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UNIVERSITY CROSSINGS APARTMENTS

TRAFFIC IMPACT ANALYSIS (REVISED)
COUNTY OF SAN BERNARDINO, CALIFORNIA

June 29, 2012 (Revised)
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1.0 INTRODUCTION

This report presents the results of the traffic impact analysis (TIA) for the proposed University Crossings Apartments development (referred to as "Project"), which is generally located north of Lugonia Avenue and west of Alabama Street in the County of San Bernardino, as shown on Exhibit 1-1.

The purpose of this traffic impact analysis is to evaluate the potential traffic and circulation impacts associated with the proposed development on the surrounding roadway system, and recommend improvements to mitigate impacts considered significant in comparison to established regulatory thresholds determined by the County of San Bernardino. As directed by County of San Bernardino staff, this TIA has been prepared in accordance with Article X of the San Bernardino County *Road Planning and Design Standards* (April 1993) and the County of San Bernardino *Congestion Management Program* (CMP) traffic study guidelines (Appendix "C").

1.1 PROJECT OVERVIEW

The Project includes the development of 321 apartment units. For the purposes of this traffic impact analysis, it is assumed that the Project will be constructed and at full occupancy by 2014.

Trips generated by the Project's proposed land uses have been estimated based on trip generation rates collected by the Institute of Transportation Engineers (ITE) and presented in ITE's most recent edition of *Trip Generation* (8th Edition, 2008). The Project is estimated to generate a net total of approximately 2,135 trip-ends per day on a typical weekday with approximately 164 AM peak hour trips and 199 PM peak hour trips. The assumptions and methods used to estimate the Project's trip generation characteristics are discussed in detail in Section 4.1 *Project Trip Generation* of this report.

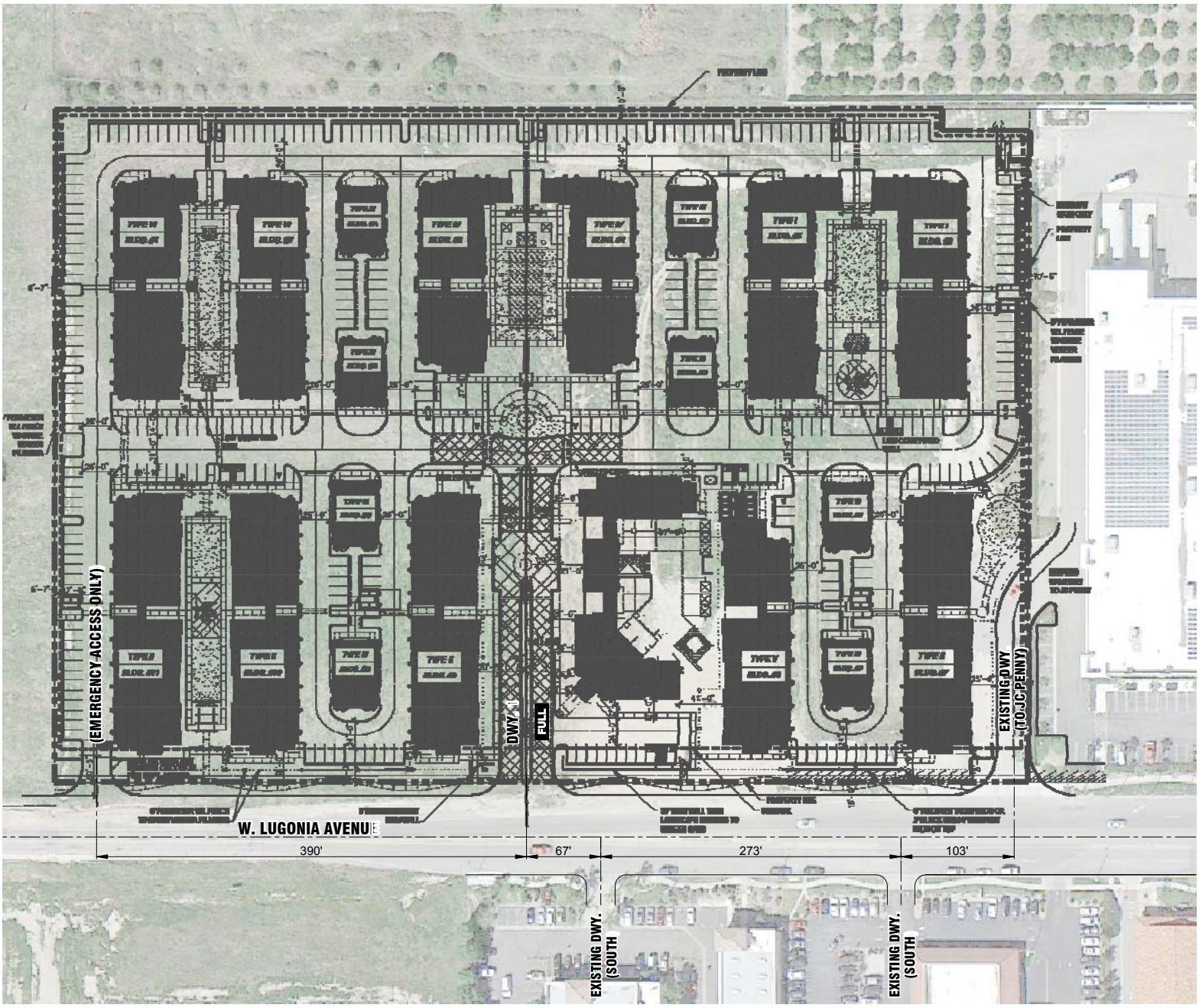
1.2 ANALYSIS SCENARIOS

Consistent with the County of San Bernardino traffic study guidelines, potential impacts to traffic and circulation will be assessed for each of the following conditions:

- Existing (2012) Conditions (1 scenario)
- Existing Plus Ambient Growth (2014), without and with Project Conditions (2 scenarios)
- Existing Plus Ambient Growth (2014) Plus Project Plus Cumulative Development Conditions (1 scenario)

EXHIBIT 1-1

SITE PLAN



LEGEND:

FULL = FULL ACCESS

- Horizon Year (2035), without and with Project (2 scenarios) –based on data from the East Valley Traffic Model (EVTM)

1.2.1 EXISTING (2012) CONDITIONS

Information for existing year (2012) is disclosed to represent the baseline traffic conditions as they existed at the time this report was prepared.

1.2.2 OPENING YEAR (2014), WITHOUT AND WITH PROJECT CONDITIONS

The opening year (2014) analysis determines the direct project-related traffic impacts based on a comparison of the Existing plus Ambient Growth plus Project (EAP) traffic conditions to the Existing plus Ambient Growth (EA) conditions. The EA and EAP (2014) traffic conditions analyses uniquely identifies the specific traffic impacts associated with the development of the proposed Project projected to its "Opening Year". To account for background traffic during this time, a total ambient growth from Existing (2012) conditions of 4.04% (2% per year x 2 years, compounded annually) is included for both EA (2014) and EAP (2014) traffic conditions. Cumulative development projects are not included as part of these analysis scenarios. Consistent with the Article X of the County of San Bernardino *Road Planning and Design Standards,* the EAP (2014) analysis is intended to identify the project-specific impacts associated solely with the development of the proposed Project based on the expected background growth within the study area.

1.2.3 OPENING YEAR CUMULATIVE (2014) CONDITIONS

The opening year cumulative (2014) analysis is based on a comparison of the Existing plus Ambient Growth (2014) plus Project plus Cumulative Development (EAPC) traffic conditions to Existing (2012) traffic conditions and has been utilized identify cumulative traffic impacts, recommend improvements to mitigate the cumulative traffic impacts and to determine if the recommended improvements funded through local and regional transportation mitigation fee programs, such as the County of San Bernardino Regional Transportation Development Mitigation Plan (RTDMP) and Measure "I", can accommodate the cumulative traffic at the target level of service (LOS) identified in the County of San Bernardino General Plan. If the "funded" improvements can provide the target LOS, then the Project's payment into the RTDMP will be considered as cumulative mitigation through the conditions of approval. Other improvements needed beyond the "funded" improvements (such as localized improvements to non-RTDMP facilities) are identified as such. To account for background traffic, other known cumulative development projects within or in close proximity to the study area were included in addition to 4.04% of ambient growth. This list of pending development projects in close proximity to the site was developed in consultation with, reviewed and approved by both County of San Bernardino and City of Redlands staff in February 2012.

1.2.4 HORIZON YEAR (2035) CONDITIONS

The Horizon Year (2035) analysis is based on a comparison of the without and with Project traffic conditions and has been utilized to identify long-range cumulative traffic impacts, recommend improvements to mitigate the cumulative traffic impacts and to determine if the recommended improvements funded through local and regional transportation mitigation fee programs can accommodate the long-range traffic at the target LOS identified in the County of San Bernardino General Plan. Similar to EAPC (2014) traffic conditions, if the "funded" improvements can provide the target LOS, then the Project's payment into the RTDMP will be considered as cumulative mitigation through the conditions of approval. Other improvements needed beyond the "funded" improvements (such as localized improvements to non-RTDMP facilities) are identified as such.

Traffic projections for Horizon Year (2035) with Project conditions were derived from the East Valley Traffic Model (EVTM) using accepted procedures for model forecast refinement and smoothing. The traffic forecasts reflect the area-wide growth anticipated between Existing (2012) conditions and Horizon Year (2035) conditions. The traffic model zone structure is not designed to provide accurate turning movements along arterial roadways unless refinement and reasonableness checking is performed. Horizon Year (2035) turning volumes were compared to EAPC (2014) volumes in order to ensure a minimum growth of ten (10) percent as a part of the refinement process. The minimum ten (10) percent growth includes any additional growth between EAPC (2014) and Horizon Year (2035) traffic conditions that is not accounted for by the traffic generated by cumulative development projects and the ambient growth between Existing (2012) and EAPC (2014) conditions.

Final turning volumes for Horizon Year (2035) without and with Project traffic conditions are provided in Appendix "1.2".

1.3 STUDY AREA

The traffic impact study area was defined in coordination with the County of San Bernardino and the City of Redlands, in conformance with the requirements of the County's TIA preparation guidelines. Based on these guidelines, the exact limits of the study area should be based on the potential impact of the proposed Project on the street network and an understanding of existing traffic conditions surrounding the site. Consistent with the County of San Bernardino CMP traffic study guidelines and other jurisdictions throughout Southern California, a minimum contribution of 50 peak hour trips is utilized to determine whether a project may potentially impact a near-by intersection. In other words, for the purposes of this analysis, the study area includes any intersection of Collector or higher classification street with another Collector or higher classification street, at which the proposed project is anticipated to add 50 or more peak hour trips. Although the Project is not anticipated to contribute more than 50 peak hour trips, the City of Redlands staff requested that the I-10 Freeway ramps on

Alabama Street and the intersection of Alabama Street at Redlands Boulevard be included as analysis locations. Exhibit 1-2 presents the study area roadway network and intersection analysis locations.

To ensure that this TIA satisfies the needs of the County of San Bernardino and complies with the County's TIA preparation guidelines, Urban Crossroads, Inc. prepared a Project Traffic Study Scoping Agreement for review by County staff prior to the preparation of this TIA. The Agreement provides an outline of the Project study area, trip generation, trip distribution, and analysis methodology. The Agreement approved by the County of San Bernardino is included in Appendix "1.1". It is important to note that the scoping agreement was also provided to the City of Redlands for additional comments. As such, this traffic study has been performed to satisfy the requirements of both the County of San Bernardino and City of Redlands.

The following seven (7) study area intersection locations shown on Exhibit 1-2 and listed on Table 1-1 were selected for this TIA based on the following: (1) County's TIA analysis methodology that requires analysis of intersection locations that may potentially be impacted by the proposed Project and (2) input from the County of San Bernardino, City of Redlands and Caltrans District 8.

Table 1-1 Intersection Analysis Locations

ID	Intersection Location	Location
1	California Street / Lugonia Avenue	Redlands
2	Nevada Street / Lugonia Avenue	SBC/Redlands
3	*Driveway 1 / Lugonia Avenue – Future Intersection*	*SBC/Redlands*
4	Alabama Street / Lugonia Avenue	SBC/Redlands
5	Alabama Street / I-10 Westbound Ramps	Caltrans
6	Alabama Street / I-10 Eastbound Ramps	Caltrans
7	Alabama Street / Redlands Boulevard	Redlands

1.4 SUMMARY OF IMPACTS

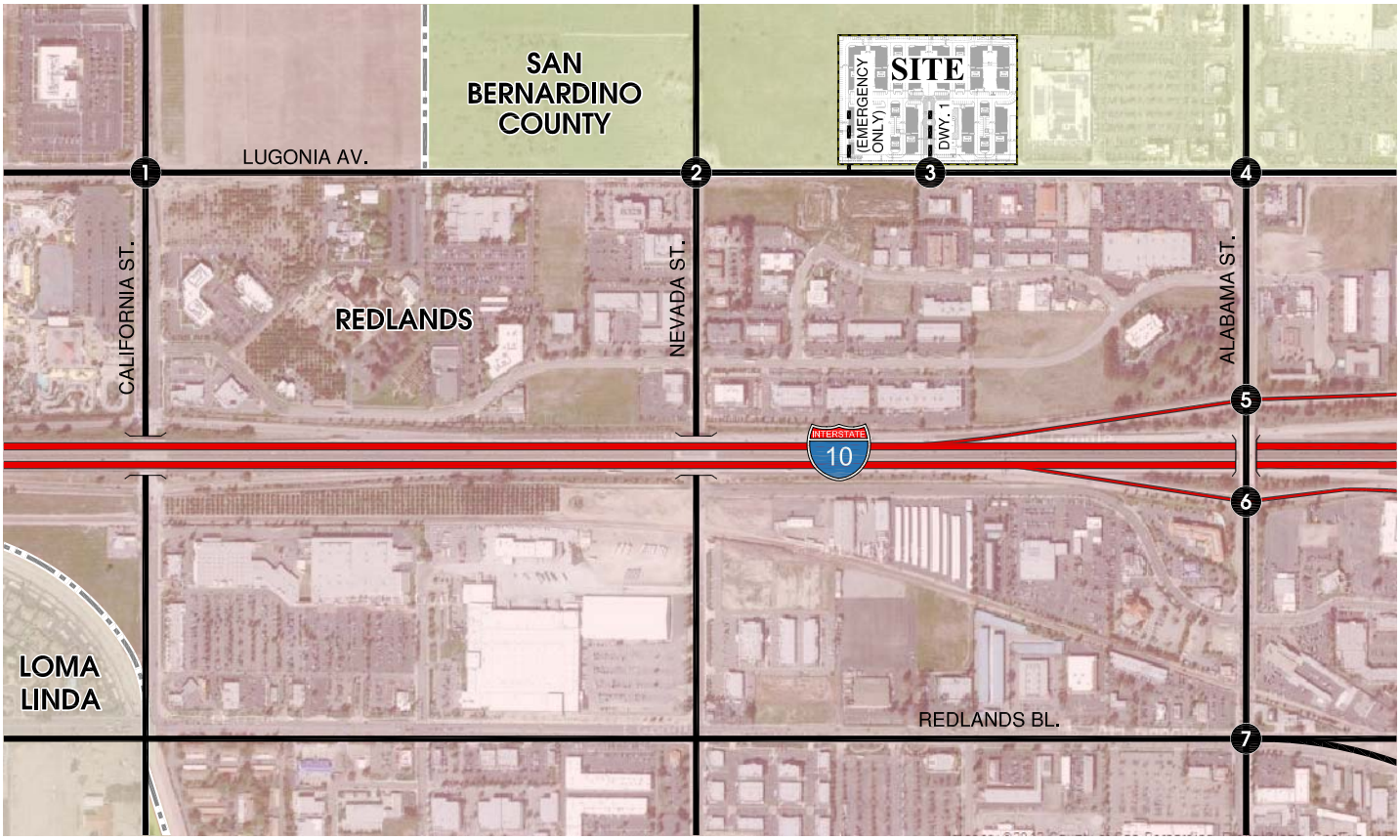
Based on the analysis for EAP (2014) traffic conditions, there are no study area intersections anticipated to be directly impacted by the Project.

Based on the analysis performed for EAPC (2014) traffic conditions, the following intersections are anticipated not to meet the requisite LOS thresholds under cumulative traffic conditions:

ID	Intersection Location	Location
5	Alabama Street / I-10 Westbound Ramps	Caltrans
7	Alabama Street / Redlands Boulevard	Redlands

EXHIBIT 1-2

LOCATION MAP



LEGEND:

1 = INTERSECTION ANALYSIS LOCATION

= FUTURE ROADWAY

N

The following additional intersections are anticipated to fall below requisite LOS thresholds for Horizon Year (2035) with Project traffic conditions, in addition to those identified under EAPC (2014) traffic conditions:

ID	Intersection Location	Location
1	California Street / Lugonia Avenue	Redlands
2	Nevada Street / Lugonia Avenue	SBC/Redlands
4	Alabama Street / Lugonia Avenue	SBC/Redlands
6	Alabama Street / I-10 Eastbound Ramps	Caltrans

Recommended improvements to reduce cumulative impacts to less-than-significant are discussed subsequently in Section 1.5 *Summary of Cumulative Impacts and Recommended Improvements* and in further detail in Section 6 *Opening Year Cumulative (2014) Traffic Analysis* and Section 7 *Horizon Year (2035) Traffic Analysis* of this report.

1.5 SUMMARY OF CUMULATIVE IMPACTS AND RECOMMENDED IMPROVEMENTS

A summary of the cumulatively impacted study area intersections and recommended improvements to reduce cumulative impacts to less-than-significant are described in detail within Section 6 *Opening Year (2014) Traffic Analysis* and Section 7 *Horizon Year (2035) Traffic Analysis* of this report. Cumulative impacts are deficiencies in the transportation network's LOS that would not be directly caused by the Project. The Project would, however, contribute traffic to these deficient facilities, resulting in a finding that the Project's contribution to the cumulative impact is considered cumulatively considerable.

Pursuant to Measure I 2010-2040, the County CMP was updated and adopted by the County Congestion Management Agency, San Bernardino Associated Governments (SANBAG), in November 2, 2005. Each local jurisdiction, including the County of San Bernardino, is required to adopt a regional transportation development mitigation program prior to November 2006. Fees from new residential, commercial and industrial development are collected to fund Measure "I" compliant regional facilities as well as local facilities. The RTDMP is intended to generate only the development fair-share contribution of project costs as required by the CMP and is not intended to provide 100% funding for or construct all projects listed in the RTDMP. Additional regional Measure "I" and federal/state funds administered by SANBAG are required for full funding of projects listed in the RTDMP. The applicant shall participate in the funding or construction of off-site improvements, including traffic signals that are needed to serve cumulative traffic conditions through the payment of required RTDMP fees and other fair share contributions, as directed by the County. These fees are collected as part of a funding mechanism aimed at ensuring that regional highways and arterial expansions keep pace with the projected vehicle trip increases.

The recommended improvements necessary to achieve the requisite LOS threshold of LOS "C" (for the City of Redlands) and LOS "D" (for the County of San Bernardino and Caltrans) or better at all study area intersections for Horizon Year (2035) with Project conditions have been illustrated on Exhibit 1-3. It should be noted that the recommended improvements for EAPC (2014) with Project conditions are a sub-set of the recommended improvements shown on Exhibit 1-3.

Intersection and roadway improvements that were identified in the analysis found in Section 6 *Opening Year (2014) Traffic Analysis* and Section 7 *Horizon Year (2035) Traffic Analysis* as necessary to maintain or improve the operational level of service of the street system in the vicinity of the Project site are shown in Table 1-2. Table 1-2 lists the total improvements that are required by Horizon Year (2035) with Project traffic conditions. It is anticipated that the improvements required to maintain or to improve the LOS operations of transportation facilities in the vicinity of the project will be constructed through the County's RTDMP fee program. The Project's contribution to the aforementioned transportation impact fee program or as a fair share contribution toward a cumulatively impacted facility not found to be covered by a pre-existing fee program should be considered sufficient to address the Project's fair share toward a mitigation measure or measures designed to alleviate the cumulative impact. In other words, the Project's contribution to a significant cumulative impact will be rendered less than cumulatively considerable and thus is not significant. Table 1-2 also identifies the Project mitigation measures, cumulative improvements under EAPC (2014) and Horizon Year (2035) conditions, programmed and non-programmed improvements and the Project's fair share responsibility for non-programmed improvements.

1.6 ON-SITE ROADWAY AND SITE ACCESS IMPROVEMENTS

The Project is proposed to have access on Lugonia Avenue via Driveway 1. Driveway 1 is proposed to allow full-access. The westerly driveway is anticipated to serve as emergency access only. Regional access to the Project site will be provided by the I-10 Freeway via California Street and Alabama Street and the near-by SR-210 Freeway to the east.

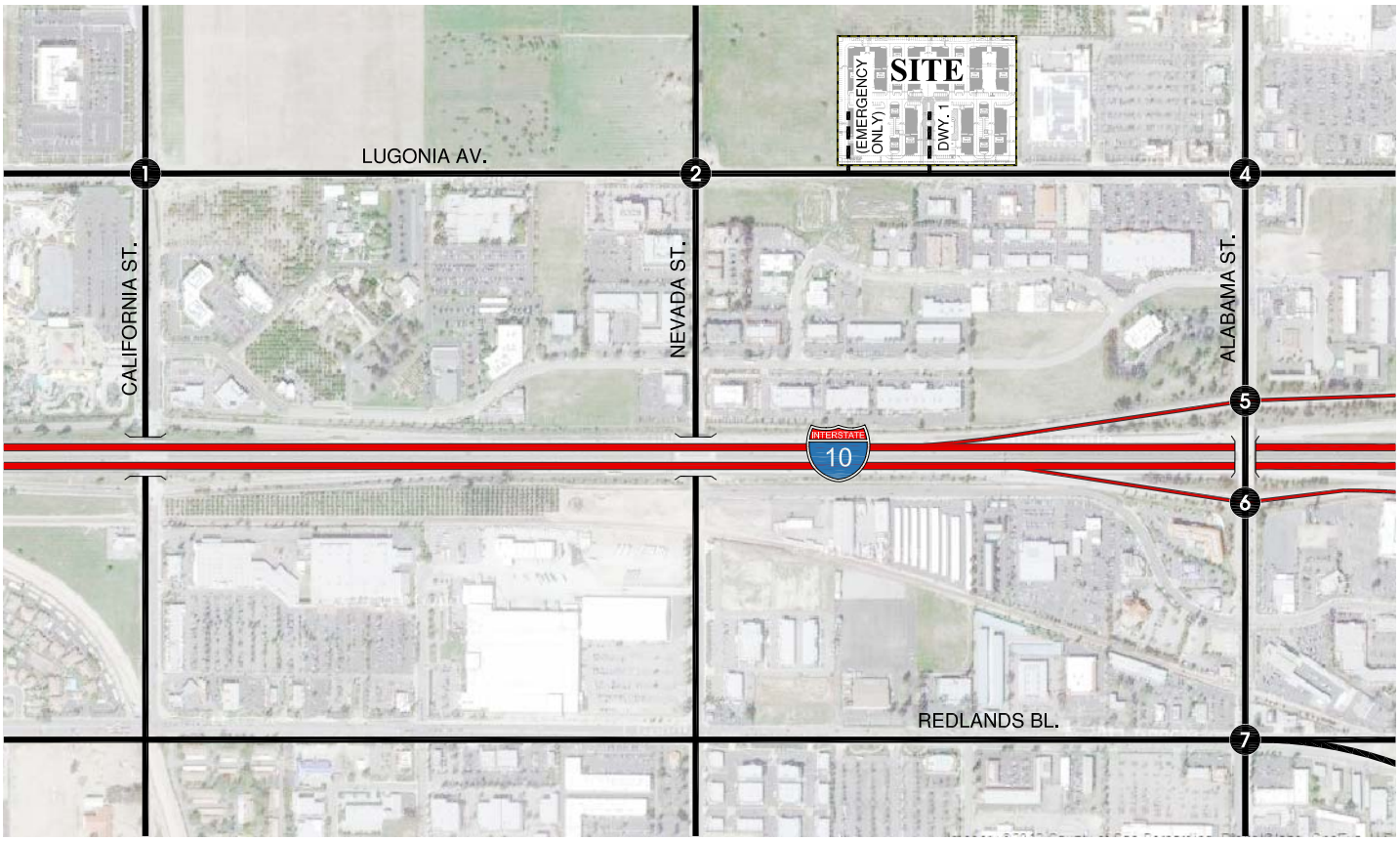
As part of the development, the Project will construct improvements on the site adjacent roadway of Lugonia Avenue. Roadway improvements necessary to provide site access and on-site circulation are assumed to be constructed in conjunction with site development and are described below. These improvements should be in place prior to occupancy.

1.6.1 ON-SITE ROADWAY IMPROVEMENTS

The recommended site-adjacent roadway improvements for the Project are described below. Exhibit 1-4 illustrates the site-adjacent roadway improvement recommendations.

EXHIBIT 1-3

HORIZON YEAR (2035) WITH PROJECT CONDITIONS CUMULATIVE MITIGATION MEASURES



LEGEND:

- = EXISTING TRAFFIC SIGNAL
- = NEW TRAFFIC SIGNAL
- = EXISTING LANE
- = LANE IMPROVEMENT
- DEF = EXISTING DEFACTO RIGHT TURN LANE
- RTO = RIGHT TURN OVERLAP PHASING IMPROVEMENT
- * = PROTECTED LEFT TURN PHASING

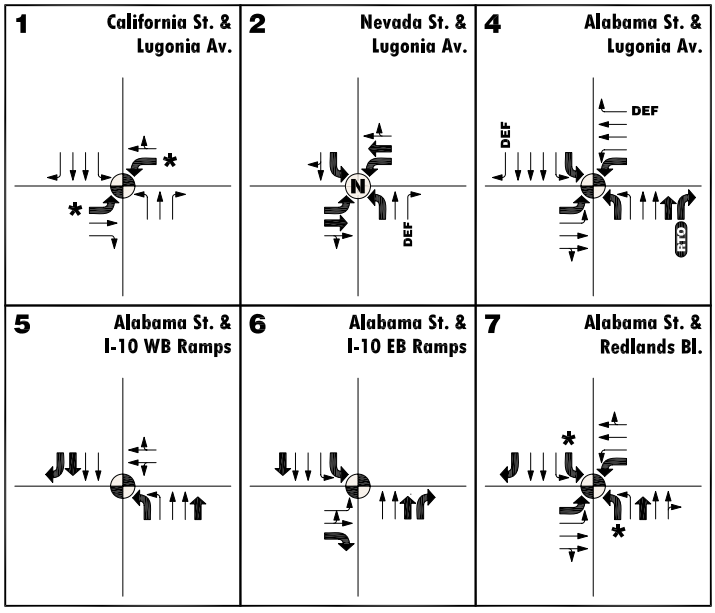


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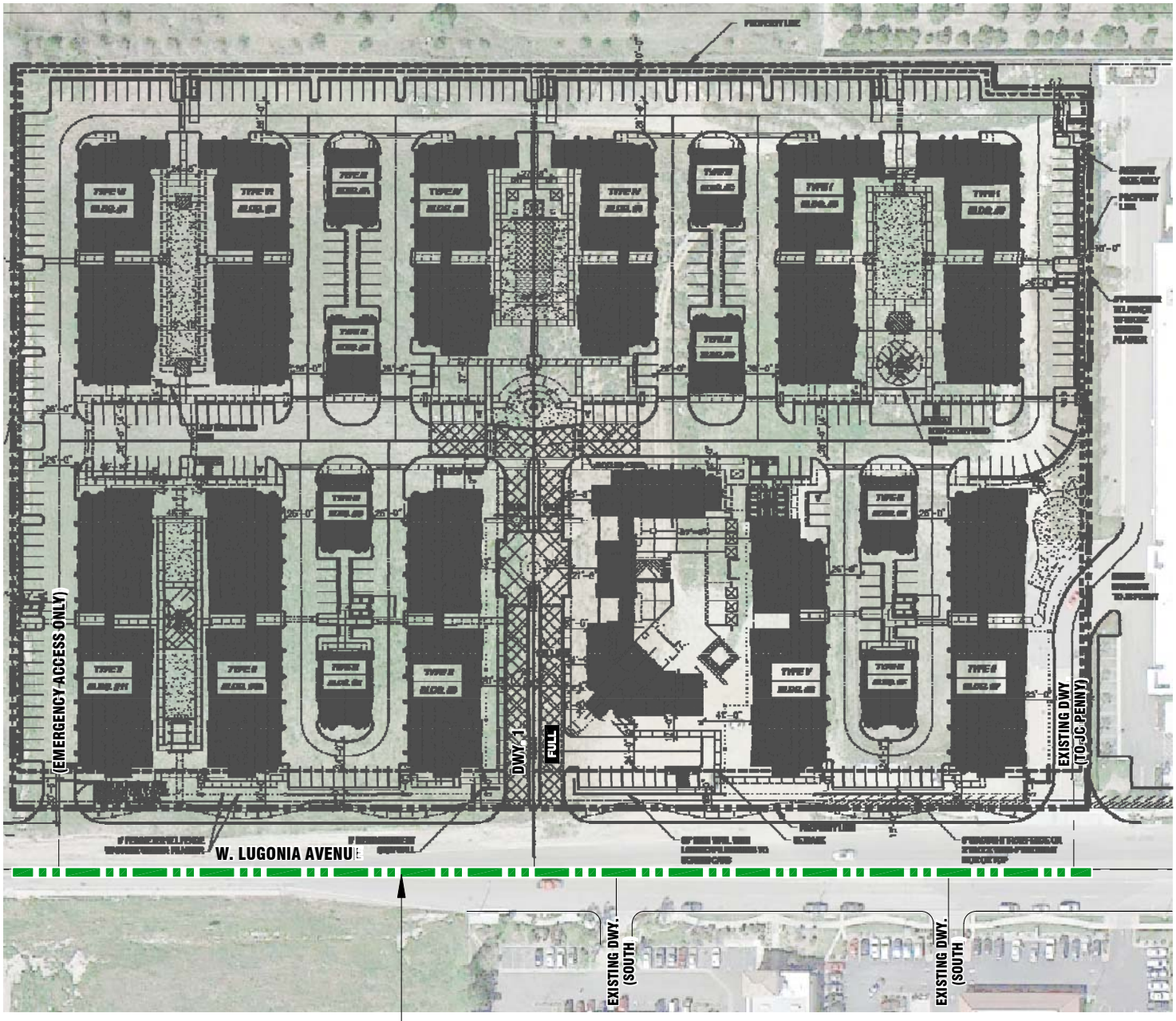
EXHIBIT 1-4

SITE ADJACENT ROADWAY RECOMMENDATIONS



CONSTRUCT LUGONIA AVENUE AT ITS ULTIMATE HALF-SECTION WIDTH AS A SECONDARY HIGHWAY (88-FOOT RIGHT-OF-WAY) BETWEEN THE PROJECT'S WESTERN AND EASTERN BOUNDARIES, CONSISTENT WITH THE CIRCULATION RECOMMENDATIONS FOUND IN THE EAST VALLEY CORRIDOR SPECIFIC PLAN (EVCSP).

WHEREVER NECESSARY, ROADWAYS ADJACENT TO THE PROJECT, SITE ACCESS POINTS AND SITE-ADJACENT INTERSECTIONS WILL BE CONSTRUCTED TO BE CONSISTENT WITH THE RECOMMENDED ROADWAY CLASSIFICATIONS AND RESPECTIVE CROSS-SECTIONS IN THE COUNTY OF SAN BERNARDINO GENERAL PLAN CIRCULATION ELEMENT AND THE EAST VALLEY CORRIDOR SPECIFIC PLAN (THE GOVERNING LAND USE DOCUMENT FOR THE AREA SOUTH OF THE PROJECT SITE WHICH INCLUDES LUGONIA AVENUE).

LEGEND:

= SECONDARY HIGHWAY (88-FOOT R.O.W.)

FULL = FULL ACCESS

Table 1-2

Summary of Transportation Impact Fee Program Improvements

#	Intersection Location	Jurisdiction	Recommended Improvements	EAPC (2014) Cumulative Improvement Needs		Horizon Year (2035) Cumulative Improvement Needs		Fair Share
				Program Improvements[1,2]	Non-Program Improvements	Program Improvements[1,2]	Non-Program Improvements	
1	California Street / Lugonia Avenue	Redlands	1.EBL, 1.WBL, Protected Left Turn Phasing on EB and WB Approaches				1.EBL, 1.WBL, Protected Left Turn Phasing on EB and WB Approaches	7.2%
2	Nevada Street / Lugonia Avenue	SBC / Redlands	Install a Traffic Signal; 1.NBL, 1.SBL, 1.EBL, 1.EBT, 1.WBL, 1.WBT			Install a Traffic Signal	1.NBL, 1.SBL, 1.EBL, 1.EBT, 1.WBL, 1.WBT	23.1%
4	Alabama Street / Lugonia Avenue	SBC / Redlands	1.NBL, 1.NBT, 1.NBR with Overlap Phasing, 1.SBL, 1.EBL, 1.WBL				1.NBL, 1.NBT, 1.NBR with Overlap Phasing, 1.SBL, 1.EBL, 1.WBL	6.2%
5	Alabama Street / I-10 Westbound Ramps	Caltrans	1.NBL, 1.NBT,1.SBT, 1.SBR		1.SBR		1.NBL, 1.NBT,1.SBT	2.6%
6	Alabama Street / I-10 Eastbound Ramps	Caltrans	1.NBT, 1.NBR, 1.SBL, 1.SBT, 1.EBR				1.NBT, 1.NBR, 1.SBL, 1.SBT, 1.EBR	2.9%
7	Alabama Street / Redlands Avenue	Redlands	1.NBL, 1.NBT, 1.SBL, 1.SBR, 1.EBL, 1.WBL		1.EBL		1.NBL, 1.NBT, 1.SBL, 1.SBR, 1.WBL	1.3%

[1] Intersection improvements shown as eligible are included for through lanes only. Eligibility is at discretion of City.

[2] Program improvements constructed by project may be eligible for fee credit. In lieu fee payment is at discretion of County.

Lugonia Avenue – Lugonia Avenue is an east-west oriented roadway located along the Project's southern boundary. Construct Lugonia Avenue at its ultimate half-section width as a secondary highway (88-foot right-of-way) between the Project's western and eastern boundaries, consistent with the circulation recommendations found in the *East Valley Corridor Specific Plan* (EVCSP).

Wherever necessary, roadways adjacent to the project, site access points and site-adjacent intersections will be constructed to be consistent with the recommended roadway classifications and respective cross-sections in the County of San Bernardino General Plan Circulation Element and the East Valley Corridor Specific Plan (the governing land use document for the area south of the project site which includes Lugonia Avenue).

1.6.2 SITE ACCESS IMPROVEMENTS

The recommended site access driveway improvements for the Project are described below. Exhibit 1-5 illustrates the on-site and site adjacent recommended roadway lane improvements. Construction of on-site and site adjacent improvements shall occur in conjunction with adjacent Project development activity or as needed for Project access purposes.

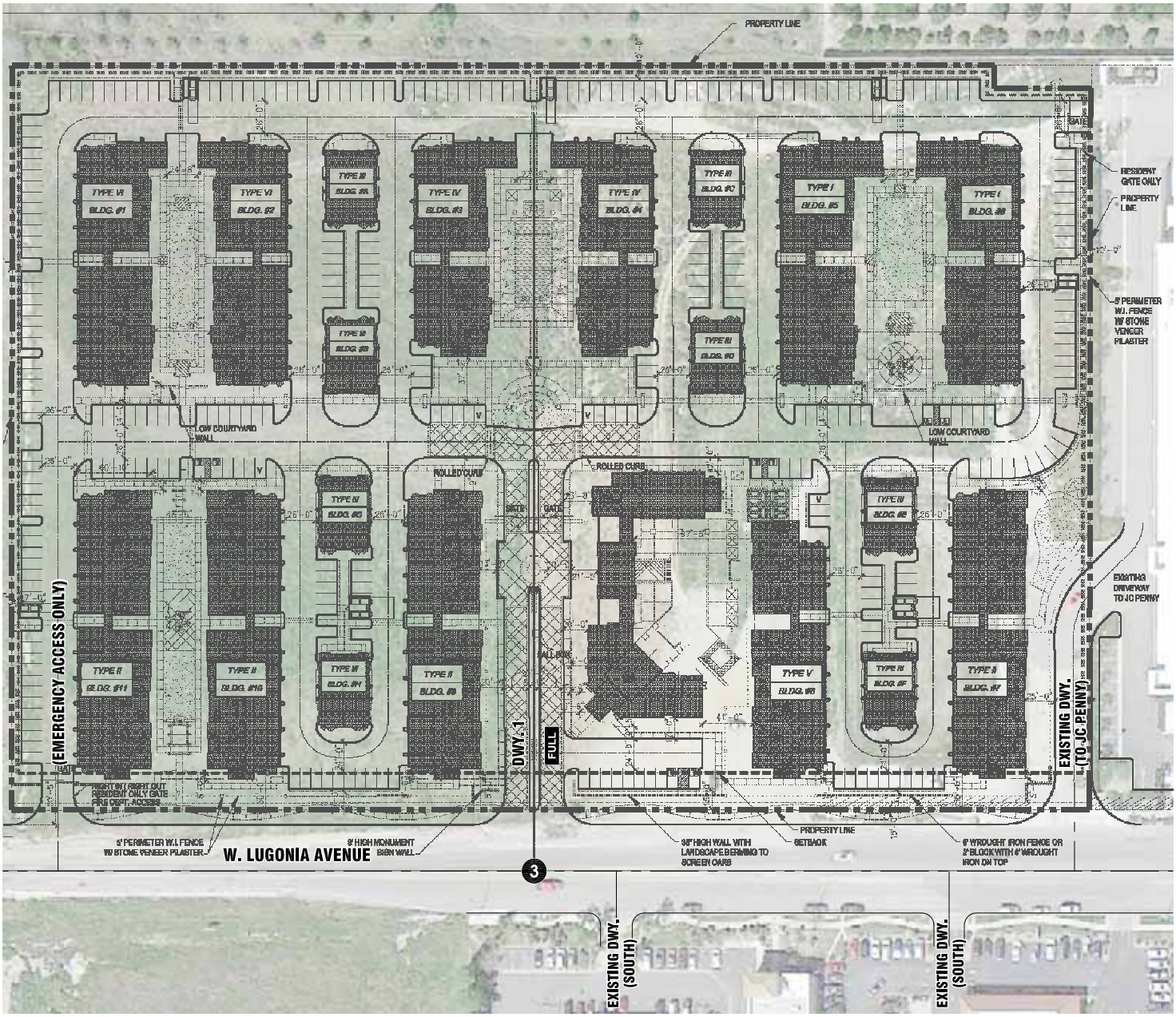
Driveway 1 / Lugonia Avenue – Install a stop control on the southbound approach and construct the intersection with the following:
Northbound Approach: N/A
Southbound Approach: One shared left-right turn lane.
Eastbound Approach: One left turn lane and one through lane.
Westbound Approach: One left turn lane, one through lane and one shared through-right turn lane.
It should be noted that the eastbound left turn lane would be accommodated within the existing painted two-way-left-turn (TWLT) median.

On-site traffic signing and striping should be implemented in conjunction with detailed construction plans for the Project site.

Sight distance at each project access point should be reviewed with respect to standard Caltrans and County of San Bernardino sight distance standards at the time of preparation of final grading, landscape and street improvement plans.

EXHIBIT 1-5

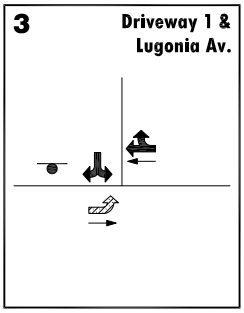
SITE ACCESS AND ON-SITE CIRCULATION RECOMMENDATIONS



SIGHT DISTANCE AT EACH PROJECT ACCESS POINT SHOULD BE REVIEWED WITH RESPECT TO STANDARD CALTRANS AND COUNTY OF SAN BERNARDINO SIGHT DISTANCE STANDARDS AT THE TIME OF PREPARATION OF FINAL GRADING, LANDSCAPE AND STREET IMPROVEMENT PLANS.

ON-SITE TRAFFIC SIGNING AND STRIPING SHOULD BE IMPLEMENTED IN CONJUNCTION WITH DETAILED CONSTRUCTION PLANS FOR THE PROJECT SITE.

N



LEGEND:

- = INSTALL STOP CONTROL
- = EXISTING LANE
- = LANE IMPROVEMENT
- = LANE IMPROVEMENT TO BE ACCOMMODATED WITHIN PAINTED MEDIAN
- FULL = FULL ACCESS

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2.0 METHODOLOGIES

This section documents the methodologies and assumptions used to perform this TIA.

2.1 LEVEL OF SERVICE

Traffic operations of roadway facilities are described using the term "Level of Service" (LOS). LOS is a qualitative description of traffic flow based on several factors such as speed, travel time, delay, and freedom to maneuver. Six levels are typically defined ranging from LOS “A”, representing completely free-flow conditions, to LOS “F”, representing breakdown in flow resulting in stop-and-go conditions. LOS “E” represents operations at or near capacity, an unstable level where vehicles are operating with the minimum spacing for maintaining uniform flow.

