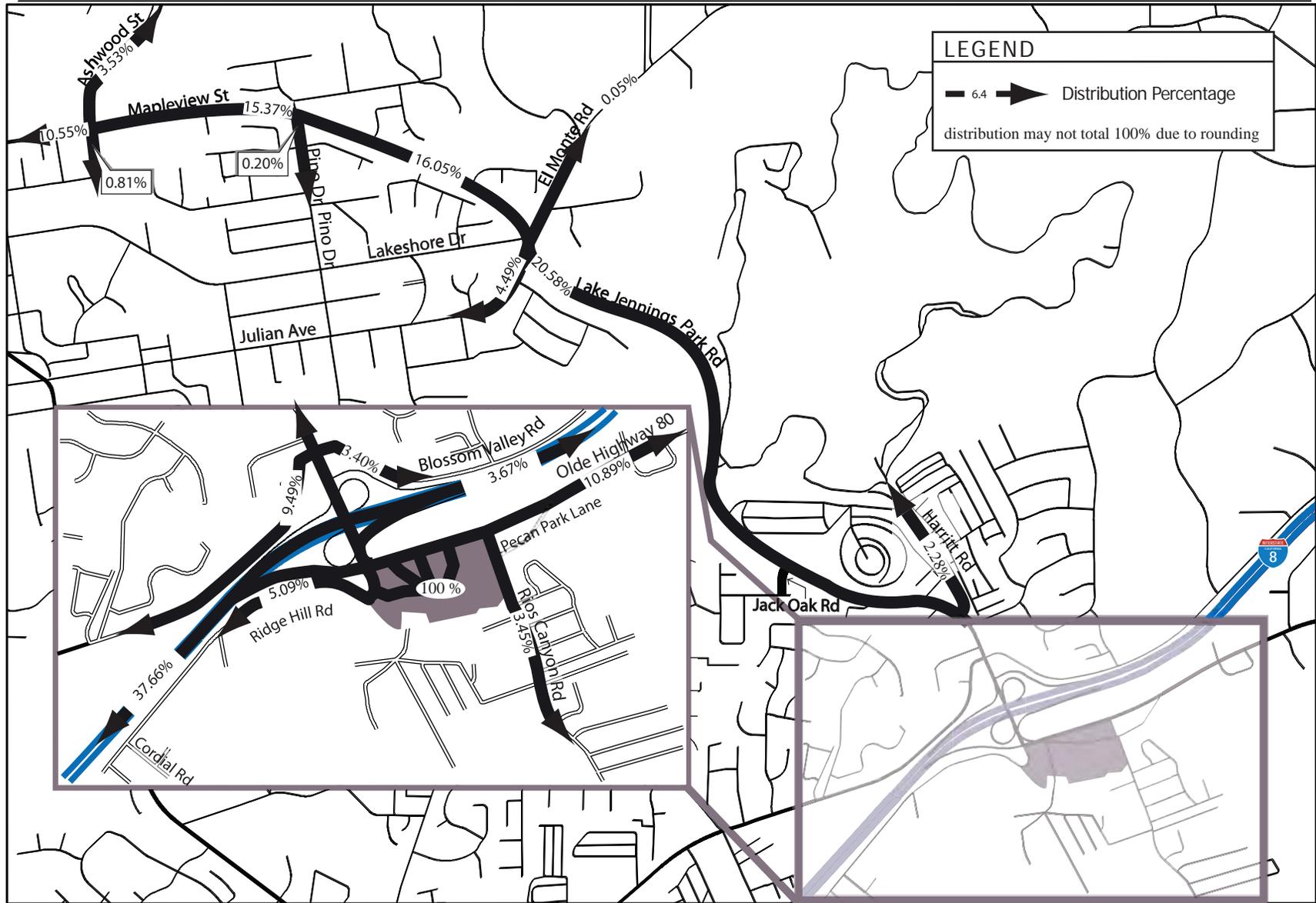


Figure 1-3
