Stratford Ranch East (TTM No. 38071) (PLN21-05032 / GPA21-05040 / ZC 21-05039)

TRAFFIC ANALYSIS

CITY OF PERRIS

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MAY 21, 2021

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LIST OF ABBREVIATED TERMS

(1)	Reference
ADT	Average Daily Traffic
CA MUTCD	California Manual on Uniform Traffic Control Devices
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CMP	Congestion Management Program
DIF	Development Impact Fee
DU	Dwelling Units
E+P	Existing Plus Project
EAC	Existing plus Ambient Growth plus Cumulative
EAPC	Existing plus Ambient Growth plus Project plus Cumulative
HCM	Highway Capacity Manual
ITE	Institute of Transportation Engineers
LOS	Level of Service
N/A	Not Applicable
NP	No Project (or Without Project)
PHF	Peak Hour Factor
Project	Stratford Ranch East (TTM No. 38071)
RTA	Riverside Transit Authority
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
sf	Square Feet
TA	Traffic Analysis
TSF	Thousand Square Feet
TTM	Tentative Tract Map
TUMF	Transportation Uniform Mitigation Fee
WP	With Project
WRCOG	Western Riverside Council of Governments
V/C	Volume to Capacity
VMT	Vehicle Miles Traveled

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1 INTRODUCTION

This report presents the results of the traffic analysis (TA) for the proposed Stratford Ranch East (TTM No. 38071) development ("Project"), which is located on the northeast corner of Evans Road and Ramona Expressway, as shown on Exhibit 1-1.

The purpose of this traffic analysis is to evaluate the potential deficiencies related to traffic and circulation system operations that may result from the development of the proposed Project, and to recommend improvements to alleviate potential deficiencies in order to achieve acceptable circulation system operational conditions. This report has been prepared in accordance with the approved Project Traffic Study Scoping agreement through consultation with City of Perris staff, which is provided in Appendix 1.1 of this report. The scoping agreement provides an outline of the Project study area, trip generation, trip distribution, and analysis methodology.

1.1 SUMMARY OF FINDINGS

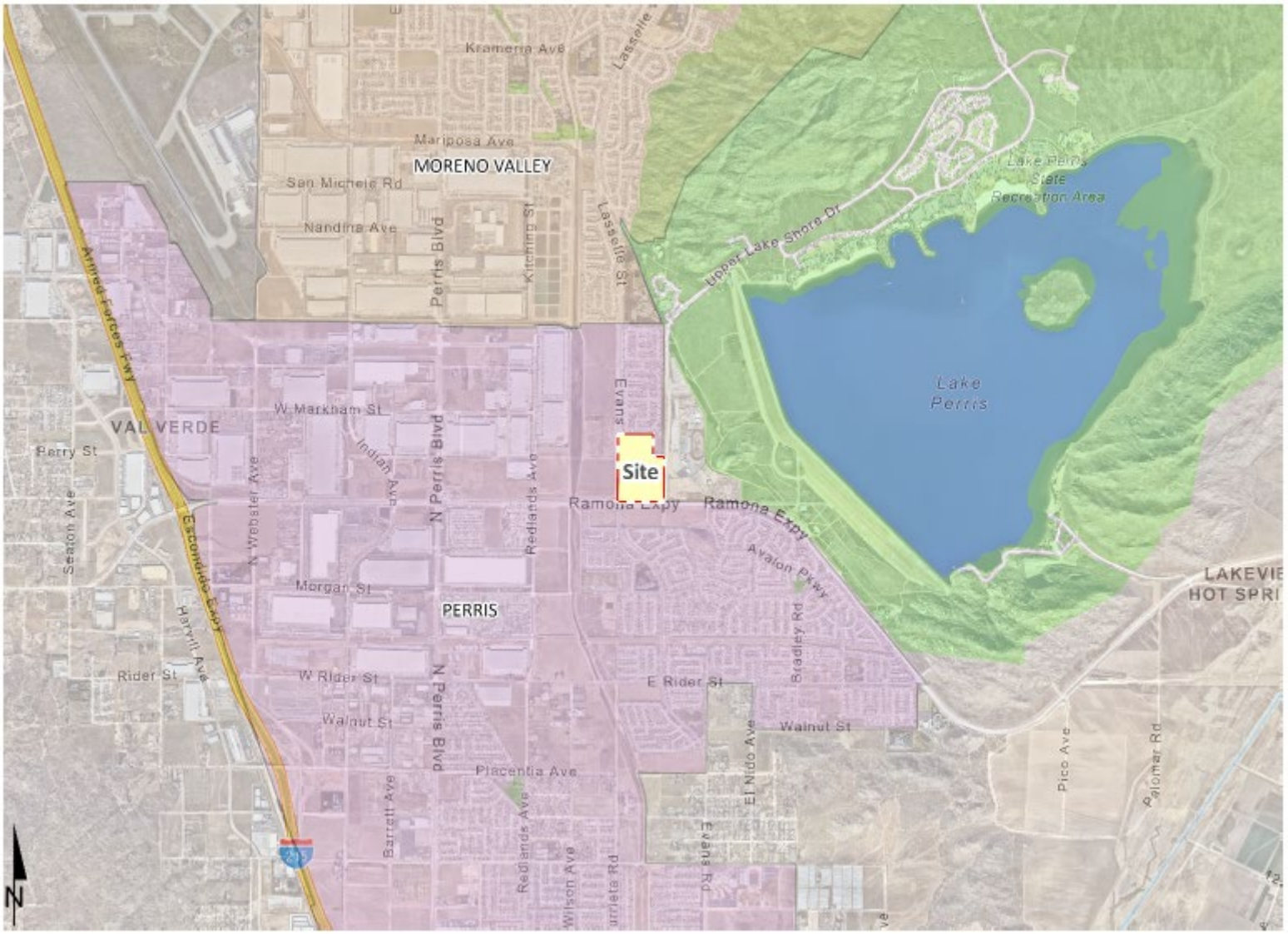
The Project is proposing to construct the following improvements as design features in conjunction with development of the site:

- Project to construct Evans Road at its ultimate half-section pavement width as a Primary Arterial (118-foot right-of-way) between the Project's northern and southern boundaries consistent with the City of Perris General Plan Circulation Element.
- Project to construct Street A and Street B on Evans Road for the westbound traffic, as needed to facilitate site access.
- Project to install a traffic signal at Street A on Evans Road.

Additional details and intersection lane geometrics are provided in Section 1.7 *On-Site Roadway Improvements* and Section 1.8 *Site Access Improvements* of this report.

As provided in the City of Perris's vehicle miles traveled (VMT) Scoping Form for Land Use Projects, the Project's VMT impact is less than significant, as described in Section 1.10 *VMT Analysis* of this report.

EXHIBIT 1-1: LOCATION MAP



1.2 PROJECT OVERVIEW

The Project is proposed to consist of 197 single family detached residential dwelling units. The anticipated Project Opening Year is 2027. The proposed Project land use is consistent with the General Plan, which is Residential. Vehicular traffic access will be provided via the following driveways (see Exhibit 1-2):

- Evans Road & Street A – full access (to also serve Tract 36647 to the west)
- Evans Road & Street B – right-in/right-out access only

Regional access to the Project site is provided via the I-215 Freeway and Harley Knox Boulevard/Ramona Expressway/future Placentia Interchange (anticipated completion of the interchange per the Riverside County Transportation Commission is Summer 2022).