2.2 INTERSECTION CAPACITY ANALYSIS

The definitions of LOS for interrupted traffic flow (flow restrained by the existence of traffic signals and other traffic control devices) differ slightly depending on the type of traffic control. The LOS is typically dependent on the quality of traffic flow at the intersections along a roadway. The *Highway Capacity Manual* (HCM) (Transportation Research Board 2000) methodology expresses the LOS at an intersection in terms of delay time for the various intersection approaches. The HCM uses different procedures depending on the type of intersection control.

The intersection LOS analysis is based on the traffic volumes observed during the peak hour conditions using traffic count data collected in February 2012. The following peak hours were selected for analysis:

- Weekday AM Peak Hour (peak hour between 7:00 AM and 9:00 AM)
- Weekday PM Peak Hour (peak hour between 4:00 PM and 6:00 PM)

2.2.1 SIGNALIZED INTERSECTIONS

The County of San Bernardino requires signalized intersection operations analysis based on the methodology described in Chapter 16 of the HCM. Intersection LOS operations are based on an intersection’s average control delay. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. For signalized intersections LOS is directly related to the average control delay per vehicle and is correlated to a LOS designation as described in Table 2-1. All signalized study area intersections have utilized the Traffix software (Version 8.0 R1, 2008), with the exception of the I-10 Freeway ramps on Alabama Street.

Per the Caltrans *Guide for the Preparation of Traffic Impact Studies*, the traffic modeling and signal timing optimization software package Synchro (Version 7 Build 759) has been utilized to analyze

signalized intersections under Caltrans' jurisdiction, which include interchange to arterial ramps (i.e. I-10 Freeway ramps on Alabama Street). Synchro is a macroscopic traffic software program that is based on the signalized intersection capacity analysis as specified in the Chapter 16 of the HCM. Macroscopic level models represent traffic in terms of aggregate measures for each movement at the study intersections. Equations are used to determine measures of effectiveness such as delay and queue length. The level of service and capacity analysis performed by Synchro takes into consideration optimization and coordination of signalized intersections within a network.

Table 2-1 Signalized Intersection LOS Thresholds

Level of Service	Description	Average Control Delay (Seconds)
A	Operations with very low delay occurring with favorable progression and/or short cycle length.	0 to 10.00
B	Operations with low delay occurring with good progression and/or short cycle lengths.	10.01 to 20.00
C	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	20.01 to 35.00
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	35.01 to 55.00
E	Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	55.01 to 80.00
F	Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths	80.01 and up

Source: HCM 2000, Chapter 16

It is important to note that input parameters associated with the intersection capacity analyses are consistent with the parameters identified in the County of San Bernardino CMP traffic study guidelines. The peak hour traffic volumes have been adjusted using a peak hour factor (PHF) to reflect peak 15 minute volumes. Common practice for LOS analysis is to use a peak 15-mintue rate of flow. However, flow rates are typically expressed in vehicles per hour. The PHF is the relationship between the peak 15-minute flow rate and the full hourly volume (e.g. PHF = [Hourly Volume] / [4 x Peak 15-minute Flow Rate]). The use of a 15-minute PHF produces a more detailed analysis as compared to analyzing vehicles per hour. Existing PHFs have been used for all analysis scenarios, with the exception of EAPC (2014) and Horizon Year (2035) traffic conditions. A PHF of 0.95 or higher has been utilized for EAPC (2014) and Horizon Year (2035) traffic conditions only.

2.2.2 UNSIGNALIZED INTERSECTIONS

The County of San Bernardino requires the operations of unsignalized intersections be evaluated using the methodology described in Chapter 17 of the HCM. The LOS rating is based on the weighted average control delay expressed in seconds per vehicle (see Table 2-2).

At two-way or side-street stop-controlled intersections, LOS is calculated for each controlled movement and for the left turn movement from the major street, as well as for the intersection as a whole. For approaches composed of a single lane, the delay is computed as the average of all movements in that lane. For all-way stop controlled intersections, LOS is computed for the intersection as a whole. All unsignalized study area intersections have utilized the Traffix software (Version 8.0 R1, 2008). It is important to note that input parameters associated with the intersection capacity analyses are consistent with the parameters identified in the County of San Bernardino CMP traffic study guidelines.

Table 2-2 Unsignalized Intersection LOS Thresholds

Level of Service	Description	Average Control Per Vehicle (Seconds)
A	Little or no delays.	0 to 10.00
B	Short traffic delays.	10.01 to 15.00
C	Average traffic delays.	15.01 to 25.00
D	Long traffic delays.	25.01 to 35.00
E	Very long traffic delays.	35.01 to 50.00
F	Extreme traffic delays with intersection capacity exceeded.	> 50.00

Source: HCM 2000, Chapter 17

2.3 TRAFFIC SIGNAL WARRANT ANALYSIS METHODOLOGY

The term "signal warrants" refers to the list of established criteria used by Caltrans and other public agencies to quantitatively justify or ascertain the potential need for installation of a traffic signal at an otherwise unsignalized intersection. This TIA uses the signal warrant criteria presented in the latest edition of the 2009 Federal Highway Administration's (FHWA) *Manual on Uniform Traffic Control Devices (MUTCD)*, as amended by the *2012 California MUTCD (CA MUTCD)*, for all study area intersections.

The signal warrant criteria for Existing (2012) conditions are based upon several factors, including volume of vehicular and pedestrian traffic, frequency of accidents, and location of school areas. Both the FHWA's *MUTCD* and the *2012 CA MUTCD* indicate that the installation of a traffic signal should be considered if one or more of the signal warrants are met. Specifically, this TIA utilizes the Peak Hour Volume-based Warrant 3 as the appropriate representative traffic signal warrant analysis for Existing

(2012) traffic conditions. Warrant 3 criteria are basically identical for both the FHWA's *MUTCD* and the *2012 CA MUTCD*. Warrant 3 is appropriate to use for this TIA because it provides specialized warrant criteria for intersections with rural characteristics (e.g. located in communities with populations of less than 10,000 persons or with adjacent major streets operating at or above 40 miles per hour). For the purposes of this study, the speed limit was the basis for determining whether Urban or Rural warrants were used for a given intersection.

Future (new) unsignalized intersections have been assessed regarding the potential need for new traffic signals based on future average daily traffic (ADT) volumes, using the Caltrans planning level ADT-based signal warrant analysis worksheets.

Traffic signal warrant analyses were performed for all of the study area intersections, with the exception of the following locations which are currently signalized or have restricted access:

ID	Intersection Location	Location
1	California Street / Lugonia Avenue	Redlands
3	*Driveway 1 / Lugonia Avenue – Future Intersection*	*SBC/Redlands*
4	Alabama Street / Lugonia Avenue	SBC/Redlands
5	Alabama Street / I-10 Westbound Ramps	Caltrans
6	Alabama Street / I-10 Eastbound Ramps	Caltrans
7	Alabama Street / Redlands Boulevard	Redlands

The Existing (2012) conditions traffic signal warrant analysis is presented in the subsequent section, Section 3 *Area Conditions* of this report. The traffic signal warrant analysis for future conditions is presented in Section 5 *Opening Year (2014) Traffic Analysis*, Section 6 *Opening Year Cumulative (2014) Traffic Analysis* and Section 7 *Horizon Year (2035) Traffic Analysis* of this report.

It is important to note that a signal warrant defines the minimum condition under which the installation of a traffic signal might be warranted. Meeting this threshold condition does not require that a traffic control signal be installed at a particular location, but rather, that other traffic factors and conditions be evaluated in order to determine whether the signal is truly justified. It should also be noted that signal warrants do not necessarily correlate with level of service. An intersection may satisfy a signal warrant condition and operate at or above LOS "C" or operate below LOS "C" and not meet a signal warrant.

2.4 LOS CRITERIA

The definition of an intersection deficiency in the County of San Bernardino is based on the County of San Bernardino General Plan Circulation Element. The County of San Bernardino General Plan states that target LOS "D" be maintained along County roads (including intersections) located within the Valley region, wherever possible. Therefore, any intersection within the unincorporated County of San

Bernardino that is operating at LOS "E" or LOS "F" will be considered deficient for the purposes of this analysis.

The City of Redlands has established specific performance criteria for intersection operations. These performance criteria include standards related to determining the significance of project impacts on the roadway system. The City of Redlands has established LOS "C" as the minimum level of service for its intersections. Therefore, any intersection operating at LOS "D" or worse will be considered deficient for the purposes of this analysis. Additionally, General Plan Policy 5.20c from the Redlands General Plan states that: where the current level of service at a location within the City of Redlands is below the Level of Service (LOS) "C" standard, no development project shall be approved that cannot be mitigated so that it does not reduce the existing level of service at that location (i.e. intersections in Redlands that are deficient to start out with are acceptable as long as they do not further degrade LOS).

The definition of an intersection deficiency has been obtained from the Caltrans *Guide for the Preparation of Traffic Impact Studies*. As stated in the Caltrans *Guide for the Preparation of Traffic Impact Studies* (December 2002), Caltrans requires Level of Service (LOS) "C" approaching "D". However, it should be noted that Caltrans acknowledges that maintaining these levels of service thresholds may not always be feasible and recommends the lead agency consult with Caltrans to determine the appropriate target level of service. If an existing facility is operating at less than the appropriate target LOS, the existing LOS should be maintained.

2.5 THRESHOLDS OF SIGNIFICANCE

This section outlines the significance criteria used in this analysis relating to roadway system impacts. The Criteria are based on California Environmental Quality Act (CEQA).

According to CEQA guidelines, a project is considered to cause a significant impact to the transportation system if it:

- Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths and mass transit.
- Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roadway or highways.
- Conflicts with adopted policies or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

Thresholds of significance for each respective jurisdiction have been applied to the study area intersections based on the jurisdiction in which the intersection lies within. For the intersections which are shared between the County of San Bernardino and the City of Redlands, the County's thresholds of significance have been utilized. Based on the County of San Bernardino *Road Planning and Design Standards*, a "significant" traffic impact occurs when the addition of project traffic as defined by the EAP (2014) scenario causes an intersection that operates at an acceptable LOS under Existing (2012) traffic conditions (i.e., LOS "D" or better) to fall to an unacceptable LOS (i.e., LOS "E" or "F"). Therefore, EAP (2014) traffic conditions are compared to Existing (2012) traffic conditions to identify significant project-related traffic impacts according to the following criteria:

- The addition of Project traffic to an intersection exceeds the thresholds provided in Table 2-3 below.

Table 2-3 County of San Bernardino Intersection Thresholds of Significance

Existing Level of Service	Total Project Peak Hour Trip Generation
A	500
B	250
C	150
D	50
E	30
F	15

Source: County of San Bernardino Road Planning and Design Standards, Article X, Table 10-1.

- The Project's access to a major street requires an access that would create an unsafe situation or a new traffic signal, and/or major revisions to an existing traffic signal.
- The Project adds traffic to a street with design features (e.g., inadequate geometric narrow width, road side ditches, sharp curves, poor sight distance, inadequate pavement structure) that may cause potential safety problems with the addition of Project traffic.

For those intersections wholly within the City of Redlands, a "significant" traffic impact under CEQA occurs when the addition of project traffic as defined by the EAP (2014) scenario causes an intersection that operates at an acceptable LOS under EA (2014) traffic conditions (i.e., LOS "C" or better) to fall to an unacceptable LOS (i.e., LOS "D", LOS "E" or LOS "F"). However, consistent with General Plan Policy 5.20c from the Redlands General Plan, the Existing (2012) LOS has been utilized to determine a significant project-related traffic impact if the Existing (2012) LOS is less than LOS "C". EAP (2014) traffic conditions are compared to EA (2014) traffic conditions to identify significant project-related traffic impacts according to the following criteria:

- A significant project-related impact occurs at a study intersection if the addition of project-generated trips reduces the peak hour level of service of the study intersection to change from acceptable operation (LOS "A", LOS "B" or LOS "C") to deficient operation (LOS "D", LOS "E" or LOS "F");
- A significant project-related impact occurs at the study intersection if the project-generated trips worsen the pre-project level of service grade at a deficiently operating (LOS LOS "D", LOS "E", LOS "F") intersection; or
- A significant project-related impact occurs at a study intersection if the addition of project-generated trips changes the delay by the values shown in Table 2-4 below.

Table 2-4 City of Redlands Intersection Thresholds of Significance

Pre-Project LOS	Project-Related Delay Increase	Mitigation Measure
D	5 seconds or more	Achieve pre-project delay or better
E	4 seconds or more	Achieve pre-project delay or better
F	3 seconds or more	Achieve pre-project delay or better

Caltrans has not defined specific criteria to identify project-related impacts in their Caltrans traffic study guidelines.

For the purposes of this analysis, a significant cumulative impact is identified when a facility is projected to operate below the level of service standards due to cumulative future traffic AND a project-related traffic increase of 50 or more peak hour trips. Cumulative traffic impacts are created as a result of a combination of the proposed project together with other future developments contributing to the overall traffic impacts requiring additional improvements to maintain acceptable level of service operations with or without the project.

A project's contribution to a cumulatively significant traffic impact can be reduced to less-than-significant if the Project is required to implement or fund its fair share of improvements designed to alleviate the potential cumulative impact. If full funding of future cumulative improvements is not reasonably assured, a temporary unmitigated cumulative impact may occur until the needed improvement is fully funded and constructed.

2.6 PROJECT FAIR SHARE CALCULATION METHODOLOGY

In cases where this TIA identifies that the proposed Project would have a significant cumulative impact to a roadway facility, and the recommended mitigation measure is a fair share monetary contribution, the following methodology was applied to determine the fair share contribution. A project's fair share contribution at an off-site study area intersection is determined based on the following equation, which

is the ratio of project traffic to new traffic, and new traffic is total future traffic subtracts existing traffic:

Project Fair Share % = Project Traffic / (Total Traffic – Existing Traffic)

The project fair share contribution calculations are presented in Section 9 *Local and Regional Funding Mechanisms* of this TIA.

3.0 AREA CONDITIONS

This section provides a summary of the existing circulation network, the County of San Bernardino General Plan Circulation Network, and a review of existing peak hour intersection operations analysis and traffic signal warrants.

The AM peak hour traffic volumes were determined by counting traffic volumes in the two hour period between 7:00 and 9:00 AM on February 9, 2012. Similarly, the PM peak hour traffic volumes were identified by counting traffic volumes in the two hour period from 4:00 to 6:00 PM on February 9, 2012. The February 9, 2012 (Thursday) count data is representative of typical weekday peak hour traffic conditions in the study area. There were no observations made in the field that would indicate atypical traffic conditions on this date, such as construction activity or detour routes.

3.1 EXISTING CIRCULATION NETWORK

Pursuant to the Traffic Study Scoping Agreement (Appendix "1.1") and in consultation with both County of San Bernardino and City of Redlands staff, the study area includes a total of seven (7) existing and future intersections as shown on Exhibit 1-2. Of these seven (7) intersections, the existing study area circulation network includes six (6) intersections analysis locations shown on Table 1-1. As such, a total of six (6) existing study area intersections were analyzed for Existing (2012) traffic conditions.

Exhibit 3-1 illustrates the study area intersections located near the proposed Project and identifies the number of through traffic lanes for existing roadways and intersection traffic controls. The existing conditions of the study area roadways are described below and future General Plan roadway cross-sections are shown subsequently for the study area:

I-10 Freeway currently provides four to six mixed flow lanes in each direction on either side of the Alabama Street freeway-arterial interchange.

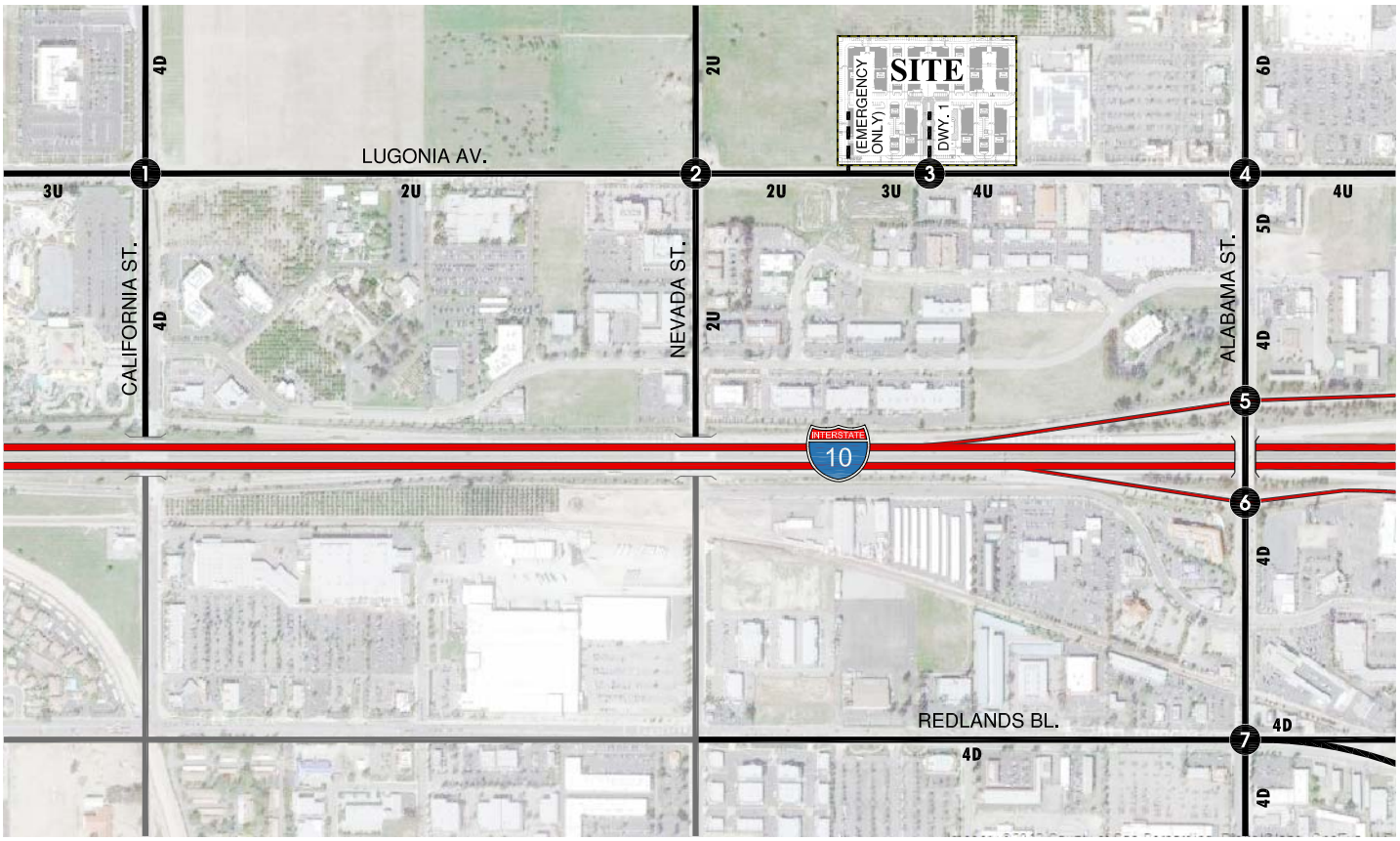
California Street is a four-lane divided roadway north of Lugonia Avenue and widens to a six-lane divided roadway north of the I-10 Freeway. There are currently no curb and gutter improvements on the east side of the street north of Lugonia Avenue. There are curb and gutter improvements in place from Lugonia Avenue to the south.

Nevada Street is a two-lane undivided roadway north and south of Lugonia Avenue; however, the pavement width is wider to the south of Lugonia Avenue. There are curb and gutter improvements in place on the west side of the street south of Lugonia Avenue.

Alabama Street is a six-lane divided roadway north of Lugonia Avenue, narrows to a five-lane divided roadway between Lugonia Avenue and the I-10 Freeway, then narrows to a four-lane divided roadway

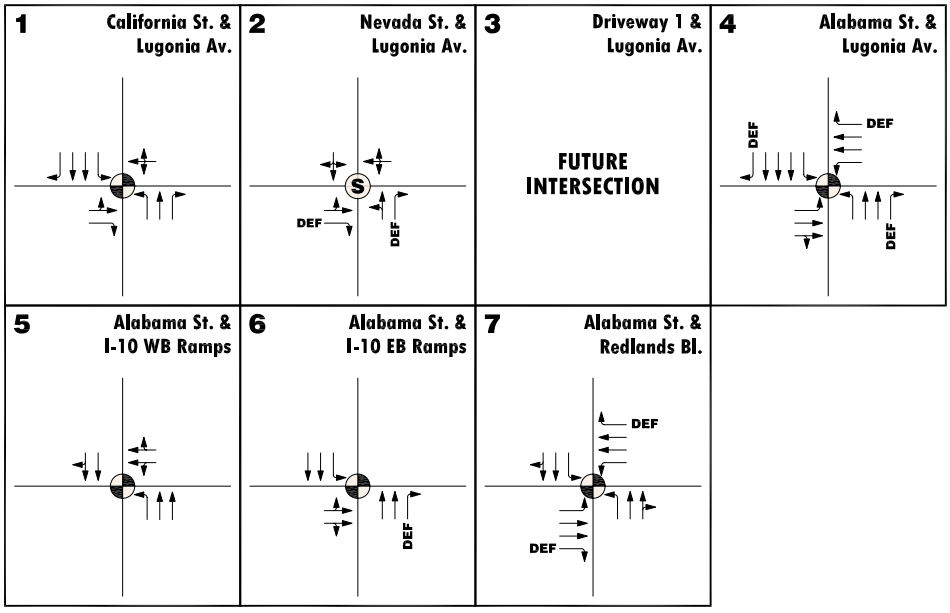
EXHIBIT 3-1

EXISTING NUMBER OF THROUGH LANES AND INTERSECTION CONTROLS



LEGEND:

- = TRAFFIC SIGNAL
- S = ALL WAY STOP
- = STOP SIGN
- 4 = NUMBER OF LANES
- D = DIVIDED
- U = UNDIVIDED
- = FREE RIGHT TURN
- DEF = RIGHT TURN OVERLAP
- RTO = DEFACTO RIGHT TURN LANE



N

south of the I-10 Freeway. There are curb and gutter improvements in place on both sides of the street from Lugonia Avenue to south of Redlands Boulevard.

Lugonia Avenue is a three-lane divided roadway west of California Street, narrows to a two-lane undivided roadway between California Street to just east of Nevada Street and widens to a four-lane divided roadway from west of Alabama Street to the east. Lugonia Avenue has curb and gutter improvements in place on both sides of the street east of California Street, portions of the roadway on the south side between California Street and Nevada Street and portions of the roadway on the north and south sides between Nevada Street to the east.

Redlands Boulevard is a four-lane divided roadway with curb and gutter improvements in place on both sides of the street to the west and east of Alabama Street.

3.2 COUNTY OF SAN BERNARDINO GENERAL PLAN CIRCULATION ELEMENT

As previously noted, the Project site is located within the area referred to as the "Donut Hole" in unincorporated County of San Bernardino. Exhibit 3-2 shows the County of San Bernardino General Plan Circulation Element for the Valley region, and Exhibit 3-3 illustrates the County of San Bernardino General Plan roadway cross-sections.

3.3 CITY OF REDLANDS GENERAL PLAN CIRCULATION ELEMENT

The "Donut Hole" region (unincorporated County of San Bernardino) is surrounded by the City of Redlands. As such, the currently adopted City of Redlands General Plan Circulation Element has been provided on Exhibit 3-4 and the City of Redlands General Plan roadway cross-sections are shown on Exhibit 3-5.

3.4 EAST VALLEY SPECIFIC PLAN CIRCULATION ELEMENT

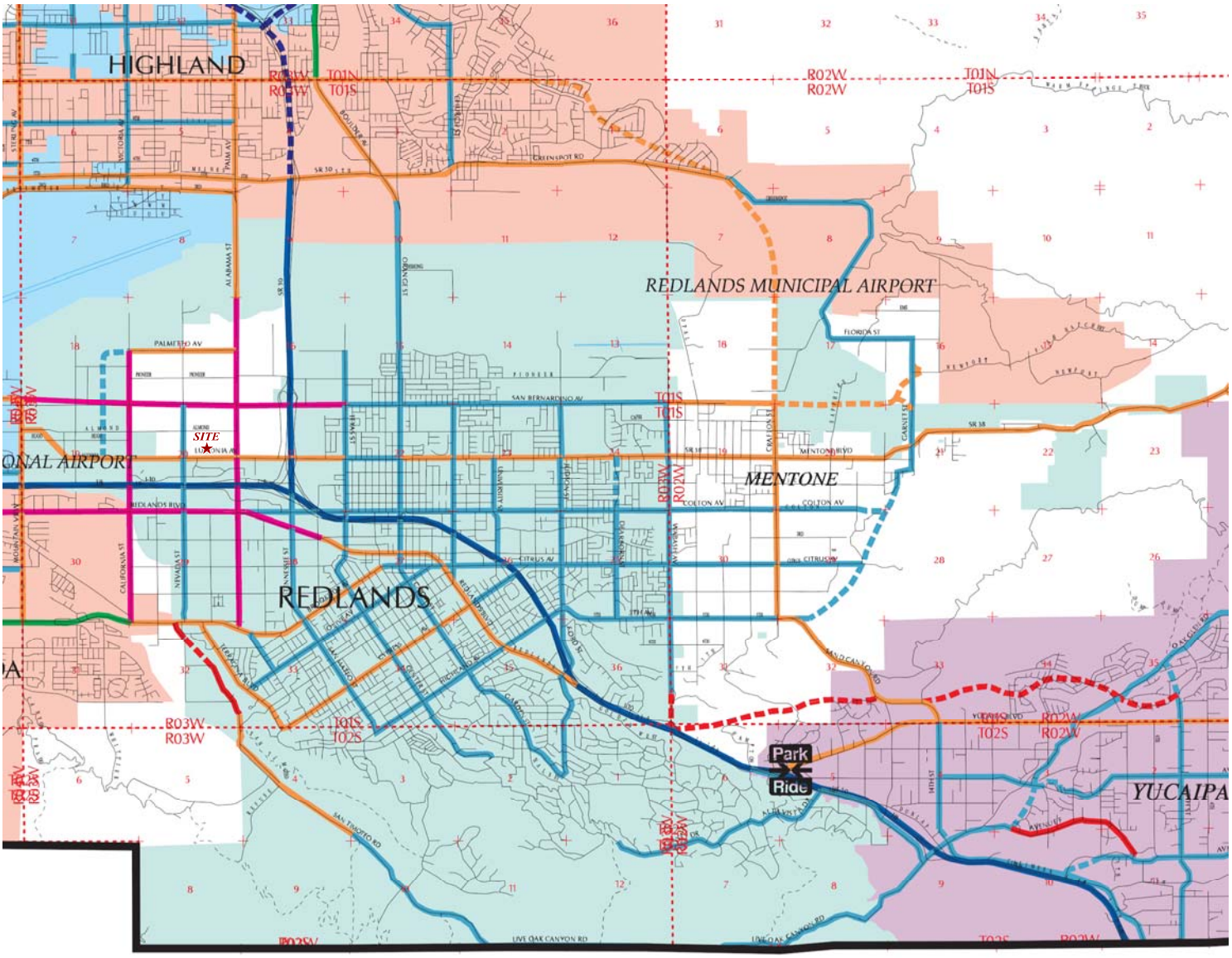
The proposed Project lies within the boundaries of the East Valley Corridor Specific Plan. The City of Redlands *East Valley Corridor Specific Plan*, approved on January 3, 1989 and as amended, Circulation Element and Roadway Cross-Sections are shown on Exhibits 3-6 and 3-7.

3.5 TRANSIT SERVICE

The project area is currently served by Omnitrans, a public transit agency serving the San Bernardino Valley, with bus service along Alabama Street and Lugonia Avenue, east of Alabama Street, via Route 15. The existing bus route provided in the area by Omnitrans is shown on Exhibit 3-8.

EXHIBIT 3-2

COUNTY OF SAN BERNARDINO
GENERAL PLAN CIRCULATION ELEMENT (VALLEY REGION)



Circulation and Transportation

EXISTING	PROPOSED	
		Freeway
		Major Divided Highway
		Major Arterial Highway
		Major Highway
		Secondary Highway
		Controlled/Limited Access Collector
		Mountain Major Highway
		Mountain Secondary Highway
		State Highways (Special Standards or Conditions)

Railroads

Park Ride — Ridesharing Facilities

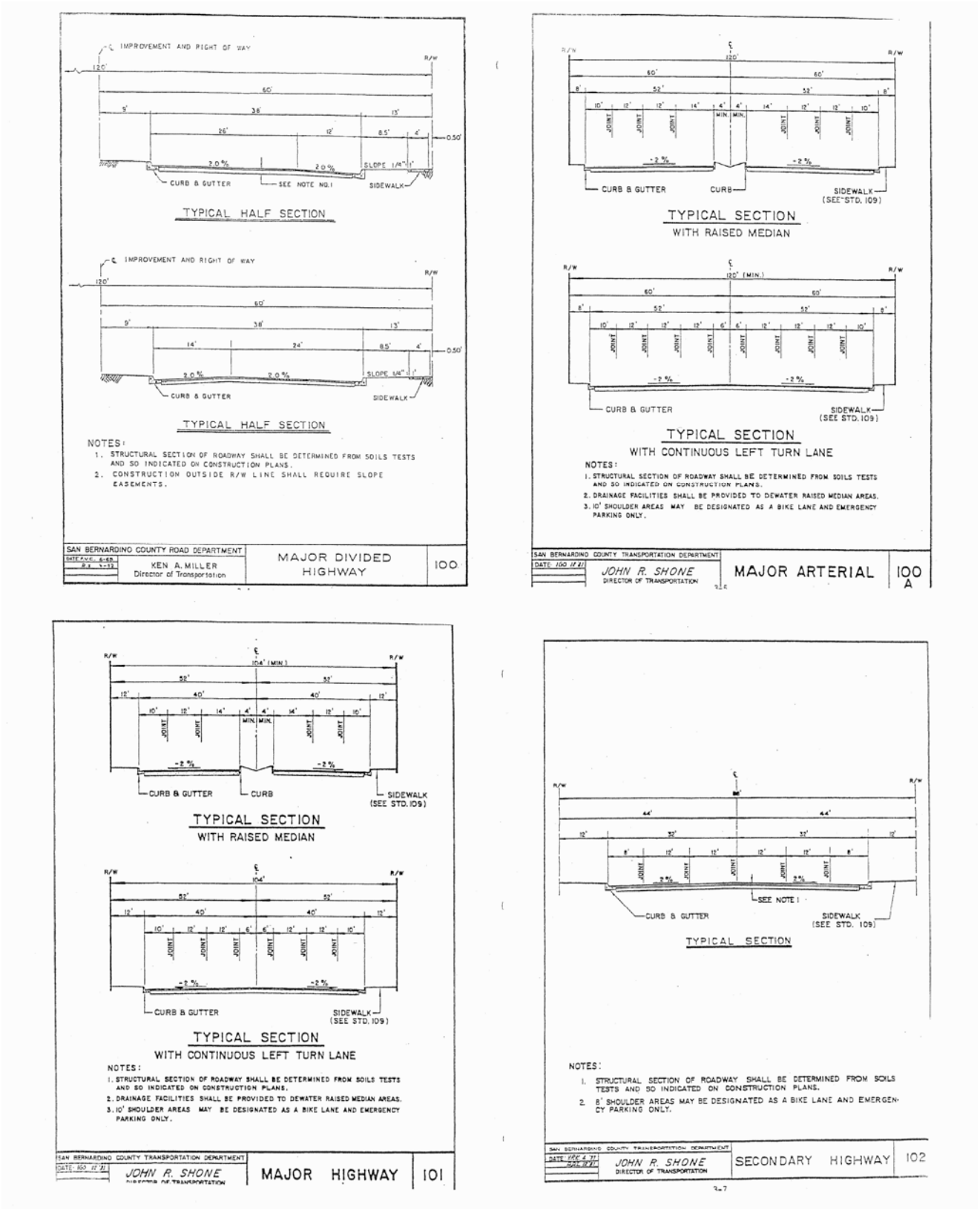
AIRPORT RUNWAYS

Runway Location

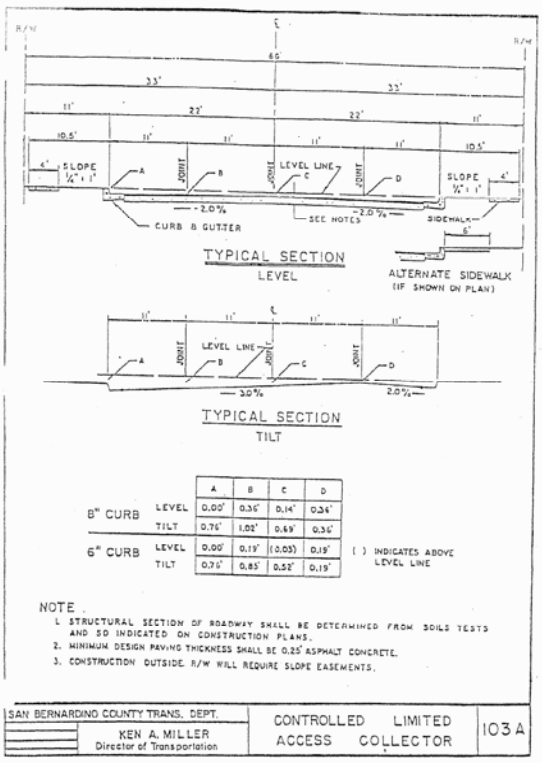
N

SOURCE: SAN BERNARDINO COUNTY
(This map was plotted March 7, 2007)

COUNTY OF SAN BERNARDINO
GENERAL PLAN ROADWAY CROSS-SECTIONS

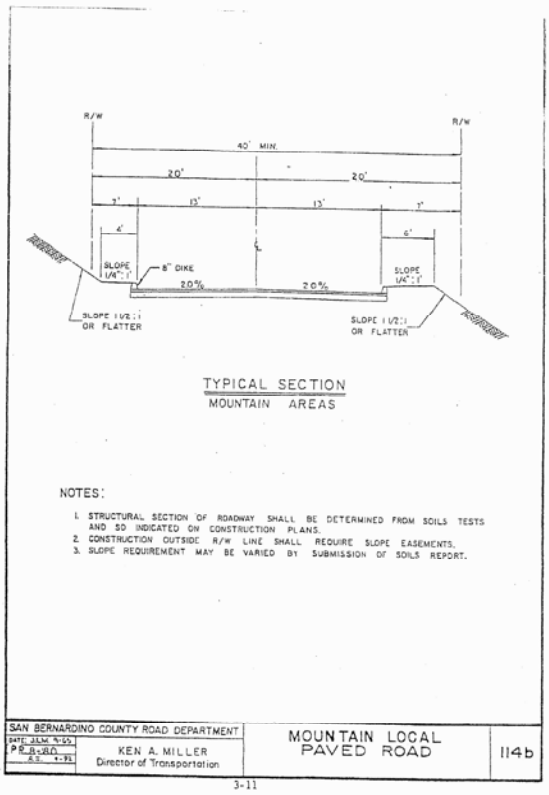


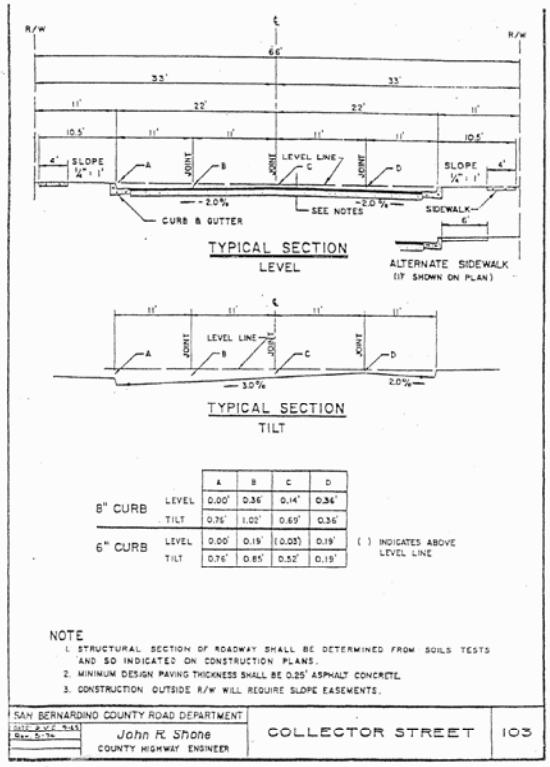
COUNTY OF SAN BERNARDINO
GENERAL PLAN ROADWAY CROSS-SECTIONS



		A	B	C	D
8" CURB	LEVEL	0.00'	0.36'	0.14'	0.36'
	TILT	0.76'	1.02'	0.69'	0.36'
6" CURB	LEVEL	0.00'	0.19'	(0.03)	0.19'
	TILT	0.76'	0.85'	0.52'	0.19'

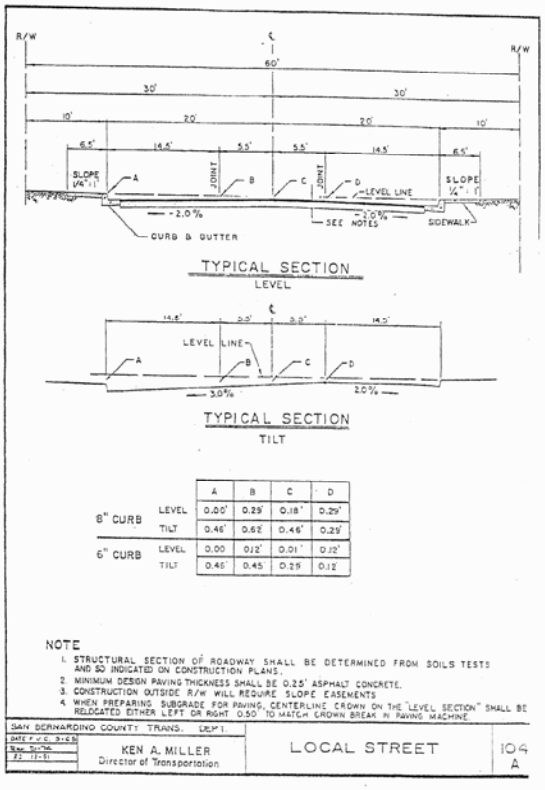
( ) INDICATES ABOVE LEVEL LINE





		A	B	C	D
8" CURB	LEVEL	0.00'	0.36'	0.14'	0.36'
	TILT	0.76'	1.02'	0.69'	0.36'
6" CURB	LEVEL	0.00'	0.19'	(0.03)	0.19'
	TILT	0.76'	0.85'	0.52'	0.19'

( ) INDICATES ABOVE LEVEL LINE



		A	B	C	D
8" CURB	LEVEL	0.00'	0.25'	0.18'	0.29'
	TILT	0.46'	0.62'	0.46'	0.29'
6" CURB	LEVEL	0.00	0.12'	0.01'	0.12'
	TILT	0.46'	0.45'	0.29	0.12

EXHIBIT 3-4

CITY OF REDLANDS
GENERAL PLAN CIRCULATION ELEMENT

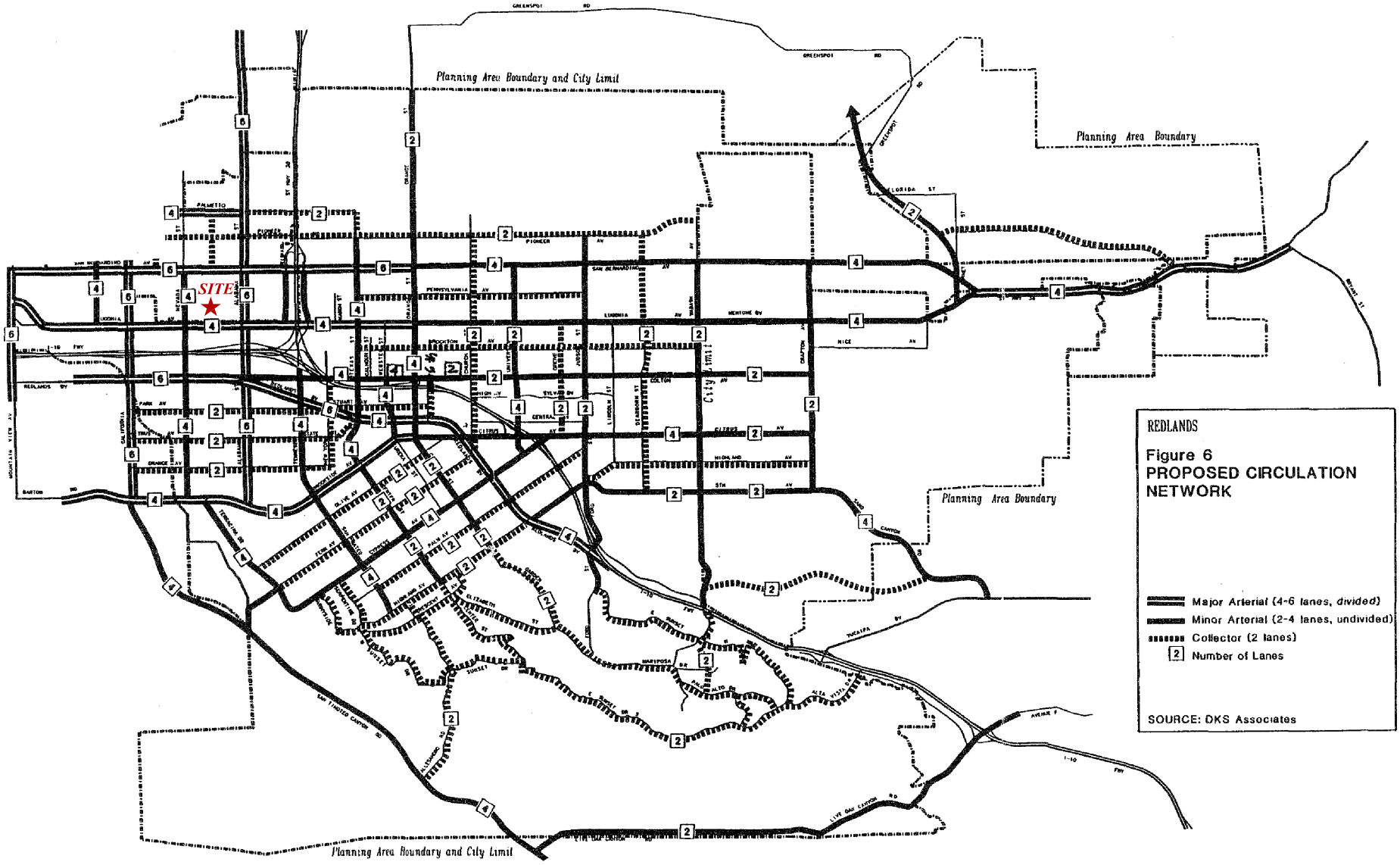
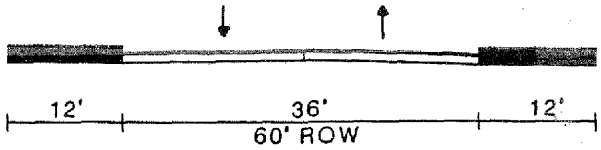