 Project Trip Distribution



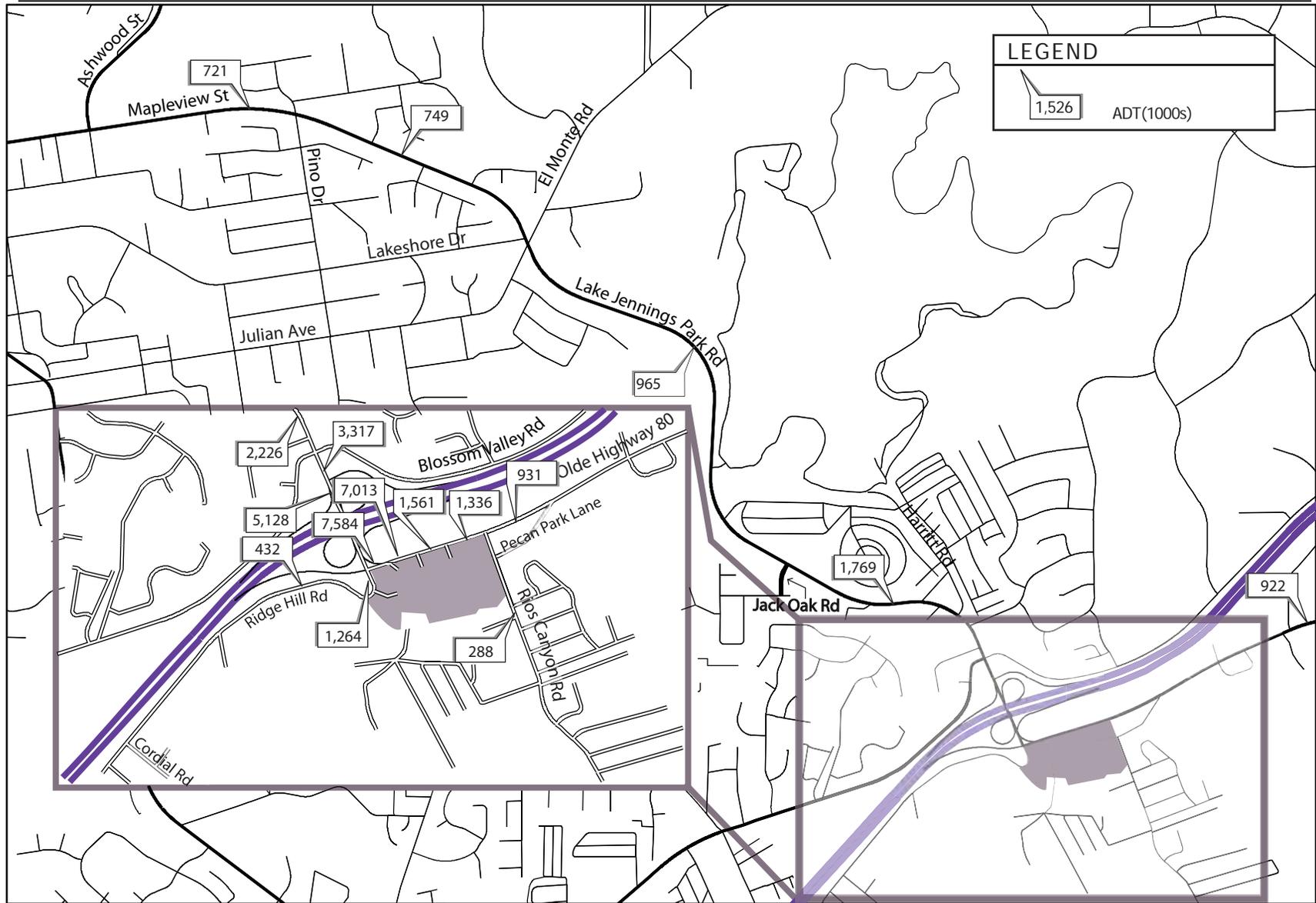