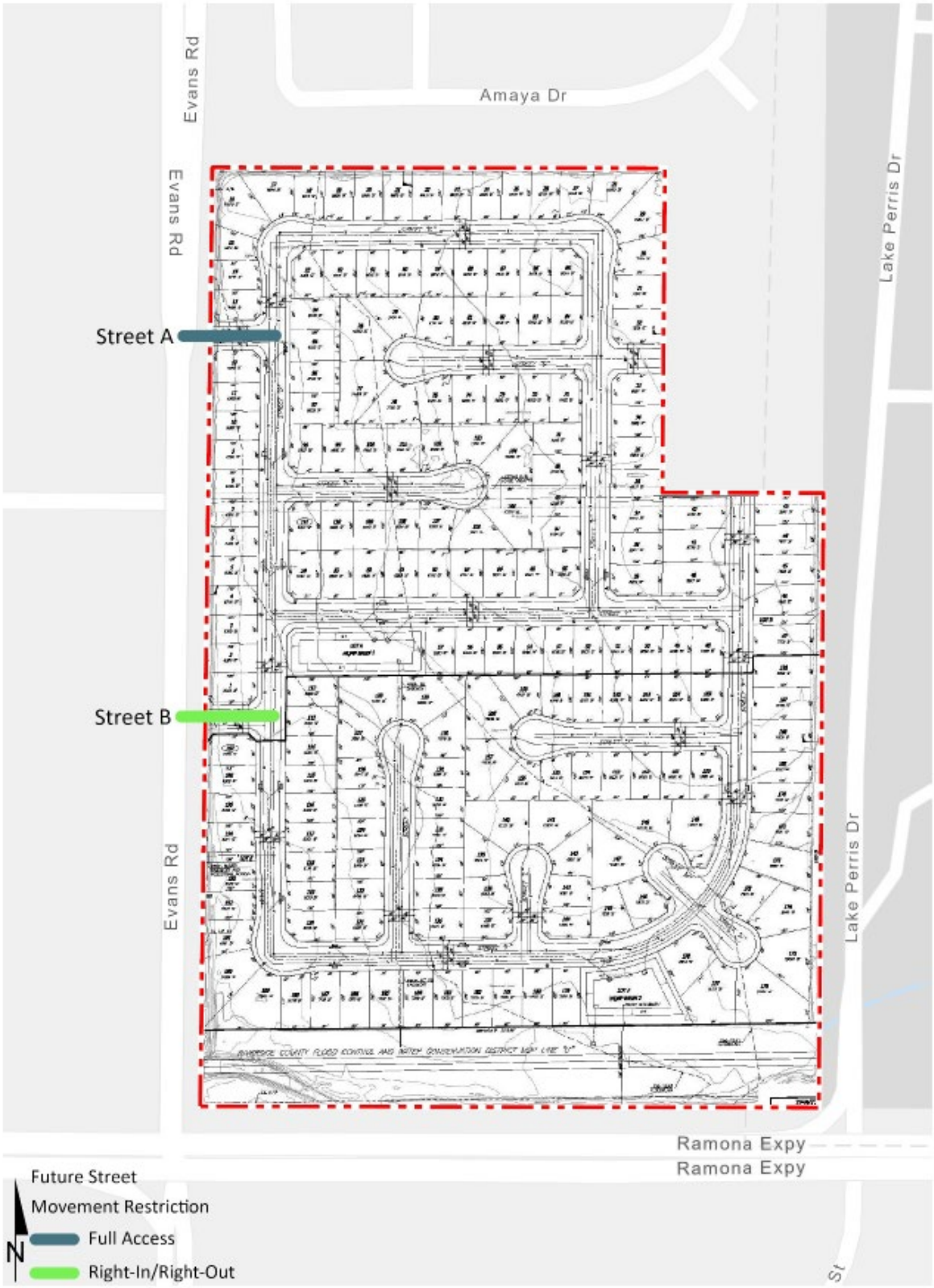
Trips generated by the Project's proposed land uses have been estimated based on trip generation rates collected by the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition, 2017. (1) The Project is estimated to generate 1,860 trip-ends per day on a typical weekday with approximately 145 AM peak hour trips and 195 PM peak hour trips. The assumptions and methods used to estimate the Project's trip generation characteristics are discussed in greater detail in Section 4.1 *Project Trip Generation* of this report.

1.3 ANALYSIS SCENARIOS

For the purposes of this traffic study, potential deficiencies to traffic and circulation have been assessed for each of the following conditions:

- Existing (2021)
- Existing Plus Project (E+P)
- Existing Plus Ambient Growth Plus Cumulative Projects (EAC) (2027)
- Existing Plus Ambient Growth Plus Project Plus Cumulative Projects (EAPC) (2027)

EXHIBIT 1-2: PRELIMINARY SITE PLAN



1.3.1 EXISTING (2021) CONDITIONS

Information for Existing (2021) conditions is disclosed to represent the baseline traffic conditions as they existed at the time this report was prepared. Traffic counts were conducted in March 2020, when local schools were in session and operating on a typical bell schedule (prior to closures related to the COVID-19 pandemic). As such, an ambient growth rate of 3 percent per year has been applied to historic count data in order to establish a 2021 baseline.

1.3.2 EXISTING PLUS PROJECT CONDITIONS

The Existing Plus Project (E+P) analysis determines any significant traffic operation and circulation system deficiencies that would occur on the existing roadway system in the scenario of the Project being placed upon (adjusted) Existing conditions.

1.3.3 EXISTING PLUS AMBIENT GROWTH PLUS PROJECT PLUS CUMULATIVE (2027) CONDITIONS

To account for growth in traffic between Existing (2021) conditions and the Project Opening Year (2027), a traffic growth rate of 19.41% was assumed (applied to the adjusted 2021 baseline). The 3.0 percent annual growth rate (compounded annually) is intended to capture non-specific ambient traffic growth. Conservatively, the TA estimates of area traffic growth then add traffic generated by other known or probable related projects. These related projects are at least in part already accounted for in the assumed 19.41% total ambient growth in traffic noted above; and in some instances, these related projects would likely not be implemented and operational within the 2027 Opening Year time frame assumed for the Project. The resulting traffic growth rate utilized in the TA (19.41% ambient growth + traffic generated by related projects) would therefore tend to overstate rather than understate background cumulative traffic deficiencies under 2027 conditions.

The EAPC conditions analyses will be utilized to determine if improvements funded through regional transportation mitigation fee programs, such as the Western Riverside Council of Governments (WRCOG) Transportation Uniform Mitigation Fee (TUMF) and City Development Impact Fee (DIF) programs, can accommodate the cumulative traffic at the target level of service (LOS) identified in the City of Perris (lead agency) General Plan. (2) Each of these regional transportation fee programs are discussed in more detail in Section 7 *Local and Regional Funding Mechanisms*.

1.4 STUDY AREA

To ensure that this TA satisfies the City of Perris' traffic study requirements, Urban Crossroads, Inc. prepared a Project traffic study scoping package for review by City of Perris staff prior to the preparation of this report.

1.4.1 INTERSECTIONS

The 5 study area intersections shown on Exhibit 1-3 and listed in Table 1-1 were selected for this TA based on the City's Traffic Study Guidelines and in consultation with City of Perris staff. The City requires analysis of intersections where the Project would contribute 50 or more peak hour trips. Based on the location of the Project site and the trip distribution patterns, the Project is anticipated to contribute at least 50 peak hour trips to all study area intersections. The Project trip generation, distribution, and volumes are further explained in Chapter 4 *Project Future Traffic* of this TA.