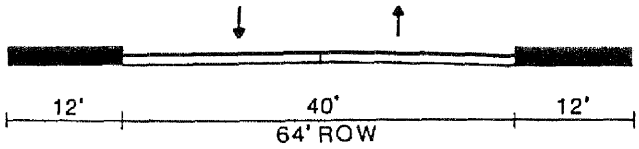
EXHIBIT 3-5

CITY OF REDLANDS
GENERAL PLAN ROADWAY CROSS-SECTIONS

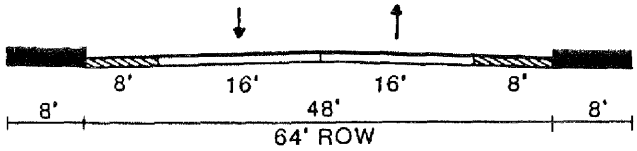
LOCAL



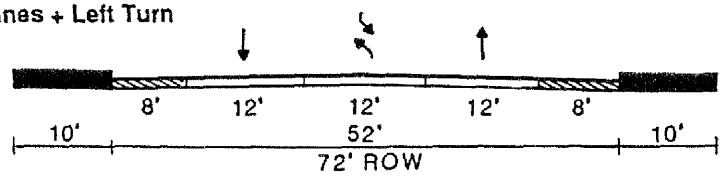
COLLECTOR - Residential



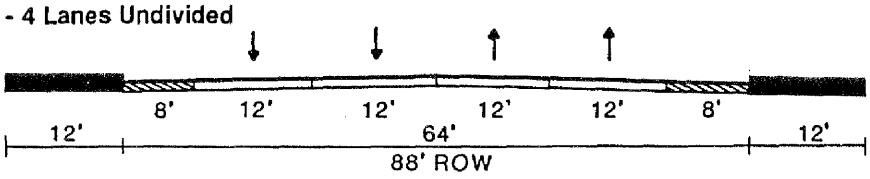
COLLECTOR - Industrial



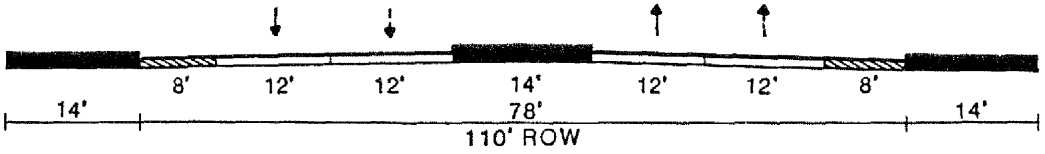
MINOR ARTERIAL - 2 Lanes + Left Turn



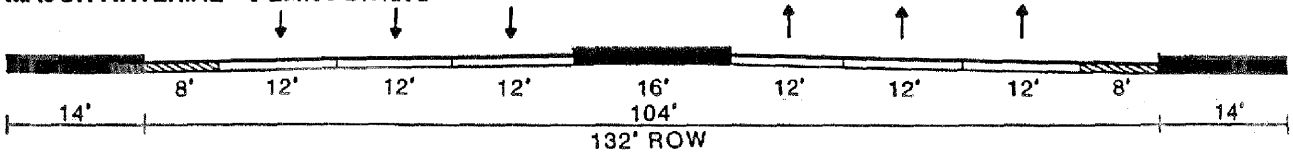
MINOR ARTERIAL - 4 Lanes Undivided



MAJOR ARTERIAL - 4 Lanes Divided



MAJOR ARTERIAL - 6 Lanes Divided



SOURCE: CITY OF REDLANDS

EXHIBIT 3-6

EAST VALLEY CORRIDOR SPECIFIC PLAN CIRCULATION ELEMENT

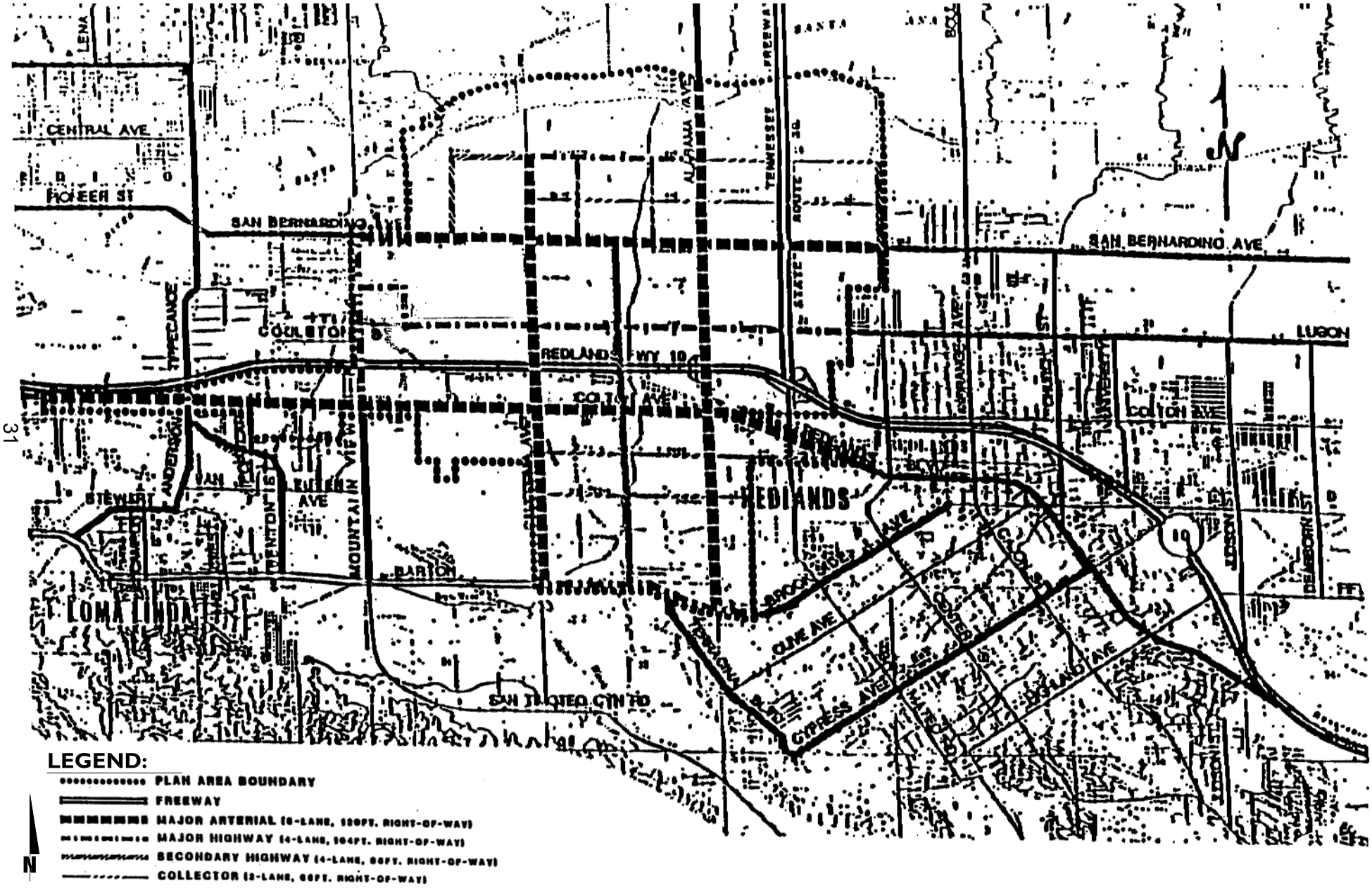
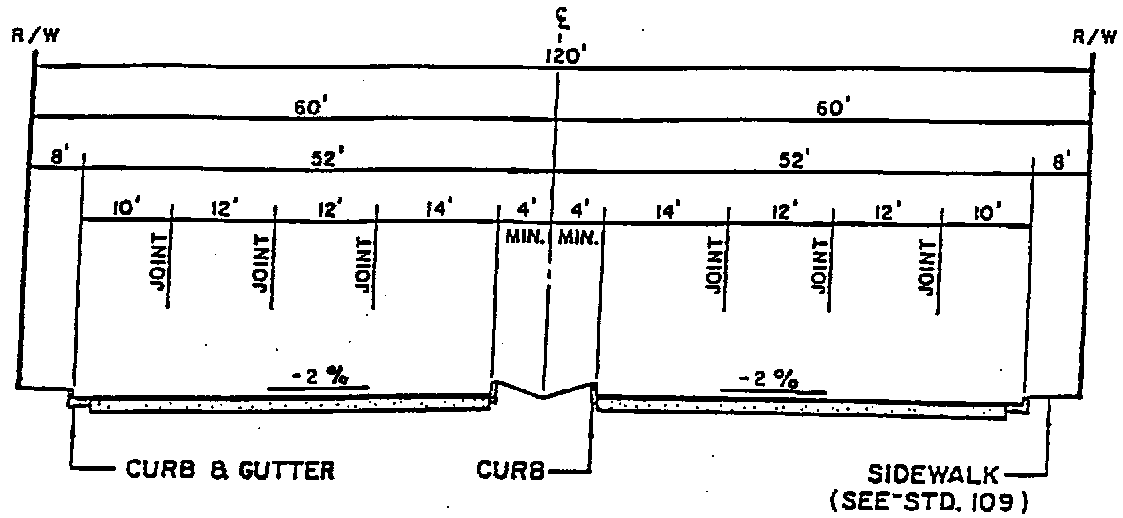


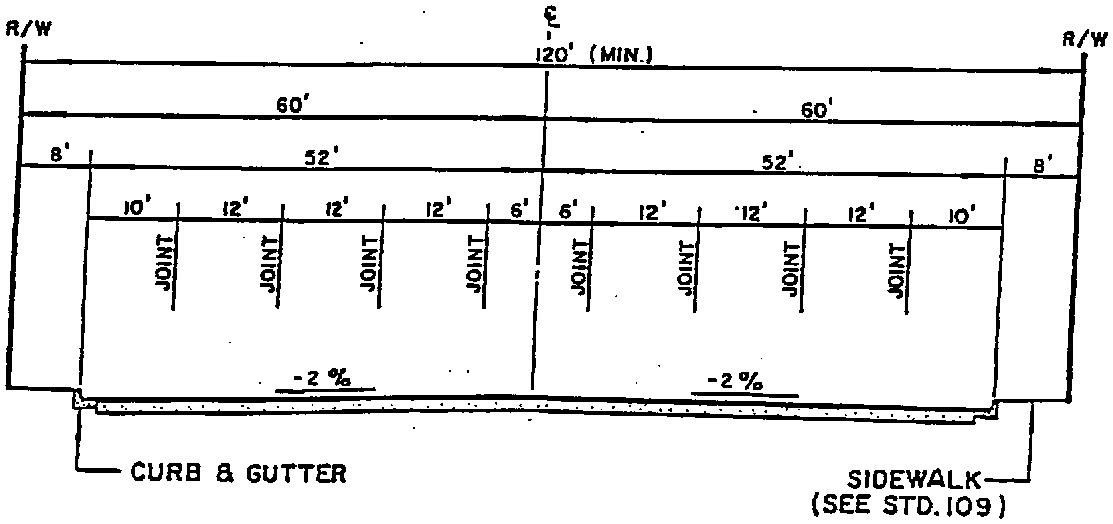
EXHIBIT 3-7

EAST VALLEY CORRIDOR SPECIFIC PLAN ROADWAY CROSS-SECTIONS (PAGE 1 OF 5)



TYPICAL SECTION

WITH RAISED MEDIAN



TYPICAL SECTION

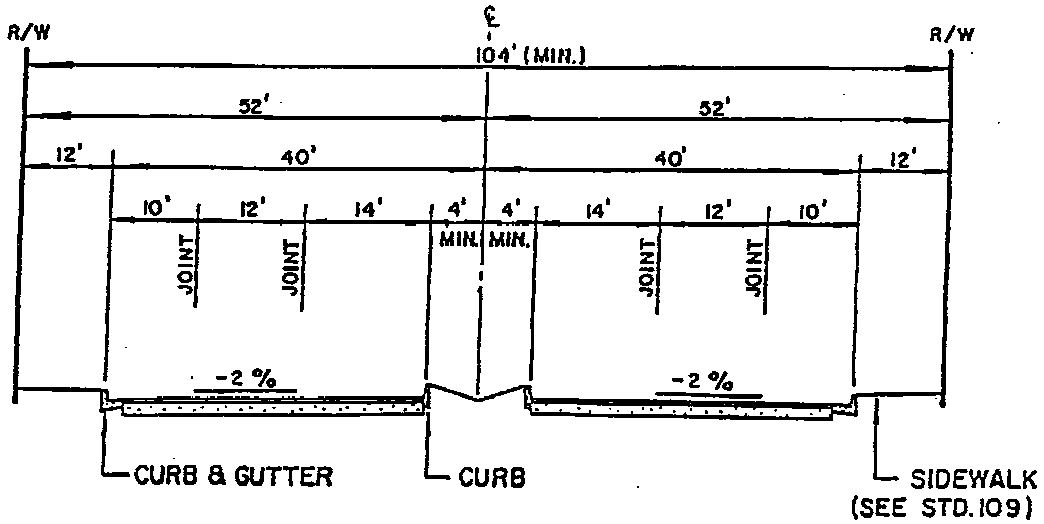
WITH CONTINUOUS LEFT TURN LANE

NOTES:

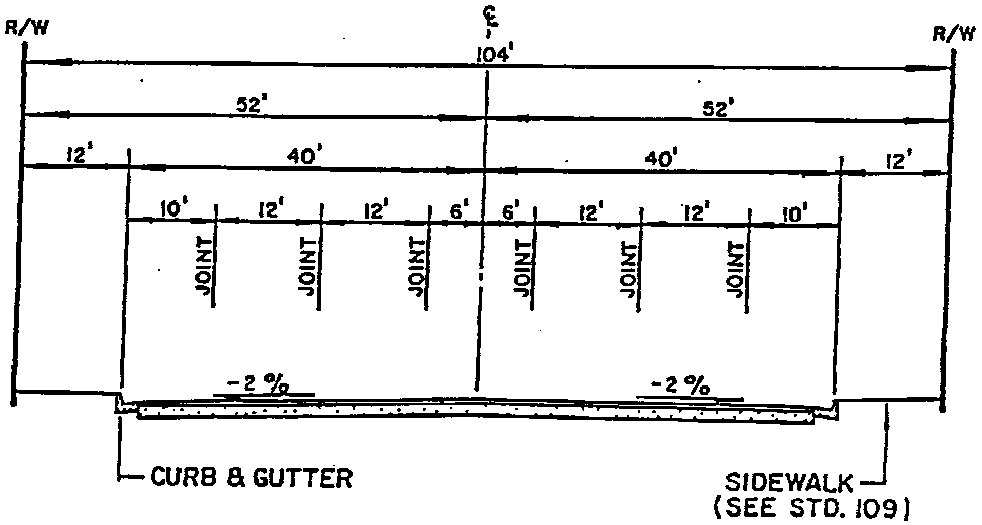
1. STRUCTURAL SECTION OF ROADWAY SHALL BE DETERMINED FROM SOILS TESTS AND SO INDICATED ON CONSTRUCTION PLANS.
2. DRAINAGE FACILITIES SHALL BE PROVIDED TO DEWATER RAISED MEDIAN AREAS.
3. 10' SHOULDER AREAS MAY BE DESIGNATED AS A BIKE LANE AND EMERGENCY PARKING ONLY.

MAJOR ARTERIAL

EAST VALLEY CORRIDOR SPECIFIC PLAN ROADWAY CROSS-SECTIONS (PAGE 2 OF 5)



TYPICAL SECTION
WITH RAISED MEDIAN



TYPICAL SECTION
WITH CONTINUOUS LEFT TURN LANE

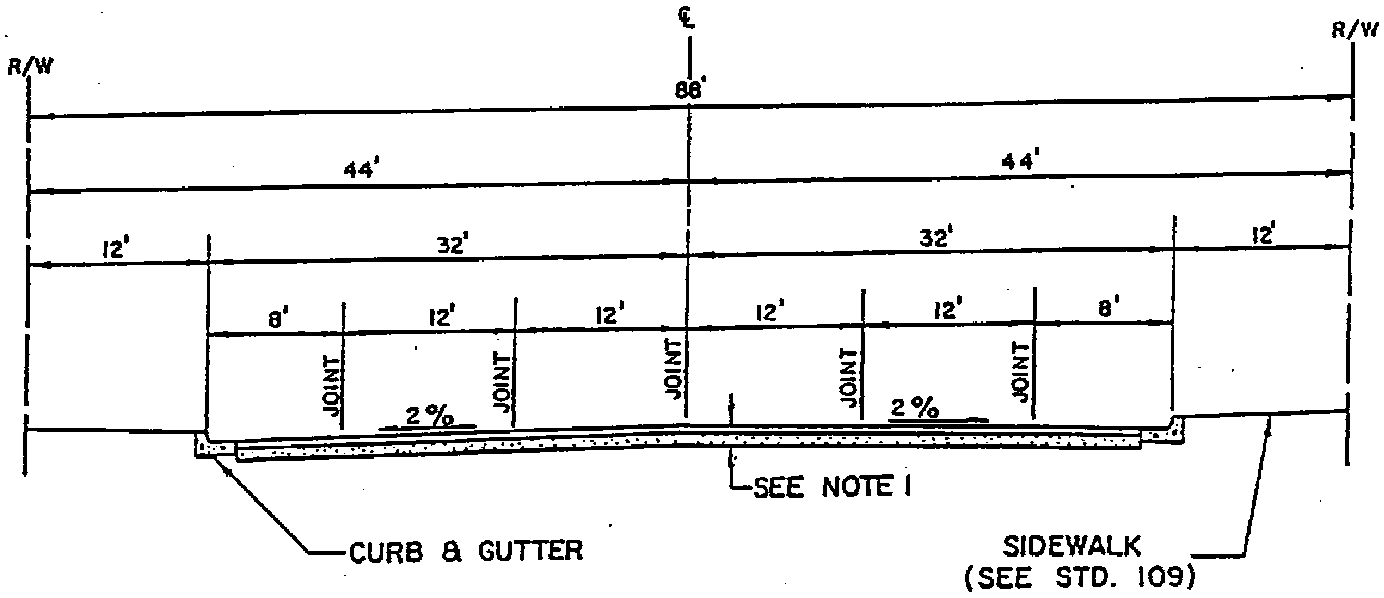
NOTES:

1. STRUCTURAL SECTION OF ROADWAY SHALL BE DETERMINED FROM SOILS TESTS AND SO INDICATED ON CONSTRUCTION PLANS.
2. DRAINAGE FACILITIES SHALL BE PROVIDED TO DEWATER RAISED MEDIAN AREAS.
3. 10' SHOULDER AREAS MAY BE DESIGNATED AS A BIKE LANE AND EMERGENCY PARKING ONLY.

MAJOR HIGHWAY

EXHIBIT 3-7

EAST VALLEY CORRIDOR SPECIFIC PLAN ROADWAY CROSS-SECTIONS (PAGE 3 OF 5)



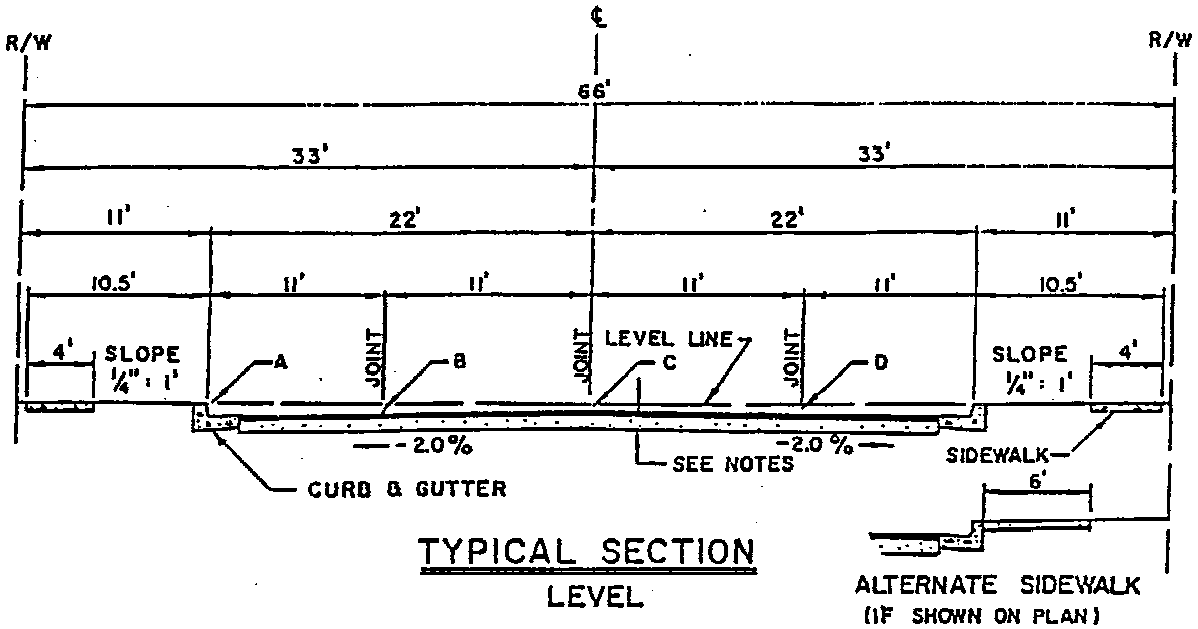
TYPICAL SECTION

NOTES:

1. STRUCTURAL SECTION OF ROADWAY SHALL BE DETERMINED FROM SOILS TESTS AND SO INDICATED ON CONSTRUCTION PLANS.
2. 8' SHOULDER AREAS MAY BE DESIGNATED AS A BIKE LANE AND EMERGENCY PARKING ONLY.

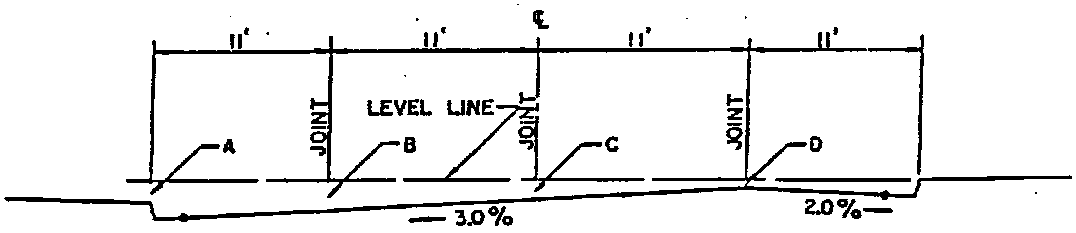
SECONDARY HIGHWAY

EAST VALLEY CORRIDOR SPECIFIC PLAN ROADWAY CROSS-SECTIONS (PAGE 4 OF 5)



TYPICAL SECTION
LEVEL

ALTERNATE SIDEWALK
(IF SHOWN ON PLAN)



TYPICAL SECTION
TILT

		A	B	C	D
8" CURB	LEVEL	0.00'	0.36'	0.14'	0.36'
	TILT	0.76'	1.02'	0.69'	0.36'
6" CURB	LEVEL	0.00'	0.19'	(0.03)	0.19'
	TILT	0.76'	0.85'	0.52'	0.19'

( ) INDICATES ABOVE LEVEL LINE

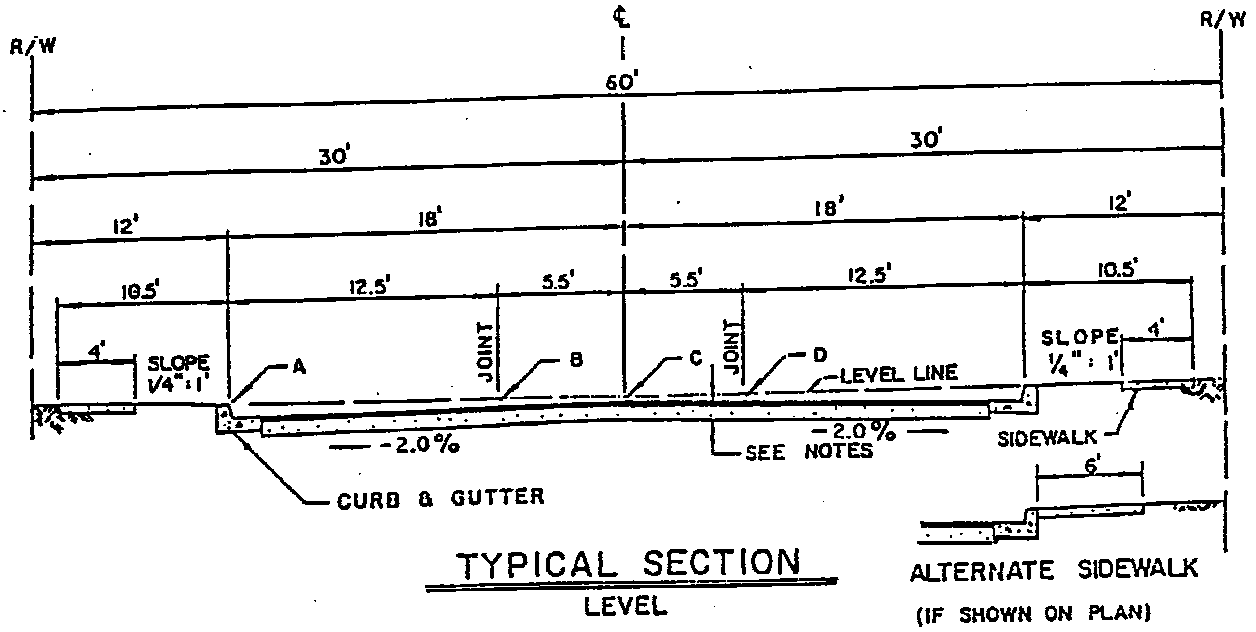
NOTE

1. STRUCTURAL SECTION OF ROADWAY SHALL BE DETERMINED FROM SOILS TESTS AND SO INDICATED ON CONSTRUCTION PLANS.
2. MINIMUM DESIGN PAVING THICKNESS SHALL BE 0.20' ASPHALT CONCRETE.
3. CONSTRUCTION OUTSIDE R/W WILL REQUIRE SLOPE EASEMENTS.

COLLECTOR STREET

EXHIBIT 3-7

EAST VALLEY CORRIDOR SPECIFIC PLAN ROADWAY CROSS-SECTIONS (PAGE 5 OF 5)

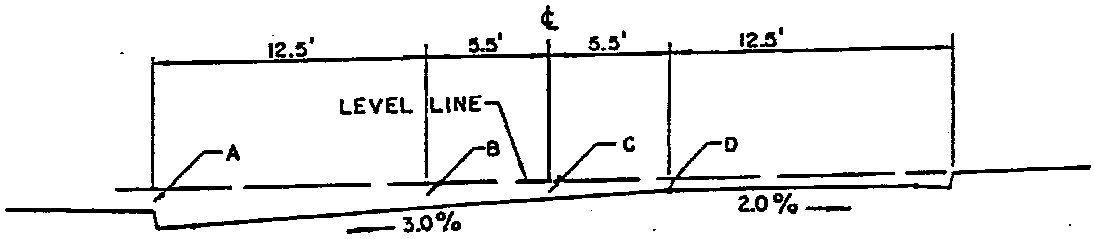


TYPICAL SECTION

LEVEL

ALTERNATE SIDEWALK

(IF SHOWN ON PLAN)



TYPICAL SECTION

TILT

		A	B	C	D
8" CURB	LEVEL	0.00'	0.33'	0.22'	0.33'
	TILT	0.44'	0.66'	0.50'	0.33'
6" CURB	LEVEL	0.00	0.16'	0.05'	0.16'
	TILT	0.44'	0.49'	0.33'	0.16'

NOTE

1. STRUCTURAL SECTION OF ROADWAY SHALL BE DETERMINED FROM SOILS TESTS AND SO INDICATED ON CONSTRUCTION PLANS.
2. MINIMUM DESIGN PAVING THICKNESS SHALL BE 0.20' ASPHALT CONCRETE.
3. CONSTRUCTION OUTSIDE R/W WILL REQUIRE SLOPE EASEMENTS
4. WHEN PREPARING SUBGRADE FOR PAVING, CENTERLINE CROWN ON THE "LEVEL SECTION" SHALL BE RELOCATED EITHER LEFT OR RIGHT 0.50' TO MATCH CROWN BREAK IN PAVING MACHINE.

LOCAL STREET

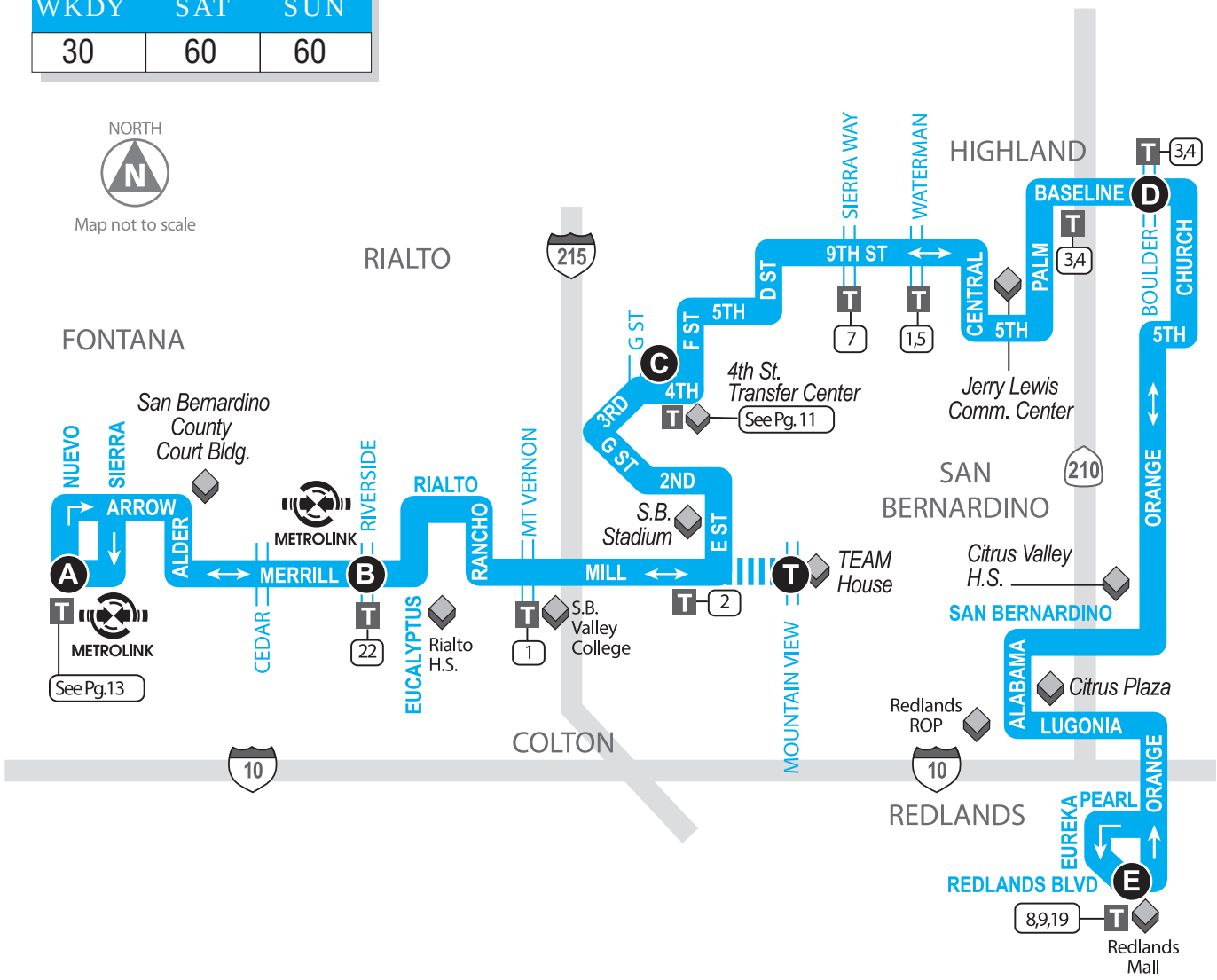
EXISTING TRANSIT SERVICES

15 FONTANA - SAN BDNO/HIGHLAND - REDLANDS

Bus Route
Tripper Service
A Timepoint—Look for the matching symbol in the timetable section.
METROLINK Metrolink Station
Point of interest
H Medical Center
T Transfer Point
1,2 Connecting Route(s)

FREQUENCY

WKDY	SAT	SUN
30	60	60



3.6 EXISTING TRAFFIC COUNTS

Manual AM and PM peak hour turning movement counts were conducted in February 2012. The raw manual peak hour turning movement traffic count data sheets are included in Appendix "3.1". The traffic counts collected in February 2012 include the vehicle classifications as shown below:

- Passenger Cars
- 2-Axle Trucks
- 3-Axle Trucks
- 4 or More Axle Trucks

To represent the impact large trucks, buses and recreational vehicles have on traffic flow; all trucks were converted into Passenger Car Equivalents (PCEs). By their size alone, these vehicles occupy the same space as two or more passenger cars. In addition, the time it takes for them to accelerate and slow down is also much longer than for passenger cars, and varies depending on the type of vehicle and number of axles. For the purpose of this analysis, a PCE factor of 1.5 has been applied to 2-axle trucks, 2.0 for 3-axle trucks and 3.0 for 4+-axle trucks to estimate each turning movement. These PCE factors are consistent with the County of San Bernardino CMP recommended PCE factors for each axle type. Flow conservation worksheets and the existing PCE volume development worksheets are included in Appendix "3.2".

Existing (2012) average daily traffic (ADT) volumes on arterial highways throughout the study area are shown on Exhibit 3-9. Existing (2012) ADT volumes are based upon factored intersection peak hour counts collected by Urban Crossroads, Inc. using the following formula for each intersection leg:

PM Peak Hour (Approach Volume + Exit Volume) x 12 = Leg Volume

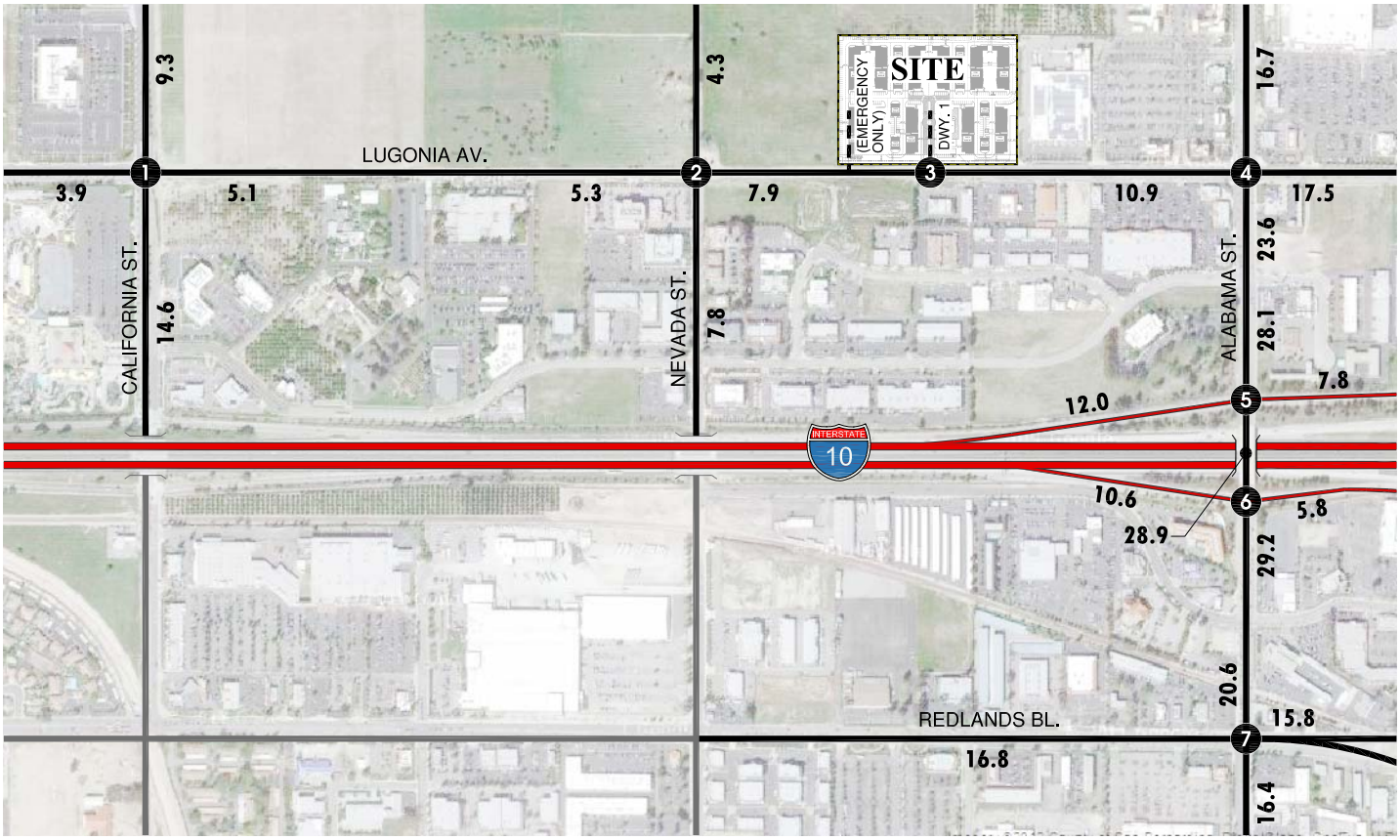
The equation shown above estimates the ADT volumes on the study area roadway segments assuming a peak-to-daily relationship of eight (8) percent. Existing (2012) AM and PM peak hour intersection volumes are shown on Exhibits 3-10 and 3-11, respectively. All of the traffic volumes illustrated on the exhibits and used in the traffic analysis are shown in terms of PCE.