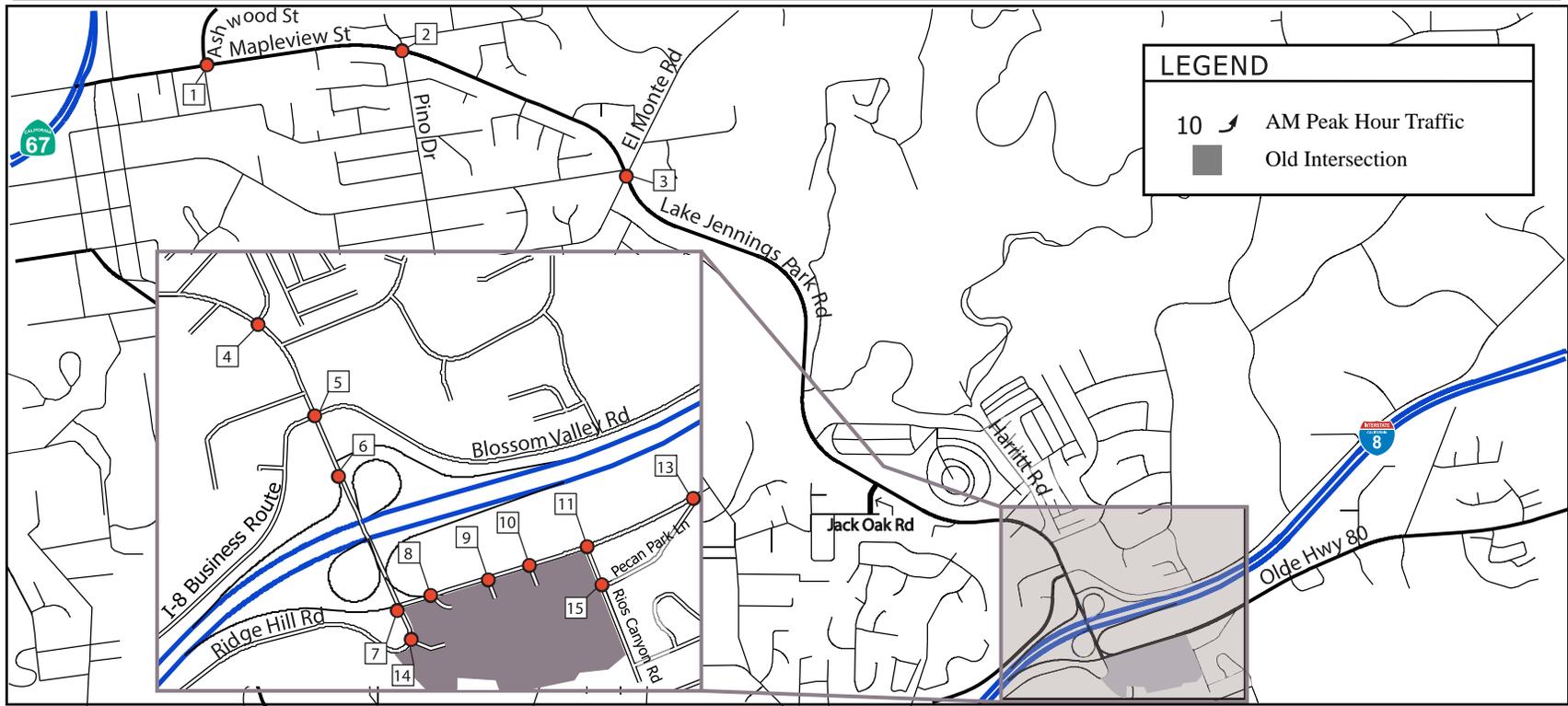