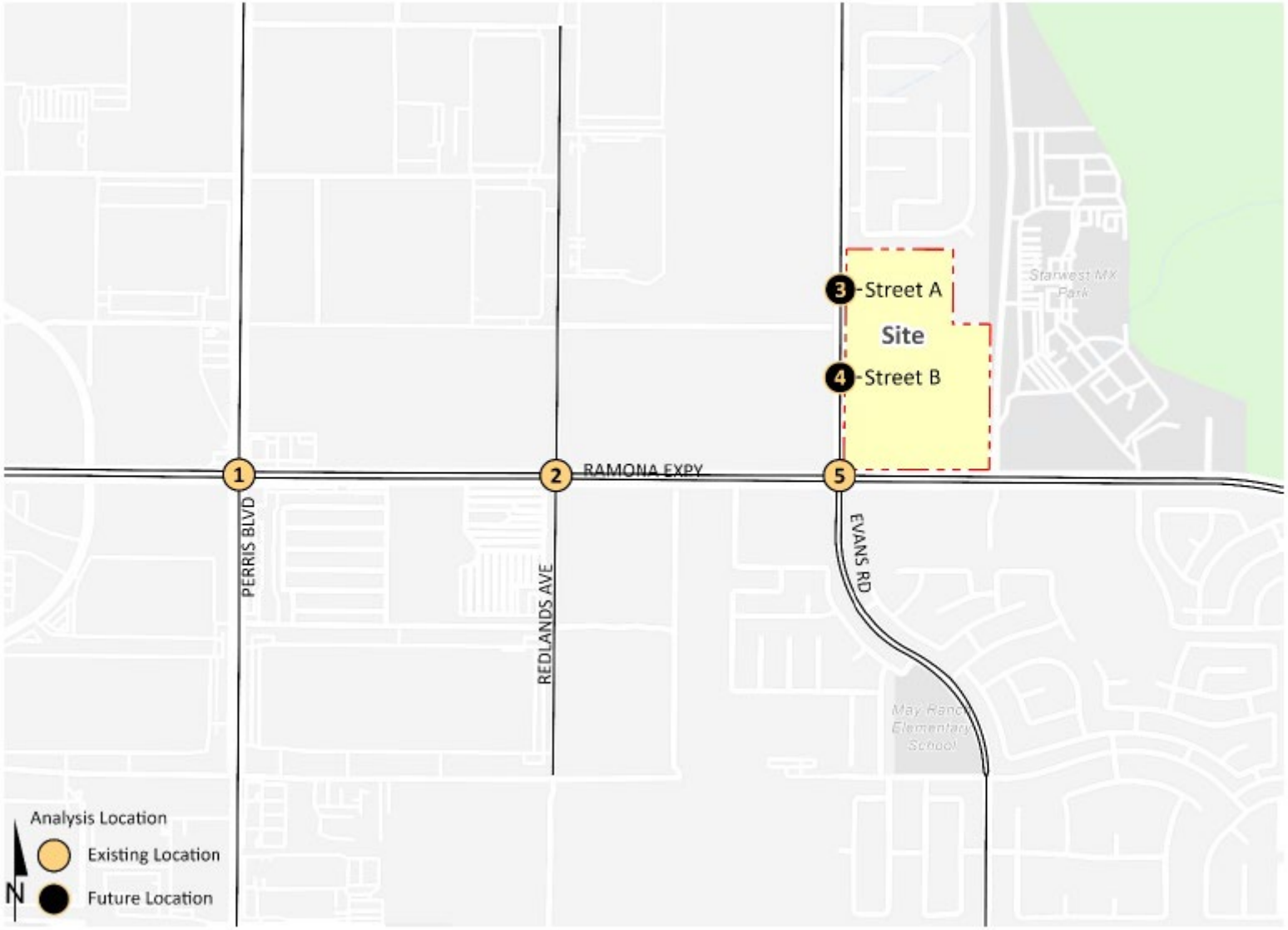
TABLE 1-1: INTERSECTION ANALYSIS LOCATIONS

ID	Intersection Location	Jurisdiction	CMP?
1	Perris Bl. & Ramona Exwy.	City of Perris	No
2	Redlands Av. & Ramona Exwy.	City of Perris	No
3	Evans Rd. & Street A – Future Intersection	City of Perris	No
4	Evans Rd. & Street B – Future Intersection	City of Perris	No
6	Evans Rd. & Ramona Exwy.	City of Perris	No

* Note: CMP = Congestion Management Program

The intent of a Congestion Management Program (CMP) is to more directly link land use, transportation, and air quality, thereby prompting reasonable growth management programs that will effectively utilize new transportation funds, alleviate traffic congestion and related deficiencies, and improve air quality. Counties within California have developed CMPs with varying methods and strategies to meet the intent of the CMP legislation. None of the study area intersections are identified as CMP facilities in the County of Riverside CMP. (3)

EXHIBIT 1-3: STUDY AREA



1.5 DEFICIENCIES

This section provides a summary of deficiencies by analysis scenario. Section 2 *Methodologies* provides information on the methodologies used in the analysis, and Section 5 *E+P Traffic Analysis* and Section 6 *EAC and EAPC (2027) Traffic Analysis* includes the detailed analysis. A summary of LOS results for all analysis scenarios is presented on Table 1-2.

1.5.1 E+P CONDITIONS

The following study area intersection is anticipated to operate at a deficient LOS (i.e., LOS E or worse) for E+P traffic conditions:

- Evans Rd. & Street A (#3) – LOS F AM and PM peak hours

1.5.2 EAC (2027) CONDITIONS

The following study area intersection is anticipated to operate at a deficient LOS (i.e., LOS E or worse) for EAC (2027) traffic conditions:

- Perris Bl. & Ramona Exwy. (#1) – LOS F AM and PM peak hours
- Redlands Av. & Ramona Exwy. (#2) – LOS F AM and PM peak hours
- Evans Rd. & Street A (#3) – LOS F PM peak hour only
- Evans Rd. & Ramona Expy. (#5) – LOS F AM and PM peak hours

1.5.3 EAPC (2027) CONDITIONS

The following study area intersection is anticipated to operate at a deficient LOS (i.e., LOS E or worse) for EAPC (2027) traffic conditions:

- Perris Bl. & Ramona Exwy. (#1) – LOS F AM and PM peak hours
- Redlands Av. & Ramona Exwy. (#2) – LOS F AM and PM peak hours
- Evans Rd. & Street A (#3) – LOS F AM and PM peak hours
- Evans Rd. & Ramona Expy. (#5) – LOS F AM and PM peak hours

TABLE 1-2: SUMMARY OF LOS BY ANALYSIS SCENARIO

		Existing		E+P		EAC		EAPC	
#	Intersection	AM	PM	AM	PM	AM	PM	AM	PM
1	Perris Bl. & Ramona Exwy.	A - D	A - D	A - D	A - D	F	F	F	F
2	Redlands Av. & Ramona Exwy.	A - D	A - D	A - D	A - D	F	F	F	F
3	Evans Rd. & Street A	N/A	N/A	F	F	A - D	F	F	F
4	Evans Rd. & Street B	N/A	N/A	A - D	A - D	N/A	N/A	A - D	A - D
5	Evans Rd. & Ramona Exwy.	A - D	A - D	A - D	A - D	F	F	F	F

A - D = A - D E = E F = F

1.6 RECOMMENDATIONS

This section provides a summary of deficiencies and recommended improvements. Section 2 *Methodologies* provides information on the methodologies used in the analyses and Section 5 *E+P Traffic Analysis*, and Section 6 *EAC and EAPC (2027) Traffic Analysis* include the detailed analyses. The direct project deficiency occurs at the intersection of Evans Road & Street A for the E+P analysis scenario (see Table 1-2). The same study area intersection deficiencies occur without and with Project traffic for the EAC and EAPC (2027) scenarios (see Table 1-2). As such, there are no direct project-related deficiencies for the EAC and EAPC (2027) scenarios, however, the Project would contribute cumulatively to each of the deficiencies identified on Table 1-2.

1.6.1 CIRCULATION SYSTEM DEFICIENCIES AND RECOMMENDED IMPROVEMENTS

A summary of the operationally deficient study area intersections and recommended improvements required to achieve acceptable circulation system performance are described in detail within Section 3 *Area Conditions*, Section 5 *E+P Traffic Analysis*, and Section 6 *EAC and EAPC (2027) Traffic Analysis* of this report.

A summary of off-site improvements needed to address intersection operational deficiencies for each analysis scenario is included in Table 1-3. These recommended improvements are consistent with or less than the geometrics assumed in the City of Perris and County of Riverside General Plan Circulation Elements. Improvements found to be included in the Western Riverside Council of Governments (WRCOG) Transportation Uniform Mitigation Fee (TUMF) program or City of Perris's (lead agency) Development Impact Fee (DIF) program, have been identified as such.

1.7 ON-SITE ROADWAY IMPROVEMENTS

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

Evans Road – Evans Road is a north-south oriented roadway located along the Project's western boundary. Construct Evans Road at its ultimate half-section pavement width as a Primary Arterial (118-foot right-of-way) between the northern and southern boundaries consistent with the City of Perris General Plan Circulation Element.