3.7 EXISTING CONDITIONS INTERSECTION OPERATIONS ANALYSIS

Existing (2012) peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2.2 *Intersection Capacity Analysis* of this report. The intersection operations analysis results are summarized in Table 3-1. The Existing conditions operations analysis show that the following intersection location experiences unacceptable LOS during the PM peak hour only:

EXHIBIT 3-9

EXISTING (2012) AVERAGE DAILY TRAFFIC (ADT)

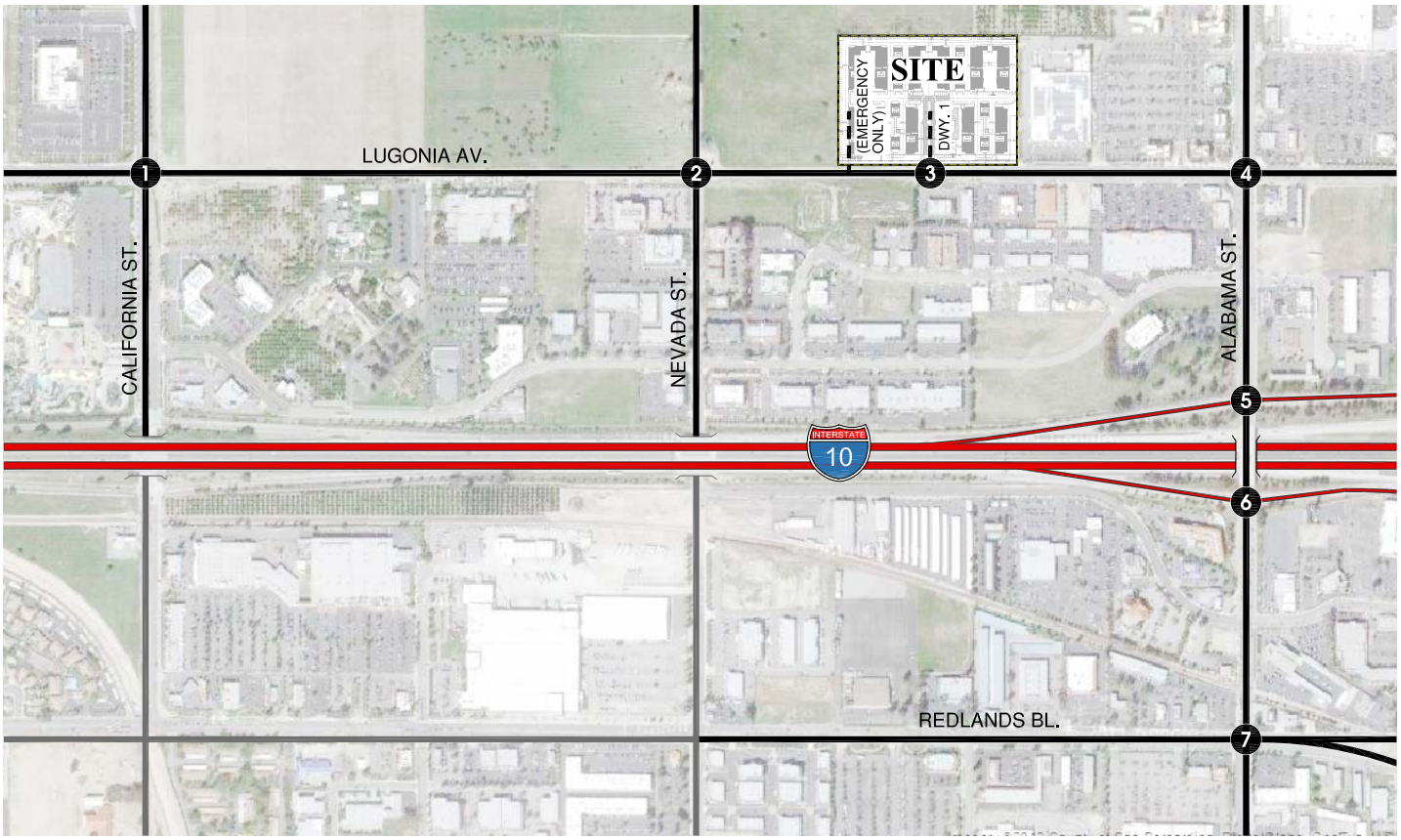


LEGEND:

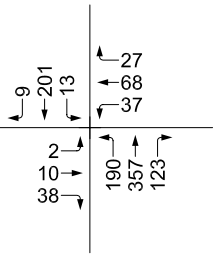
10.0 = VEHICLES PER DAY (1000's)

N

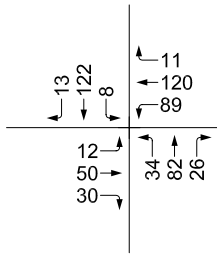
EXISTING (2012) AM PEAK HOUR INTERSECTION VOLUMES



1 California St. & Lugonia Av.



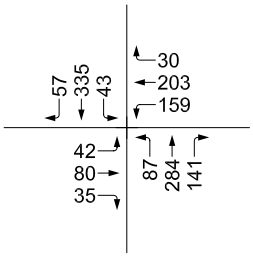
2 Nevada St. & Lugonia Av.



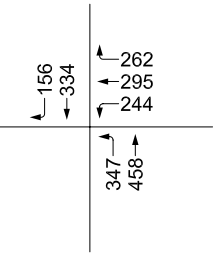
3 Driveway 1 & Lugonia Av.

FUTURE INTERSECTION

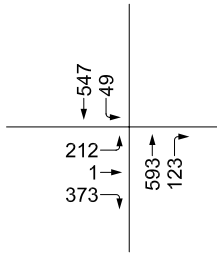
4 Alabama St. & Lugonia Av.



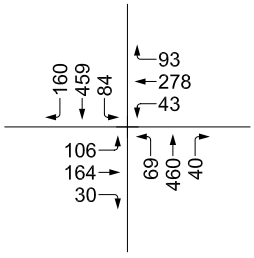
5 Alabama St. & I-10 WB Ramps



6 Alabama St. & I-10 EB Ramps

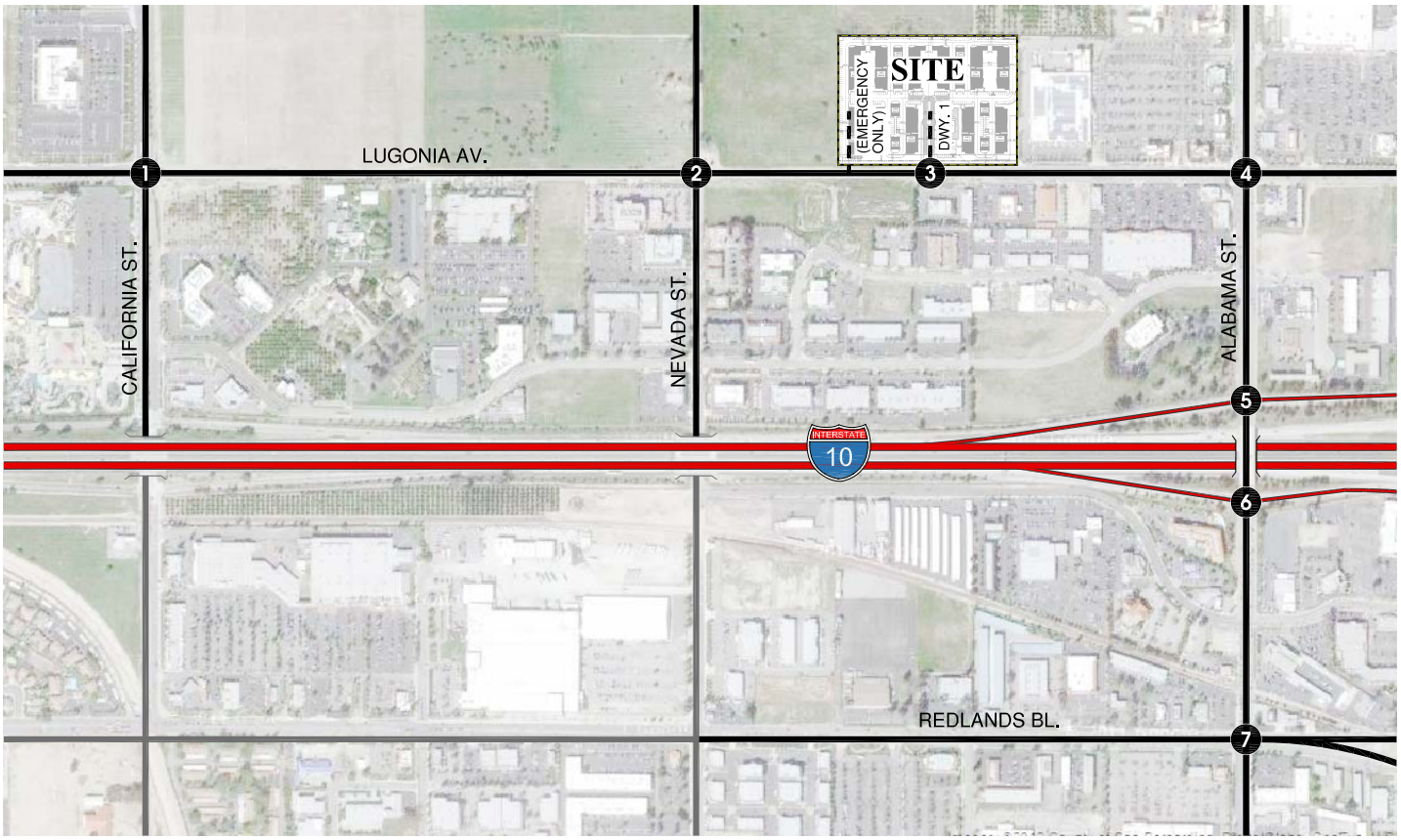


7 Alabama St. & Redlands Bl.

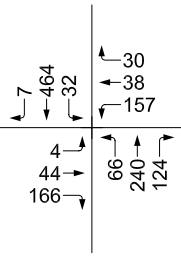


N

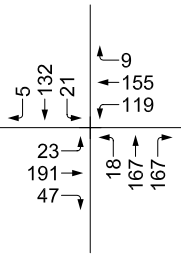
EXISTING (2012) PM PEAK HOUR INTERSECTION VOLUMES



1 California St. & Lugonia Av.



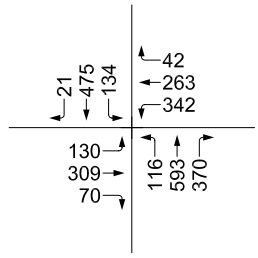
2 Nevada St. & Lugonia Av.



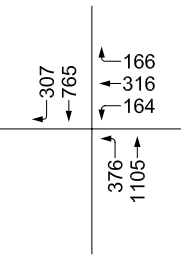
3 Driveway 1 & Lugonia Av.

FUTURE INTERSECTION

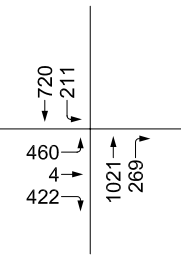
4 Alabama St. & Lugonia Av.



5 Alabama St. & I-10 WB Ramps



6 Alabama St. & I-10 EB Ramps



7 Alabama St. & Redlands Bl.

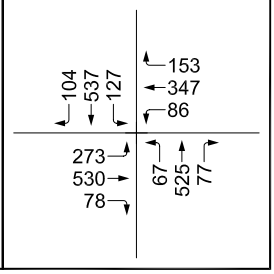


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Table 3-1

Intersection Analysis for Existing (2012) Conditions

#	Intersection	Jurisdiction	Traffic Control[3]	Intersection Approach Lanes[1]												Weekday AM[2]			Weekday PM[2]		
				Northbound			Southbound			Eastbound			Westbound								
				L	T	R	L	T	R	L	T	R	L	T	R	Delay	V/C	LOS	Delay	V/C	LOS
1	California St. / Lugonia Av.	Redlands	TS	1	1	1	1	2	1	0	1	1	0	1	0	19.9	0.33	B	24.0	0.38	C
2	Nevada St. / Lugonia Av.	County/Redlands	AWS	0	1	d	0	1	0	0	1	d	0	1	0	11.2	0.45	B	16.3	0.67	C
3	Driveway 1 / Lugonia Av.	County/Redlands	Future Analysis Location																		
4	Alabama St. / Lugonia Av.	County/Redlands	TS	1	2	d	1	3	d	1	2	0	1	2	d	23.2	0.31	C	34.6	0.73	C
5	Alabama St. / I-10 WB Ramps	Caltrans	TS	1	2	0	0	2	0	0	0	0	0	2	0	48.1	0.69	D	30.2	0.82	C
6	Alabama St. / I-10 EB Ramps	Caltrans	TS	0	2	d	1	2	0	0	2	0	0	0	0	18.2	0.37	B	25.1	0.73	C
7	Alabama St. / Redlands Blvd.	Redlands	TS	1	2	0	1	2	0	1	2	d	1	2	d	30.7	0.57	C	39.4	0.73	D

1 When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes (minimum 20-feet).

L = Left; T = Through; R = Right; > = Right-Turn Overlap Phasing; d = Defacto Right Turn Lane

2 Delay and level of service calculated using the following analysis software:
Traffix (Version 8.0 R1, 2008) for signalized and unsignalized intersections. The I-10 Freeway ramps have been analyzed using SYNCHRO 7.
Per the 2000 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

3 CCS = Cross Street Stop; AWS = All Way Stop; TS = Traffic Signal

4 V/C is greater than 1.00; Level of Service "F".

* BOLD = Unsatisfactory level of service.

ID	Intersection Location	Location
7	Alabama Street / Redlands Boulevard – LOS "D" PM Peak Hour only	Redlands

The intersection operations analysis worksheets are included in Appendix "3.3" of this TIA.

3.8 EXISTING CONDITIONS TRAFFIC SIGNAL WARRANTS ANALYSIS

Traffic signal warrants for Existing traffic conditions are based on existing peak hour intersection volumes. For Existing conditions, the following intersection appears to currently warrant a traffic signal based on the peak-hour volume based warrant (see Appendix "3.3"):

ID	Intersection Location	Location
2	Nevada Street / Lugonia Avenue	SBC/Redlands

However, as noted previously a signal warrant defines the minimum condition under which the installation of a traffic signal might be warranted. Meeting this threshold condition does not require that a traffic control signal be installed at a particular location, but rather, that other traffic factors and conditions be evaluated in order to determine whether the signal is truly justified. As shown on Table 3-1, the intersection of Nevada Street / Lugonia Avenue is currently operating at acceptable LOS (i.e., LOS "C" or better). As such, it is recommended that this intersection be monitored and a traffic signal be installed at the discretion of the governing jurisdiction's Traffic Engineer at a time when the side-street (Nevada Street) peak hour traffic volumes warrant the installation of a traffic signal.

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4.0 PROJECTED FUTURE TRAFFIC

This section presents the traffic volumes estimated to be generated by the Project, as well as the Project's trip assignment onto the study area roadway network. The Project is located north of the Lugonia Avenue and west of Alabama Street in the unincorporated County of San Bernardino region known as the "Donut Hole", and is proposed to consist of 321 apartment units. For the purposes of this traffic study, the Project is assumed to be built and fully occupied by Year 2014.

The Project is proposed to have access on Lugonia Avenue via Driveway 1. Driveway 1 is proposed to allow full-access. The westerly driveway is anticipated to serve as emergency access only. It should be noted that Driveway 1 is not anticipated to align will the existing access to the commercial retail uses to the south of Lugonia Avenue, however, the eastbound left turning vehicles into the Project are not anticipated to conflict with the westbound left turning vehicles into the existing commercial retail center to the south. Regional access to the Project site will be provided by the I-10 Freeway via California Street and Alabama Street and the near-by SR-210 Freeway to the east.

4.1 PROJECT TRIP GENERATION

Trip generation represents the amount of traffic which is both attracted to and produced by a development. Determining traffic generation for a specific project is therefore based upon forecasting the amount of traffic that is expected to be both attracted to and produced by the specific land uses being proposed for a given development.

Trip generation rates used to estimate Project traffic are shown in Table 4-1 and a summary of the Project's trip generation is shown in Table 4-2. The trip generation rates are based upon data collected by the Institute of Transportation Engineers (ITE) and presented in ITE's most recent edition of *Trip Generation*, (8th Edition, 2008).

Project daily and peak hour trip generation is shown in Table 4-2. The Project is anticipated to generate a net total of approximately 2,135 trip-ends per day with 132 AM peak hour trips and 199 PM peak hour trips.

4.2 PROJECT TRIP DISTRIBUTION

Trip distribution is the process of identifying the probable destinations, directions or traffic routes that will be utilized by Project traffic. The potential interaction between the planned land uses and surrounding regional access routes are considered, to identify the route where the Project traffic would distribute. The Project trip distribution was developed based on anticipated travel patterns to and from the Project site for the traffic associated with the proposed residential use.

Table 4-1

Project Trip Generation Rates[1]

Land Use	ITE Code	Units[2]	Weekday AM Peak Hour			Weekday PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Apartment	220	DU	0.10	0.41	0.51	0.40	0.22	0.62	6.65

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Eighth Edition (2008).

[2] DU = Dwelling Units

Table 4-2

Project Trip Generation Summary

Land Use	Quantity	Units[1]	Weekday AM Peak Hour			Weekday PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Apartment	321	DU	32	132	164	128	71	199	2,135

[1] DU = Dwelling Units

The total volume on each roadway was divided by the total site traffic generation to indicate the percentage of Project traffic that would use each component of the regional roadway system in each relevant direction. The Project trip distribution pattern is graphically depicted on Exhibit 4-1.

4.3 MODAL SPLIT

The traffic reducing potential of public transit, walking or bicycling have not been considered in this TIA. Essentially, the traffic projections are "conservative" in that these alternative travel modes might be able to reduce the forecasted traffic volumes.

4.4 PROJECT TRIP ASSIGNMENT

The assignment of traffic from the Project area to the adjoining roadway system is based upon the Project trip generation, trip distribution, and the arterial highway and local street system improvements that would be in place by the time of initial occupancy of the Project. Based on the identified Project traffic generation and trip distribution patterns, Project average daily traffic (ADT) volumes for the weekday are shown on Exhibit 4-2. Project AM and PM peak hour volumes are shown on Exhibits 4-3 and 4-4.

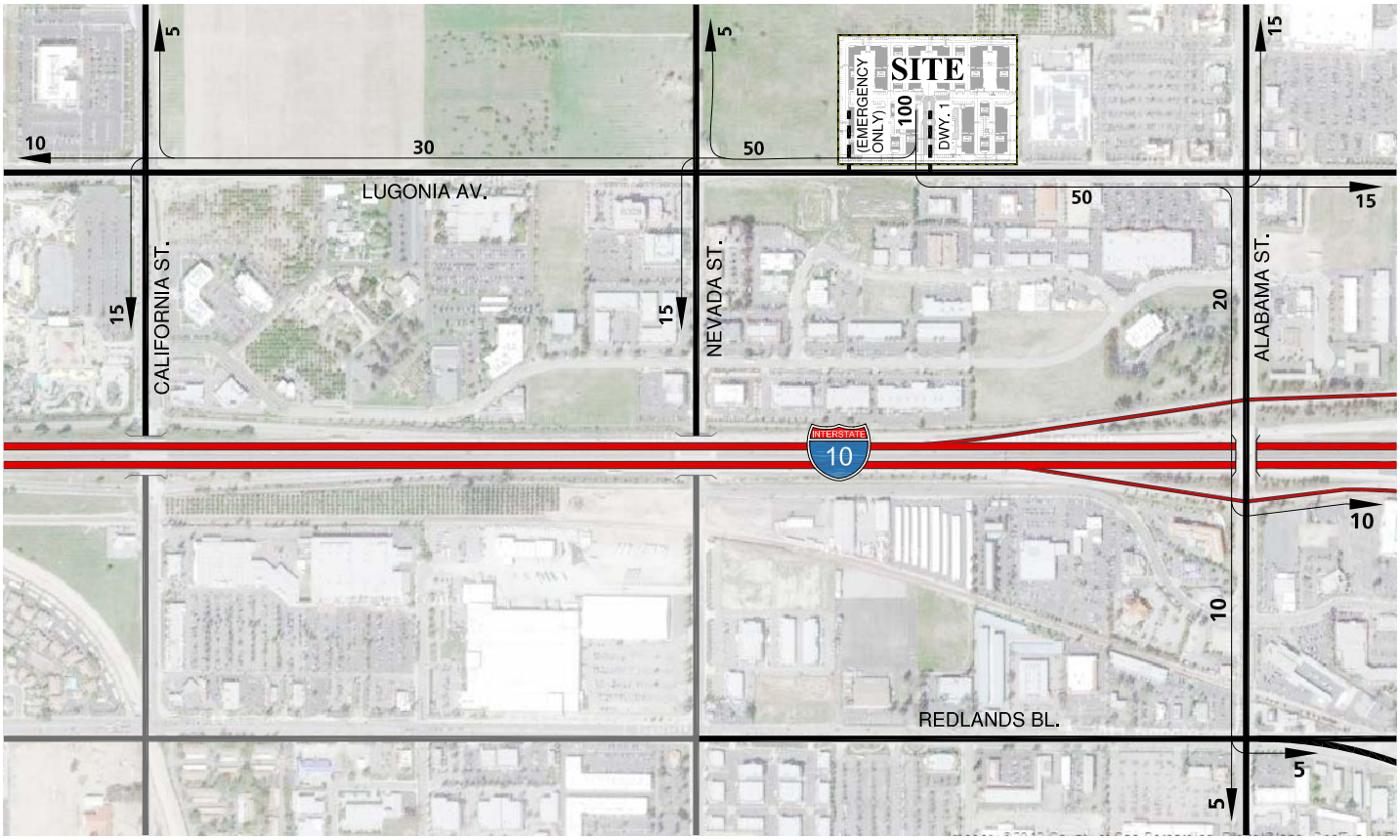
4.5 BACKGROUND TRAFFIC

Future year traffic forecasts have been based upon two (2) years of background (ambient) growth at 2% per year for 2014 traffic conditions. The ambient growth factor is intended to approximate regional traffic growth. The total ambient growth is 4.04% for 2014 traffic conditions (compounded growth of two percent per year over two years or $1.02^{2\ years}$). This ambient growth rate is added to existing traffic volumes to account for area-wide growth not reflected by cumulative development projects. Ambient growth has been added to daily and peak hour traffic volumes on surrounding roadways, in addition to traffic generated by the development of future projects, located within or in close proximity to the study area, that have been approved but not yet built and/or for which development applications have been filed and are under consideration by governing agencies.

The adopted *Southern California Association of Governments (SCAG) 2008 Regional Transportation Plan (RTP)* growth forecasts for San Bernardino County identifies projected growth in population of 1,864,264 in 2003 to 3,133,801 in 2035, or a 68% increase over the 32 year period. The change in population equates to roughly a 1.64 percent growth rate compounded annually. Similarly, growth over the same 32 year period in households is projected to increase by 76 percent, or 1.78 percent annual growth rate. Finally, growth in employment over the same 32 year period is projected to increase by 96 percent, or a 2.13 percent annual growth rate. The use of an annual growth rate of 2.0 percent would appear to conservatively approximate the anticipated regional growth in traffic volumes in the San Bernardino County, especially when considered along with the addition of project-related traffic and traffic generated by other known development projects.

EXHIBIT 4-1

PROJECT TRIP DISTRIBUTION



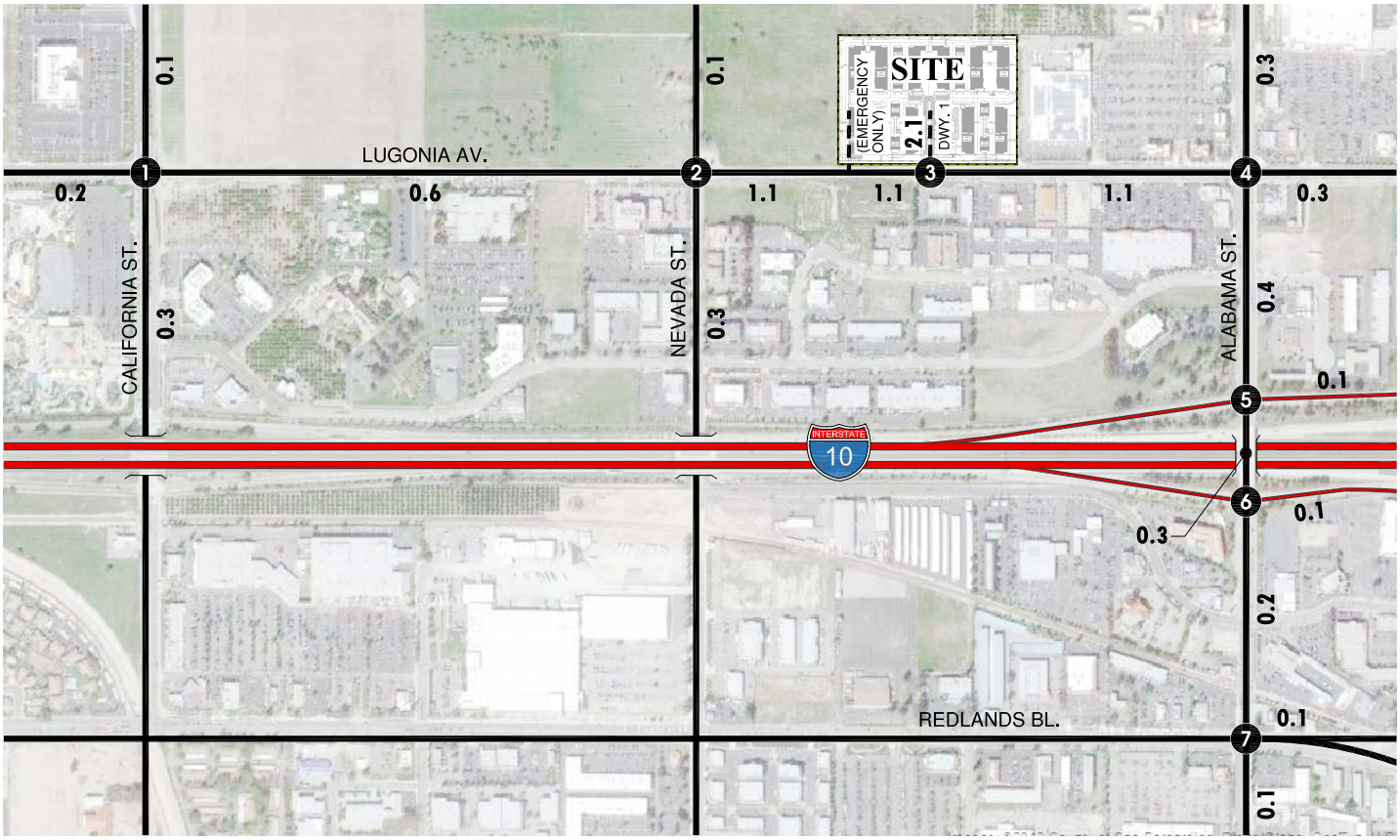
LEGEND:

10 = PERCENT TO/FROM PROJECT

N

EXHIBIT 4-2

PROJECT ONLY AVERAGE DAILY TRAFFIC (ADT)



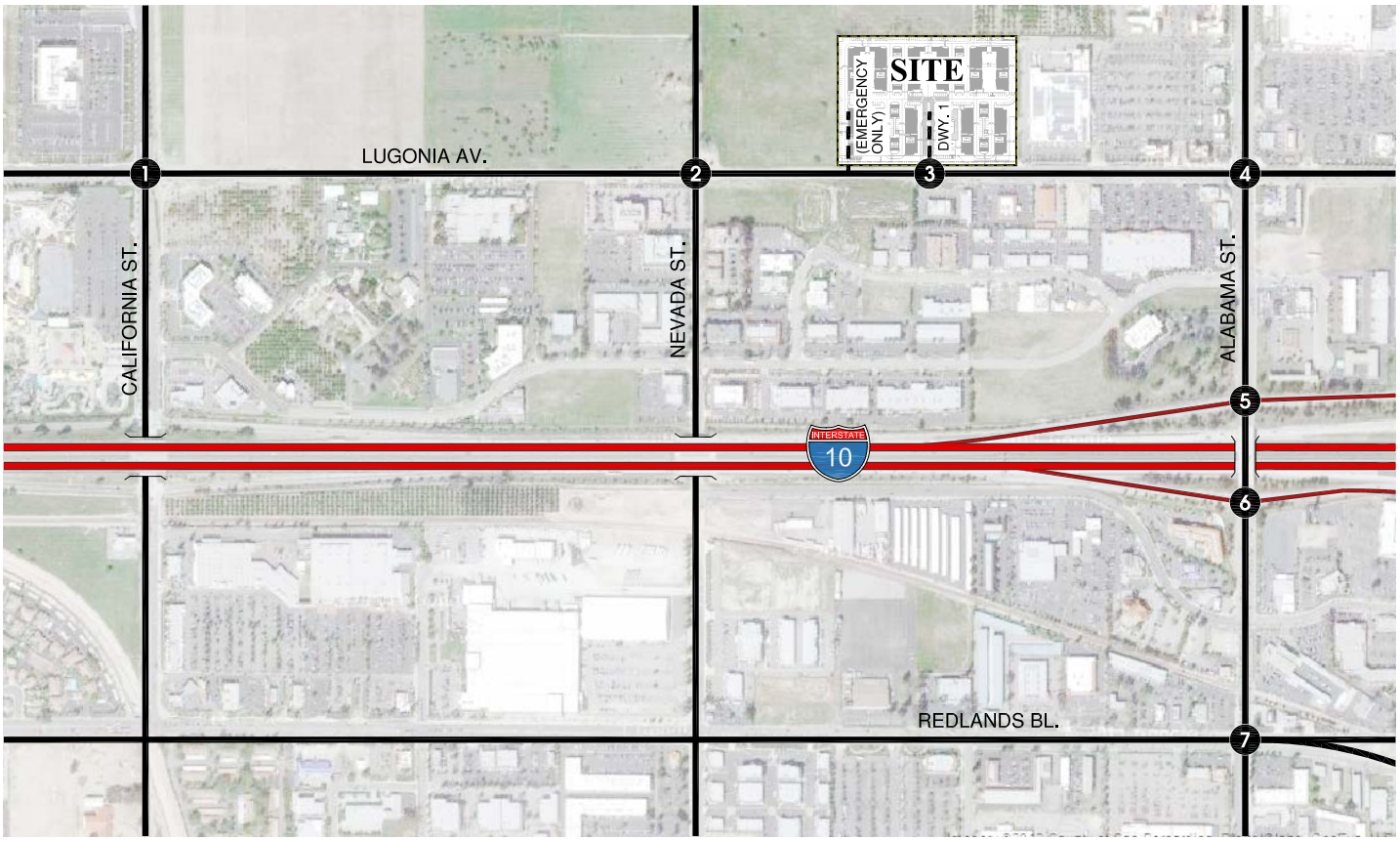
LEGEND:

10.0 = VEHICLES PER DAY (1000's)

N

EXHIBIT 4-3

PROJECT ONLY
AM PEAK HOUR INTERSECTION VOLUMES



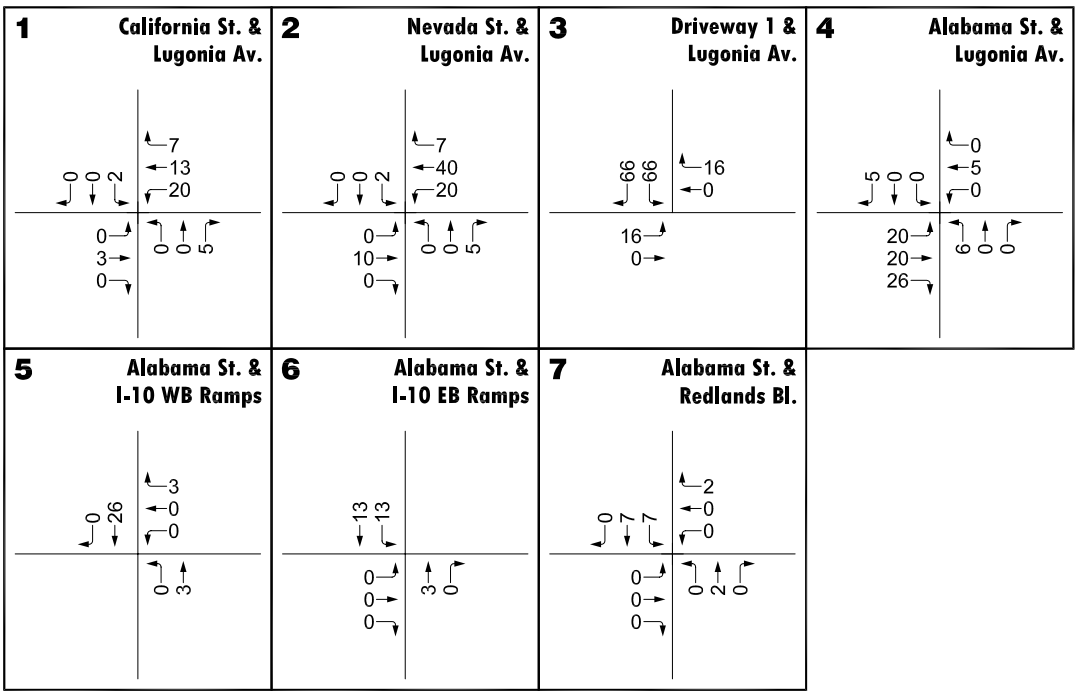


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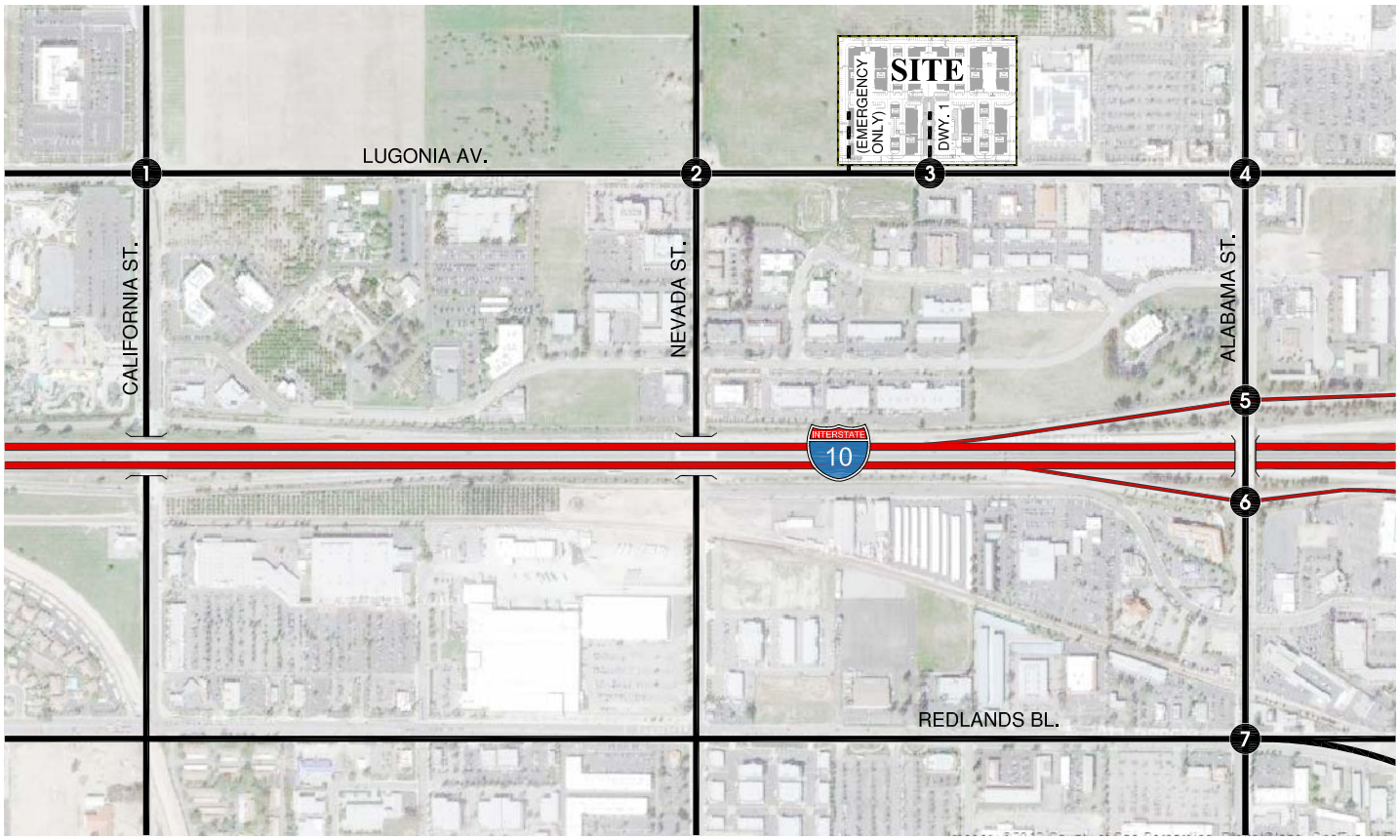
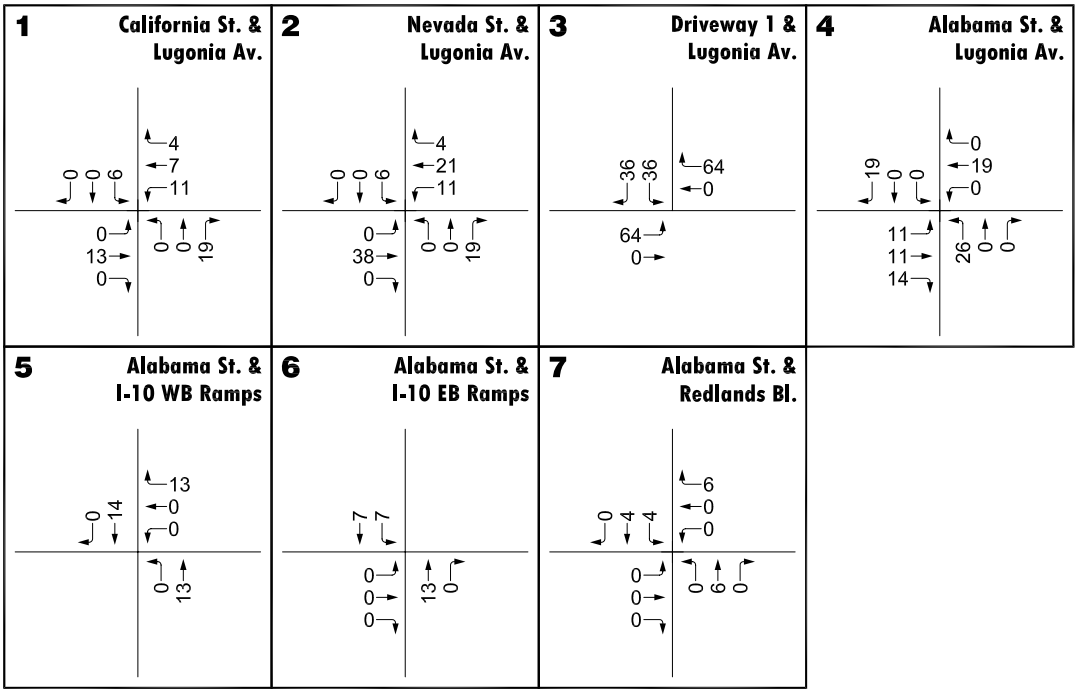
EXHIBIT 4-4

PROJECT ONLY
PM PEAK HOUR INTERSECTION VOLUMES





4.6 CUMULATIVE DEVELOPMENT TRAFFIC

CEQA guidelines require that other reasonably foreseeable development projects which are either approved or being processed concurrently in the study area also be included as part of a cumulative analysis scenario. A cumulative project list was developed for the purposes of this analysis through consultation with planning and engineering staff from the County of San Bernardino and the City of Redlands. Exhibit 4-5 illustrates the cumulative development location map. A list of the cumulative development projects included and summary of land use information has been provided in Table 4-3.

4.6.1 CUMULATIVE DEVELOPMENT TRIP GENERATION

Cumulative development trip generation rates and associated trip generation have been provided in Appendix "4.1". The cumulative development projects assumed in this traffic analysis are estimated to generate 149,858 trip-ends per day during a typical weekday with approximately 8,774 vehicle trips during the AM peak hour and 13,935 vehicle trips during the PM peak hour.

4.6.2 CUMULATIVE DEVELOPMENT TRIP ASSIGNMENT

Based on the identified trip distribution patterns for the cumulative development projects on arterial highways throughout the study area for future conditions, cumulative development ADT volumes, AM peak hour and PM peak hour intersection turning movement volumes are shown on Exhibits 4-6, 4-7 and 4-8, respectively.

4.7 TRAFFIC FORECASTS

Consistent with the County of San Bernardino TIA guidelines, the EAP (Opening Year 2014 with Project) analysis scenario was compared to the EA (Opening Year 2014 without Project) analysis scenario to identify project-related impacts.

To provide a comprehensive assessment of the potential project-related and cumulative traffic impacts, two types of analyses, "buildup" and "buildout", were performed in support of this work effort. The buildup method was used to approximate the EAP conditions for the study year of 2014, and is intended to identify the direct project-related impacts on both the existing and planned near-term circulation system. The Opening Year traffic condition includes background traffic in addition to the traffic generated by the proposed Project. The buildup method was also utilized to approximate the EAPC conditions for the study year of 2014, and is intended to identify the cumulative impacts on both the existing and planned near-term circulation system. The EAPC traffic condition includes background traffic, traffic generated by other cumulative development projects within the study area and the traffic generated by the proposed Project. The buildout approach is used to forecast the long-range Horizon Year (2035) conditions.