Figure 1-4
Project Daily Roadway Segment Volumes

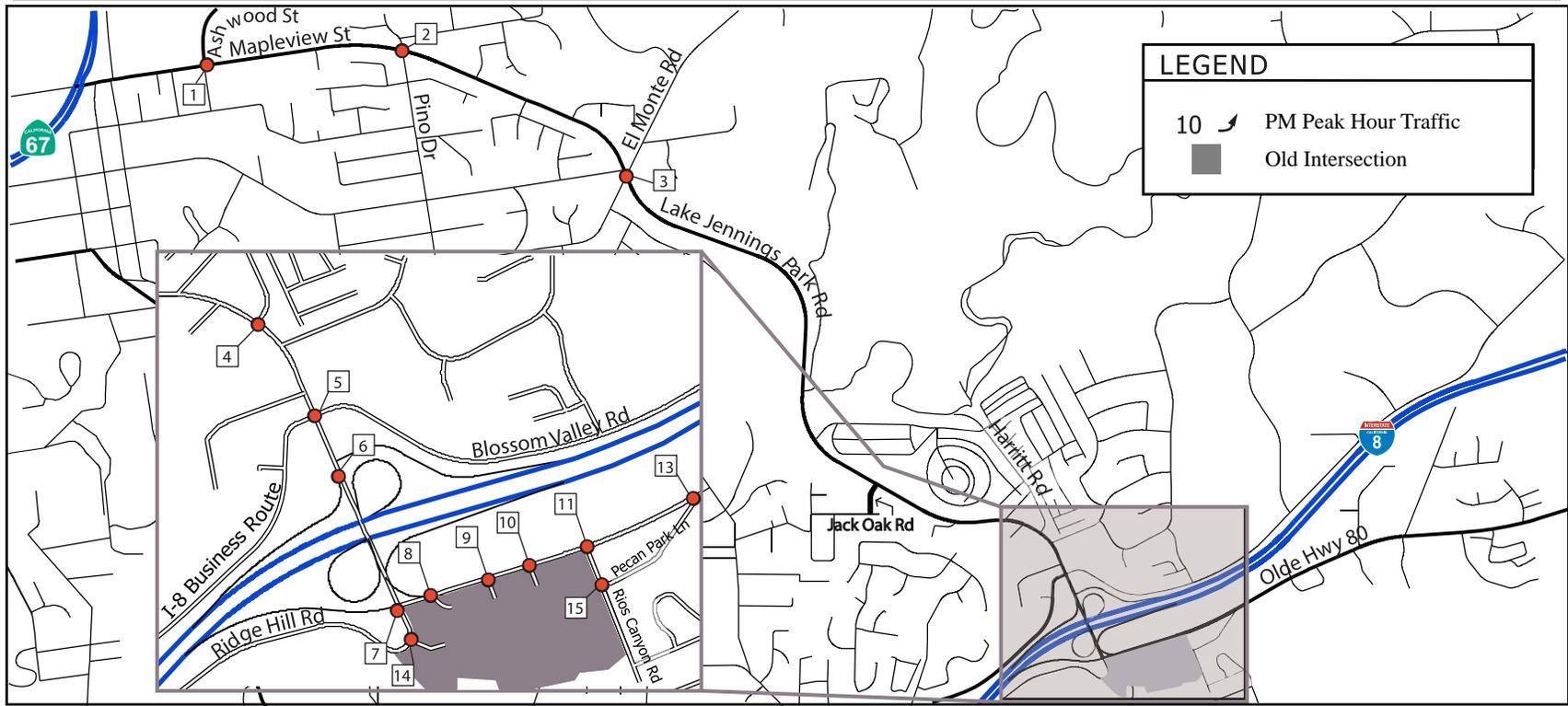




<p>Maplevie St & Ashwood St</p> <p>1</p>	<p>Maplevie St & Pino Dr</p> <p>2</p>	<p>Lake Jennings Park Rd & El Monte Rd</p> <p>3</p>	<p>Lake Jennings Park Rd & Harritt Rd</p> <p>4</p>	<p>Lake Jennings Park Rd & Blossom Valley Rd</p> <p>5</p>	<p>Lake Jennings Park Rd & I-8 WB On Ramp</p> <p>6</p>	<p>Lake Jennings Park Rd & I-8 EB Off Ramp</p> <p>7</p>	<p>Olde Hwy 80 & Driveway 1</p> <p>8</p>
<p>Olde Hwy 80 & Driveway 2</p> <p>9</p>	<p>Olde Hwy 80 & Driveway 3</p> <p>10</p>	<p>Olde Hwy 80 & Rios Canyon Rd</p> <p>11</p>	<p>Olde Hwy 80 & Pecan Park Ln West</p> <p>12</p>	<p>Olde Hwy 80 & Pecan Park Ln East</p> <p>13</p>	<p>Ridge Hill Rd & Driveway 4</p> <p>14</p>	<p>Rios Canyon Rd & Pecan Park Ln</p> <p>15</p>	

Figure 1- 5
Project AM Peak Hour Intersection Volumes