Wherever necessary, roadways adjacent to the Project, site access points and site-adjacent intersections will be constructed to be consistent with the identified roadway classifications and respective cross-sections in the City of Perris General Plan Circulation Element.

TABLE 1-3: SUMMARY OF IMPROVEMENTS BY ANALYSIS SCENARIO

#	Intersection Location	Jurisdiction	Recommended Improvements		Improvements in DIF, TUMF, etc.[1,2]	Project Responsibility	Project Fair Share[3]
			E+P	EAPC (2027)			
1	Perris Bl. & Ramona Exwy.	City of Perris	- None	- Restripe the NB right turn lane as a shared through-right turn lane	No	Fair Share	2.7%
				- Restripe the SB right turn lane as a shared through-right turn lane	No	Fair Share	
2	Redlands Av. & Ramona Exwy.	City of Perris	- None	- Add a NB right turn lane	No	Fair Share	2.7%
				- Add a 2nd SB left turn lane		Fair Share	
				- Add a 2nd EB left turn lane		Fair Share	
				- Add a 4th EB through lane		Fair Share	
				- Add a 2nd WB left turn lane		Fair Share	
				- Add a 4th WB through lane		Fair Share	
				- Modify the traffic signal to implement overlap phasing for the WB right turn lane		Fair Share	
3	Evans Rd. & Street A	City of Perris	- Install a traffic signal	- Same	No	Construct	100.0%
5	Evans Rd. & Ramona Exwy.	City of Perris	- None	- Add a 3rd WB through lane	No	Fair Share	4.2%

[1] Improvements included in TUMF Nexus or City of Perris DIF programs have been identified as such.

[2] Program improvements constructed by Project may be eligible for fee credit. In lieu fee payment is at discretion of City. Represents the fair share percentage for the Project during the most impacted peak hour.

[3] Total project fair share contribution consists of the improvements which are not already included in the City-wide DIF/County TUMF for those intersections wholly or partially

1.8 SITE ACCESS IMPROVEMENTS

The recommended site access driveway improvements for the Project are described below. Exhibit 1-4 also illustrates the site access 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.

Evans Road & Street A – Install a traffic signal and construct the intersection with the following geometrics:

- Northbound Approach: One through lane and one shared through-right turn lane.
- Southbound Approach: One left turn lane with a minimum of 100-feet of storage and two through lanes.
- Eastbound Approach: Not Applicable (N/A)
- Westbound Approach (Street A): One shared left-right turn lane.
- This driveway will also align with a future access into Tract 36647 (located to the west).

Evans Road & Street B – Install a stop control on the westbound approach and construct the intersection with the following geometrics:

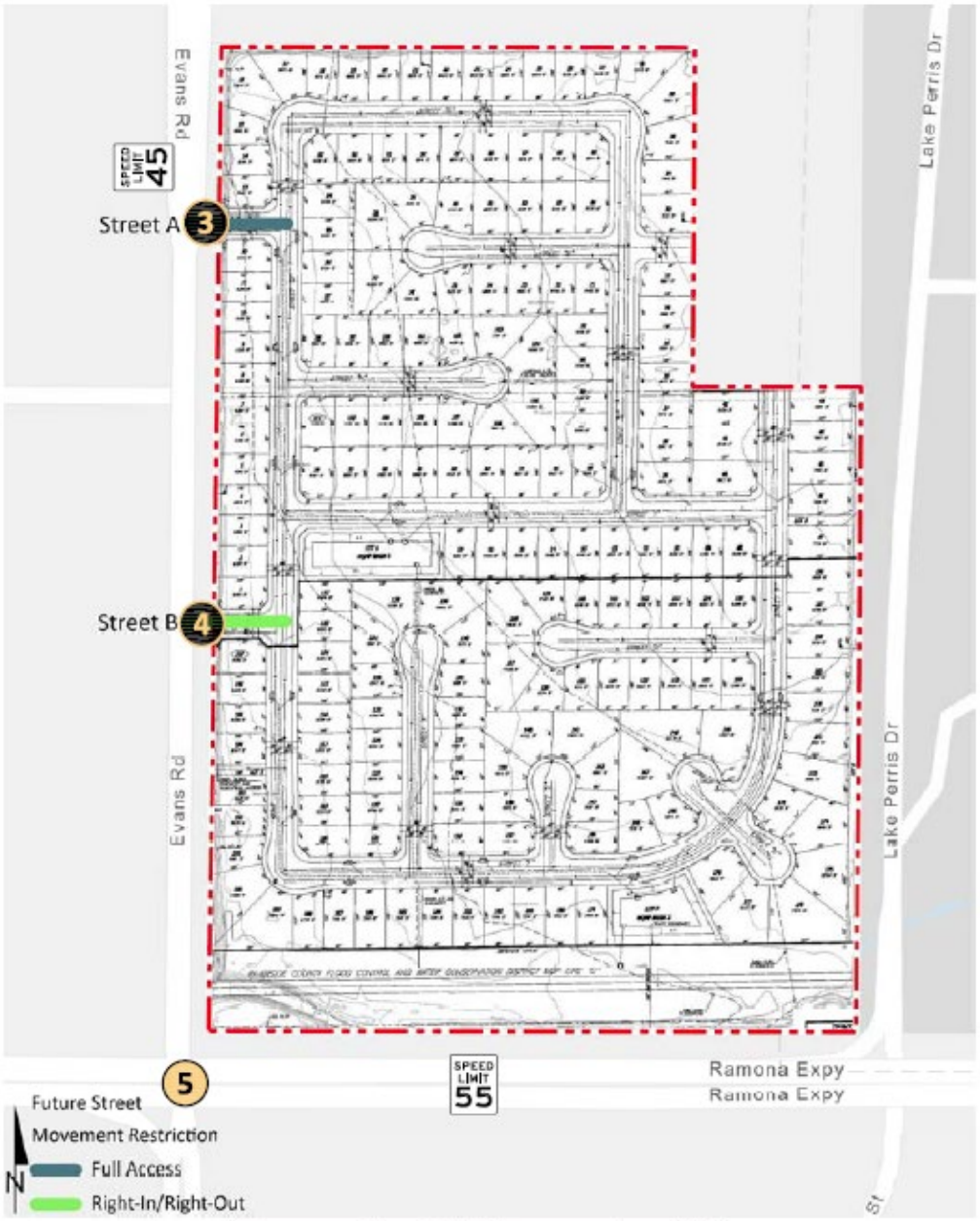
- Northbound Approach: One through lane and one shared through-right turn lane.
- Southbound Approach: Two through lanes.
- Eastbound Approach: N/A
- Westbound Approach (Street B): One right turn lane. Left turns into and out of this driveway are to be controlled with a raised median.

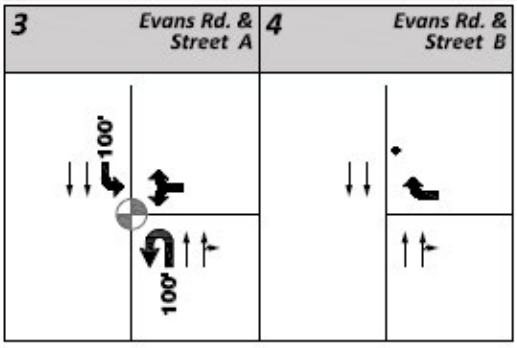
Wherever necessary, roadways adjacent to the Project, site access points and site-adjacent intersections will be constructed to be consistent with the identified roadway classifications and respective cross-sections in the City of Perris General Plan Circulation Element.

On-site traffic signing and striping should be implemented agreeable with the provisions of the California Manual on Uniform Traffic Control Devices (CA MUTCD) and in conjunction with detailed construction plans for the Project site.