EXHIBIT 4-5

CUMULATIVE DEVELOPMENT LOCATION MAP

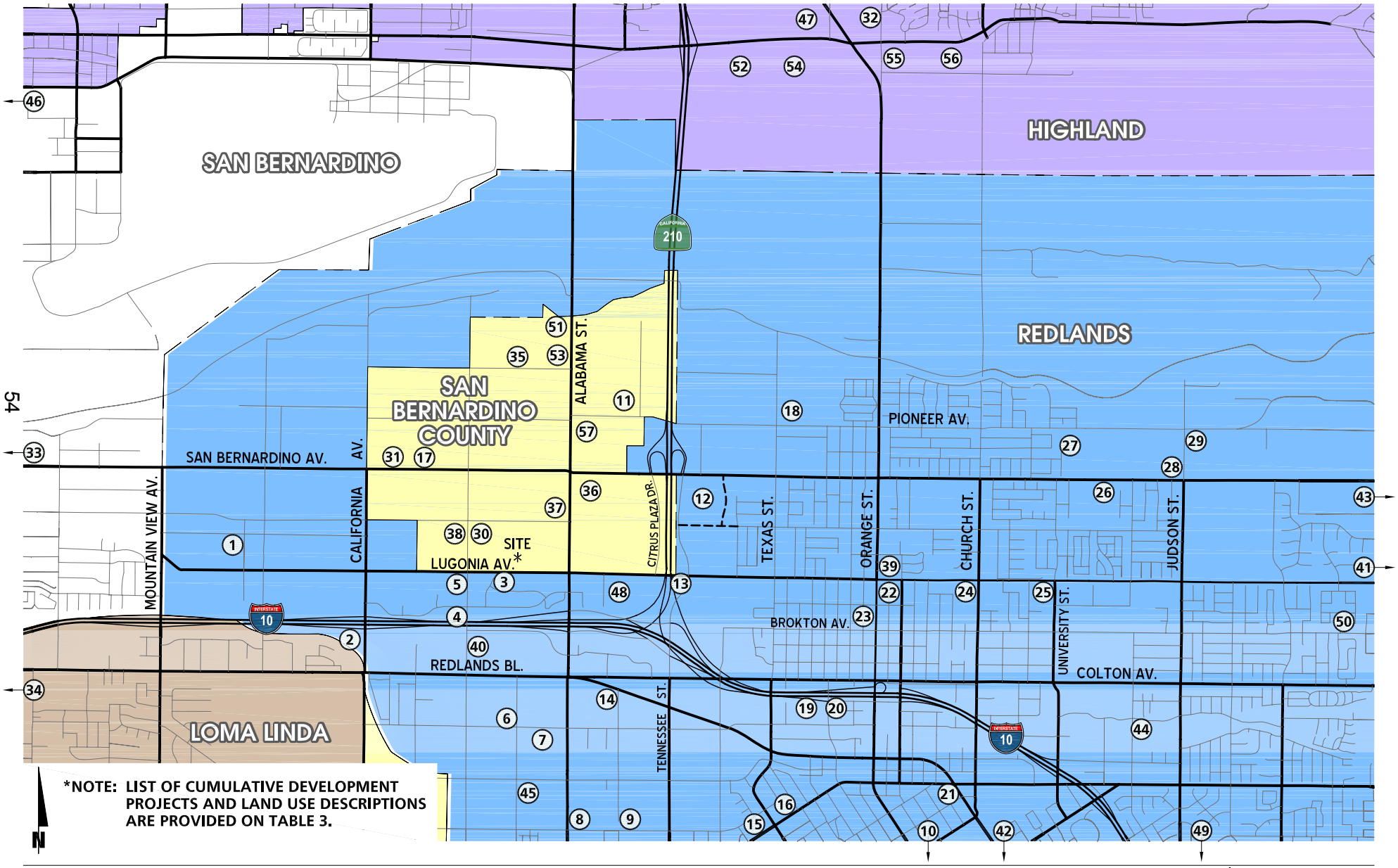
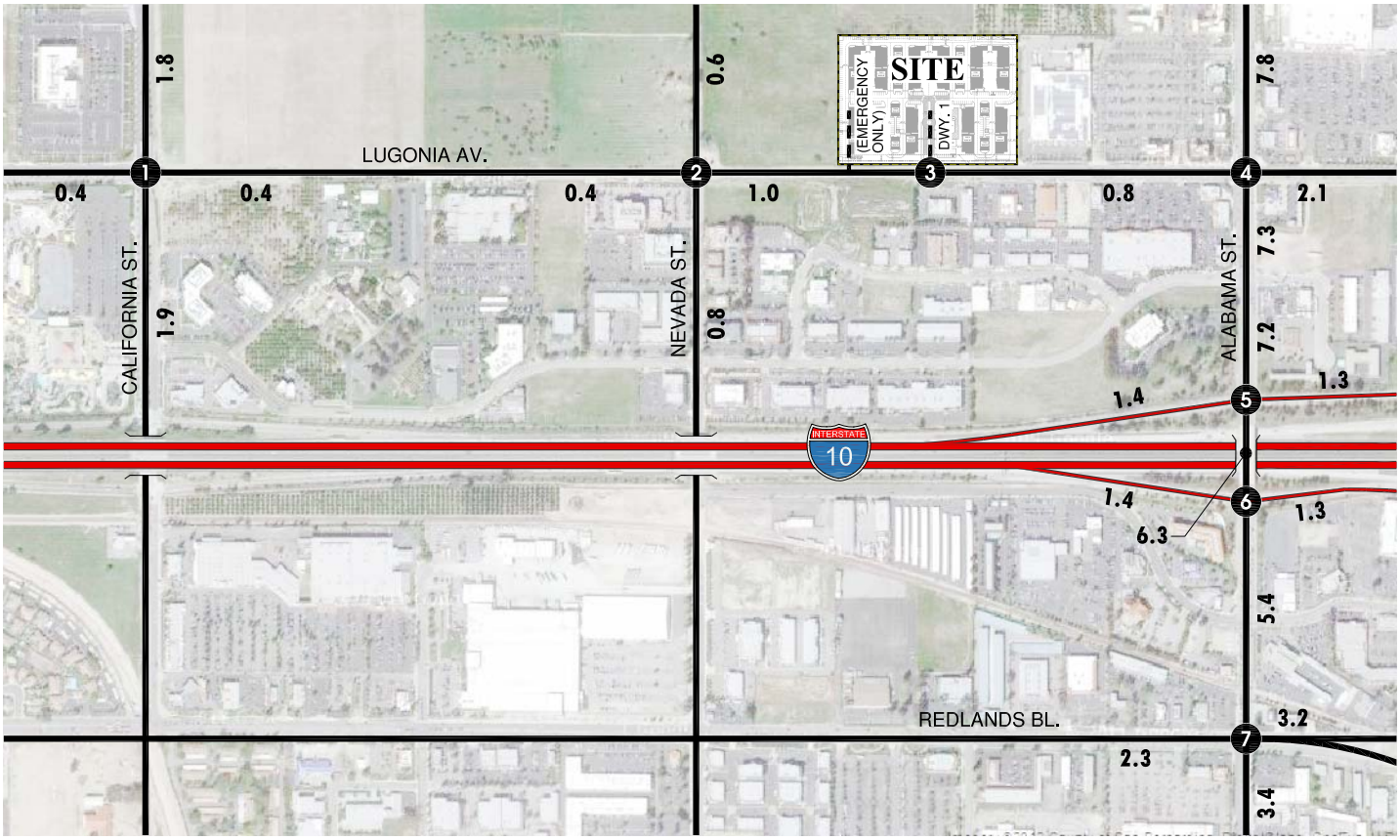


EXHIBIT 4-6

CUMULATIVE DEVELOPMENT AVERAGE DAILY TRAFFIC (ADT)



LEGEND:

10.0 = VEHICLES PER DAY (1000's)

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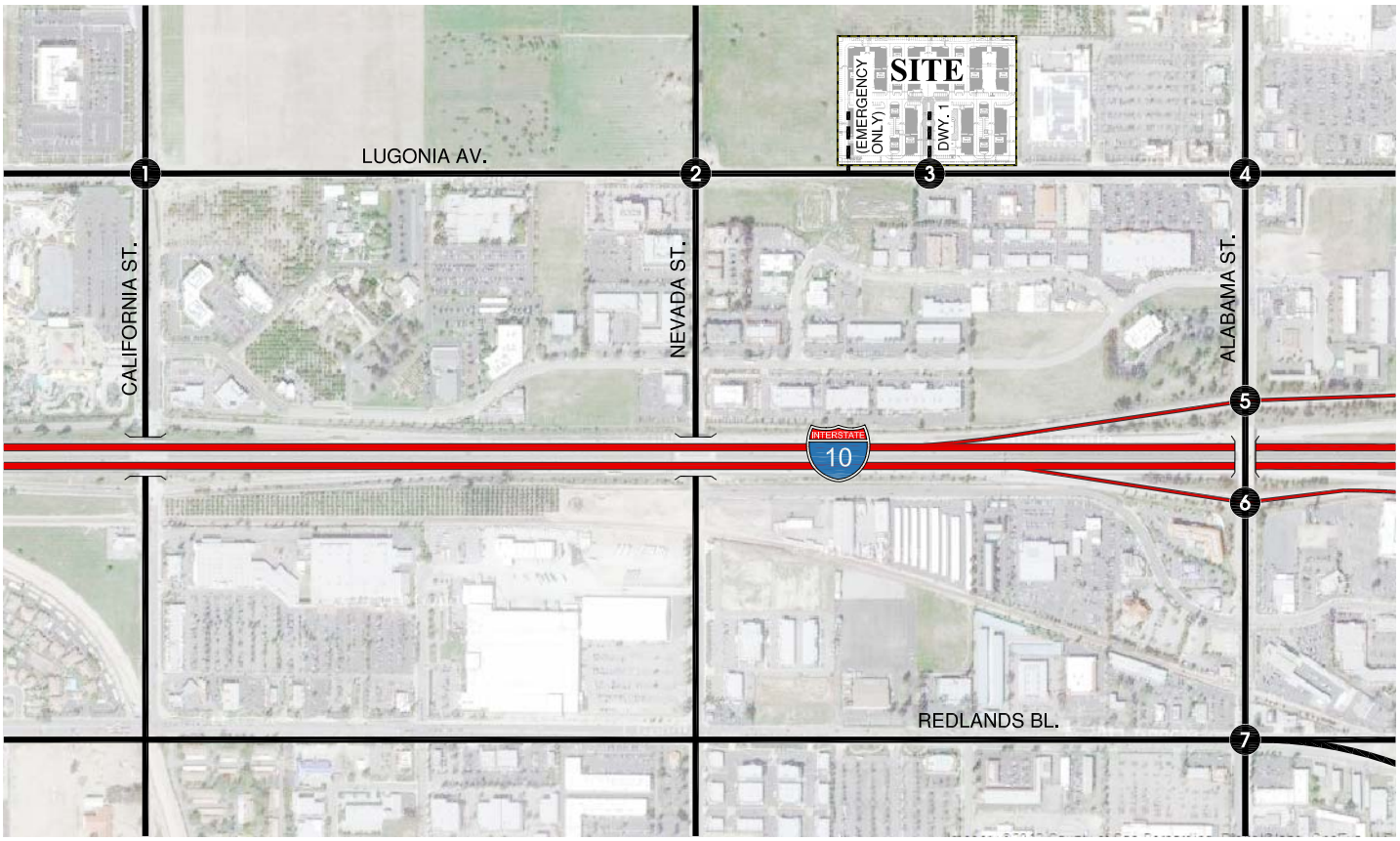
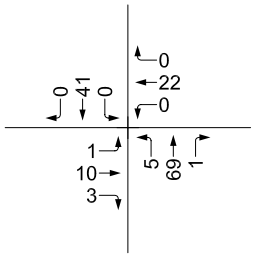
EXHIBIT 4-7

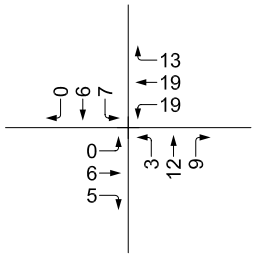
CUMULATIVE DEVELOPMENT AM PEAK HOUR INTERSECTION VOLUMES



1 California St. & Lugonia Av.



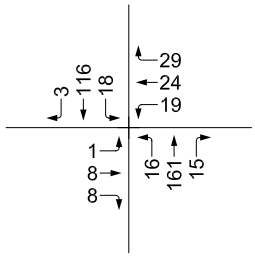
2 Nevada St. & Lugonia Av.



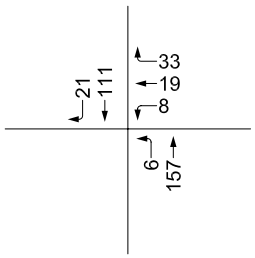
3 Driveway 1 & Lugonia Av.

FUTURE INTERSECTION

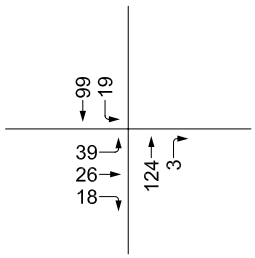
4 Alabama St. & Lugonia Av.



5 Alabama St. & I-10 WB Ramps



6 Alabama St. & I-10 EB Ramps



7 Alabama St. & Redlands Bl.

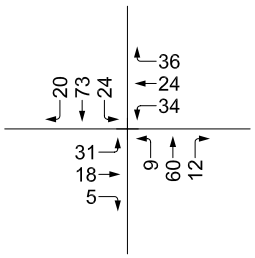


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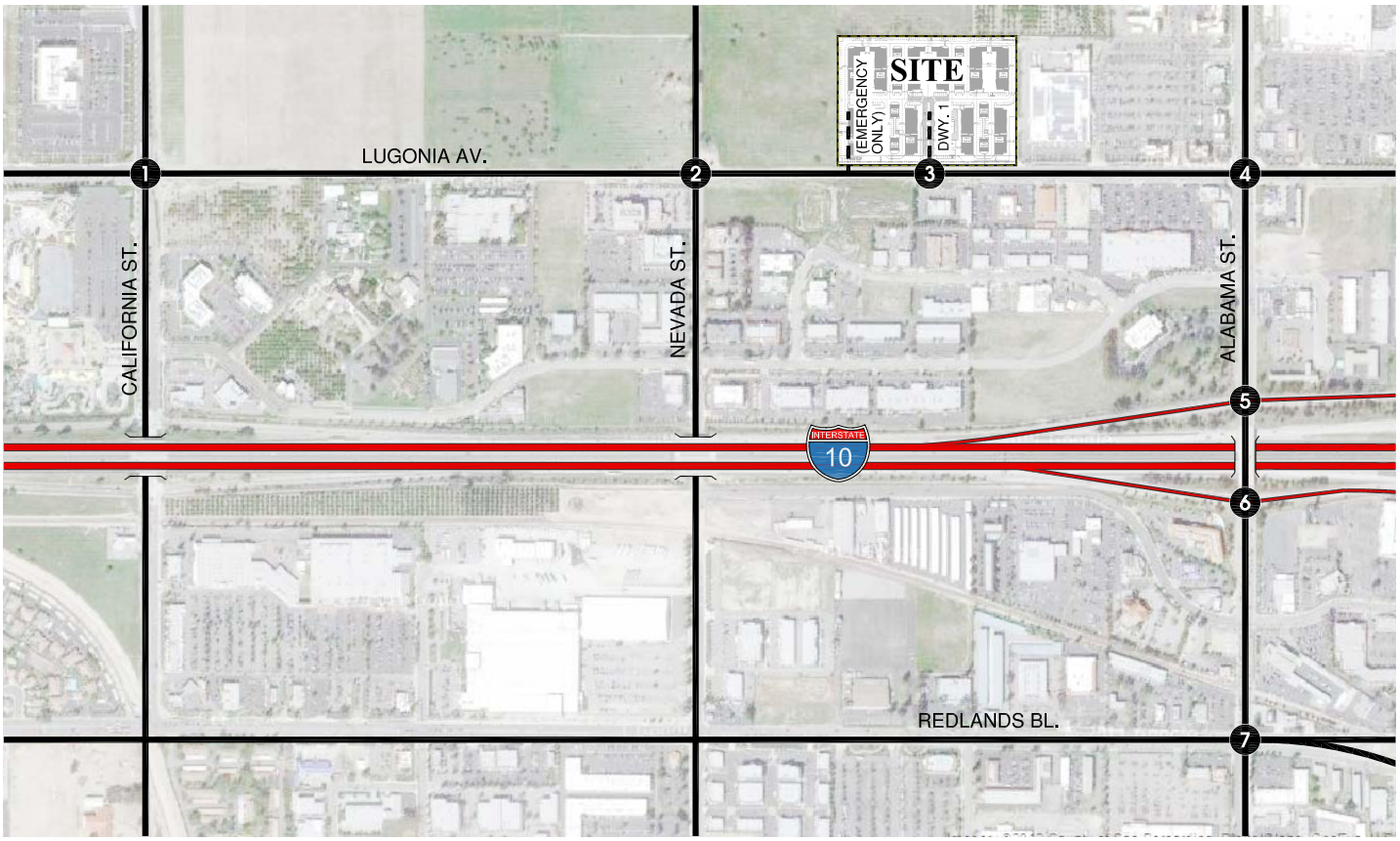
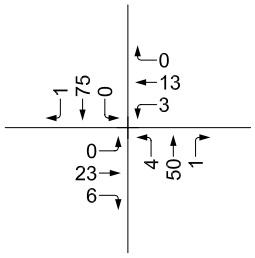
EXHIBIT 4-8

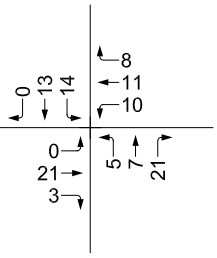
CUMULATIVE DEVELOPMENT
PM PEAK HOUR INTERSECTION VOLUMES



1 California St. & Lugonia Av.



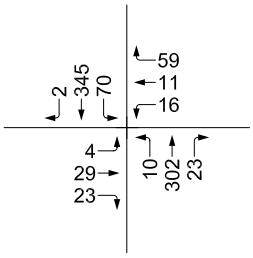
2 Nevada St. & Lugonia Av.



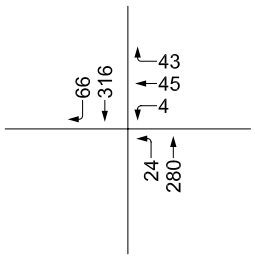
3 Driveway 1 & Lugonia Av.

FUTURE INTERSECTION

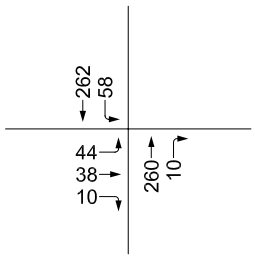
4 Alabama St. & Lugonia Av.



5 Alabama St. & I-10 WB Ramps



6 Alabama St. & I-10 EB Ramps



7 Alabama St. & Redlands Bl.

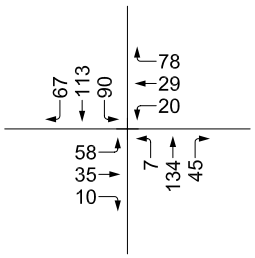


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Table 4-3 (Page 1 of 4)

Cumulative Development Land Use Summary

#	Project/Location	Land Use[1]	Quantity	Units[2]
1	East of Research Dr., south of Almond Av., north of Lugonia Av.	Industrial Park	880.118	TSF
2	South of I-10, west of California St.	Commercial Retail Center	51.101	TSF
3	NE corner of Plum Ln. & Idaho St.	General Office	8.132	TSF
4	South of Orange Tree Ln., west of Nevada St.	General Office	51.432	TSF
5	South of Lugonia Ave., west of Nevada St.	Hotel	102	RMS
6	1776 Park Av.	Medical-Dental Office	52.559	TSF
7	415-495 Park Av.	Medical-Dental Office	122.604	TSF
8	NE corner of Alabama St. & Orange Av.	Condo/Townhomes	77	DU
9	NE corner of Orange Av. & Kansas St.	Senior Adult Housing-Attached	160	DU
10	East side of Alessandro, North of Sunset Hills Ln.	SFDR	27	DU
11	Redlands Distribution Center Buildings 9 & 10 (Prologis) - Buckeye St. between Pioneer Av., Palmetto Av. and Riverbluff Av.	High-Cube Warehouse	1,343.426	TSF
12	Redlands Crossing Shopping Center - SE corner of Tennessee St. & San Bernardino Av.	Discount Superstore	215.000	TSF
		Specialty Retail	25.700	TSF
		High-Turnover (Sit-Down) Restaurant	9.000	TSF
		Fast-Food Restaurant w/o Drive-Thru	12.300	TSF
		Fast-Food Restaurant with Drive-Thru	10.500	TSF
		Gas Station w/ Food Mart & Car Wash	12	VFP
13	SW corner of Tennessee St. & Lugonia Av.	Specialty Retail	8.048	TSF
14	South of Redlands Blvd., west of Kansas St.	Self-Service Car Wash	7	STALLS
15	708 Brookside Ave.	General Office	7.000	TSF
16	520 Brookside Ave.	Church	15.107	TSF
17	Watson Land - North of San Bernardino Av., east of #31	High-Cube Warehouse	578.400	TSF
18	NE corner of Texas St. & Pioneer Av.	SFDR	12	DU

Table 4-3 (Page 2 of 4)

Cumulative Development Land Use Summary

#	Project/Location	Land Use[1]	Quantity	Units[2]
19	South of I-10, west of Eureka St.	Specialty Retail	150.300	TSF
20	South of Pearl Ave., between Eureka St. & Third St.	Specialty Retail	18.200	TSF
21	500 East Citrus Ave.	Recreational Community Center	21.000	TSF
22	SE corner of Lugonia Av. & Orange St.	Specialty Retail	6.750	TSF
23	1135 Orange St.	Specialty Retail	3.243	TSF
24	SW corner of Lugonia Av. & Church St.	Condo/Townhomes	37	DU
25	SE corner of Lugonia Av. & Occidental	SFDR	12	DU
26	South of San Bernardino Av., west of Grove St.	SFDR	10	DU
27	East of Deanna Wy., between San Bernardino Av. & Pioneer Av.	SFDR	26	DU
28	North of San Bernardino Av., west of Judson St.	SFDR	74	DU
29	SE corner of Pioneer Av. & Judson St.	SFDR	33	DU
30	Redlands Distribution Facility (Lytle Development) - SE corner of Nevada St. & Almond Av.	High-Cube Warehouse	425.000	TSF
31	Watson Lane - North of San Bernardino Av., east of California St.	High-Cube Warehouse	377.692	TSF
32	121 SFDR Housing Gated Community	SFDR	121	DU
33	CUP No. 10-04	General Light Industrial	42.005	TSF
34	CUP No. 10-02	Self-Service Car Wash	3	STALLS
35	Oakmont - North of Palmetto Av., between Nevada St. & Alabama St.	High-Cube Warehouse	530.111	TSF
36	Mountain Grove - SE corner of San Bernardino Av. & Alabama St.	Shopping Center	1,850.000	TSF
		Apartments	281	DU
		Hotel	200	RMS
		Theatre	3,544	SEATS

Table 4-3 (Page 3 of 4)

Cumulative Development Land Use Summary

#	Project/Location	Land Use[1]	Quantity	Units[2]
37	Stone Creek - NW corner of Almond Av. and Alabama St.	Specialty Retail	52.500	TSF
		High-Turnover (Sit-Down) Restaurant	15.000	TSF
		General Office	149.000	TSF
		Hotel	180	RMS
38	Almond Avenue Industrial Project (Newcastle) - SW corner of Nevada St. & Almond Av.	High-Cube Warehouse	425.940	TSF
39	NE corner of Orange St. & Lugonia Av.	SFDR	228	DU
40	1020-1050 Nevada	Industrial Park	63.638	TSF
41	Madeira Ave., west of Sapphire	SFDR	27	DU
42	Center St., east of Burke St.	SFDR	15	DU
43	SW corner of San Bernardino Av. & Wabash Av.	SFDR	76	DU
44	SE corner of Grove St. & Sylvan Blvd.	Condo/Townhomes	40	DU
45	SE corner of Citrus Av. & Iowa St.	Industrial Park	141.000	TSF
46	Santa Fe Depot	Specialty Retail	2.554	TSF
		Fast-Food Restaurant with Drive-Thru	3.105	TSF
47	Greenspot Village & Marketplace CMP	Planning Area 1 (Commercial)		
		Superstore	200.000	TSF
		Anchor Retail	355.000	TSF
		Gas Station w/ Convenience Market	3.600	TSF
		Bank with Drive-Thru	10.000	TSF
		Fast-Food Restaurant with Drive-Thru	12.000	TSF
		High-Turnover (Sit-Down) Restaurant	25.000	TSF
		Sit-Down Restaurants	40.000	TSF
		Planning Area 2 (Residential)		
		Apartments	378	DU
		Condo/Townhomes	172	DU
		Planning Area 3 (Village Center - Mixed Use)		
		Daycare	7.000	TSF
		Shopping Center	80.000	TSF
		Sit-Down Restaurants	7.000	TSF
		Hotel (includes 20 TSF Conference Center)	240	RMS
		General Office	60.000	TSF
		Apartments	172	DU
		Condo/Townhomes	78	DU

Table 4-3 (Page 4 of 4)

Cumulative Development Land Use Summary

#	Project/Location	Land Use[1]	Quantity	Units[2]
48	1222 Indiana Ct.	General Light Industrial	5.550	TSF
49	NE corner of Ford St. & Patricia	Church	20.500	TSF
50	NE corner of Wabash Av. & Nice Av.	Mini-Warehouse	60.857	TSF
		General Light Industrial	48.045	TSF
51	North of Palmetto Av., west of Alabama St.	High-Cube Warehouse	275.000	TSF
52	Regency Center	Fast-Food Restaurant with Drive-Thru	3.417	TSF
		Shopping Center	42.840	TSF
53	Nevada St. & Palmetto Ave. (Newcastle)	High-Cube Warehouse	400.000	TSF
54	Jack in the Box Center	Fast-Food Restaurant with Drive-Thru	6.280	TSF
		Shopping Center	7.065	TSF
		Retail	13.771	TSF
55	133 SFD Housing (SE corner of Orange St. & Greenspot Rd.)	SFDR	133	DU
56	Blossom Trails	SFDR	14	DU
		Condo/Townhomes	306	DU
57	Rossmore Enterprises - SE corner of Alabama St. & Pioneer Av.	High-Cube Warehouse	594.415	TSF

[1] SFDR = Single Family Detached Residential

[2] DU = Dwelling Units; TSF = Thousand Square Feet; VFP = Vehicle Fueling Position

4.8 OPENING YEAR (2014) CONDITIONS

The buildup approach combines existing traffic counts with a background ambient growth factor to forecast the Opening Year 2014 traffic conditions. An ambient growth factor of 4.04% accounts for background (area-wide) traffic increases that occur over time up to the year 2014 from the year 2012 (compounded two percent per year growth over a two year period). Traffic volumes generated by the Project are then added to assess the EAP (2014) traffic conditions. The 2014 roadway network is similar to the Existing conditions roadway network, with the exception of future roadways proposed to be developed by the Project.

The near-term traffic analysis includes the following traffic conditions, with the various traffic components:

- Existing plus Ambient Growth (EA) (2014) Conditions
    - Existing 2012 counts
    - Ambient growth traffic (4.04%)
- Existing plus Ambient Growth plus Project (EAP) (2014) Conditions
    - Existing 2012 counts
    - Ambient growth traffic (4.04%)
    - Project traffic
- Existing plus Ambient Growth plus Project plus Cumulative Development (EAPC) (2014) Conditions
    - Existing 2012 counts
    - Ambient growth traffic (4.04%)
    - Cumulative Development Project traffic
    - Project traffic

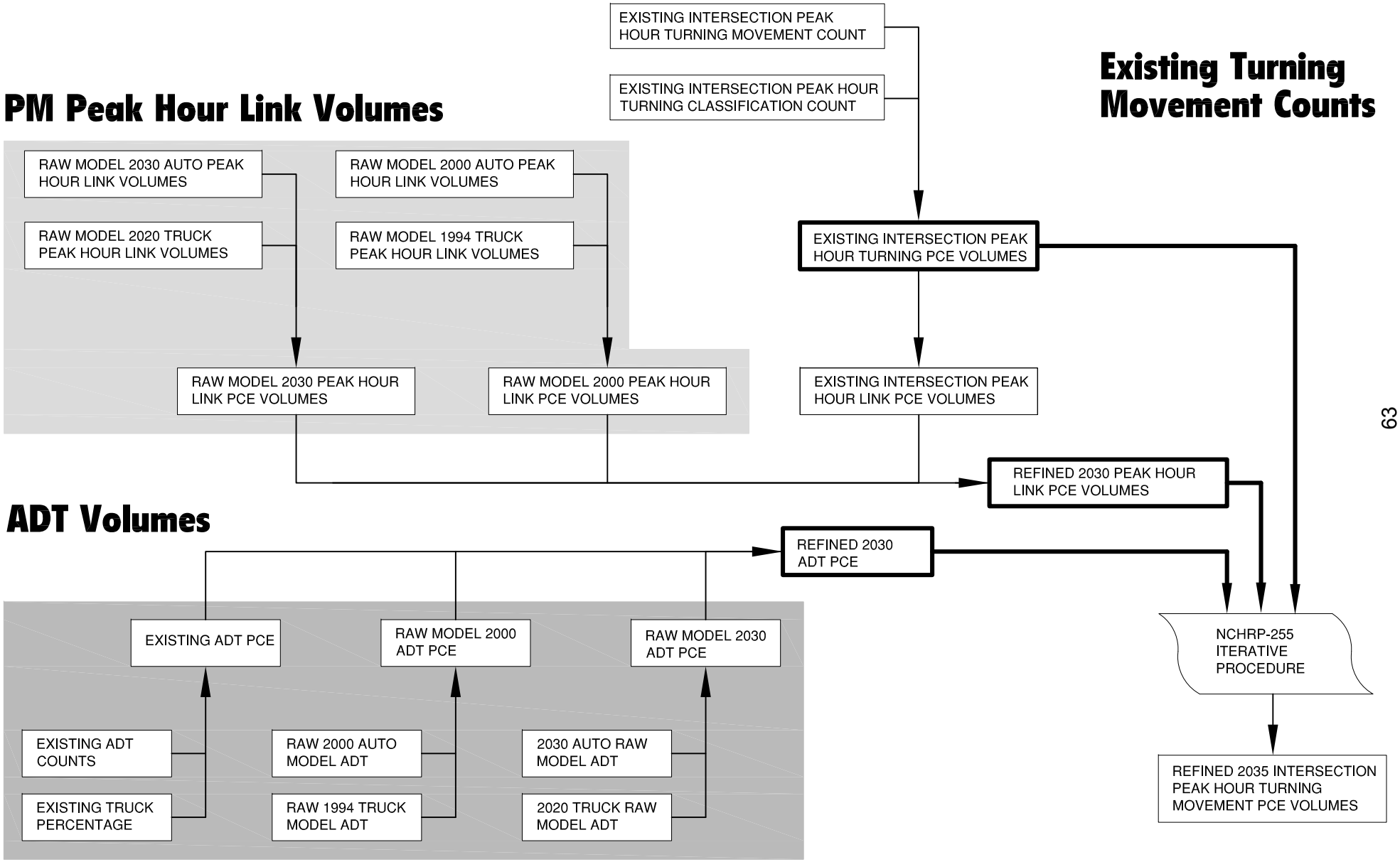
4.9 HORIZON YEAR (2035) CONDITIONS

Exhibit 4-9 illustrates the overall Horizon Year (2035) peak hour turning movement volume refinement process. The Horizon Year (2035) with project traffic volumes have been derived from the sub-regional travel demand model currently being used for long-range planning in cities located in the eastern San Bernardino Valley. This model is commonly referred to as the East Valley Traffic Model (EVTM) and is maintained on behalf of the cities within the eastern San Bernardino Valley by the City of San Bernardino. The EVTM uses forecasted growth in population and employment, in conjunction with changes in household income, to project future travel patterns in the region. The population and employment data are consistent with the Cities' General Plans as well as the Southern California Association of Government's (SCAG) regional growth forecasts through Year 2030.

There are several differences between the procedures for the passenger car model and the truck model. One difference is the factors used to determine the peak hour volumes from the EVTM traffic model peak period traffic assignments and the passenger car equivalent factors. The passenger car model uses an AM peak period to peak hour factor of 0.38 and a PM peak period to peak hour factor of 0.28. The truck model

EXHIBIT 4-9

2035 PEAK HOUR TURNING MOVEMENT PCE VOLUME REFINEMENT PROCESS



uses an AM peak period to peak hour factor of 0.333 and a PM peak period to peak hour factor of 0.25. The passenger car model does not require a passenger car equivalent (PCE) factor (e.g., PCE factor is equal to 1.0), and the truck model uses a PCE factor of 1.5 for buses/recreational vehicles, 2.0 for 3-axle units, and 3.0 for 4+-axle units.

The EVTM passenger car model has a base (validation) year of 2000 and a horizon (future forecast) year of 2030. The difference in model volumes (2030 – 2000) defines the growth in traffic over the 30 year period. Since the existing conditions traffic count data was collected in 2010, the overall model growth needs to be adjusted in order to reflect the growth from 2010 to 2030 (20 years). A factor of 0.67 (20/30) has therefore been applied to the overall model growth to determine the incremental growth that was added to the existing count data to determine the refined Horizon Year (2030) weekday AM and PM peak hour approach and departure traffic volumes.

The EVTM truck model has a base (validation) year of 1994 and a horizon (future forecast) year of 2020. However, SANBAG has directed that all analysis assume that the 1994 base year is functionally equivalent to 2000 conditions. The difference in model volumes (2020 – 2000[1994]) defines the growth in traffic over the 20 year period to 2020 conditions. Since the existing conditions traffic count data was collected in 2010, the overall model growth must be adjusted to reflect the growth from 2010 to 2030 (20 years). A factor of 1.00 (20/20) has therefore been applied to the overall model growth to determine the incremental growth that was added to the existing count data to determine the refined Horizon Year (2030) weekday AM and PM peak hour approach and departure traffic volumes.

The refined future peak hour approach and departure volumes obtained from these calculations are then entered into a spreadsheet program consistent with the National Cooperative Highway Research Program (NCHRP Report 255), along with initial estimates of turning movement proportions. A linear programming algorithm is used to calculate individual turning movements which match the known directional roadway segment forecast volumes computed in the previous step. This program computes a likely set of intersection turning movements from intersection approach counts and the initial turning proportions from each approach leg. An additional refinement step completed for this analysis was to compare the resulting Horizon Year 2030 post-processed volumes to EAPC (2014) traffic volumes and adjust the Year 2030 volumes to reflect reasonable growth beyond EAPC (2014) traffic conditions (by a minimum of 10%). A comparison of these adjusted/refined Year 2030 traffic volumes to the EAPC (2014) traffic volumes indicated substantial growth. The total growth observed at each of the study area intersections ranged between 20% and 60% during the peak hours, approximately equating to 1% to 2% annually between Year 2014 and Year 2035. As such, the adjusted/refined Year 2030 traffic volumes (adjusted to reflect growth beyond EAPC 2014 traffic conditions) could reasonably be considered post-2030 traffic conditions that reflect potential traffic growth in the study area to 2035 and beyond. Where applicable, additional adjustments have been made to account for conservation of flow – where flow conservation is the process of balancing vehicle trips to ensure vehicles exiting an intersection are equal to the number of vehicles entering an adjacent, closely-spaced intersection.

The project only traffic forecasts have been generated by applying the trip generation, distribution and traffic assignment calculations. Project traffic volumes were then subtracted from the refined future year EVTM traffic model volumes to determine Horizon Year (2035) without project traffic conditions. The initial estimate of the future Horizon Year (2035) peak hour turning movements was then reviewed by Urban Crossroads for reasonableness at intersections where model results showed unreasonable turning movements. The initial raw model estimates were adjusted to achieve flow conservation, reasonable growth, and reasonable diversion between parallel routes.

Post-processing worksheets for Horizon Year (2035) with Project conditions are provided in Appendix "1.2".

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5.0 OPENING YEAR (2014) ANALYSIS

This section discusses the methods used to develop EA (2014) and EAP (2014) traffic forecasts, and the resulting intersection operations. Consistent with the County of San Bernardino traffic study guidelines, direct Project impacts and mitigation requirements are identified through the analysis of EAP (2014) traffic conditions.

5.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for EA and EAP (2014) conditions are consistent with those shown previously on Exhibit 3-1, with the exception of Project driveways and those facilities assumed to be constructed by the Project to provide site access are also assumed to be in place for EAP (2014) conditions only.

5.2 EA (2014) TRAFFIC VOLUME FORECASTS

This scenario includes Existing (2012) traffic volumes plus an ambient growth factor of 4.04%. The weekday ADT volumes which can be expected for EA (2014) traffic conditions are shown on Exhibit 5-1. Exhibits 5-2 and 5-3 show the AM and PM peak hour intersection turning movement volumes for EA (2014) traffic conditions.

5.3 EAP (2014) TRAFFIC VOLUME FORECASTS

This scenario includes Existing (2012) traffic volumes plus an ambient growth factor of 4.04% and the addition of project traffic. The weekday ADT volumes which can be expected for EAP (2014) traffic conditions are shown on Exhibit 5-4. Exhibits 5-5 and 5-6 show the AM and PM peak hour intersection turning movement volumes for EAP (2014) traffic conditions.