<p>Mapleview St & Ashwood St</p> <p>1</p>	<p>Mapleview St & Pino Dr</p> <p>2</p>	<p>Lake Jennings Park Rd & El Monte Rd</p> <p>3</p>	<p>Lake Jennings Park Rd & Harritt Rd</p> <p>4</p>	<p>Lake Jennings Park Rd & Blossom Valley Rd</p> <p>5</p>	<p>Lake Jennings Park Rd & I-8 WB On Ramp</p> <p>6</p>	<p>Lake Jennings Park Rd & I-8 EB Off Ramp</p> <p>7</p>	<p>Olde Hwy 80 & Driveway 1</p> <p>8</p>
<p>Olde Hwy 80 & Driveway 2</p> <p>9</p>	<p>Olde Hwy 80 & Driveway 3</p> <p>10</p>	<p>Olde Hwy 80 & Rios Canyon Rd</p> <p>11</p>	<p>Olde Hwy 80 & Pecan Park Ln West</p> <p>12</p>	<p>Olde Hwy 80 & Pecan Park Ln East</p> <p>13</p>	<p>Ridge Hill Rd & Driveway 4</p> <p>14</p>	<p>Rios Canyon Rd & Pecan Park Ln</p> <p>15</p>	

Figure 1- 6
Project PM Peak Hour Intersection Volumes



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:

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

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.