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

EXHIBIT 1-4: SITE ACCESS RECOMMENDATIONS





= Traffic Signal
= Stop Sign
= Existing Lane
= Lane Improvement
100' = Minimum Lane Storage Length

1.9 QUEUING ANALYSIS AT THE PROJECT DRIVEWAYS

A queuing analysis was conducted along the site adjacent roadway of Evans Road for EAPC (2027) traffic conditions to determine the 95th percentile queues. The analysis was conducted for the weekday AM and weekday PM peak hours. The traffic modeling and signal timing optimization software package Synchro/SimTraffic (Version 10) has been utilized to assess queues at the Project access points. Synchro is a macroscopic traffic software program that is based on the signalized and unsignalized intersection capacity analyses as specified in the HCM. SimTraffic is designed to model networks of signalized and unsignalized intersections, with the primary purpose of checking and fine-tuning signal operations. SimTraffic uses the input parameters from Synchro to generate random simulations. The 95th percentile queue is not necessarily ever observed; it is simply based on statistical calculations (or Average Queue plus 1.65 standard deviations). Many jurisdictions utilize the 95th percentile queues for design purposes. SimTraffic simulations have been recorded 5 times, during the weekday AM and weekday PM peak hours, and has been seeded for 30-minute periods with 60-minute recording intervals. Queuing results are provided in Appendix 1.2. Based on the 95th percentile queues under EAPC (2027) traffic conditions, no driveway blockages are anticipated along Evans Road during the peak hours.

1.10 VMT ANALYSIS

The City of Perris adopted Transportation Impact Analysis Guidelines for CEQA (City Guidelines). (4) The City Guidelines include VMT thresholds that were recently reviewed and adopted by City Council on May 12, 2020. The VMT Scoping Form for Land Use Projects, provided by the City of Perris, has been completed and reviewed for accuracy. As shown in Appendix 1.1, the Project's VMT impact is less than significant.

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2 METHODOLOGIES

This section of the report presents the methodologies used to perform the traffic analyses summarized in this report. The methodologies described are generally consistent with City of Perris traffic study guidelines.

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) methodology expresses the LOS at an intersection in terms of delay time for the various intersection approaches. (5) The HCM uses different procedures depending on the type of intersection control.

2.2.1 SIGNALIZED INTERSECTIONS

The City of Perris requires signalized intersection operations analysis based on the methodology described in the HCM. (5) However, there are currently no siganlized study area intersections. 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. Study area intersections have been evaluated using the Synchro (Version 10) analysis software package.

Synchro is a macroscopic traffic software program that is based on the signalized intersection capacity analysis as specified in 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

Description	Average Control Delay (Seconds), V/C ≤ 1.0	Level of Service, V/C ≤ 1.0	Level of Service, V/C > 1.0
Operations with very low delay occurring with favorable progression and/or short cycle length.	0 to 10.00	A	F
Operations with low delay occurring with good progression and/or short cycle lengths.	10.01 to 20.00	B	F
Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	20.01 to 35.00	C	F
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	D	F
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	E	F
Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths	80.01 and up	F	F

Source: HCM, 6th Edition

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-minute 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 Existing (2020) baseline, E+P, EAC (2027), and EAPC (2027) traffic conditions.

2.2.2 UNSIGNALIZED INTERSECTIONS

The City of Perris requires the operations of unsignalized intersections be evaluated using the methodology described the HCM. (5) The LOS rating is based on the weighted average control delay expressed in seconds per vehicle (see Table 2-2).

TABLE 2-2: UNSIGNALIZED INTERSECTION LOS THRESHOLDS

Description	Average Control Delay Per Vehicle (Seconds)	Level of Service, V/C ≤ 1.0	Level of Service, V/C > 1.0
Little or no delays.	0 to 10.00	A	F
Short traffic delays.	10.01 to 15.00	B	F
Average traffic delays.	15.01 to 25.00	C	F
Long traffic delays.	25.01 to 35.00	D	F
Very long traffic delays.	35.01 to 50.00	E	F
Extreme traffic delays with intersection capacity exceeded.	> 50.00	F	F

Source: HCM, 6th Edition

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. The "worst case" movement delay and LOS is reported for the intersection. For all-way stop controlled intersections, LOS is computed for the intersection as a whole.

2.3 TRAFFIC SIGNAL WARRANT ANALYSIS METHODOLOGY

The term "signal warrants" refers to the list of established criteria used by the 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 TA uses the signal warrant criteria presented in the latest edition of the California Department of Transportation (Caltrans) California Manual on Uniform Traffic Control Devices *(CA MUTCD)* for all study area intersections. (6)

The signal warrant criteria for Existing conditions are based upon several factors, including volume of vehicular and pedestrian traffic, frequency of accidents, and location of school areas. The Caltrans CA MUTCD indicates that the installation of a traffic signal should be considered if one or more of the signal warrants are met. (6) Specifically, this TA utilizes the Peak Hour Volume-based Warrant 3 as the appropriate representative traffic signal warrant analysis for existing study area intersections for all analysis scenarios. Warrant 3 is appropriate to use for this TA 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 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 intersections that do not currently exist 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 the following study area intersection shown in Table 2-3:

TABLE 2-3: TRAFFIC SIGNAL WARRANT ANALYSIS LOCATIONS

ID	Intersection Location	Jurisdiction
3	Evans Rd. & Street A	City of Perris

Traffic signal warrant analyses were performed for the one full access unsignalized study area intersections. The Existing conditions traffic signal warrant analysis is presented in the subsequent section, Section 3 *Area Conditions* of this report. The traffic signal warrant analyses for future conditions are presented in Section 5 *E+P Traffic Analysis,* and Section 6 *EAC and EAPC (2027) 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 LOS. An intersection may satisfy a signal warrant condition and operate at or above acceptable LOS or operate below acceptable LOS and not meet a signal warrant.

2.4 MINIMUM LEVEL OF SERVICE (LOS)

The definition of an intersection deficiency has been obtained from the City of Perris' General Plan. LOS D along all City maintained roads (including intersections) and LOS D along I-215 and SR-74 (including intersections with local streets and roads). An exception to the local road standard is LOS E, at intersections of any Arterials and Expressways with SR-74, the Ramona-Cajalco Expressway, or at I-215 Freeway ramps. (7)

LOS E may be allowed within the boundaries of the Downtown Specific Plan Area to the extent that it would support transit-oriented development and walkable communities. Increased congestion in this area will facilitate an increase in transit ridership and encourage development of a complementary mix of land uses within a comfortable walking distance from light rail stations.

2.5 DEFICIENCY CRITERIA

This section outlines the methodology used in this analysis related to identifying circulation system deficiencies. The following deficiency criteria has been utilized for the City of Perris. To determine whether the addition of project-related traffic at a study intersection would result in a deficiency, the following will be utilized:

- A project-related deficiency is considered direct and significant when a study intersection operates at an acceptable LOS for existing conditions (without the project) and the addition of 50 or more AM or PM peak hour project trips causes the intersection to operate at an unacceptable LOS for existing plus project (E+P) traffic conditions.
- A project-related deficiency is considered direct and significant when a study intersection operates at an unacceptable LOS for existing conditions (without the project) and the addition of

50 or more AM or PM peak hour project trips causes the intersection delay to increase by 2 seconds or more.

- A cumulative deficiency is considered significant when a study intersection is forecast to operate at an unacceptable LOS with the addition of cumulative/background traffic and 50 or more AM or PM peak hour project trips.

2.6 PROJECT FAIR SHARE CALCULATION METHODOLOGY

Improvements found to be included in the TUMF and DIF, will be identified as such. For improvements that do not appear to be in either of the pre-existing fee programs, a fair share financial contribution based on the Project's proportional share may be imposed in order to mitigate the Project's share of deficiencies in lieu of construction. It should be noted that fair share calculations are for informational purposes only and the City Engineer will determine the appropriate improvements to be implemented by a project (to be identified in the conditions of approval).

If the intersection is currently operating at acceptable LOS under Existing traffic conditions, the Project's fair share cost of improvements would be determined based on the following equation, which is the ratio of Project traffic to new traffic, where new traffic is total future traffic less existing baseline traffic:

2027 Project Fair Share % = Project Traffic / (EAPC (2027) Total Traffic – Existing Traffic)

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3 AREA CONDITIONS

This section provides a summary of the existing circulation network, the City of Perris General Plan Circulation Network, and a review of existing peak hour intersection operations and traffic signal warrant analyses.