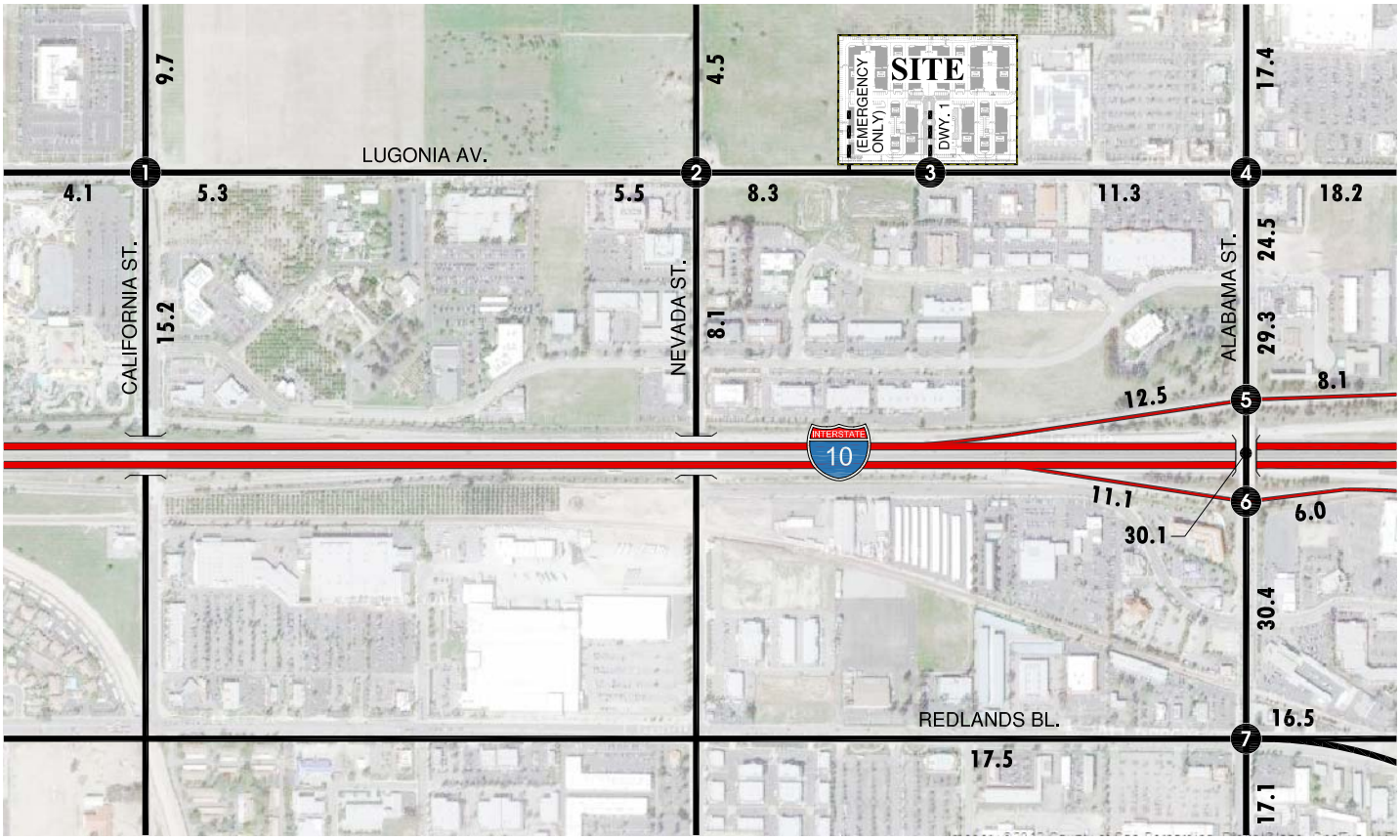
5.4 INTERSECTION OPERATIONS ANALYSIS

Level of service calculations were conducted for the study intersections to evaluate their operations under EA (2014) and EAP (2014) traffic conditions with existing roadway and intersection geometrics consistent with Exhibit 3-1. The intersection analysis results are summarized in Table 5-1 which indicates that the following intersection is anticipated to experience unacceptable LOS (i.e., LOS "E" or LOS "F") during one or both of the peak hours:

ID	Intersection Location	Location
7	Alabama Street / Redlands Boulevard – LOS "D" PM Peak Hour only	Redlands

EXHIBIT 5-1

EXISTING PLUS AMBIENT GROWTH (2014) AVERAGE DAILY TRAFFIC (ADT)



LEGEND:

10.0 = VEHICLES PER DAY (1000's)

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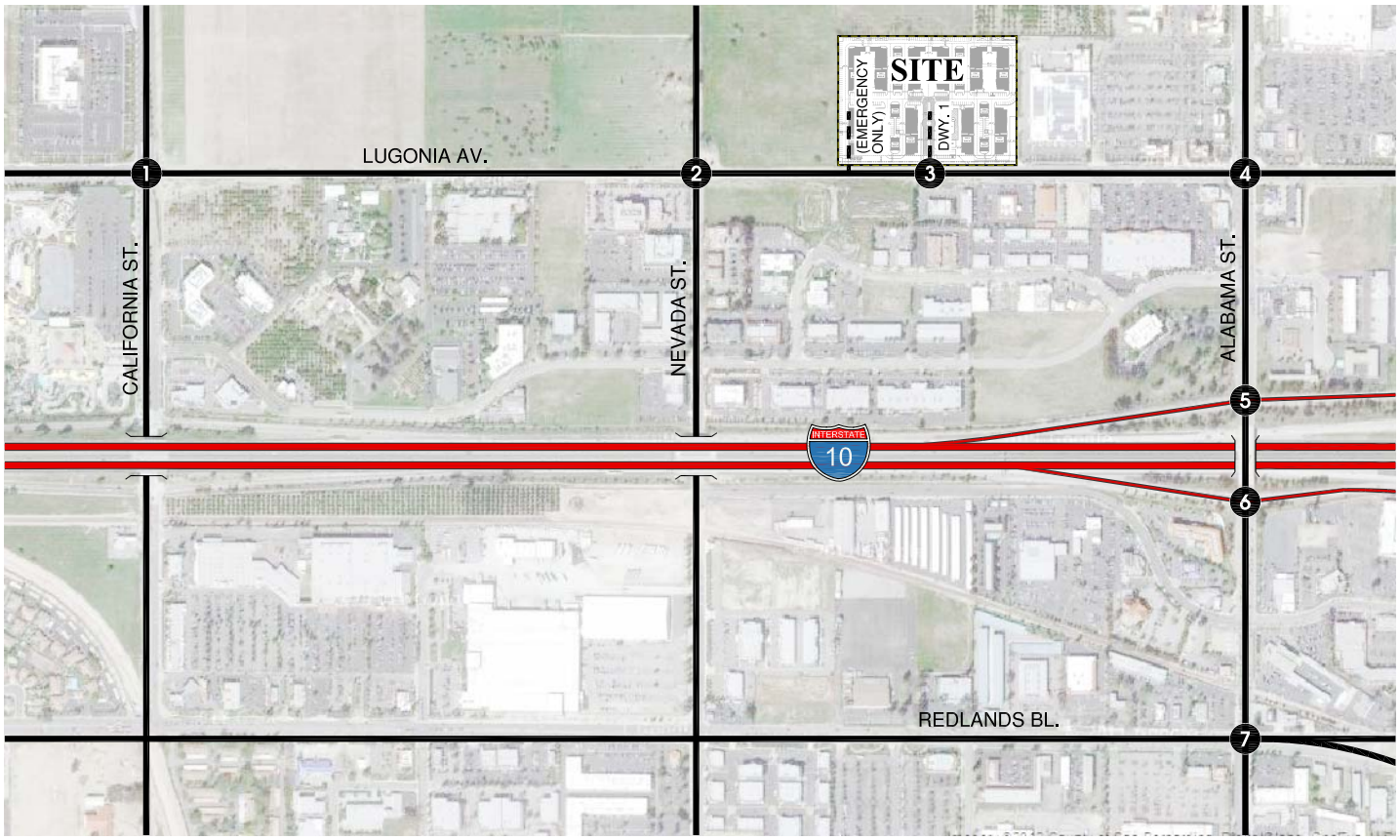
EXHIBIT 5-2

EXISTING PLUS AMBIENT GROWTH (2014) AM PEAK HOUR INTERSECTION VOLUMES



1 California St. & Lugonia Av.	2 Nevada St. & Lugonia Av.	3 Driveway 1 & Lugonia Av.	4 Alabama St. & Lugonia Av.
9 ↓ 209 ↓ 14 ↓ / 28 ← 71 ← 38 ←	14 ↓ 127 ↓ 8 ↓ / 11 ← 125 ← 93 ←	FUTURE INTERSECTION	59 ↓ 349 ↓ 45 ↓ / 31 ← 211 ← 165 ←
2 → 10 → 40 → / 198 → 371 → 128 →	12 → 52 → 31 → / 35 → 85 → 27 →		44 → 83 → 36 → / 91 → 295 → 147 →

5 Alabama St. & I-10 WB Ramps	6 Alabama St. & I-10 EB Ramps	7 Alabama St. & Redlands Bl.
162 ↓ 347 ↓ / 273 ← 307 ← 254 ←	569 ↓ 51 ↓ /	166 ↓ 478 ↓ 87 ↓ / 97 ← 289 ← 45 ←
361 → 477 →	221 → 1 → 388 → / 617 → 128 →	110 → 171 → 31 → / 72 → 479 → 42 →

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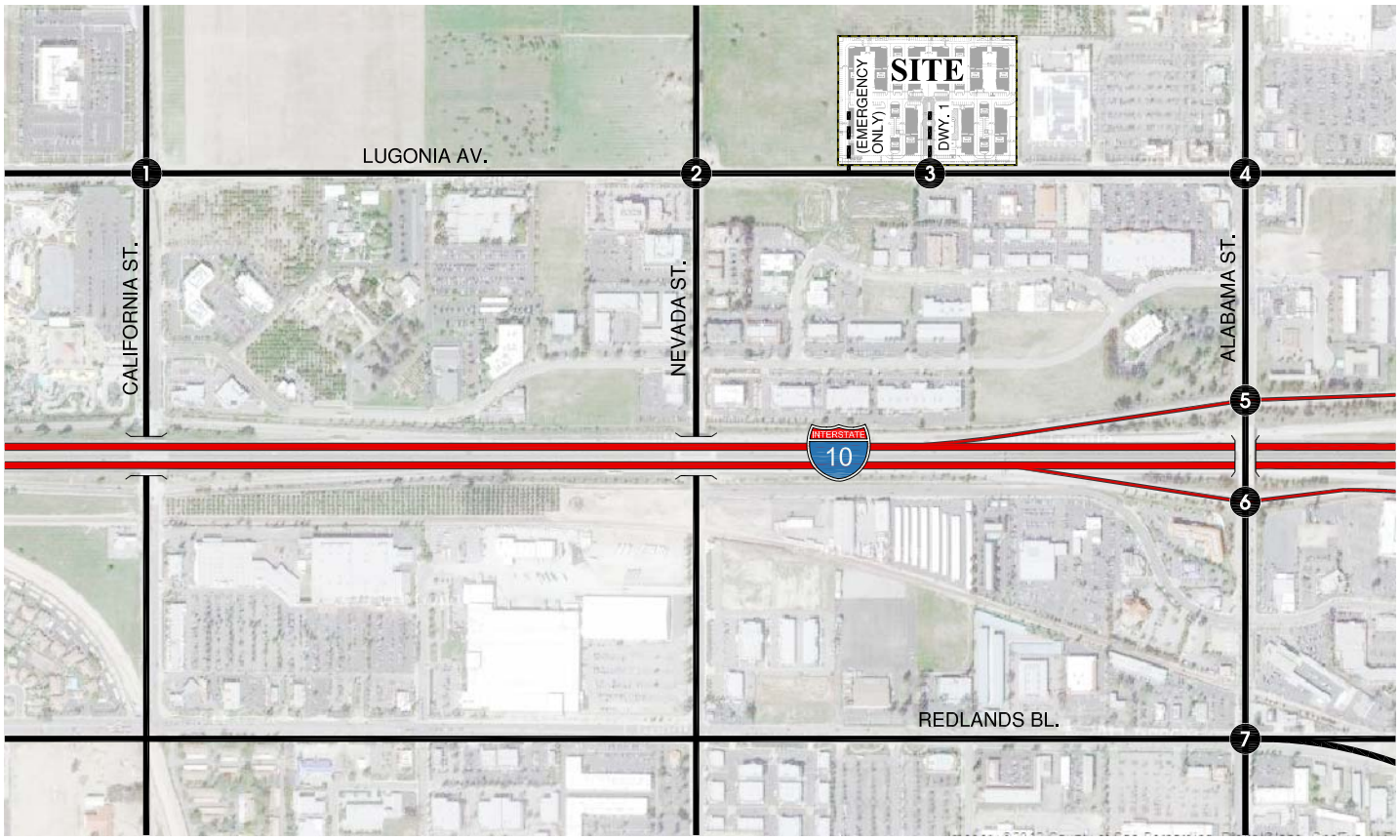
EXHIBIT 5-3

EXISTING PLUS AMBIENT GROWTH (2014) PM PEAK HOUR INTERSECTION VOLUMES



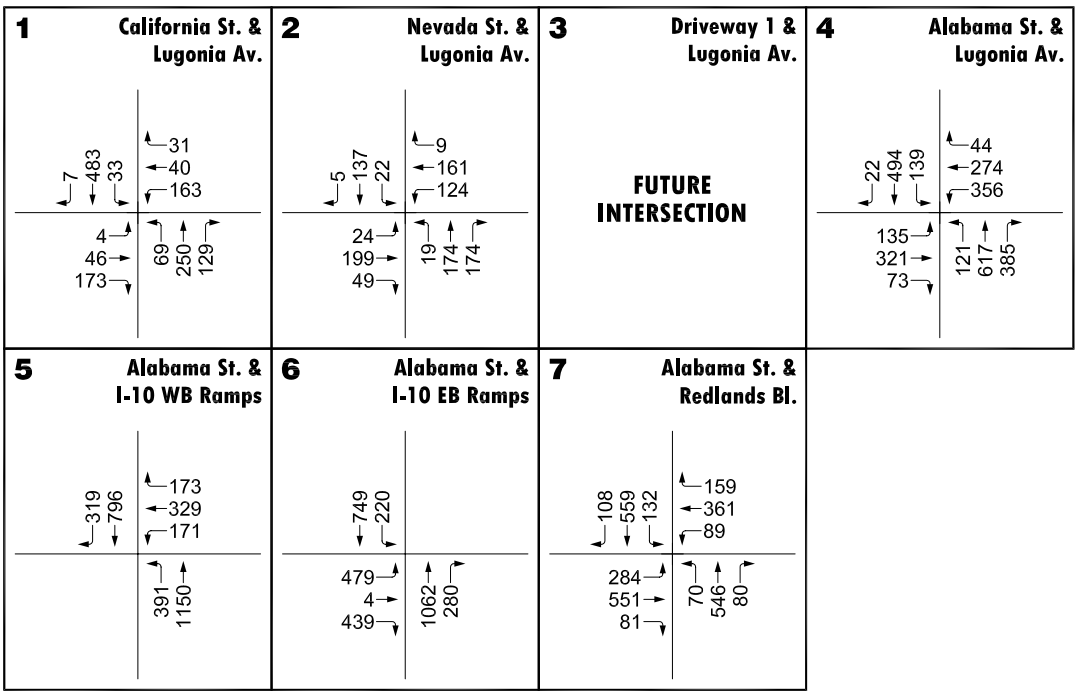
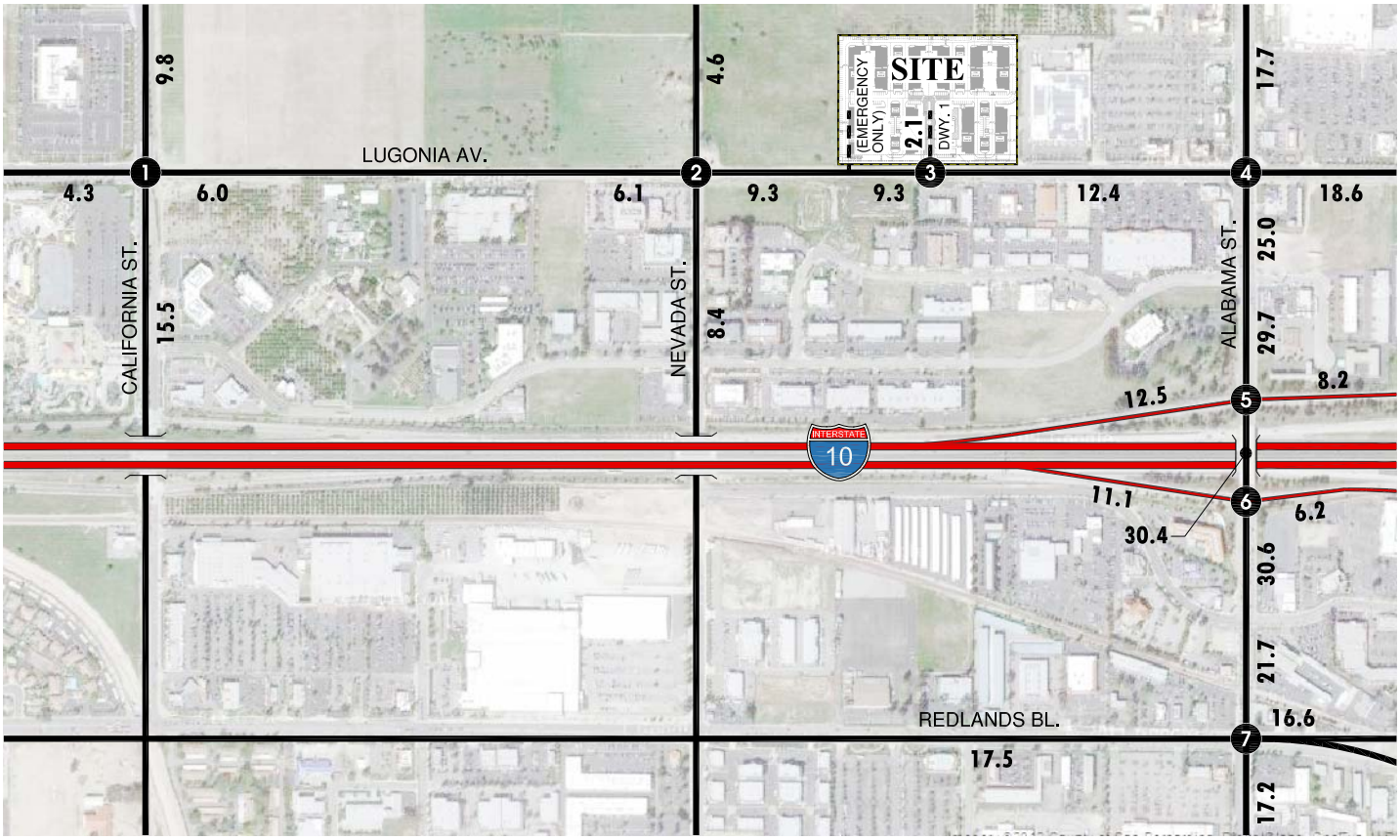


EXHIBIT 5-4

EXISTING PLUS AMBIENT GROWTH (2014) PLUS PROJECT AVERAGE DAILY TRAFFIC (ADT)



LEGEND:

10.0 = VEHICLES PER DAY (1000's)

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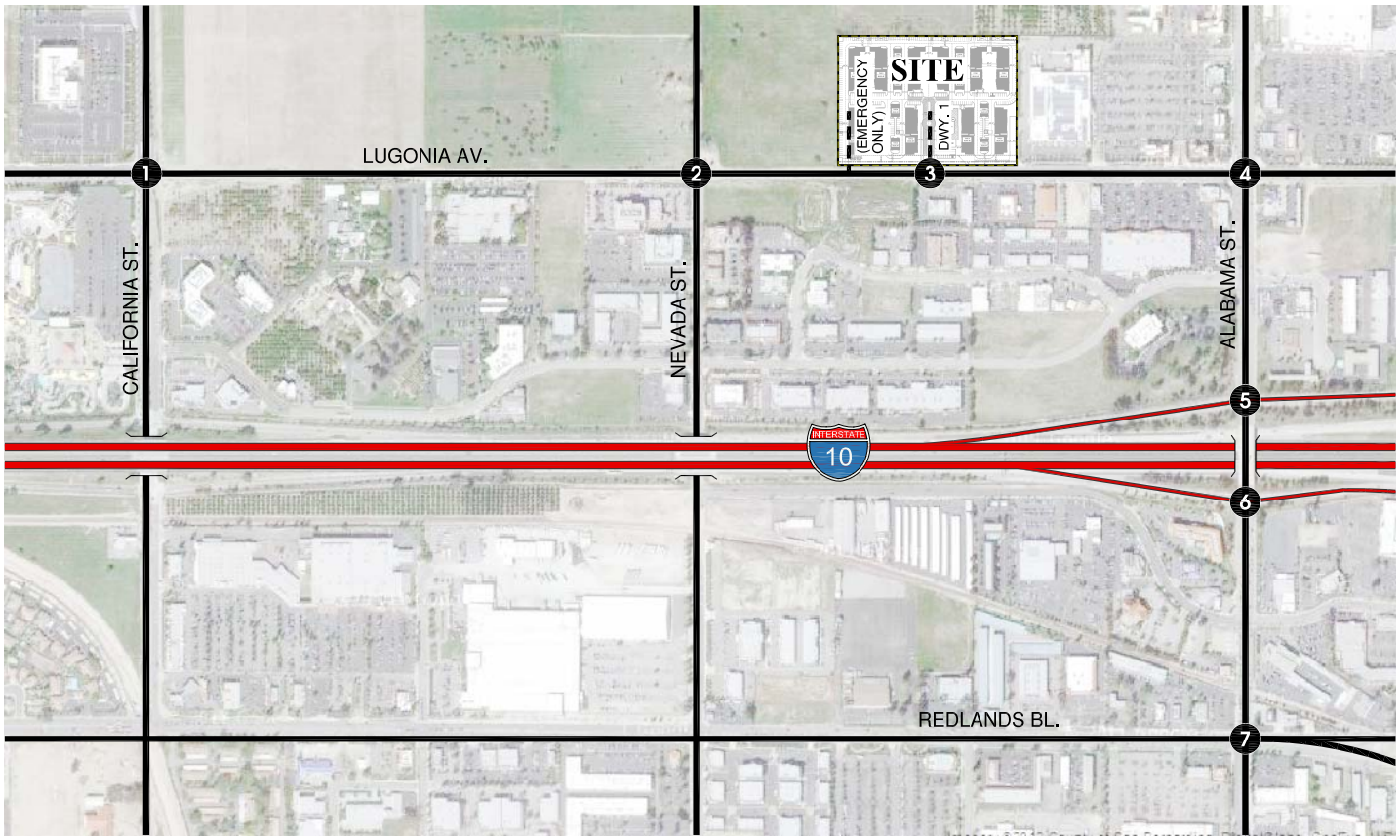
EXHIBIT 5-5

EXISTING PLUS AMBIENT GROWTH (2014) PLUS PROJECT AM PEAK HOUR INTERSECTION VOLUMES



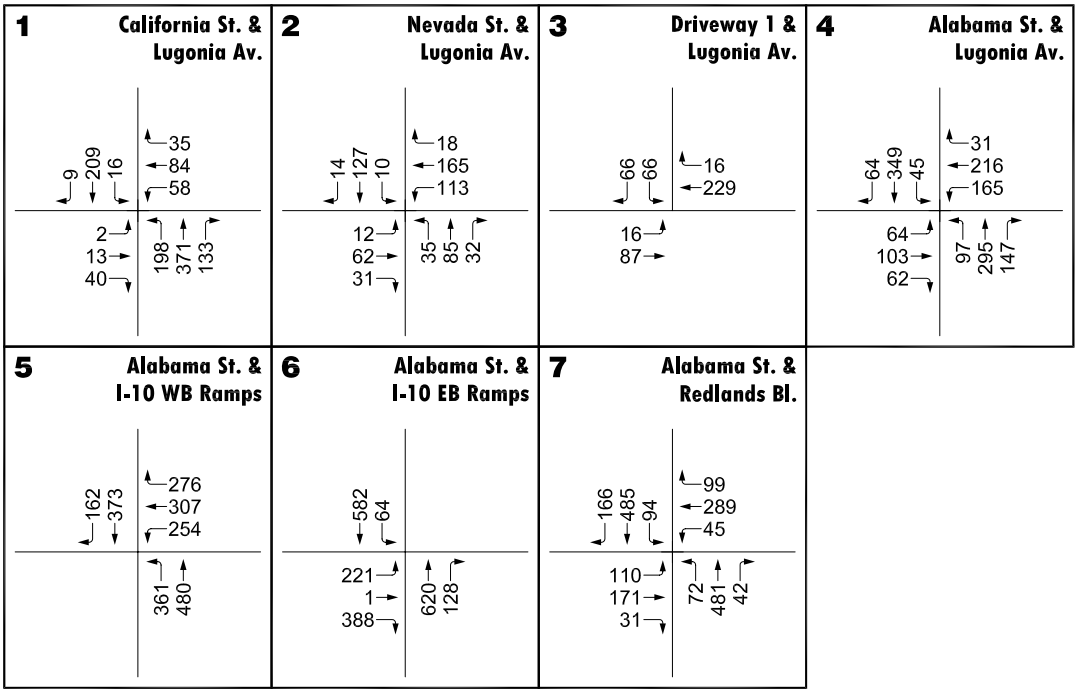


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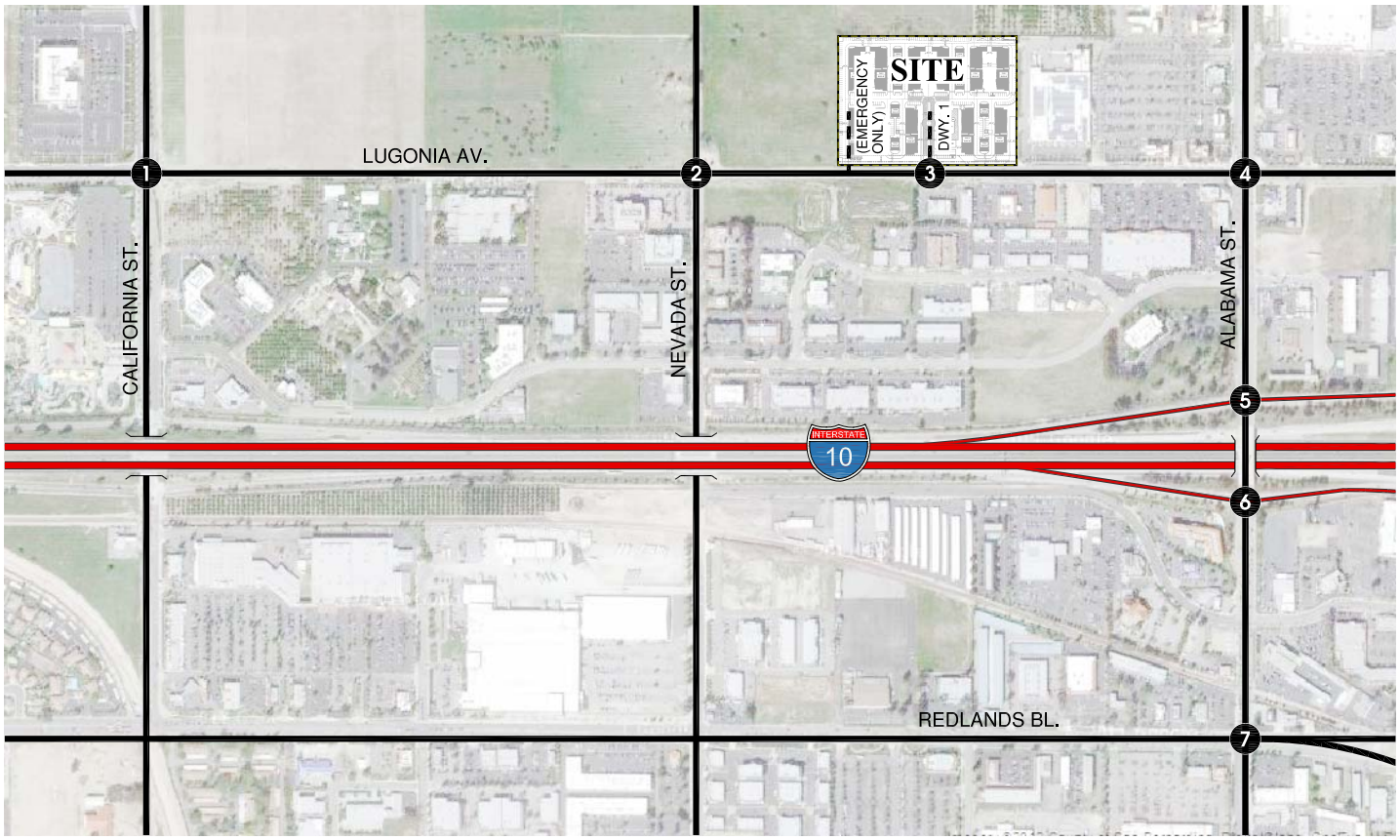
EXHIBIT 5-6

EXISTING PLUS AMBIENT GROWTH (2014) PLUS PROJECT PM PEAK HOUR INTERSECTION VOLUMES



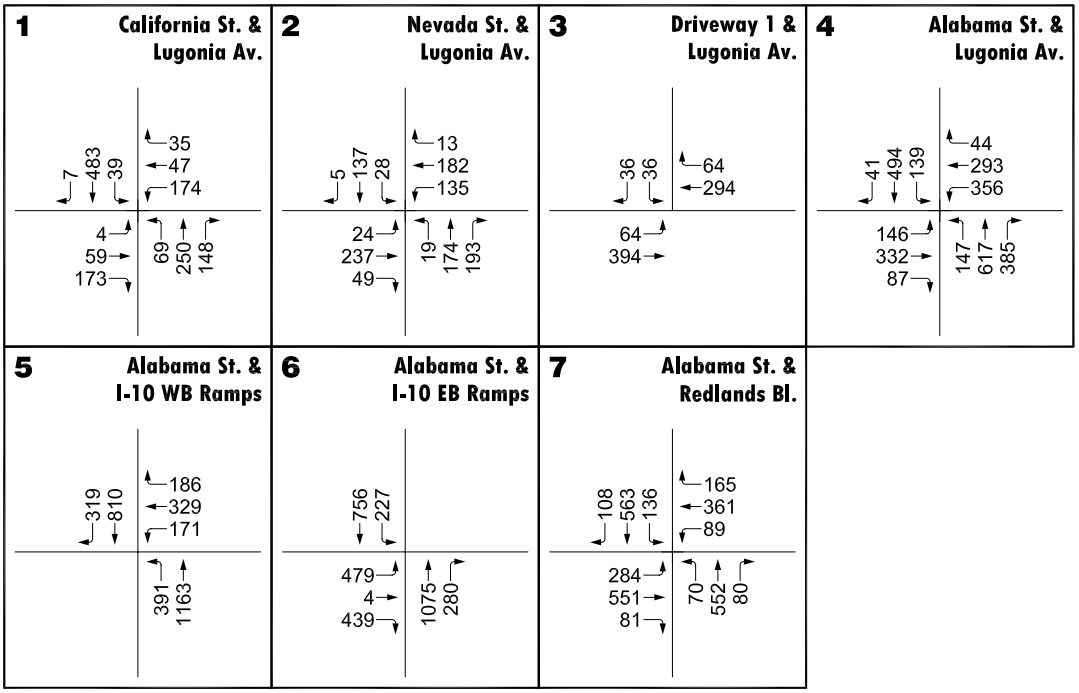


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Table 5-1

Intersection Analysis for Opening Year (2014) Conditions

#	Intersection	Jurisdiction	Traffic Control[2]	Existing (2012)[1]						EA (2014)[1]						EAP (2014)[1]						Project Trip Threshold	Direct Project Impact[3]			
				Weekday AM			Weekday PM			Weekday AM			Weekday PM			Weekday AM			Weekday PM				Weekday AM		Weekday PM	
				Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C	LOS		Project trips or Δ Delay	Impact?	Project trips or Δ Delay	Impact?
1	California St. / Lugonia Av.	Redlands	TS	19.9	0.33	B	24.0	0.38	C	20.2	0.35	C	24.4	0.40	C	22.5	0.38	C	25.3	0.43	C	--	N/A	N/A	N/A	N/A
2	Nevada St. / Lugonia Av.	County/Redlands	AWS	11.2	0.45	B	16.3	0.67	C	11.5	0.47	B	17.5	0.71	C	13.5	0.61	B	22.4	0.82	C	150	84	No	99	No
3	Driveway 1 / Lugonia Av.	County/Redlands	CSS	Not Applicable						Not Applicable						10.9	--	B	14.7	--	B	500	164	No	200	No
4	Alabama St. / Lugonia Av.	County/Redlands	TS	23.2	0.31	C	34.6	0.73	C	23.4	0.33	C	36.4	0.75	D	23.4	0.34	C	36.7	0.76	D	150	82	No	100	No
5	Alabama St. / I-10 WB Ramps	Caltrans	TS	48.1	0.69	D	30.2	0.82	C	54.0	0.71	D	31.6	0.86	C	54.8	0.73	D	32.2	0.87	C	--	N/A	N/A	N/A	N/A
6	Alabama St. / I-10 EB Ramps	Caltrans	TS	18.2	0.37	B	25.1	0.73	C	18.3	0.39	B	26.4	0.76	C	18.6	0.40	B	26.4	0.77	C	--	N/A	N/A	N/A	N/A
7	Alabama St. / Redlands Blvd.	Redlands	TS	30.7	0.57	C	**39.4**	**0.73**	**D**	31.3	0.59	C	**40.7**	**0.76**	**D**	31.4	0.59	C	**40.9**	**0.77**	**D**	**--**	N/A	N/A	0.2	No

[1] Delay and level of service calculated using the following analysis software:
Traffix (Version 8.0 R1, 2008) for signalized and unsignalized intersections. The I-10 Freeway ramps have been analyzed using SYNCHRO 7.
Per the 2000 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[2] CCS = Cross Street Stop; AWS = All Way Stop; TS = Traffic Signal

[3] Significant project impacts are based on the County of San Bernardino and City of Redlands Traffic Performance Criteria and Thresholds of Significance.
County of San Bernardino: Per the County of San Bernardino Road Planning and Design Standards, the following threshold of significance will be utilized to determine whether the addition of project traffic at a study intersection results in a significant project-related impact:
The addition of project traffic to an intersection exceeds the project-related trip tresholds provided in Table 10-1 of Article X; or
The Project's access to a major street requires an access that would create an unsafe situation or a new traffic signal, and/or major revisions to an existing traffic signal; or
The Project adds traffic to a street with design features (e.g., inadequate geometrics, narrow width, road side ditches, sharp curves, poor sight distance, inadequate pavement structure) that may cause potential safety problems with the addition of project traffic.
City of Redlands: A project is considered to cause a significant impact if the addition of project traffic causes an intersection to operate deficiently (LOS D, E, or F) and, if applicable, also causes an unsignalized intersection to satisfy Caltrans traffic signal warrant. In addition, a project is considered to cause a significant impact if a studied intersection is operating at LOS "D" and the addition of the project traffic increases delay by more than 5 seconds. For LOS "E", if the delay is increased by more than 4 seconds with the addition of the project. For LOS "F", if the delay is increased by more than 3 seconds with the addition of the project.
Caltrans: Does not have specific thresholds for determining direct project impacts.

[*] **BOLD** = Unsatisfactory level of service.

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It should be noted that this same intersection does not operate at acceptable levels of service under Existing (2012) conditions. The intersection operations analysis worksheets for EA (2014) conditions are included in Appendix "5.1" of this TIA.

As shown on Table 5-1, the addition of Project traffic has the potential to worsen the peak hour operations of the following intersection, potentially resulting in a significant impact:

Alabama Street / Redlands Boulevard (#7) – This intersection is anticipated to operate at LOS "D" during the PM peak hour under EA (2014) traffic conditions. The intersection is anticipated to continue to operate at LOS "D" with the addition of Project traffic; however, the Project is anticipated to contribute less than 50 peak hour trips to this intersection and would result in less than a five (5) second increase to the EA (2014) delay. Based on the stated significance threshold for City of Redlands intersections already operating at LOS "D" under pre-project conditions, the impact is considered "less-than-significant".

The intersection operations analysis worksheets for EAP (2014) conditions are included in Appendix "5.2" of this TIA.

5.5 TRAFFIC SIGNAL WARRANTS ANALYSIS

For both EA (2014) and EAP (2014) traffic conditions, no additional traffic signals appear to be warranted in addition to those currently warranted for Existing (2012) conditions (see Appendix "5.3").

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6.0 OPENING YEAR CUMULATIVE (2014) TRAFFIC ANALYSIS

This section discusses the methods used to develop EAPC (2014) traffic forecasts, and the resulting intersection operations. Consistent with the County of San Bernardino traffic study guidelines, A comparison of the Existing (2012) and EAPC (2014) traffic conditions analysis results has been utilized to identify cumulative impacts.

6.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for EAPC (2014) conditions is consistent with those shown previously on Exhibit 3-1, with the exception of project driveways and those facilities assumed to be constructed by the Project or cumulative development projects to provide site access are also assumed to be in place for EAPC (2014) traffic conditions.

6.2 EAPC (2014) TRAFFIC VOLUME FORECASTS

This scenario includes Existing (2012) traffic volumes, an ambient growth factor of 4.04%, traffic from pending and approved but not yet constructed known development projects in the area and the addition of Project traffic. The ADT volumes which can be expected for EAPC (2014) traffic conditions are shown on Exhibit 6-1. Exhibits 6-2 and 6-3 show the AM and PM peak hour intersection turning movement volumes for EAPC (2014) with Project traffic conditions.

6.3 INTERSECTION OPERATIONS ANALYSIS

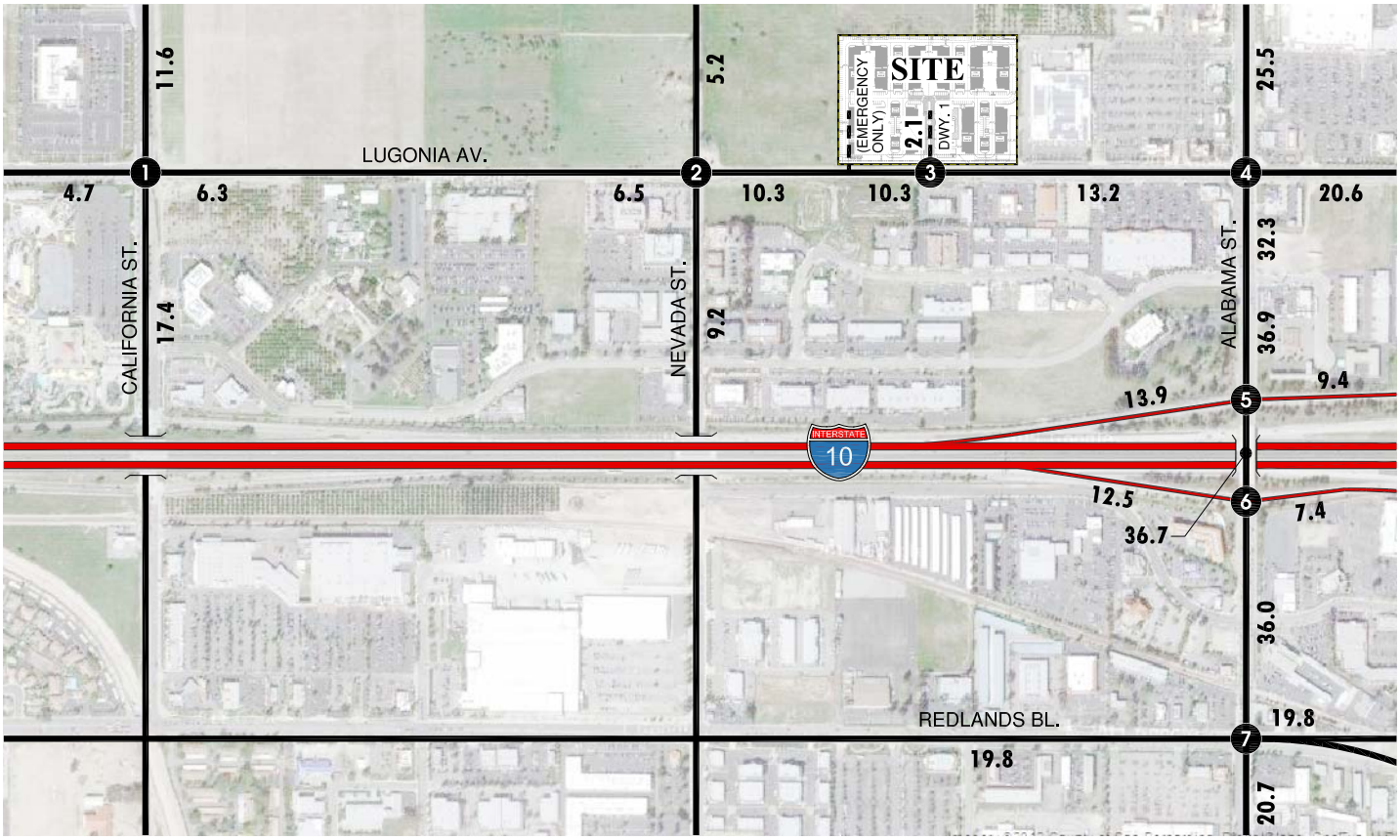
Level of service calculations were conducted for the study intersections to evaluate their operations under EAPC (2014) conditions with existing roadway and intersection geometrics consistent with Exhibit 3-1. The intersection analysis results are summarized in Table 6-1 which indicates that the following intersections are anticipated to experience unacceptable LOS (i.e., LOS "E" or LOS "F") during one or both of the peak hours, as defined by each of the governing jurisdictions, resulting in a potentially significant cumulative traffic impact:

ID	Intersection Location	Location
5	Alabama Street / I-10 Westbound Ramps – LOS "E" AM Peak Hour; LOS "F" PM Peak Hour	Caltrans
7	Alabama Street / Redlands Boulevard – LOS "E" PM Peak Hour Only	Redlands

The intersection operations analysis worksheets for EAPC (2014) conditions are included in Appendix "6.1" of this TIA.