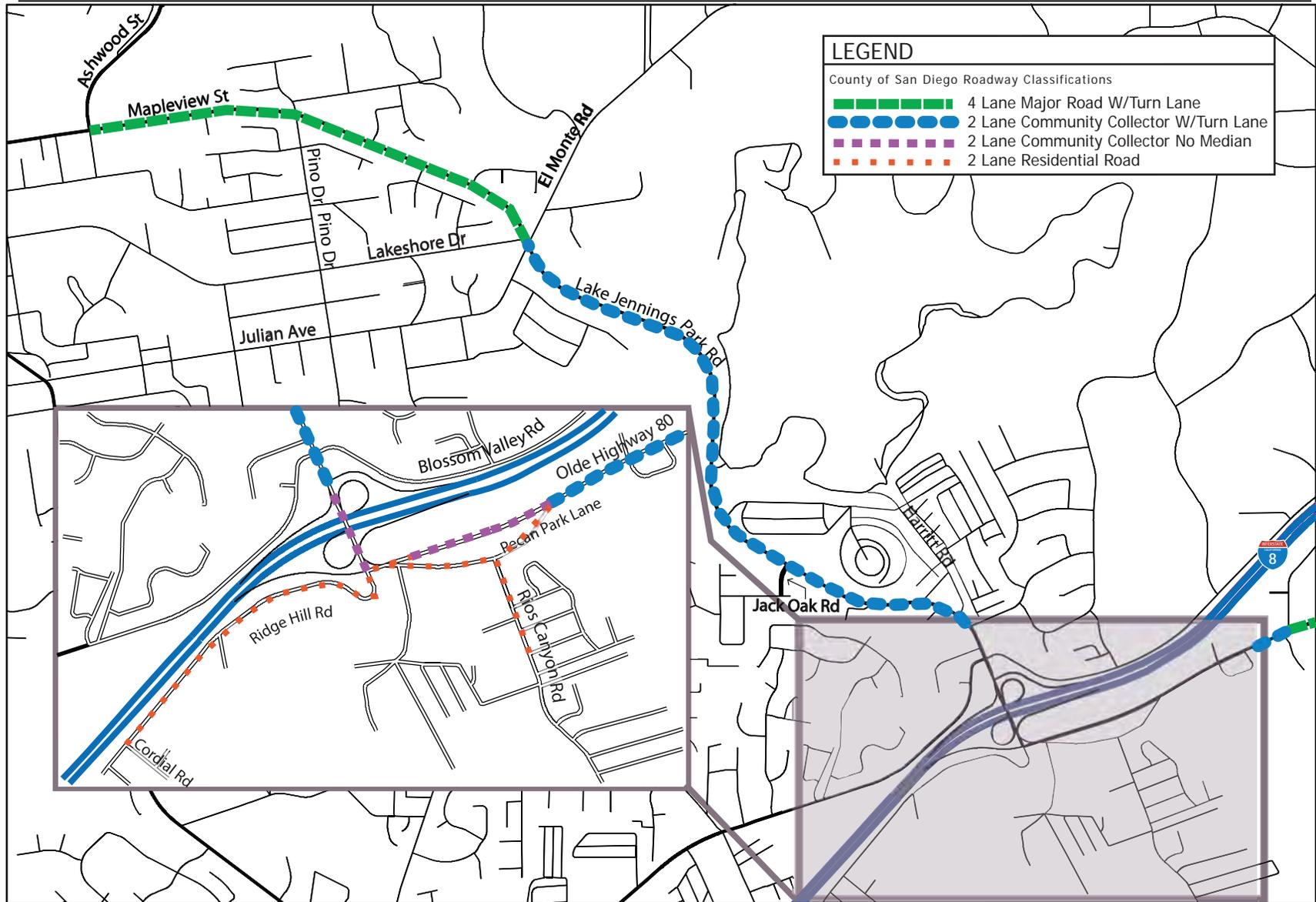


Figure 3-1
Existing Circulation Network



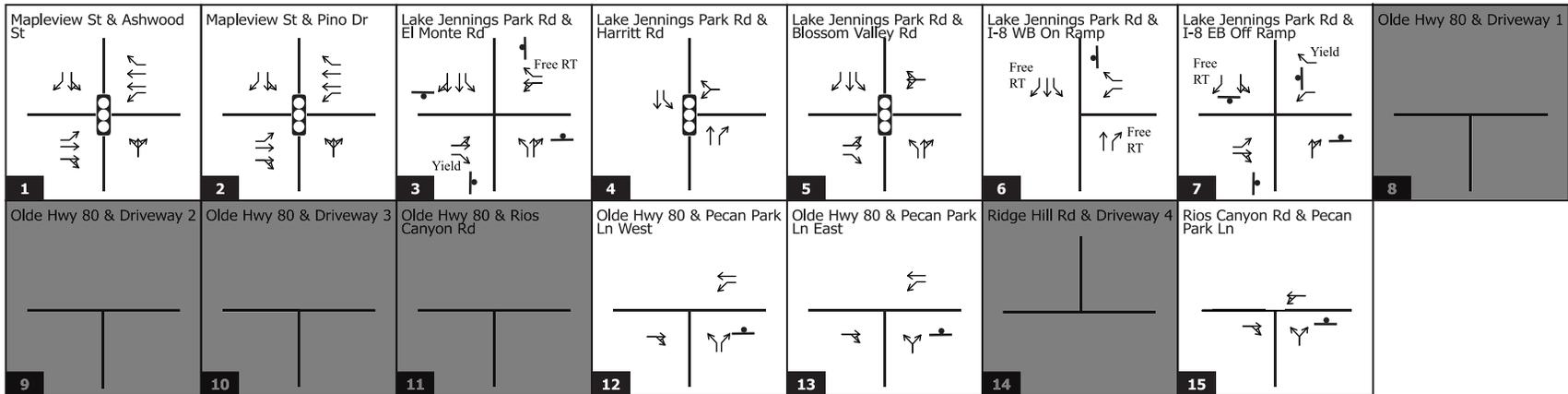