3.1 EXISTING CIRCULATION NETWORK

Pursuant to the scoping agreement with City of Perris staff (Appendix 1.1), the study area includes a total of 5 existing and future intersections as shown previously on Exhibit 1-2. 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.

3.2 GENERAL PLAN CIRCULATION ELEMENTS

Exhibit 3-2 shows the City of Perris General Plan Circulation Element, and Exhibit 3-3 illustrates the City of Perris General Plan roadway cross-sections. Evans Road is designated as a Primary Arterial and Ramona Expressway is designated as an Expressway.

EXPRESSWAYS

Ramona Expressway is a six-lane expressway providing major east-west travel in northern Perris. The ultimate cross section is typically 184 feet.

PRIMARY ARTERIAL STREET

Arterial streets in general vary from a curb-to-curb width of 64 feet to 86 feet in accordance with the cross sections shown in Exhibit 3-3. The ultimate cross section is typically 118 feet.

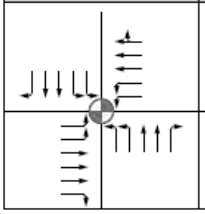
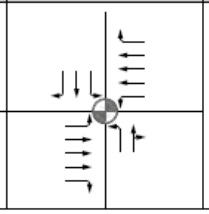
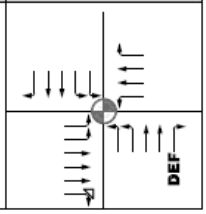
3.3 TRUCK ROUTES

The City of Perris designated truck route map is shown on Exhibit 3-4. If applicable, these designated truck route maps have been utilized to route truck traffic from future cumulative development projects throughout the study area. Note that Ramona Expressway has not been utilized to route any heavy truck traffic to and from the I-215 Freeway.

3.4 TRANSIT SERVICE

Exhibit 3-5 shows existing routes along Evans Road and Ramona Expressway. The study area is currently served by the Riverside Transit Authority (RTA), a public transit agency serving the Riverside County region. RTA currently serves the study area via Routes 19 and 41, which Route 19 appears that it could potentially serve the proposed Project. Transit service is reviewed and updated by RTA periodically to address ridership, budget, and community demand needs. Changes in land use can affect these periodic adjustments which may lead to either enhanced or reduced service where appropriate.

EXHIBIT 3-1: EXISTING NUMBER OF THROUGH LANES AND INTERSECTION CONTROLS

1 Perris Bl. & Ramona Exwy.	2 Redlands Av. & Ramona Exwy.	3 Evans Rd. & Street A	4 Evans Rd. & Street B	5 Evans Rd. & Ramona Exwy.
		Future Intersection	Future Intersection	

= Traffic Signal
4 = Number of Lanes
D = Divided
U = Undivided
DEF = Defacto Right Turn
= Channelized Yield

EXHIBIT 3-2: CITY OF PERRIS GENERAL PLAN CIRCULATION ELEMENT

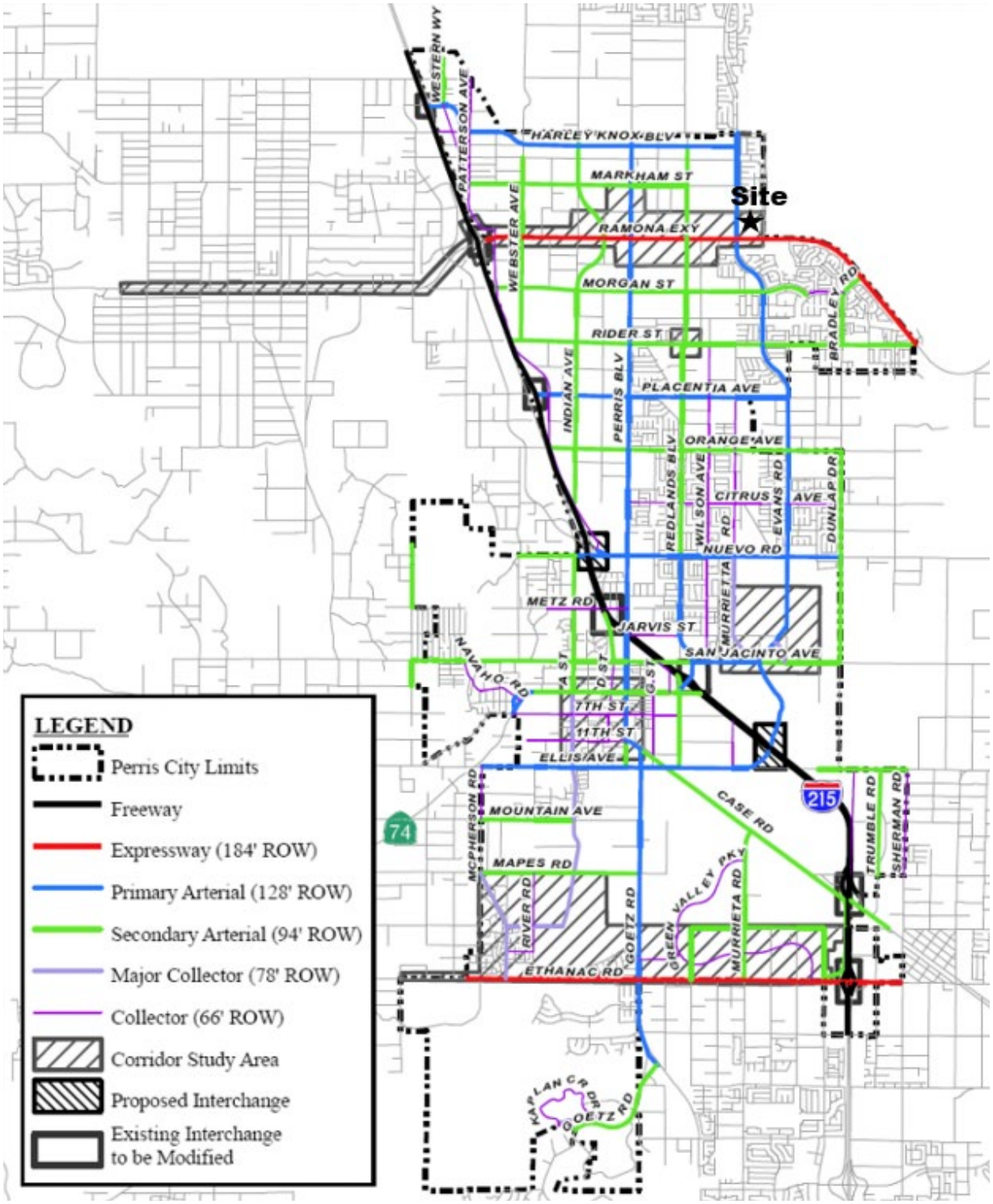
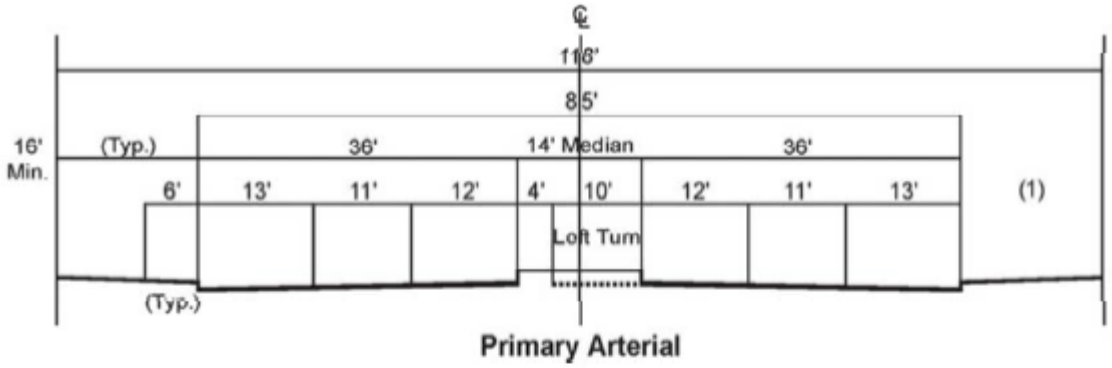
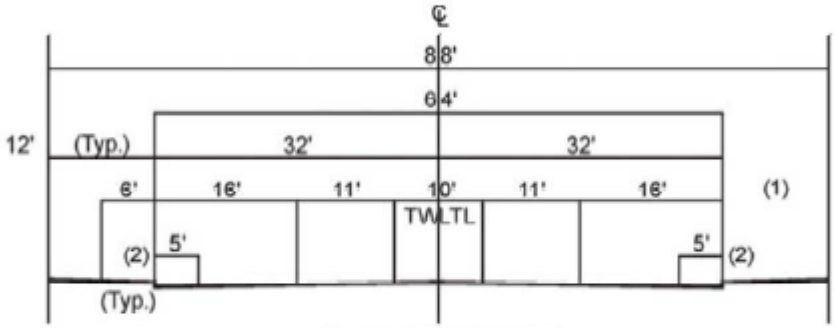