EXHIBIT 6-1

EXISTING PLUS AMBIENT GROWTH (2014) PLUS PROJECT PLUS CUMULATIVE DEVELOPMENT AVERAGE DAILY TRAFFIC (ADT)



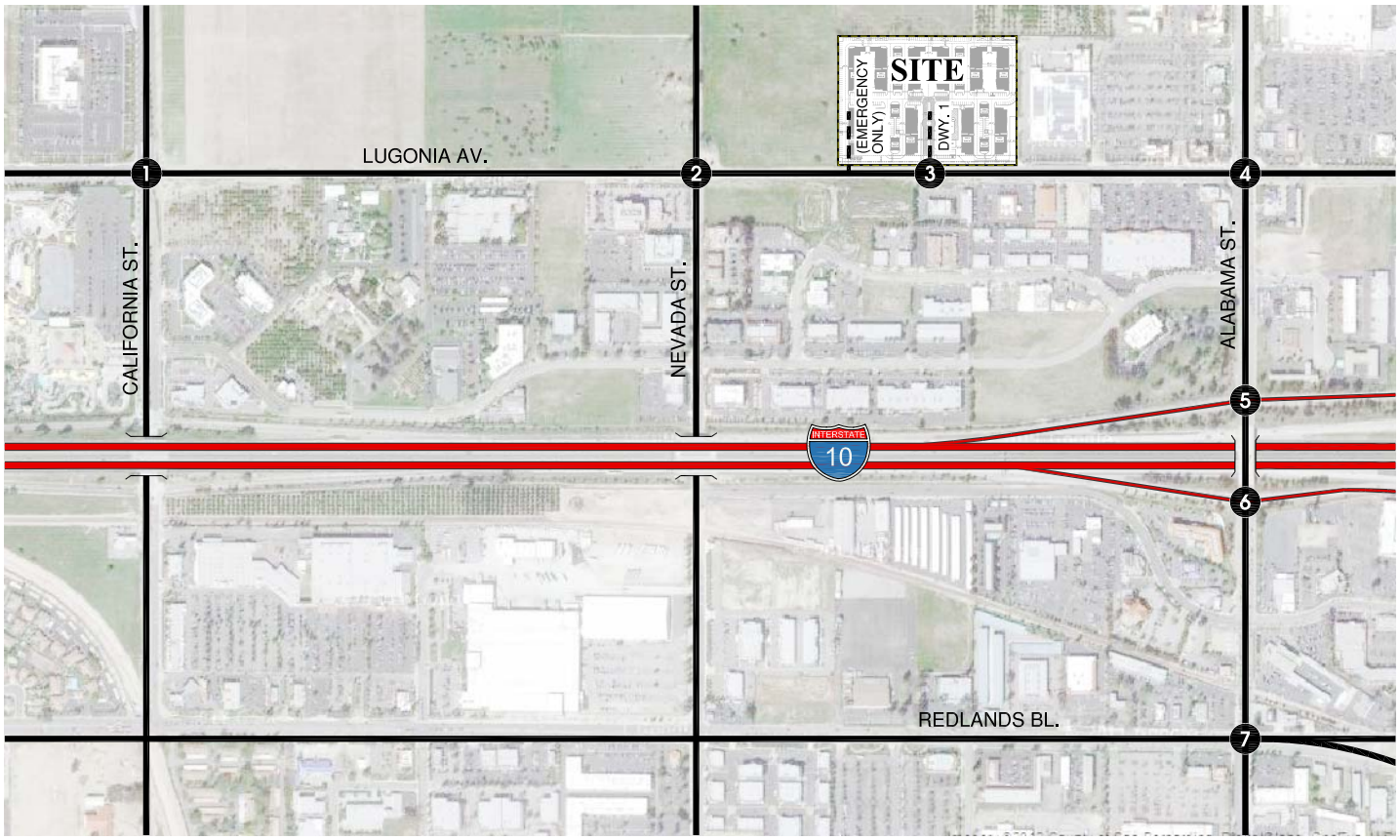
LEGEND:

10.0 = VEHICLES PER DAY (1000's)

N

EXHIBIT 6-2

EXISTING PLUS AMBIENT GROWTH (2014) PLUS PROJECT PLUS CUMULATIVE DEVELOPMENT AM PEAK HOUR INTERSECTION VOLUMES



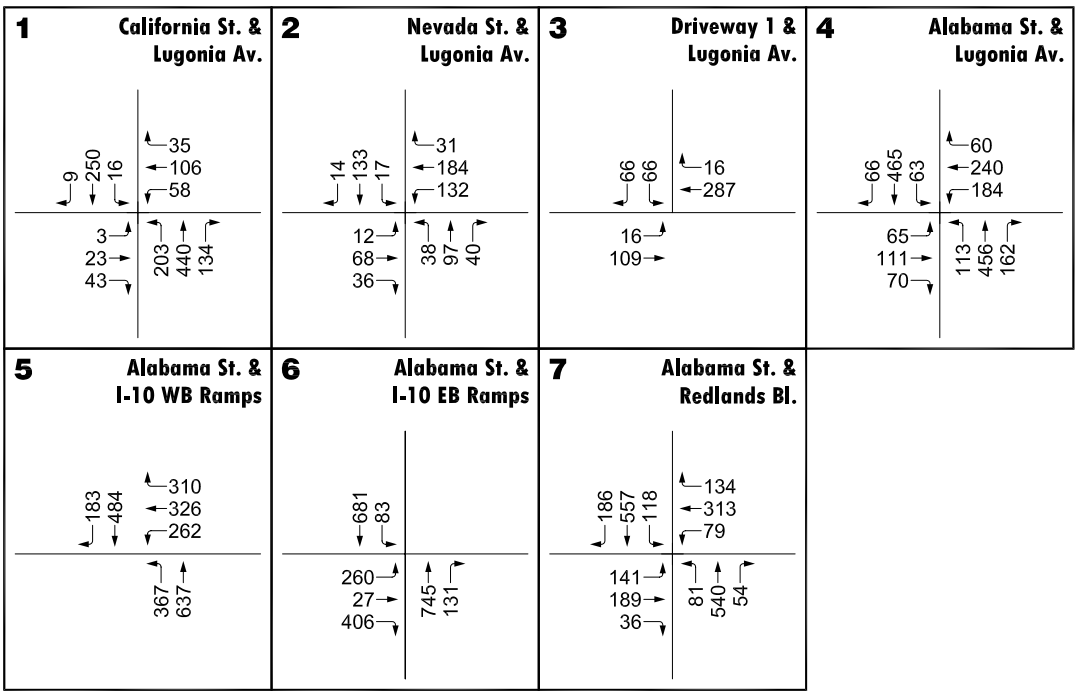
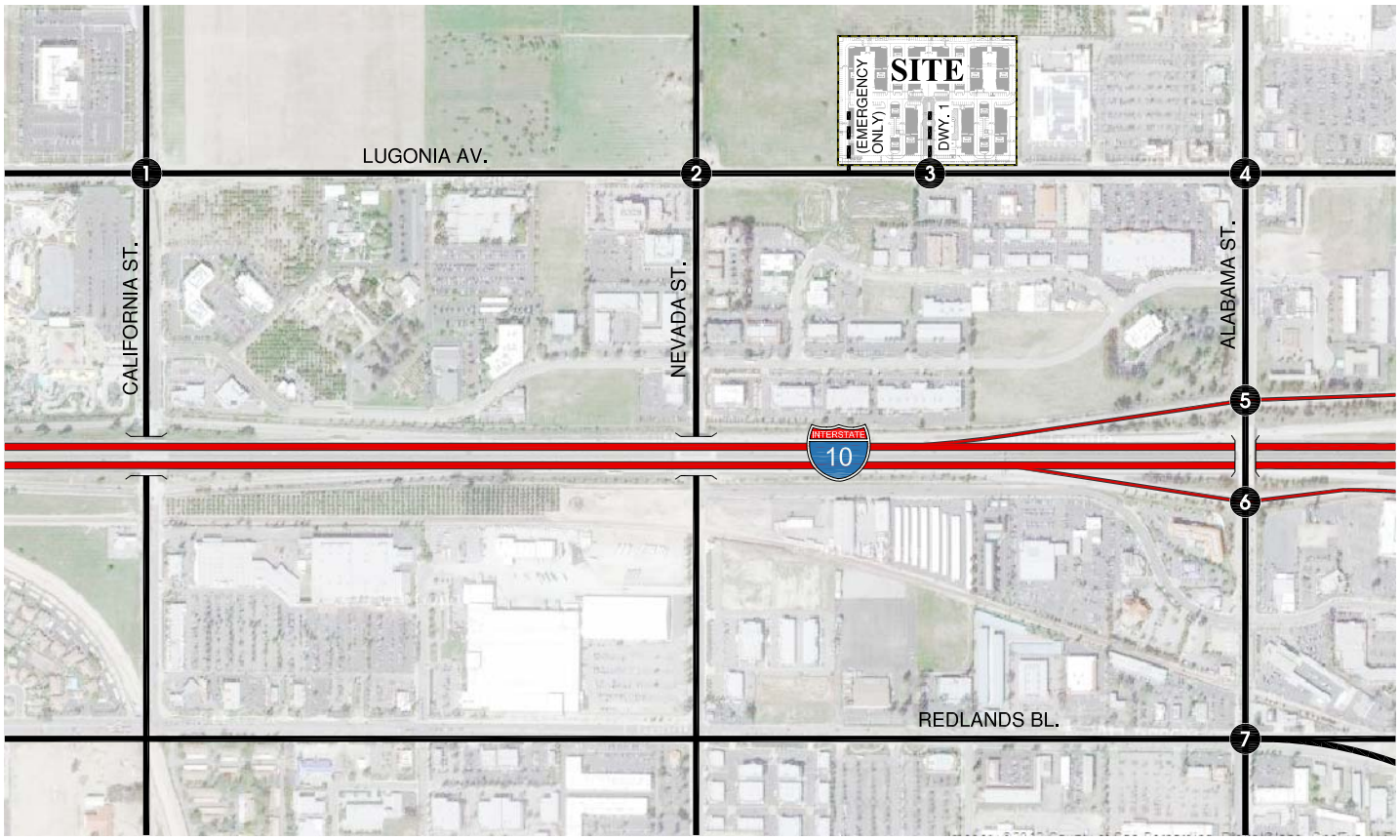


EXHIBIT 6-3

EXISTING PLUS AMBIENT GROWTH (2014) PLUS PROJECT PLUS CUMULATIVE DEVELOPMENT PM PEAK HOUR INTERSECTION VOLUMES



1 California St. & Lugonia Av.	2 Nevada St. & Lugonia Av.	3 Driveway 1 & Lugonia Av.	4 Alabama St. & Lugonia Av.
8, 558, 39 / 35, 60, 177	5, 150, 42 / 21, 193, 145	36, 36 / 64, 323	43, 839, 209 / 103, 304, 372
4, 82, 179 / 73, 300, 149	24, 258, 52 / 24, 181, 214	64, 466 /	150, 361, 110 / 157, 919, 408

5 Alabama St. & I-10 WB Ramps	6 Alabama St. & I-10 EB Ramps	7 Alabama St. & Redlands Bl.
385, 1126 / 229, 374, 175	1018, 285 /	175, 676, 226 / 243, 390, 109
415, 1442 /	523, 42, 449 / 1334, 290	342, 586, 91 / 77, 686, 125

N

Table 6-1

Intersection Analysis for Existing Plus Ambient Growth (2014) Plus Project Plus Cumulative Development Conditions

#	Intersection	Jurisdiction	Traffic Control[3]	Intersection Approach Lanes[1]												EAPC (2014)					
				Northbound			Southbound			Eastbound			Westbound			Weekday AM[2]			Weekday PM[2]		
				L	T	R	L	T	R	L	T	R	L	T	R	Delay	V/C	LOS	Delay	V/C	LOS
1	California St. / Lugonia Av.	Redlands	TS	1	1	1	1	2	1	0	1	1	0	1	0	23.3	0.43	C	25.6	0.43	C
2	Nevada St. / Lugonia Av.	County/Redlands	AWS	0	1	d	0	1	0	0	1	d	0	1	0	13.2	0.60	B	31.4	0.94	D
3	Driveway 1 / Lugonia Av.	County/Redlands	CSS	0	0	0	0	1	0	1	1	0	0	2	0	11.6	--	B	16.2	--	C
4	Alabama St. / Lugonia Av.	County/Redlands	TS	1	2	d	1	3	d	1	2	0	1	2	d	23.9	0.39	C	44.9	0.85	D
5	Alabama St. / I-10 WB Ramps	Caltrans	TS	1	2	0	0	2	0	0	0	0	0	2	0	57.2	0.78	E	66.9	1.05	F[4]
6	Alabama St. / I-10 EB Ramps	Caltrans	TS	0	2	d	1	2	0	0	2	0	0	0	0	20.7	0.50	C	35.6	0.95	D
7	Alabama St. / Redlands Blvd.	Redlands	TS	1	2	0	1	2	0	1	2	d	1	2	d	33.8	0.64	C	58.8	0.96	E

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; > = Right-Turn Overlap Phasing; d = Defacto Right Turn Lane; 1 = Improvement

[2] Delay and level of service calculated using the following analysis software:
Traffix (Version 8.0 R1, 2008) for signalized and unsignalized intersections. The I-10 Freeway ramps have been analyzed using SYNCHRO 7.
Per the 2000 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[3] CCS = Cross Street Stop; AWS = All Way Stop; TS = Traffic Signal

[4] V/C is greater than 1.0; Level of Service "F".

* BOLD = Unsatisfactory level of service.

Measures to address cumulative impacts for EAPC (2014) traffic conditions are discussed in Section 6.5 *EAPC (2014) Cumulative Impacts and Recommended Improvements*.

6.4 TRAFFIC SIGNAL WARRANTS ANALYSIS

For EAPC (2014) traffic conditions, no additional traffic signals appear to be warranted in addition to those currently warranted for Existing (2012) conditions (see Appendix "6.2").

6.5 EAPC (2014) CUMULATIVE IMPACTS AND RECOMMENDED IMPROVEMENTS

Improvement strategies have been recommended at intersections that have been identified as cumulatively impacted to reduce each location's peak hour delay and improve the associated LOS grade to an acceptable letter grade (per the requirements of each governing jurisdiction). The effectiveness of the recommended improvement strategies discussed below to address EAPC (2014) cumulative traffic impacts are presented in Table 6-2. As shown in Table 6-2, the peak hour LOS operations at each of the cumulatively impacted intersections are anticipated to reach acceptable levels with the recommended improvements.

The following recommended improvements are recommended to reduce EAPC (2014) cumulative impacts to "less-than-significant":

Recommended Improvement – Alabama Street / I-10 Westbound Ramps (#5) – The following improvements (shown in **bold**) are necessary to reduce the cumulative impact to less-than-significant:
Northbound: One left turn lane and two through lanes.
Southbound: Re-stripe to provide two through lanes and **one right turn lane**.
Eastbound: Not applicable.
Westbound: One shared left-through lane and one shared through-right turn lane.

Recommended Improvement – Alabama Street / Redlands Boulevard (#7) – The following improvements (shown in **bold**) are necessary to reduce the cumulative impact to less-than-significant:
Northbound: One left turn lane, one through lane and one shared through-right turn lane.
Southbound: One left turn lane, one through lane and one shared through-right turn lane.
Eastbound: Re-stripe and reconstruct the existing median to provide **two left turn lanes**, one through lane and one shared through-right turn lane.
Westbound: One left turn lane, two through lanes and one defacto right turn lane.
Recommended improvements also include providing protected left turn phasing for the northbound and southbound approaches (currently split phase).

The applicant shall participate in the funding or construction of off-site improvements, including traffic signals that are needed to serve cumulative traffic conditions through the payment of County of San

Table 6-2

Intersection Analysis for Existing Plus Ambient Growth (2014) Plus Project Plus Cumulative Development Conditions
With Improvements to Mitigate Cumulative Impacts

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Weekday AM[2]			Weekday PM[2]		
			Northbound			Southbound			Eastbound			Westbound								
			L	T	R	L	T	R	L	T	R	L	T	R	Delay	V/C	LOS	Delay	V/C	LOS
5	Alabama Street / I-10 Westbound Ramps																			
	- Without Improvements	TS	1	2	0	0	2	0	0	0	0	0	2	0	57.2	0.78	E	66.9	1.05	F[4]
	- With Improvements	TS	1	2	0	0	2	1	0	0	0	0	2	0	23.7	0.47	C	31.1	0.75	C
7	Alabama Street / Redlands Boulevard																			
	- Without Improvements	TS	1	2	0	1	2	0	1	2	d	1	2	d	33.8	0.64	C	58.8	0.96	E
	- With Improvements[5]	TS	1	2	0	1	2	0	2	2	0	1	2	d	31.4	0.70	C	32.6	0.89	C

1 When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; > = Right-Turn Overlap Phasing; d = Defacto Right Turn Lane; 1 = Improvement

2 Delay and level of service calculated using the following analysis software:
Traffix (Version 8.0 R1, 2008) for signalized and unsignalized intersections. The I-10 Freeway ramps have been analyzed using SYNCHRO 7.
Per the 2000 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

3 CCS = Cross Street Stop; AWS = All Way Stop; TS = Traffic Signal

4 V/C is greater than 1.0; Level of Service "F".

5 Change north-south traffic signal phasing to protected from split phase.

Bernardino Regional Transportation Development Mitigation Plan (RTDMP) fees or a fair share contribution, as directed by the County. These fees are collected as part of a funding mechanism aimed at ensuring that regional highways and arterial expansions keep pace with the projected population increases. Each of the improvements discussed above have been identified as being included as part of the RTDMP program or fair share contribution in Section 9 *Local and Regional Funding Mechanisms* of this TIA.

Worksheets for EAPC (2014) conditions, with improvements, HCM calculations are provided in Appendix "6.3".

7.0 HORIZON YEAR (2035) TRAFFIC ANALYSIS

This section discusses the methods used to develop Horizon Year (2035) traffic forecasts for without and with Project conditions and the resulting intersection operations. Horizon Year (2035) without and with Project traffic conditions serve as the basis for identifying long-range cumulative traffic impacts.

7.1 ROADWAY IMPROVEMENTS

Similar to EAPC (2014) traffic conditions, the lane configurations and traffic controls assumed to be in place for Horizon Year (2035) conditions is consistent with those shown previously on Exhibit 3-1, with the exception of project driveways and those facilities assumed to be constructed by the Project or cumulative development projects to provide site access are also assumed to be in place for Horizon Year (2035) traffic conditions. Mitigation measures are consistent with or within the proposed General Plan roadway cross-sections.

7.2 HORIZON YEAR (2035) WITHOUT PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes the refined post-processed volumes obtained from the East Valley Traffic Model (EVTM). A detailed discussion of the post-processing methodology and volume development for Horizon Year (2035) traffic conditions can be found in Section 4.9 *Horizon Year (2035) Conditions* of this report. The weekday ADT volumes which can be expected for Horizon Year (2035) without Project traffic conditions are shown on Exhibit 7-1. Exhibits 7-2 and 7-3 show the AM and PM peak hour intersection turning movement volumes for Horizon Year (2035) without Project traffic conditions.

7.3 HORIZON YEAR (2035) WITH PROJECT TRAFFIC VOLUME FORECASTS

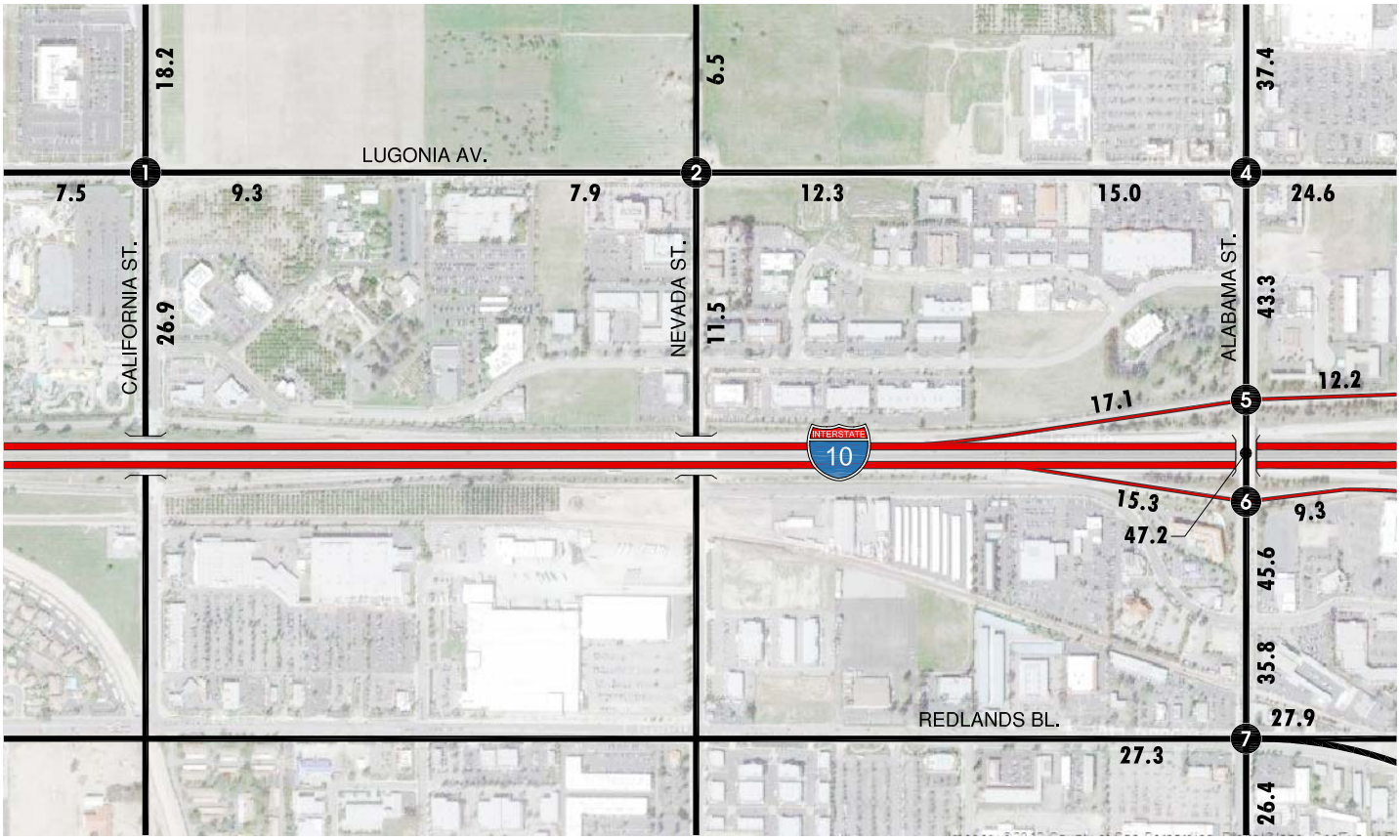
This scenario includes the refined post-processed volumes obtained from the EVTM. A detailed discussion of the post-processing methodology and volume development for Horizon Year (2035) traffic conditions can be found in Section 4.9 *Horizon Year (2035) Conditions* of this report. The weekday ADT volumes which can be expected for Horizon Year (2035) with Project traffic conditions are shown on Exhibit 7-4. Exhibits 7-5 and 7-6 show the AM and PM peak hour intersection turning movement volumes for Horizon Year (2035) with Project traffic conditions.

7.4 INTERSECTION OPERATIONS ANALYSIS

LOS calculations were conducted for the study intersections to evaluate their operations under Horizon Year (2035) without and with Project conditions with Existing (2012) baseline roadway and intersection geometrics consistent with Exhibit 3-1. The intersection analysis results are summarized in Table 7-1 which indicates that the following intersection locations will experience unacceptable LOS (i.e., LOS "E" or LOS "F") during one or both of the peak hours:

EXHIBIT 7-1

HORIZON YEAR (2035) WITHOUT PROJECT AVERAGE DAILY TRAFFIC (ADT)



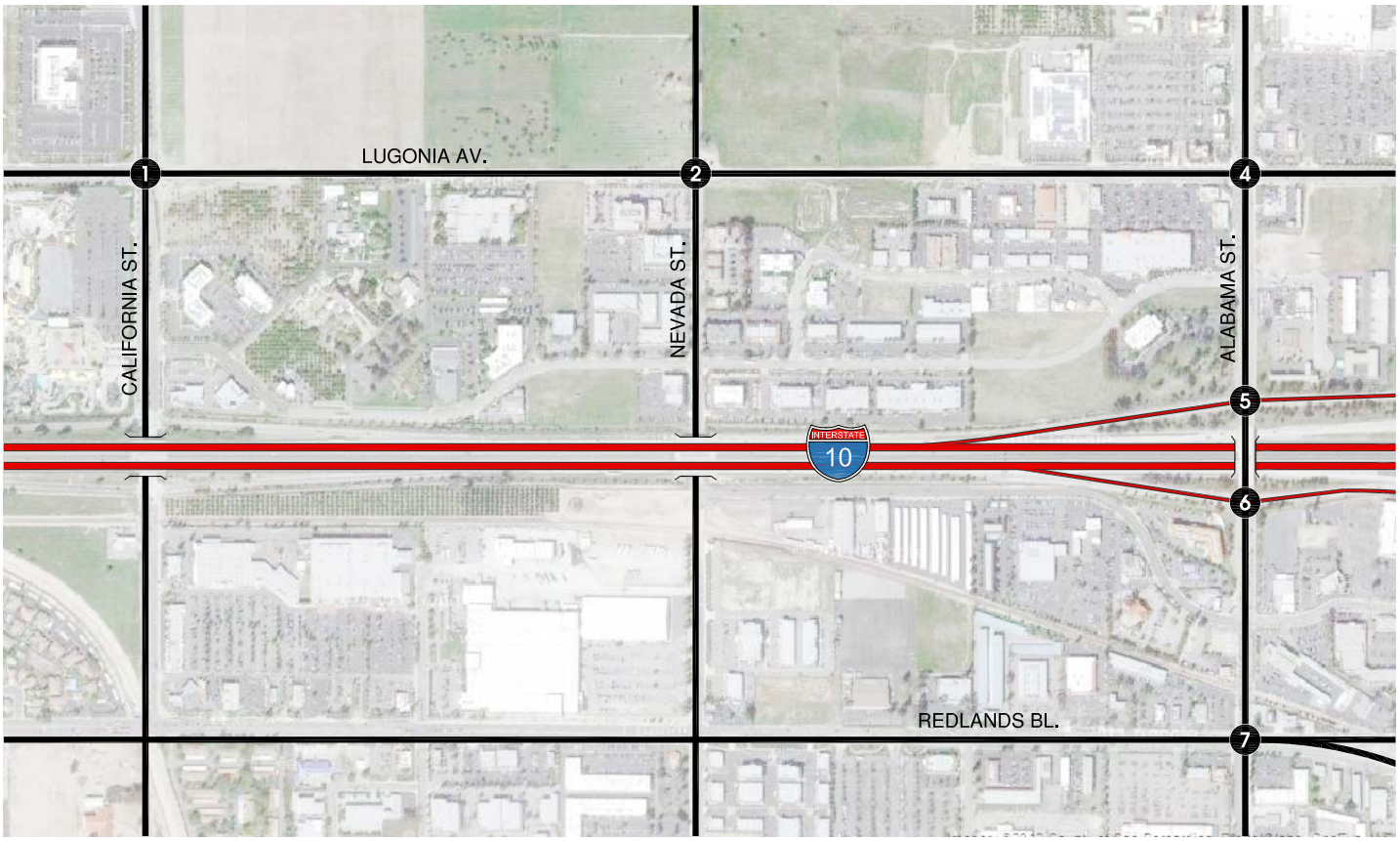
LEGEND:

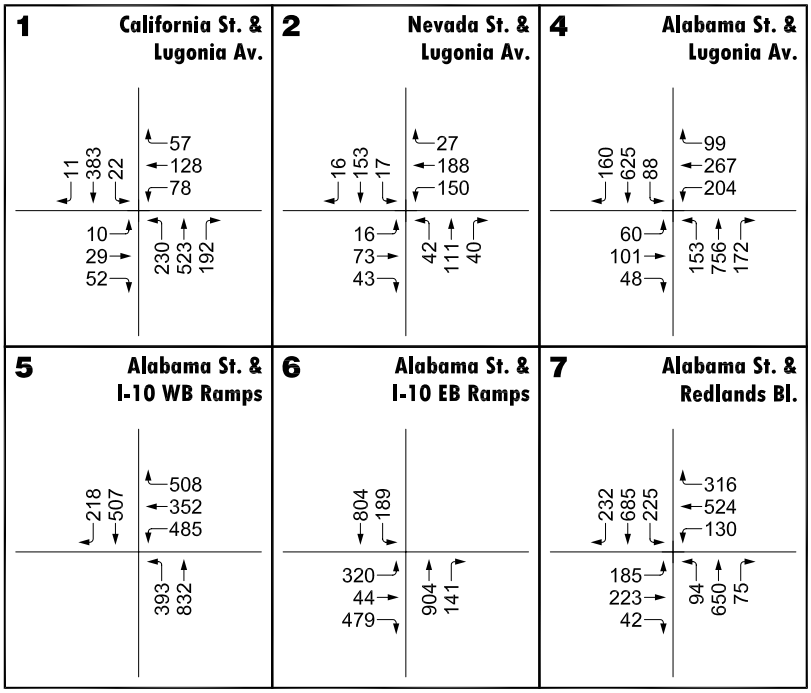
10.0 = VEHICLES PER DAY (1000's)

N

EXHIBIT 7-2

HORIZON YEAR (2035) WITHOUT PROJECT AM PEAK HOUR INTERSECTION VOLUMES

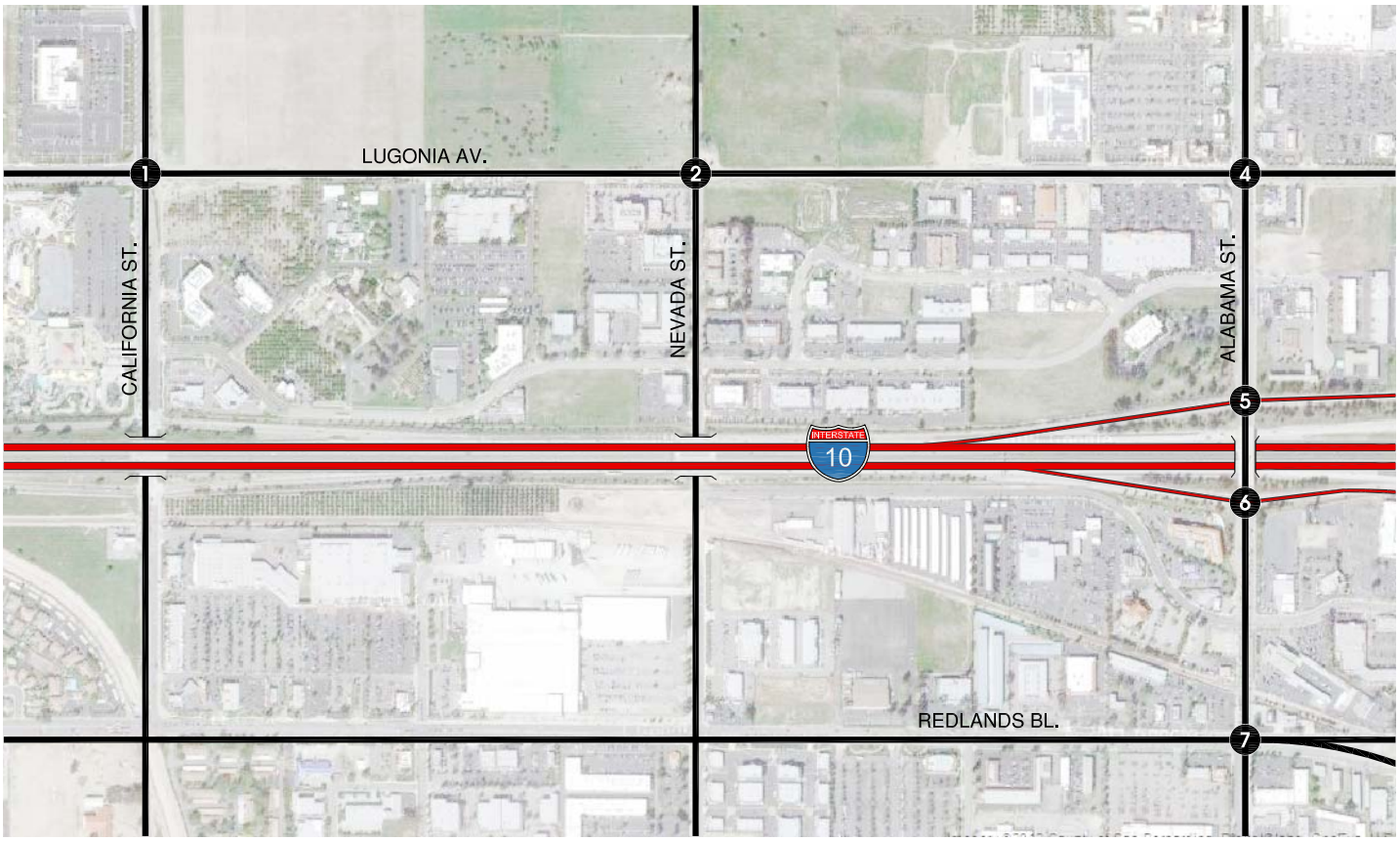


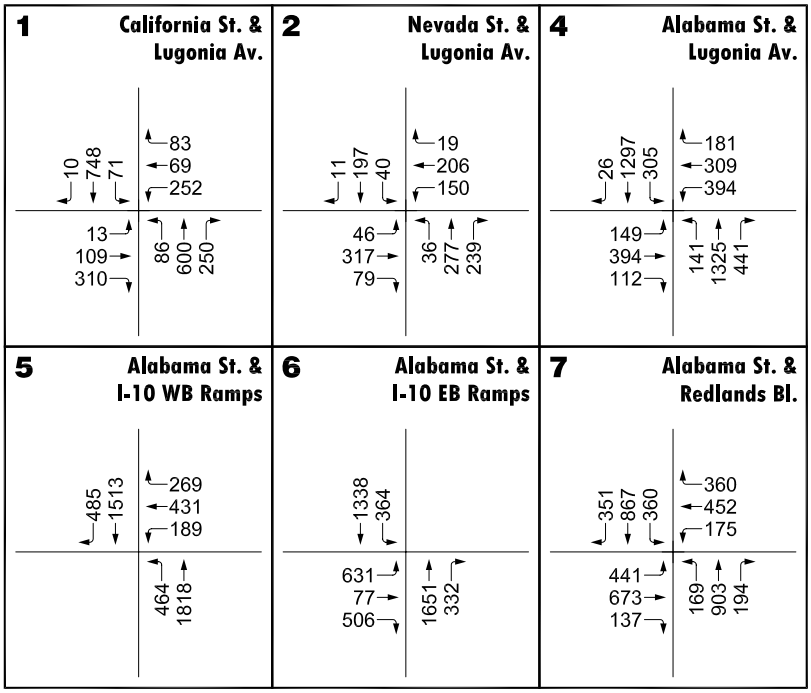


N

EXHIBIT 7-3

HORIZON YEAR (2035) WITHOUT PROJECT PM PEAK HOUR INTERSECTION VOLUMES

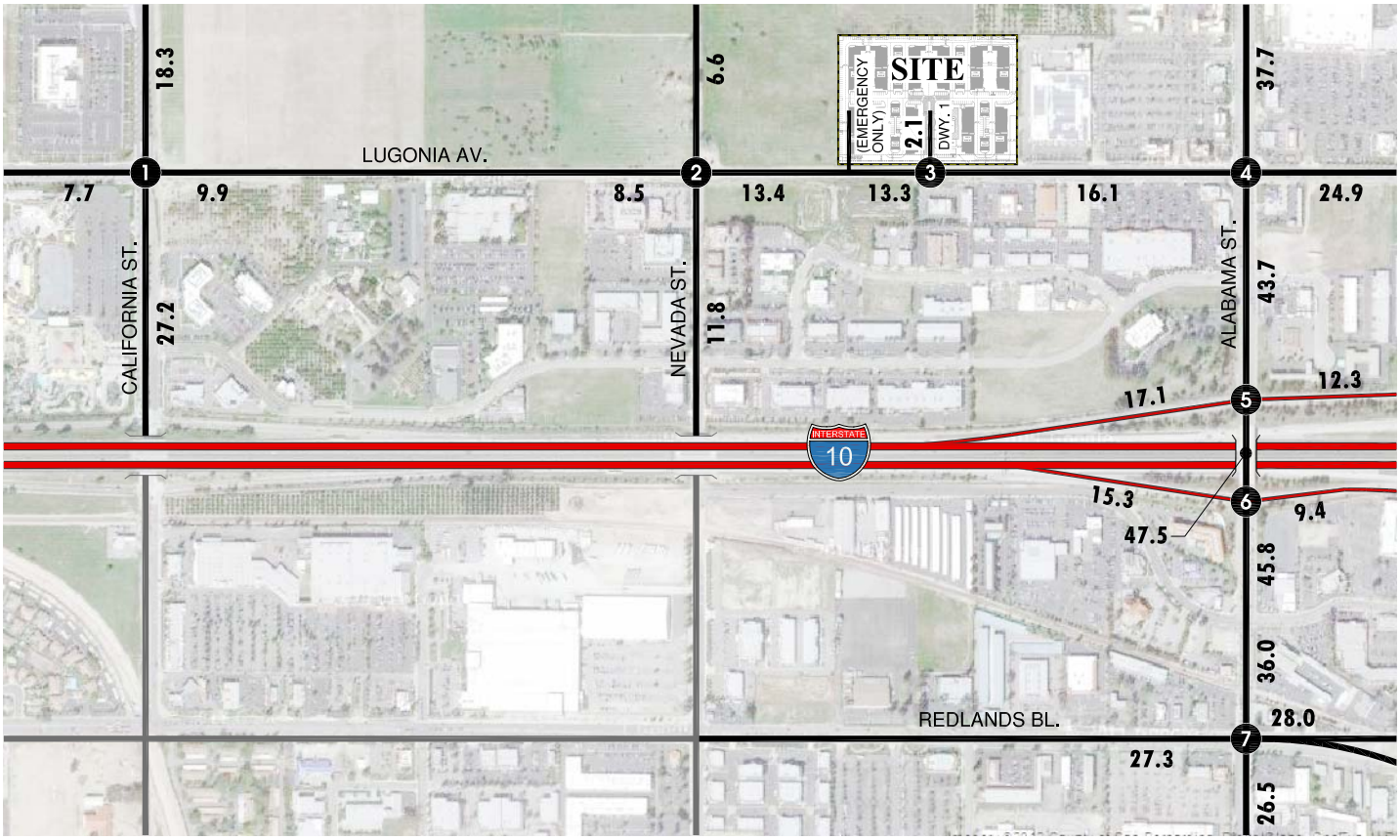




N

EXHIBIT 7-4

HORIZON YEAR (2035) WITH PROJECT AVERAGE DAILY TRAFFIC (ADT)



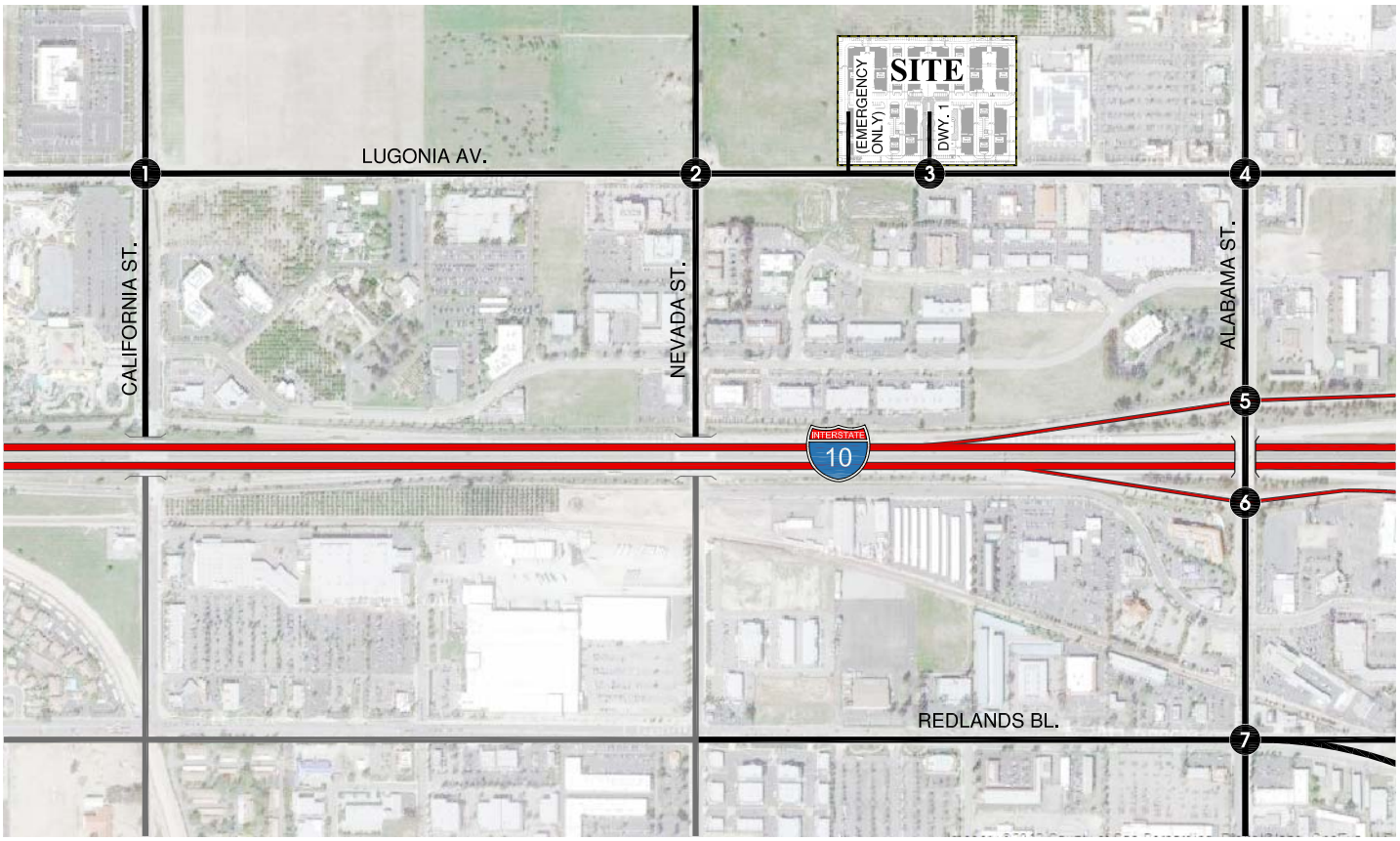
LEGEND:

10.0 = VEHICLES PER DAY (1000's)