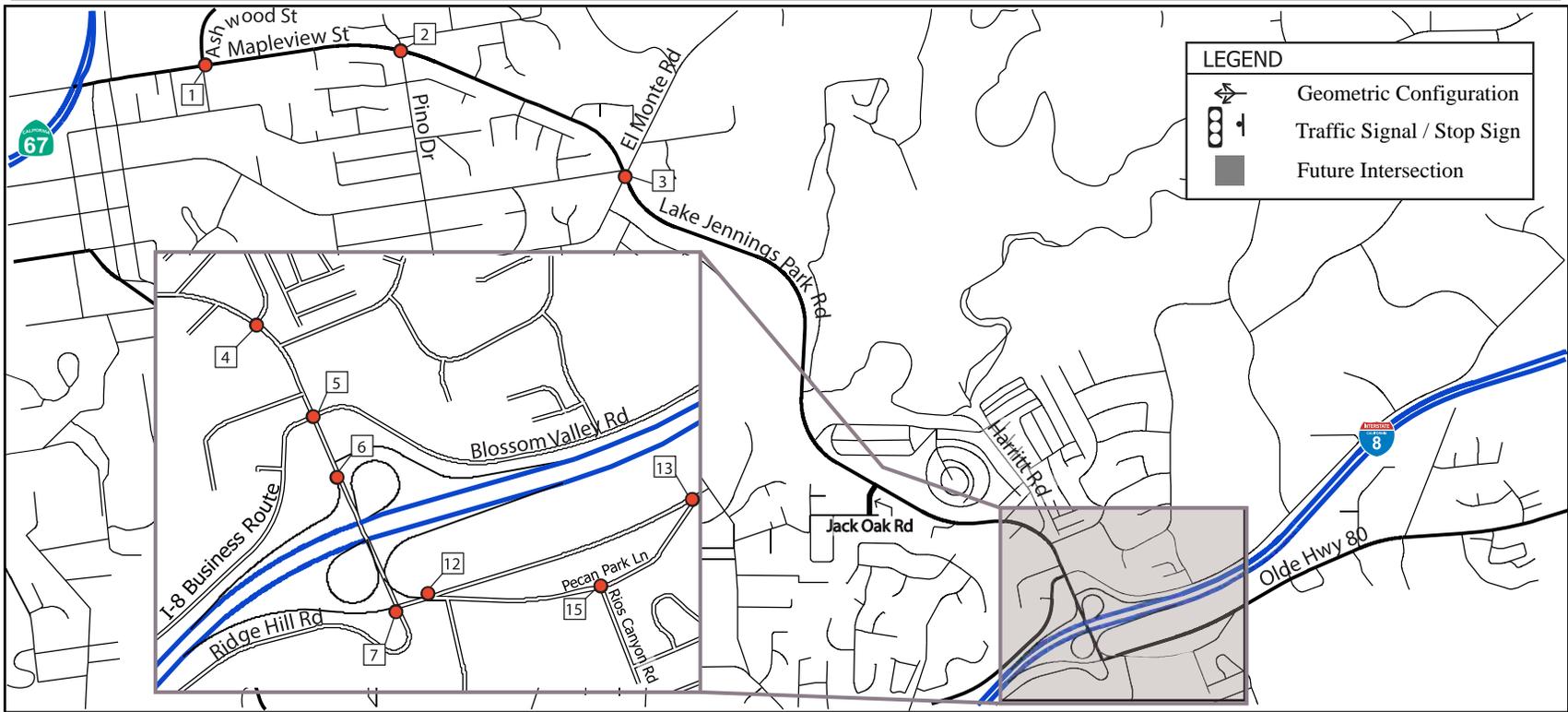


Figure 3-2
Existing Geometric Configuration