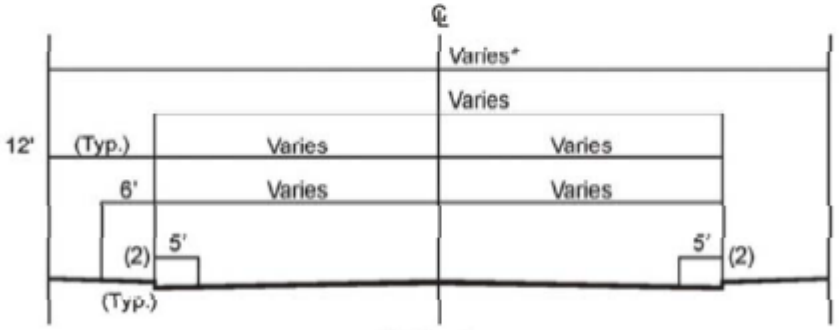
EXHIBIT 3-3: CITY OF PERRIS GENERAL PLAN ROADWAY CROSS-SECTIONS



Primary Arterial



Secondary Arterial



Collector

Legend

(1) No stopping any time both sides.
(2) Bike lane where designated.

* The width of the collector street can range from 40 feet to 64 feet curb-to-curb.

TWLTL = Two Way Left Turn Lane

Source: City of Perris General Plan 8-2008

EXHIBIT 3-4: CITY OF PERRIS TRUCK ROUTES

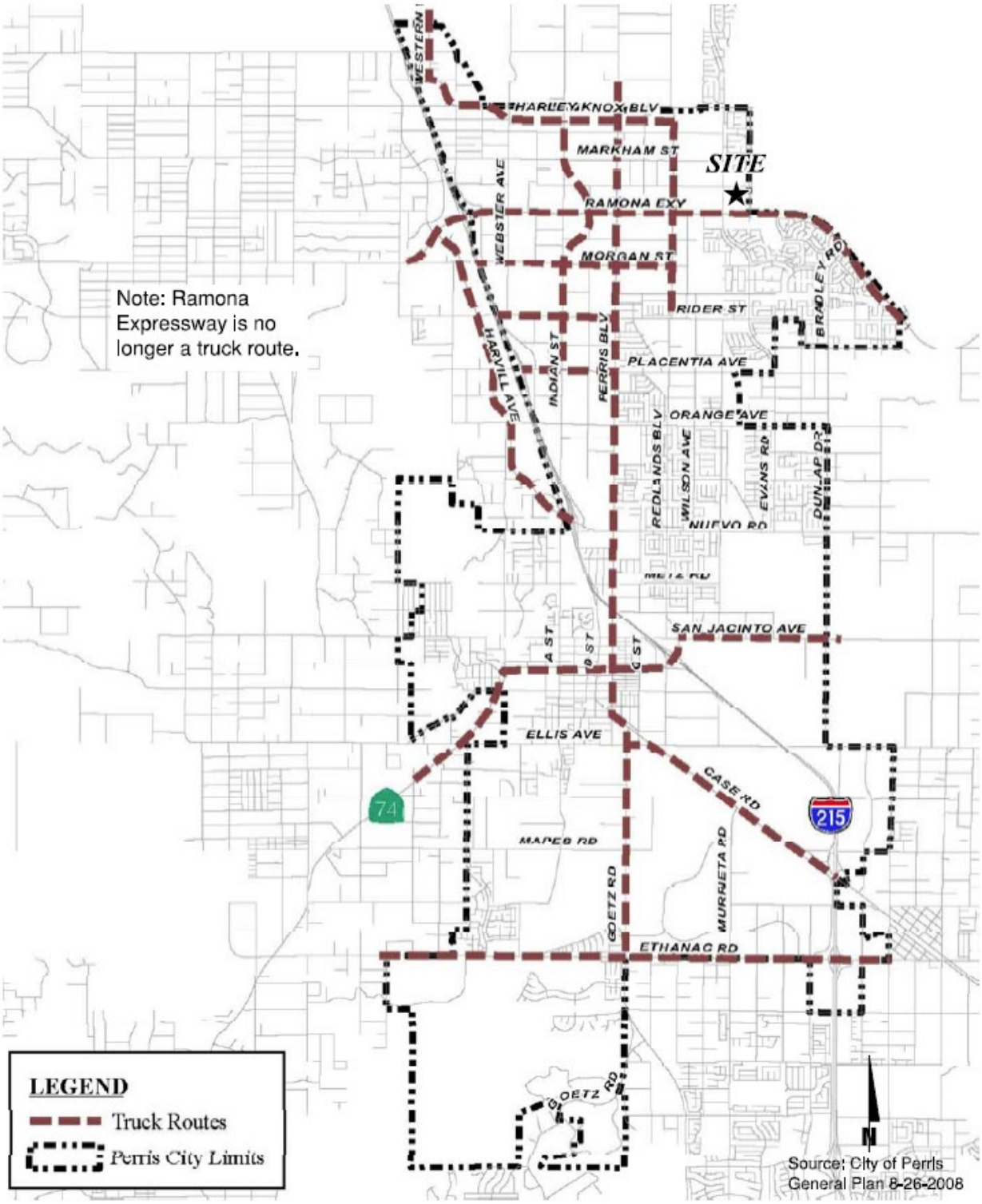
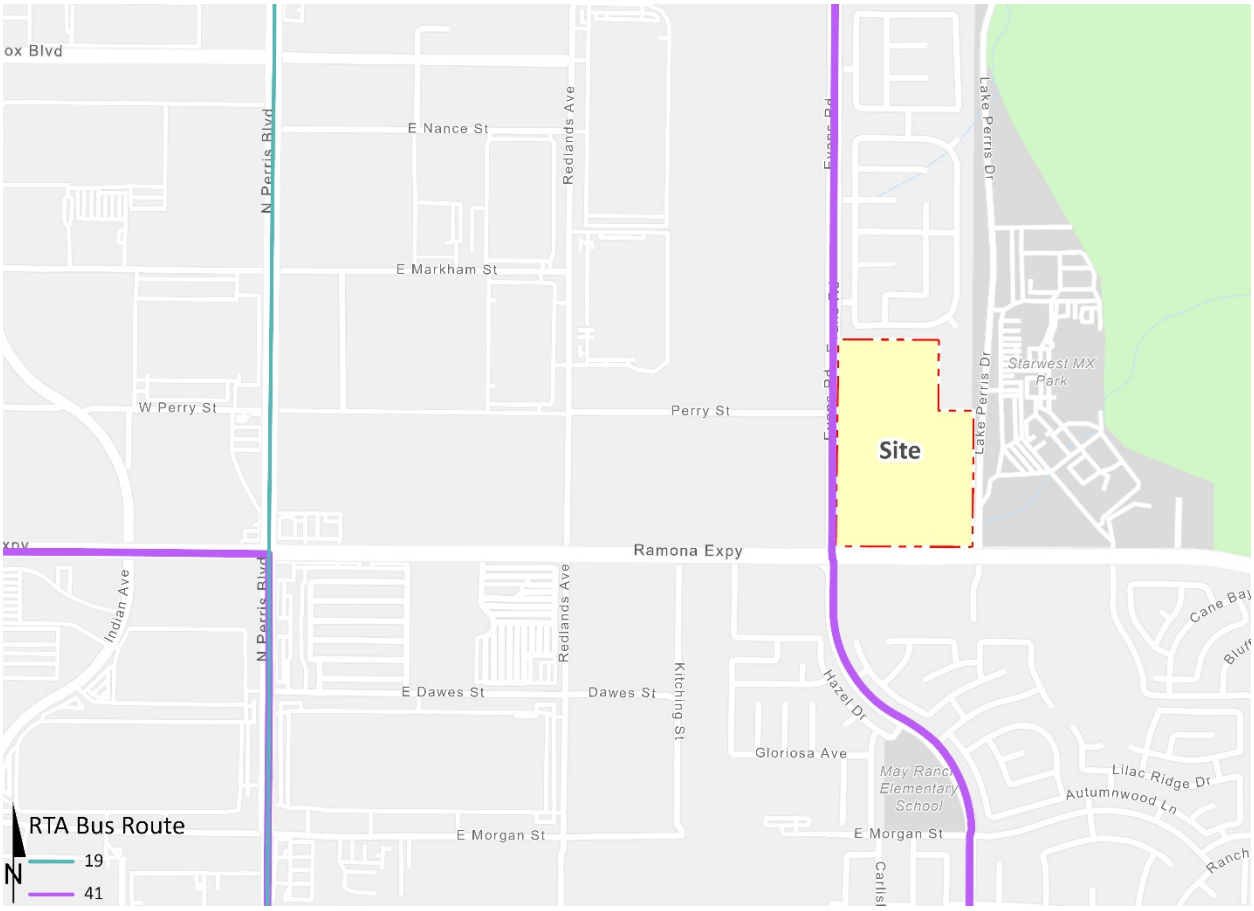