N

EXHIBIT 7-5

HORIZON YEAR (2035) WITH PROJECT AM PEAK HOUR INTERSECTION VOLUMES



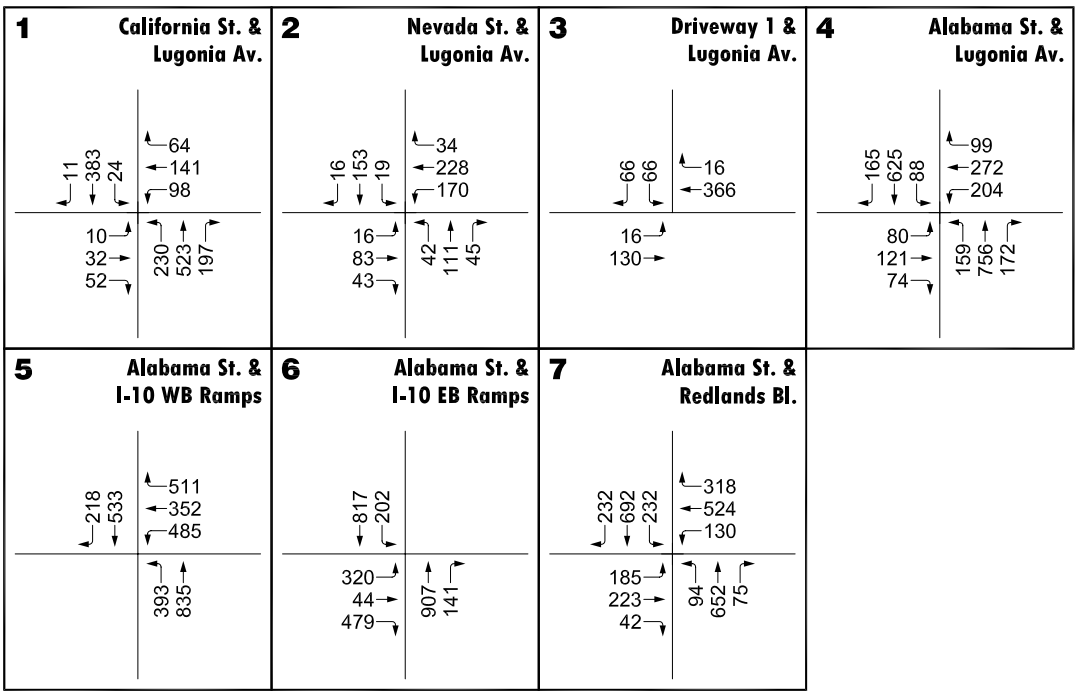
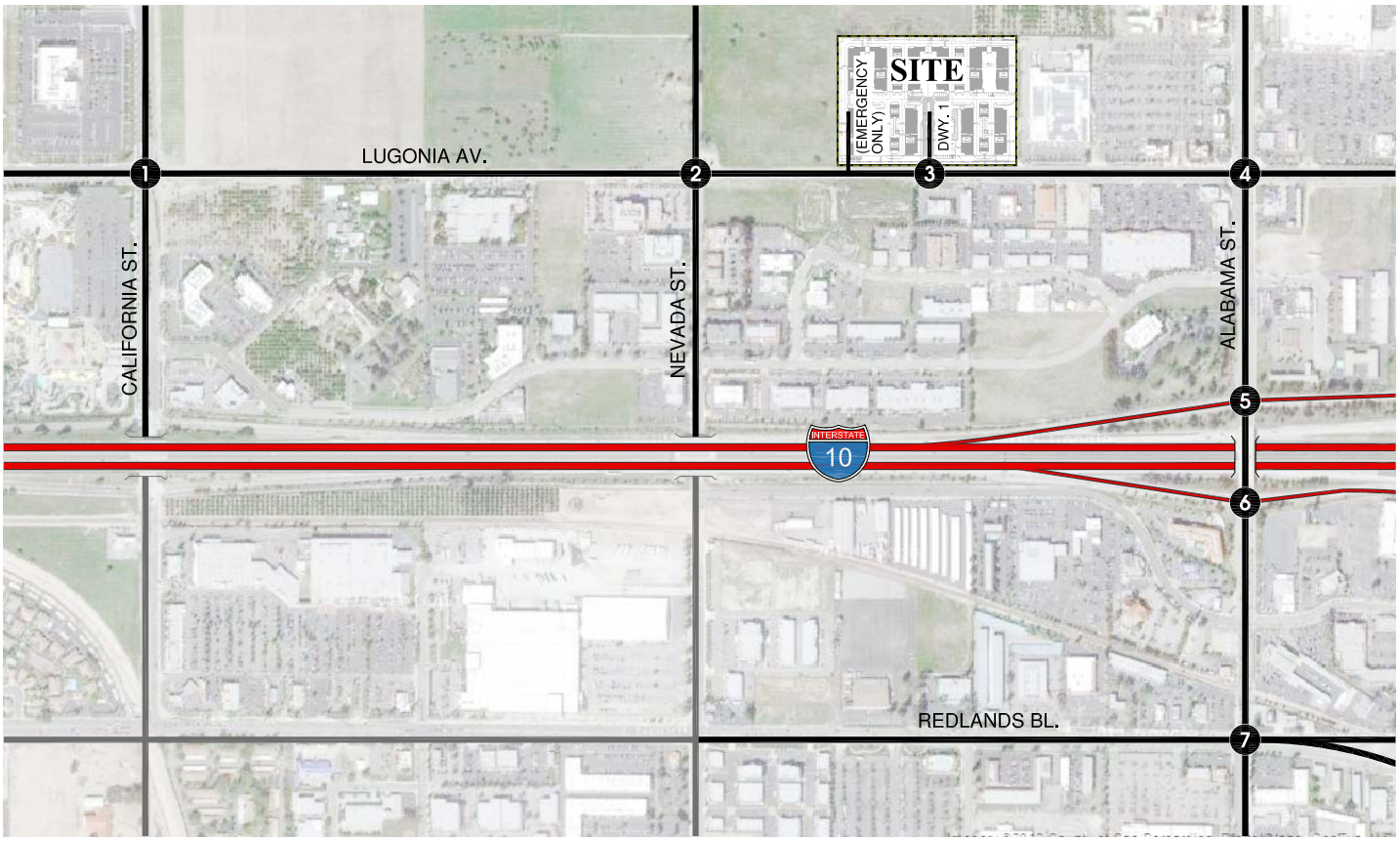


EXHIBIT 7-6

HORIZON YEAR (2035) WITH PROJECT PM PEAK HOUR INTERSECTION VOLUMES



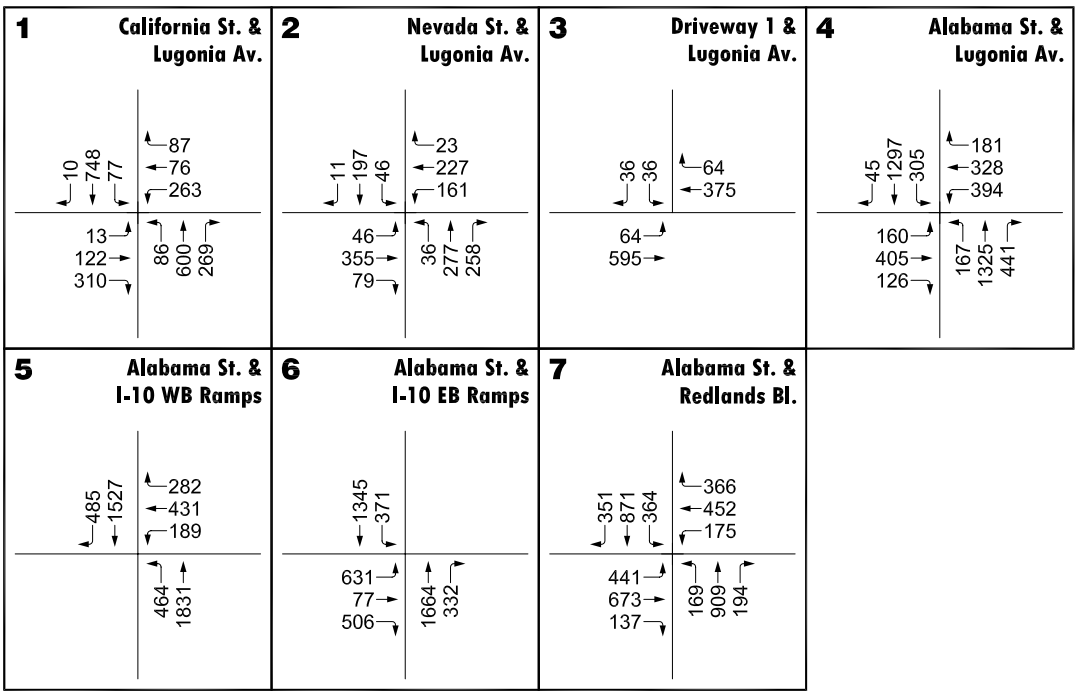


Table 7-1

Intersection Analysis for Horizon Year (2035) Conditions

#	Intersection	Jurisdiction	Traffic Control[2]	2035 Without Project[1]						2035 With Project[1]					
				Weekday AM			Weekday PM			Weekday AM			Weekday PM		
				Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C	LOS
1	California St. / Lugonia Av.	Redlands	TS	26.7	0.50	C	39.0	0.68	D	28.7	0.53	C	40.2	0.71	D
2	Nevada St. / Lugonia Av.	County/Redlands	AWS	14.4	0.65	B	40.5	0.95	E	18.2	0.78	C	57.3	1.07	F
3	Driveway 1 / Lugonia Av.	County/Redlands	CSS	Not Applicable						12.5	--	B	15.8	--	C
4	Alabama St. / Lugonia Av.	County/Redlands	TS	26.0	0.48	C	59.9	0.98	E	26.1	0.50	C	60.5	0.99	E
5	Alabama St. / I-10 WB Ramps	Caltrans	TS	>80.0	0.97	F	>80.0	1.29	F	>80.0	0.98	F	>80.0	1.30	F
6	Alabama St. / I-10 EB Ramps	Caltrans	TS	23.8	0.71	C	>80.0	1.19	F	24.0	0.72	C	>80.0	1.20	F
7	Alabama St. / Redlands Blvd.	Redlands	TS	41.4	0.86	D	>80.0	1.25	F	41.7	0.86	D	>80.0	1.26	F

[1] Delay and level of service calculated using the following analysis software:
Traffix (Version 8.0 R1, 2008) for signalized and unsignalized intersections. The I-10 Freeway ramps have been analyzed using SYNCHRO 7.
Per the 2000 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[2] CCS = Cross Street Stop; AWS = All Way Stop; TS = Traffic Signal

* BOLD = Unsatisfactory level of service.

ID	Intersection Location	Location
1	California Street / Lugonia Avenue	Redlands
2	Nevada Street / Lugonia Avenue	SBC/Redlands
4	Alabama Street / Lugonia Avenue	SBC/Redlands
5	Alabama Street / I-10 Westbound Ramps	Caltrans
6	Alabama Street / I-10 Eastbound Ramps	Caltrans
7	Alabama Street / Redlands Boulevard	Redlands

The intersection operations analysis worksheets for Horizon Year (2035) without Project conditions are included in Appendix "7.1" of this TIA. The intersection operations analysis worksheets for Horizon Year (2035) with Project conditions are included in Appendix "7.2" of this TIA.

Measures to address cumulative impacts for Horizon Year (2035) traffic conditions are discussed in Section 7.6 *Horizon Year (2035) Cumulative Impacts and Recommended Improvements*.

7.5 TRAFFIC SIGNAL WARRANTS ANALYSIS

For Horizon Year (2035) with Project conditions, no additional traffic signals appear to be warranted in addition to those currently warranted for Existing (2012) conditions (see Appendix "7.3").

Although the intersection of Nevada Street at Lugonia Avenue warranted a traffic signal under Existing (2012) traffic conditions, it is anticipated that the side-street peak hour delays would reach deficient levels under Horizon Year (2035) without and with Project traffic conditions. As such, signalization has not been recommended at this location until Horizon Year (2035) traffic conditions for the purposes of this analysis.

7.6 HORIZON YEAR (2035) CUMULATIVE IMPACTS AND RECOMMENDED IMPROVEMENTS

Improvements have been recommended at intersections that have been identified as cumulatively impacted to reduce each location's peak hour delay and improve the associated LOS grade to an acceptable letter grade (per the requirements of each governing jurisdiction). The effectiveness of the recommended improvements discussed below to address Horizon Year (2035) cumulative traffic impacts are presented in Table 7-2. As shown in Table 7-2, the peak hour LOS operations at each of the cumulatively impacted intersections are anticipated to reach acceptable levels with the recommended improvements.

The following improvements are recommended to reduce cumulative impacts identified at transportation facilities under Horizon Year (2035) to "less-than-significant"; each of the recommended improvements identified below are consistent with or within the County of San Bernardino General Plan and the East Valley Corridor Specific Plan roadway cross-sections:

Table 7-2

Intersection Analysis for Horizon Year (2035) With Project Conditions
With Improvements to Mitigate Cumulative Impacts

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Weekday AM[2]			Weekday PM[2]		
			Northbound			Southbound			Eastbound			Westbound								
			L	T	R	L	T	R	L	T	R	L	T	R	Delay	V/C	LOS	Delay	V/C	LOS
	California Street / Lugonia Avenue																			
1	- Without Improvements	TS	1	1	1	1	2	1	0	1	1	0	1	0	28.7	0.53	C	40.2	0.71	D
	- With Improvements[4]	TS	1	1	1	1	2	1	1	1	1	1	1	0	20.2	0.42	C	29.7	0.76	C
	Nevada Street / Lugonia Avenue																			
2	- Without Improvements	AWS	0	1	d	0	1	0	0	1	d	0	1	0	18.2	0.78	C	57.3	1.07	F
	- With Improvements	TS	1	1	d	1	1	0	1	2	0	1	2	0	21.3	0.30	C	21.0	0.48	C
	Alabama Street / Lugonia Avenue																			
4	- Without Improvements	TS	1	2	d	1	3	d	1	2	0	1	2	d	26.1	0.50	C	60.5	0.99	E
	- With Improvements	TS	2	3	1>	2	3	d	2	2	0	2	2	d	21.7	0.33	C	27.6	0.68	C
	Alabama Street / I-10 Westbound Ramps																			
5	- Without Improvements	TS	1	2	0	0	2	0	0	0	0	0	2	0	>80.0	0.98	F	>80.0	1.30	F
	- With Improvements	TS	2	3	0	0	3	1	0	0	0	0	2	0	30.3	0.73	C	28.8	0.81	C
	Alabama Street / I-10 Eastbound Ramps																			
6	- Without Improvements	TS	0	2	d	1	2	0	0	2	0	0	0	0	24.0	0.72	C	>80.0	1.20	F
	- With Improvements	TS	0	3	1	2	3	0	1	1	1	0	0	0	26.0	0.59	C	27.7	0.83	C
	Alabama Street / Redlands Avenue																			
7	- Without Improvements	TS	1	2	0	1	2	0	1	2	d	1	2	d	41.7	0.86	D	>80.0	1.26	F
	- With Improvements[5]	TS	2	3	0	2	2	1	2	2	0	2	2	0	25.0	0.59	C	31.6	0.79	C

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; > = Right-Turn Overlap Phasing; d = Defacto Right Turn Lane; 1 = Improvement

[2] Delay and level of service calculated using the following analysis software:
Traffix (Version 8.0 R1, 2008) for signalized and unsignalized intersections. The I-10 Freeway ramps have been analyzed using SYNCHRO 7.
Per the 2000 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control.
For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[3] CCS = Cross Street Stop; AWS = All Way Stop; TS = Traffic Signal

[4] Change east-west traffic signal phasing to protected from split phase.

[5] Change north-south traffic signal phasing to protected from split phase.

Recommended Improvement – California Street / Lugonia Avenue (#1) – The following improvements (shown in **bold**) are necessary to reduce the cumulative impact to less-than-significant:
Northbound: One left turn lane, one through lane and one right turn lane.
Southbound: One left turn lane, two through lanes and one right turn lane.
Eastbound: **One left turn lane**, one through lane and one right turn lane.
Westbound: **One left turn lane** and one shared through-right turn lane.
Recommended improvements also include providing protected left turn phasing for the eastbound and westbound approaches (currently split phase).

Recommended Improvement – Nevada Street / Lugonia Avenue (#2) – The following improvements (shown in **bold**) are necessary to reduce the cumulative impact to less-than-significant:
Install a traffic signal.
Northbound: **One left turn lane**, one through lane and one defacto right turn lane.
Southbound: **One left turn lane** and one shared through-right turn lane.
Eastbound: **One left turn lane, one through lane** and one shared through-right turn lane.
Westbound: **One left turn lane, one though lane** and one shared through-right turn lane.

Recommended Improvement – Alabama Street / Lugonia Avenue (#4) – The following improvements (shown in **bold**) are necessary to reduce the cumulative impact to less-than-significant:
Northbound: **Two left turn lanes, three through lanes and one right turn lane with overlap phasing.**
Southbound: **Two left turn lanes**, three through lanes and one defacto right turn lane.
Eastbound: **Two left turn lanes**, one through lane and one shared through-right turn lane.
Westbound: **Two left turn lanes**, two through lanes and one defacto right turn lane.

Recommended Improvement – Alabama Street / I-10 Westbound Ramps (#5) – The following improvements (shown in **bold**) are necessary to reduce the cumulative impact to less-than-significant:
Northbound: **Two left turn lanes and three through lanes**.
Southbound: **Three through lanes and one right turn lane**.
Eastbound: N/A
Westbound: One shared left-though lane and one shared through-right turn lane.

Recommended Improvement – Alabama Street / I-10 Eastbound Ramps (#6) – The following improvements (shown in **bold**) are necessary to reduce the cumulative impact to less-than-significant:
Northbound: **Three through lanes and one right turn lane.**
Southbound: **Two left turn lanes and three through lanes.**
Eastbound: One left turn lane, one shared left-through lane and **one right turn lane**.
Westbound: N/A

Recommended Improvement – Alabama Street / Redlands Boulevard (#7) – The following improvements (shown in **bold**) are necessary to reduce the cumulative impact to less-than-significant:
Northbound: **Two left turn lanes, two through lanes** and one shared through-right turn lane.
Southbound: **Two left turn lanes**, two through lanes and **one right turn lane**.
Eastbound: Re-stripe and reconstruct the existing median to provide **two left turn lanes**, one through lane and one shared through-right turn lane.
Westbound: Re-stripe and reconstruct the existing median to provide **two left turn lanes**, one through lane and one shared through-right turn lane.
Recommended improvements also include providing protected left turn phasing for the northbound and southbound approaches (currently split phase).

The applicant shall participate in the funding or construction of off-site improvements, including traffic signals that are needed to serve Horizon Year (2035) traffic conditions through the payment of RTDMP or a fair share contribution, as directed by the County. These fees are collected as part of a funding mechanism aimed at ensuring that regional highways and arterial expansions keep pace with the projected population increases. Each of the improvements discussed above have been identified as being included as part of RTDMP funding program, Measure "I" funding program or fair share contribution as described in Section 9 *Local and Regional Funding Mechanisms* of this TIA.

Worksheets for Horizon Year (2035) with Project conditions, with mitigation, HCM calculations are provided in Appendix "7.4".

8.0 LOCAL CIRCULATION AND SITE ACCESS

This section summarizes Project site access and on-site circulation recommendations.

The Project is proposed to have access on Lugonia Avenue via Driveway 1. Driveway 1 is proposed to allow full-access. The westerly driveway is anticipated to serve as emergency access only. Regional access to the Project site will be provided by the I-10 Freeway via California Street and Alabama Street and the near-by SR-210 Freeway to the east.

8.1 ON-SITE ROADWAY IMPROVEMENTS

The recommended site-adjacent roadway improvements for the Project are described below. Exhibit 8-1 illustrates the site-adjacent roadway improvement recommendations.

Lugonia Avenue – Lugonia Avenue is an east-west oriented roadway located along the Project's southern boundary. Construct Lugonia Avenue at its ultimate half-section width as a secondary highway (88-foot right-of-way) between the Project's western and eastern boundaries, consistent with the circulation recommendations found in the *East Valley Corridor Specific Plan* (EVCSP).

Wherever necessary, roadways adjacent to the project, site access points and site-adjacent intersections will be constructed to be consistent with the recommended roadway classifications and respective cross-sections in the County of San Bernardino General Plan Circulation Element and the East Valley Corridor Specific Plan (the governing land use document for the area south of the project site which includes Lugonia Avenue).

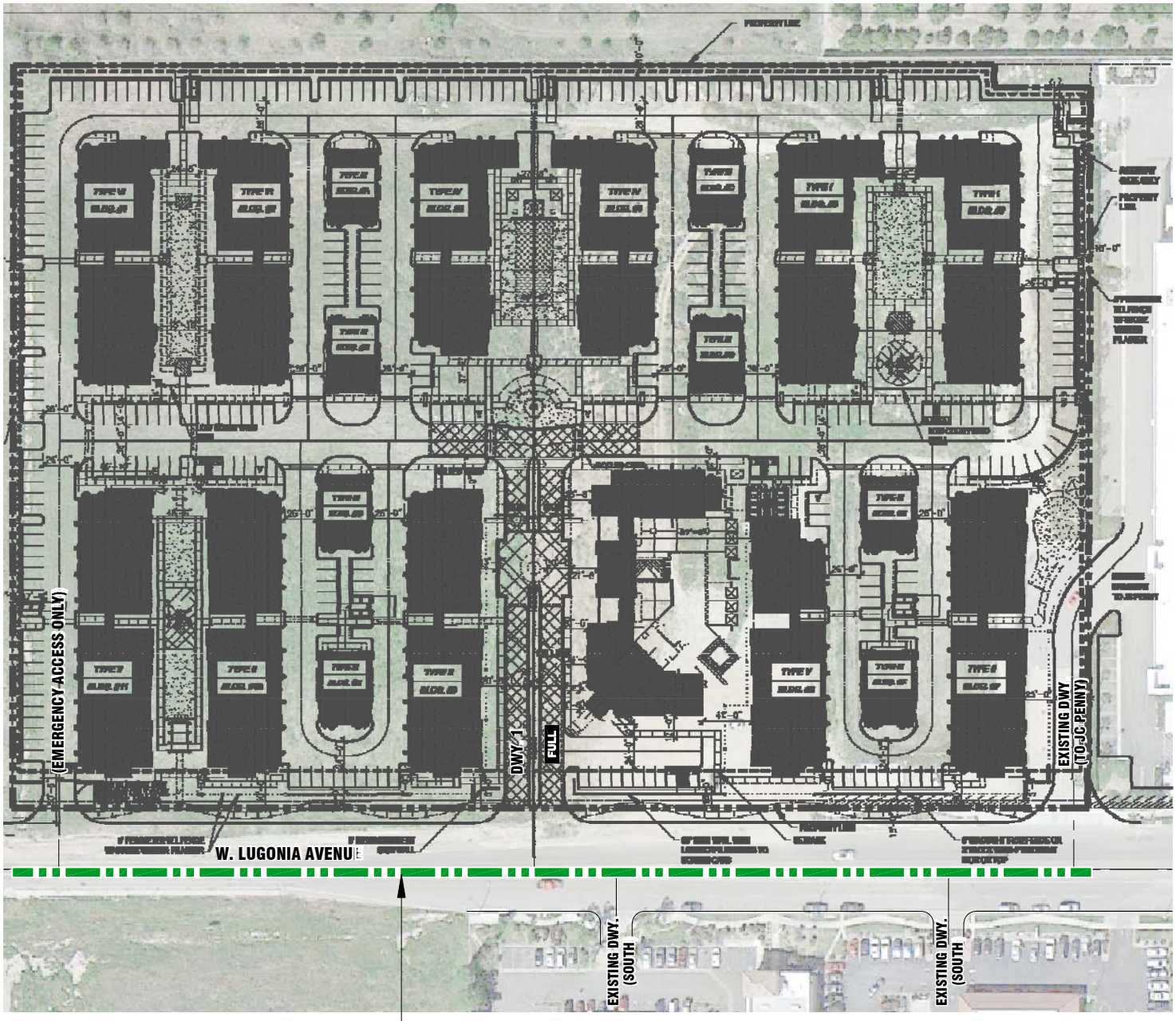
8.2 SITE ACCESS IMPROVEMENTS

The recommended site access driveway improvements for the Project are described below. Exhibit 8-2 illustrates the on-site and site adjacent recommended roadway lane improvements. Construction of on-site and site adjacent improvements shall occur in conjunction with adjacent Project development activity or as needed for Project access purposes.

Driveway 1 / Lugonia Avenue – Install a stop control on the southbound approach and construct the intersection with the following:
Northbound Approach: N/A
Southbound Approach: One shared left-right turn lane.
Eastbound Approach: One left turn lane and one through lane.
Westbound Approach: One left turn lane, one through lane and one shared through-right turn lane.
It should be noted that the eastbound left turn lane would be accommodated within the existing painted two-way-left-turn (TWLT) median.

EXHIBIT 8-1

SITE ADJACENT ROADWAY RECOMMENDATIONS



CONSTRUCT LUGONIA AVENUE AT ITS ULTIMATE HALF-SECTION WIDTH AS A SECONDARY HIGHWAY (88-FOOT RIGHT-OF-WAY) BETWEEN THE PROJECT'S WESTERN AND EASTERN BOUNDARIES, CONSISTENT WITH THE CIRCULATION RECOMMENDATIONS FOUND IN THE EAST VALLEY CORRIDOR SPECIFIC PLAN (EVCSP).

WHEREVER NECESSARY, ROADWAYS ADJACENT TO THE PROJECT, SITE ACCESS POINTS AND SITE-ADJACENT INTERSECTIONS WILL BE CONSTRUCTED TO BE CONSISTENT WITH THE RECOMMENDED ROADWAY CLASSIFICATIONS AND RESPECTIVE CROSS-SECTIONS IN THE COUNTY OF SAN BERNARDINO GENERAL PLAN CIRCULATION ELEMENT AND THE EAST VALLEY CORRIDOR SPECIFIC PLAN (THE GOVERNING LAND USE DOCUMENT FOR THE AREA SOUTH OF THE PROJECT SITE WHICH INCLUDES LUGONIA AVENUE).

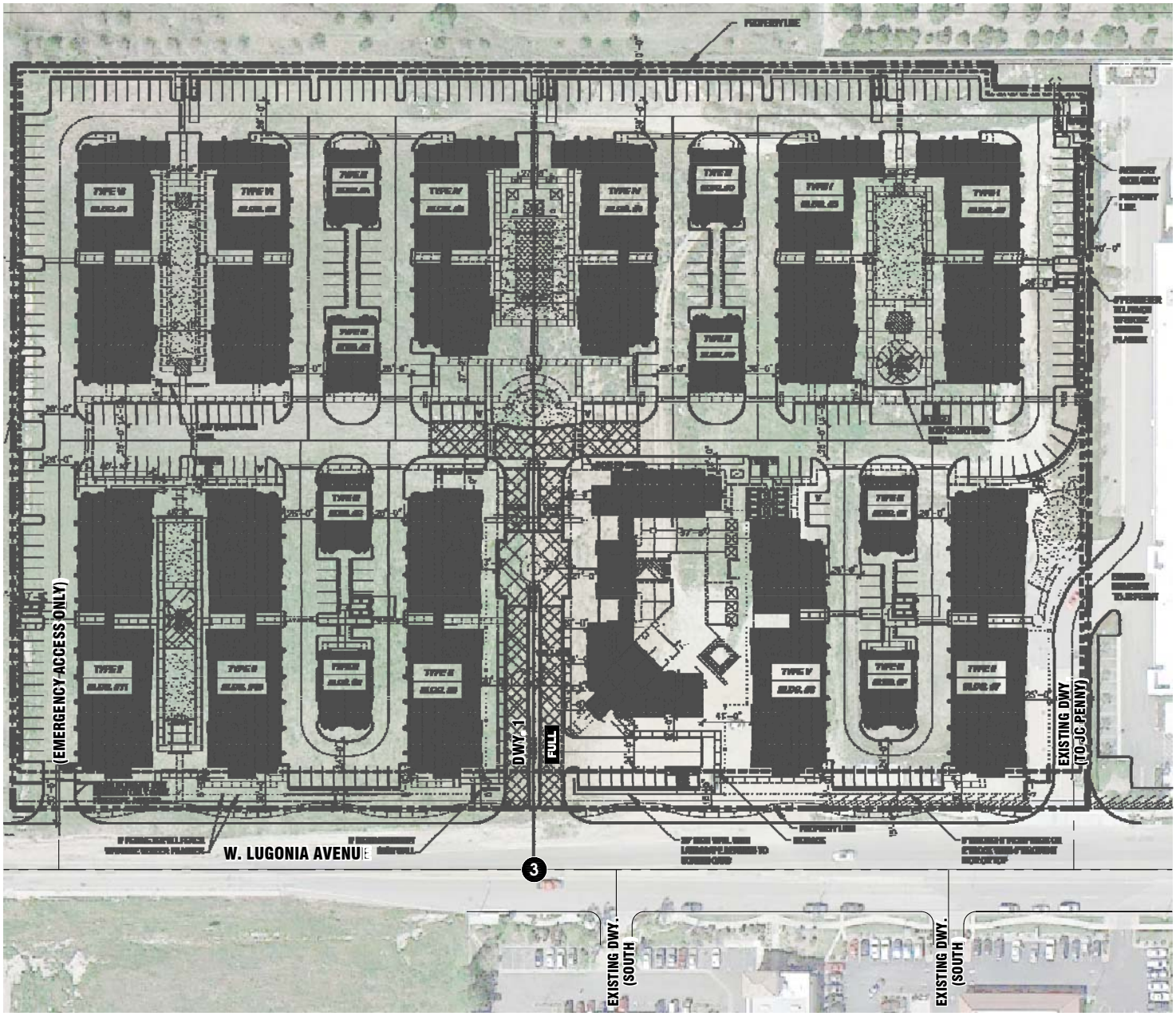
LEGEND:

= SECONDARY HIGHWAY (88-FOOT R.O.W.)

FULL = FULL ACCESS

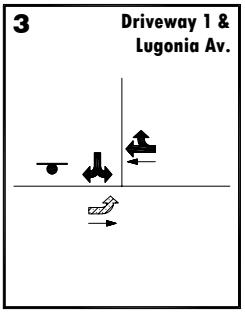
EXHIBIT 8-2

SITE ACCESS AND ON-SITE CIRCULATION RECOMMENDATIONS



SIGHT DISTANCE AT EACH PROJECT ACCESS POINT SHOULD BE REVIEWED WITH RESPECT TO STANDARD CALTRANS AND COUNTY OF SAN BERNARDINO SIGHT DISTANCE STANDARDS AT THE TIME OF PREPARATION OF FINAL GRADING, LANDSCAPE AND STREET IMPROVEMENT PLANS.

ON-SITE TRAFFIC SIGNING AND STRIPING SHOULD BE IMPLEMENTED IN CONJUNCTION WITH DETAILED CONSTRUCTION PLANS FOR THE PROJECT SITE.



LEGEND:

- = INSTALL STOP CONTROL
- = EXISTING LANE
- = LANE IMPROVEMENT
- = LANE IMPROVEMENT TO BE ACCOMMODATED WITHIN PAINTED MEDIAN
- FULL = FULL ACCESS

On-site traffic signing and striping should be implemented in conjunction with detailed construction plans for the Project site.

Sight distance at each project access point should be reviewed with respect to standard Caltrans and County of San Bernardino sight distance standards at the time of preparation of final grading, landscape and street improvement plans.

9.0 LOCAL AND REGIONAL FUNDING MECHANISMS

Transportation improvements throughout San Bernardino County are funded through a combination of direct project mitigation, fair share contributions or development impact fee programs. Identification and timing of needed improvements is generally determined through local jurisdictions based upon a variety of factors.

Table 9-1 lists the total improvements that are required by Horizon Year (2035) with Project traffic conditions. The Project's contribution to one of the aforementioned transportation impact fee programs or as a fair share contribution toward a cumulatively impacted facility not found to be covered by a pre-existing fee program should be considered sufficient to address the Project's fair share toward a mitigation measure or measures designed to alleviate the cumulative impact. In other words, the Project's contribution to a significant cumulative impact will be rendered less than cumulatively considerable and thus is not significant. The regional and local transportation impact fee programs have each been reviewed and compared to the recommended improvements for each impacted facility. Recommended improvements already identified and included in one of the pre-existing fee program (i.e., RTDMP) are clearly denoted. If an impacted facility was found to require improvements beyond those already identified within one of the pre-existing regional or local fee programs, the Project may be required to contribute the associated intersection or roadway fair-share percentage toward the costs of the recommended improvements. The fair-share calculations, also presented in Table 9-1, indicate that the project contributes between 1.3% and 23.1% of new vehicle trips to the impacted study area intersections.

The improvements listed in Table 9-1 are comprised of lane additions, installation of signals and signal modifications. As noted, the identified improvements are covered either by the RTDMP Program or as a fair-share contribution if not covered by a fee program. Lane additions are shown as the number of lanes required and the direction of travel, for example, "1.EBT" indicates one additional eastbound through lane. Depending on the width of the existing pavement and right-of-way, these improvements may involve only striping modifications or they may involve construction of additional pavement width. Additional discussion of the relevant pre-existing transportation impact fee programs is provided below.

9.1 REGIONAL TRANSPORTATION DEVELOPMENT MITIGATION PLAN

The RTDMP program has been developed to satisfy the provisions of the San Bernardino County Congestion Management Plan (CMP). Pursuant to Measure "I" 2010-2040, the County CMP was updated and adopted by the County Congestion Management Agency (CMA), San Bernardino Associated Governments (SANBAG), in November 2, 2005. The CMP requires each local jurisdiction, including the County of San Bernardino, to adopt a regional transportation development mitigation program prior to November 2006. Failure to adopt a program that complies with the CMP may result in significant loss to the County of State Gas Tax, regional Measure "I", and federal/state grant funding

Table 9-1

Summary of Transportation Impact Fee Program Improvements

#	Intersection Location	Jurisdiction	Recommended Improvements	EAPC (2014) Cumulative Improvement Needs		Horizon Year (2035) Cumulative Improvement Needs		Fair Share
				Program Improvements[1,2]	Non-Program Improvements	Program Improvements[1,2]	Non-Program Improvements	
1	California Street / Lugonia Avenue	Redlands	1.EBL, 1.WBL, Protected Left Turn Phasing on EB and WB Approaches				1.EBL, 1.WBL, Protected Left Turn Phasing on EB and WB Approaches	7.2%
2	Nevada Street / Lugonia Avenue	SBC / Redlands	Install a Traffic Signal; 1.NBL, 1.SBL, 1.EBL, 1.EBT, 1.WBL, 1.WBT			Install a Traffic Signal	1.NBL, 1.SBL, 1.EBL, 1.EBT, 1.WBL, 1.WBT	23.1%
4	Alabama Street / Lugonia Avenue	SBC / Redlands	1.NBL, 1.NBT, 1.NBR with Overlap Phasing, 1.SBL, 1.EBL, 1.WBL				1.NBL, 1.NBT, 1.NBR with Overlap Phasing, 1.SBL, 1.EBL, 1.WBL	6.2%
5	Alabama Street / I-10 Westbound Ramps	Caltrans	1.NBL, 1.NBT,1.SBT, 1.SBR		1.SBR		1.NBL, 1.NBT,1.SBT	2.6%
6	Alabama Street / I-10 Eastbound Ramps	Caltrans	1.NBT, 1.NBR, 1.SBL, 1.SBT, 1.EBR				1.NBT, 1.NBR, 1.SBL, 1.SBT, 1.EBR	2.9%
7	Alabama Street / Redlands Avenue	Redlands	1.NBL, 1.NBT, 1.SBL, 1.SBR, 1.EBL, 1.WBL		1.EBL		1.NBL, 1.NBT, 1.SBL, 1.SBR, 1.WBL	1.3%

[1] Intersection improvements shown as eligible are included for through lanes only. Eligibility is at discretion of City.

[2] Program improvements constructed by project may be eligible for fee credit. In lieu fee payment is at discretion of County.

necessary for the ongoing maintenance of and improvements to the County Maintained Road System (CMRS). The RTDMP is intended to generate only the development fair-share contribution of project costs as required by the CMP and is not intended to provide 100% funding for or construct all projects listed in the program. Additional regional Measure "I" and federal/state funds administered by SANBAG are required for full funding of projects listed in the RTDMP.

The following sixteen (16) subareas are covered within the RTDMP, twelve (12) of which represent unincorporated areas within the San Bernardino Valley and four (4) of which represent unincorporated areas within the Victor Valley:

1. Adelanto Sphere of Influence
2. Apple Valley Sphere of Influence
3. Chino Sphere of Influence
4. Colton Sphere of Influence
5. Devore/Glen Helen Unincorporated Areas
6. Fontana Sphere of Influence
7. Hesperia Sphere of Influence
8. Loma Linda Sphere of Influence
9. Montclair Sphere of Influence
10. Redlands "Donut Hole" Unincorporated Area
11. Redlands Sphere of Influence
12. Rialto Sphere of Influence
13. San Bernardino Sphere of Influence
14. Upland Sphere of Influence
15. Victorville Sphere of Influence
16. Yucaipa Sphere of Influence

A list of "Major Arterial Road" projects was developed for each subarea consisting of all County maintained roads with an existing Master Plan classification of Secondary or greater, as designated in the 1989 General Plan Circulation Element. Although not required, the County Public Works Department also developed a list of "Traffic Signal" projects for inclusion in the RTDMP program. "Traffic Signal" projects were identified for construction wherever two of the RTDMP's major arterial road projects intersect and a signal does not exist currently. The list of freeway interchange projects was compiled by SANBAG as part of its Nexus Study. The list was originally based upon the interchanges submitted by SANBAG and local jurisdictions for the 2004 Regional Transportation Plan (RTP) and then modified for the Nexus Study after local jurisdiction input.

RTDMP fees are imposed on new residential, industrial, and commercial development through application of the TUMF fee ordinance and fees are collected at the building or occupancy permit stage. Current RTDMP rates for County projects located within the Redlands "Donut Hole"

Unincorporated Area are shown in Table 9-2. The fee for multi-family residential use is $1,436 per dwelling unit. On July 1st of each year, beginning July 1, 2007, fees shall be adjusted annual as required in Appendix "J" (Section J.3) of the San Bernardino County CMP to ensure that the development impact fees collected keep pace with construction and labor costs, etc. All fees collected under the RTMP will be deposited into separate accounts to avoid any commingling of the fees with other revenues and funds of the County. Fees will be deposited into funds based upon the subarea in which the development occurs and prorated among four project category funds within those subareas (Major Arterial, Traffic Signal, Freeway Interchange, and Railroad Grade Separation) based upon total project category project costs. Funds will be expended solely for the purpose for which the fees are collected and specifically for the construction of the transportation facilities projects listed within the subarea. Fees will not be used to construct any other transportation facility not expressly identified in the RTDMP.

As shown in Table 9-1, a number of the facilities forecast to be impacted by the proposed project are programmed for improvements through the RTDMP program. The project applicant will be subject to the RTDMP fee program and will pay the requisite RTDMP fees at the rates then in effect. The project's payment of RTDMP fees appear to be sufficient to mitigate its impacts to RTDMP-funded facilities.

9.2 MEASURE "I" 2010-2040

In 2004, the voters of San Bernardino County approved the 30-year extension of Measure "I", a one-half of one percent sales tax on retail transactions, through the year 2040, for transportation projects including, but not limited to, infrastructure improvements, commuter rail, public transit, and other identified improvements. The Measure "I" extension requires that a regional traffic impact fee be created to ensure development is paying its fair share. A regional Nexus study was prepared by the San Bernardino Associated Governments (SANBAG) and concluded that each jurisdiction should include a regional fee component in their local programs in order to meet the Measure "I" requirement. The regional component assigns specific facilities and cost sharing formulas to each jurisdiction.

9.3 FAIR SHARE CONTRIBUTION

Project mitigation may include a combination of fee payments to established programs, construction of specific improvements, payment of a fair share contribution toward future improvements or a combination of these approaches. Table 9-1 presents improvements not included in any of the pre-existing transportation fee programs in the column labeled "Non-Program Improvements". Improvements constructed by development may be eligible for a fee credit or reimbursement through the program where appropriate.

When off-site improvements are identified with a minor share of responsibility assigned to proposed

Table 9-2

Estimated Fee Obligation

Fee Reference	Single Family Residential ($ Per DU)	Multi-Family ($ Per DU)	Commercial ($ Per Sq Ft)	Service ($ Per Sq Ft)	Industrial ($ Per Sq Ft)
Regional Transportation Development Mitigation Plan (RTDMP)[1]	$2,073	$1,436	$4.74	$2.86	$1.64

[1] RTDMP rates consistent with Table 7.7 of the County of San Bernardino Regional Transportation Development Mitigation Plan Report.

Fee Calculation

Program	Category	Unit Cost	Units/Sq.Ft.	Total
RTDMP	Multi-Family	$1,436.00	321	$460,956.00
			Total Transportation Impact Fees:	$460,956

development, the approving jurisdiction may elect to collect a fair share contribution or require the development to construct improvements. Detailed fair share calculations for each peak hour have been provided on Table 9-3 and the highest peak hour fair share percentage is reflected on Table 9-1.

Improvements included in a defined program and constructed by development may be eligible for a fee credit or reimbursement through the program where appropriate. A rough order of magnitude cost should be prepared to determine the appropriate contribution value based upon the project's fair share of traffic as part of the project approval process. The cost basis should be determined by the County based upon physical and community constraints, current bidding experiences and engineering preferences.

Table 9-3

Project Contribution to Total New Traffic

Intersection		Peak Hour	2012 Traffic	Project Traffic	2035 WP Traffic	New Traffic	Project Contribution
No.	Name						
1	California Street / Lugonia Avenue	AM	1,075	50	1,765	690	**7.2%**
		PM	1,372	60	2,661	1,289	4.7%
2	Nevada Street / Lugonia Avenue	AM	597	84	960	363	**23.1%**
		PM	1,054	99	1,716	662	15.0%
4	Alabama Street / Lugonia Avenue	AM	1,496	82	2,815	1,319	**6.2%**
		PM	2,865	100	5,174	2,309	4.3%
5	Alabama Street / I-10 Westbound Ramps	AM	2,096	32	3,327	1,231	**2.6%**
		PM	3,199	40	5,209	2,010	2.0%
6	Alabama Street / I-10 Eastbound Ramps	AM	1,898	29	2,910	1,012	**2.9%**
		PM	3,107	27	4,926	1,819	1.5%
7	Alabama Street / Redlands Avenue	AM	1,986	18	3,399	1,413	**1.3%**
		PM	2,904	20	5,102	2,198	0.9%

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