EXHIBIT 3-5: EXISTING TRANSIT ROUTES



3.5 BICYCLE & PEDESTRIAN FACILITIES

In an effort to promote alternative modes of transportation, the City of Perris also includes a proposed bikeways and trail system. The City of Perris proposed bikeways and trail system is shown on Exhibit 3-6. Ramona Expressway and Evans Road are proposed to have Class II bike lanes. Field observations conducted in March 2020 indicate nominal pedestrian and bicycle activity within the study area. Exhibit 3-7 illustrates the existing bicycle and pedestrian facilities, including bike lanes, sidewalks, and crosswalk locations.

3.6 EXISTING TRAFFIC COUNTS

The intersection LOS analysis is based on the traffic volumes observed during the peak hour conditions using traffic count data collected in March 2020, when local schools were in session and operating on a typical bell schedule (prior to closures related to the COVID-19 pandemic). 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)

The weekday AM and weekday PM peak hour count data are 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 the count dates, such as construction activity or detour routes and near-by schools were in session and operating on normal schedules.

The raw manual peak hour turning movement traffic count data sheets are included in Appendix 3.1. These raw turning volumes have been flow conserved between intersections with limited access, no access, and where there are currently no uses generating traffic.

Existing weekday average daily traffic (ADT) volumes on arterial highways throughout the study area are shown on Exhibit 3-8 (in actual vehicles). Where actual 24-hour tube count data was not available, Existing ADT volumes were based upon factored intersection peak hour counts collected by Urban Crossroads, Inc. using the following formula for each intersection leg:

Weekday PM Peak Hour (Approach Volume + Exit Volume) x 12.37 = Leg Volume

A comparison of the PM peak hour and daily traffic volumes of various roadway segments within the study area indicated that the peak-to-daily relationship is approximately 8.08 percent. As such, the above equation utilizing a factor of 12.37 estimates the ADT volumes on the study area roadway segments assuming a peak-to-daily relationship of approximately 8.08 percent (i.e., 1/0.0808 = 12.37) and was assumed to sufficiently estimate average daily traffic (ADT) volumes for planning-level analyses. Existing weekday AM and weekday PM peak hour intersection volumes (in actual vehicles) are also shown on Exhibit 3-8.

EXHIBIT 3-6: CITY OF PERRIS PROPOSED BIKEWAYS AND TRAIL IMPROVEMENTS

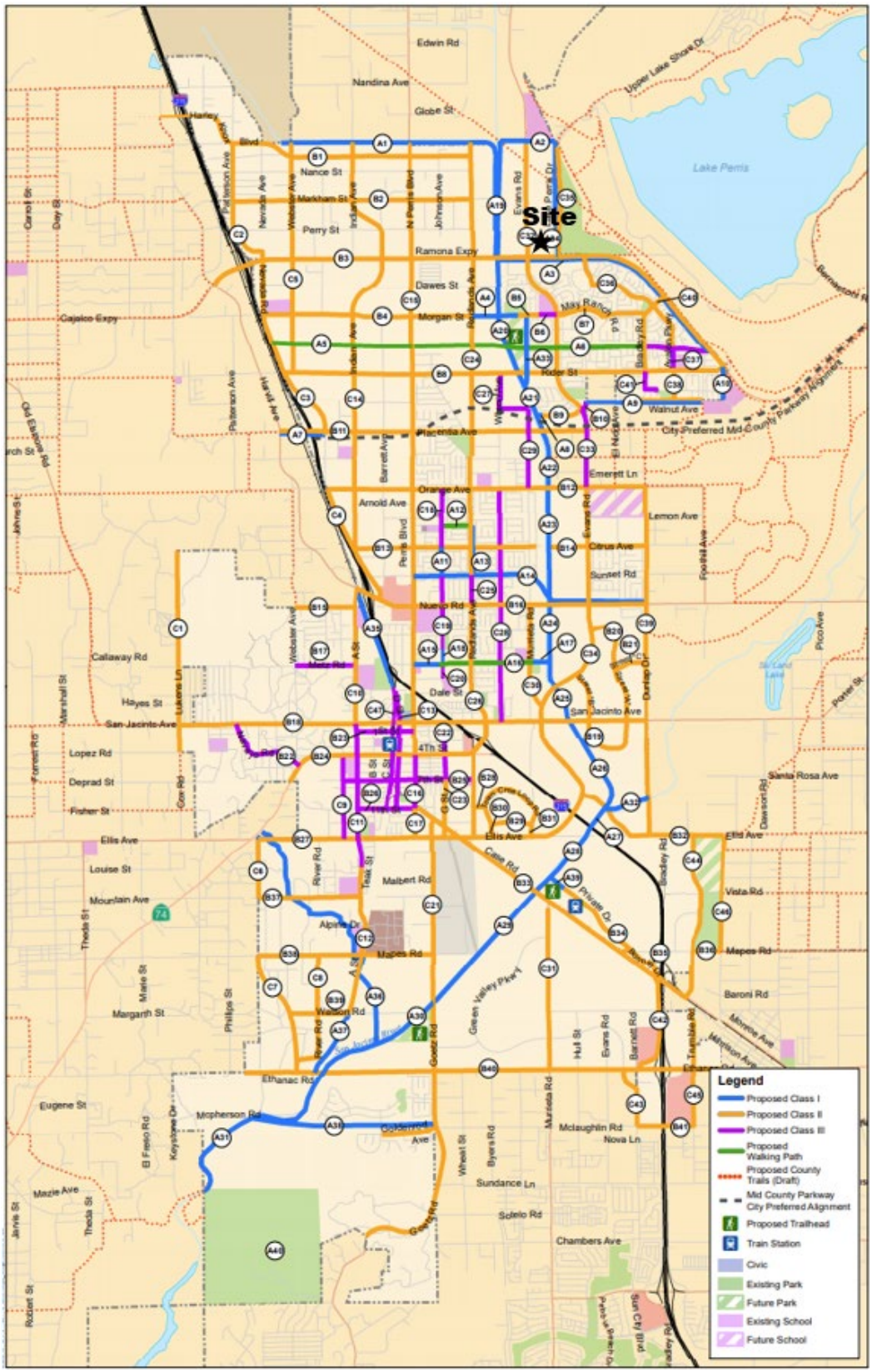


EXHIBIT 3-7: EXISTING PEDESTRIAN FACILITIES

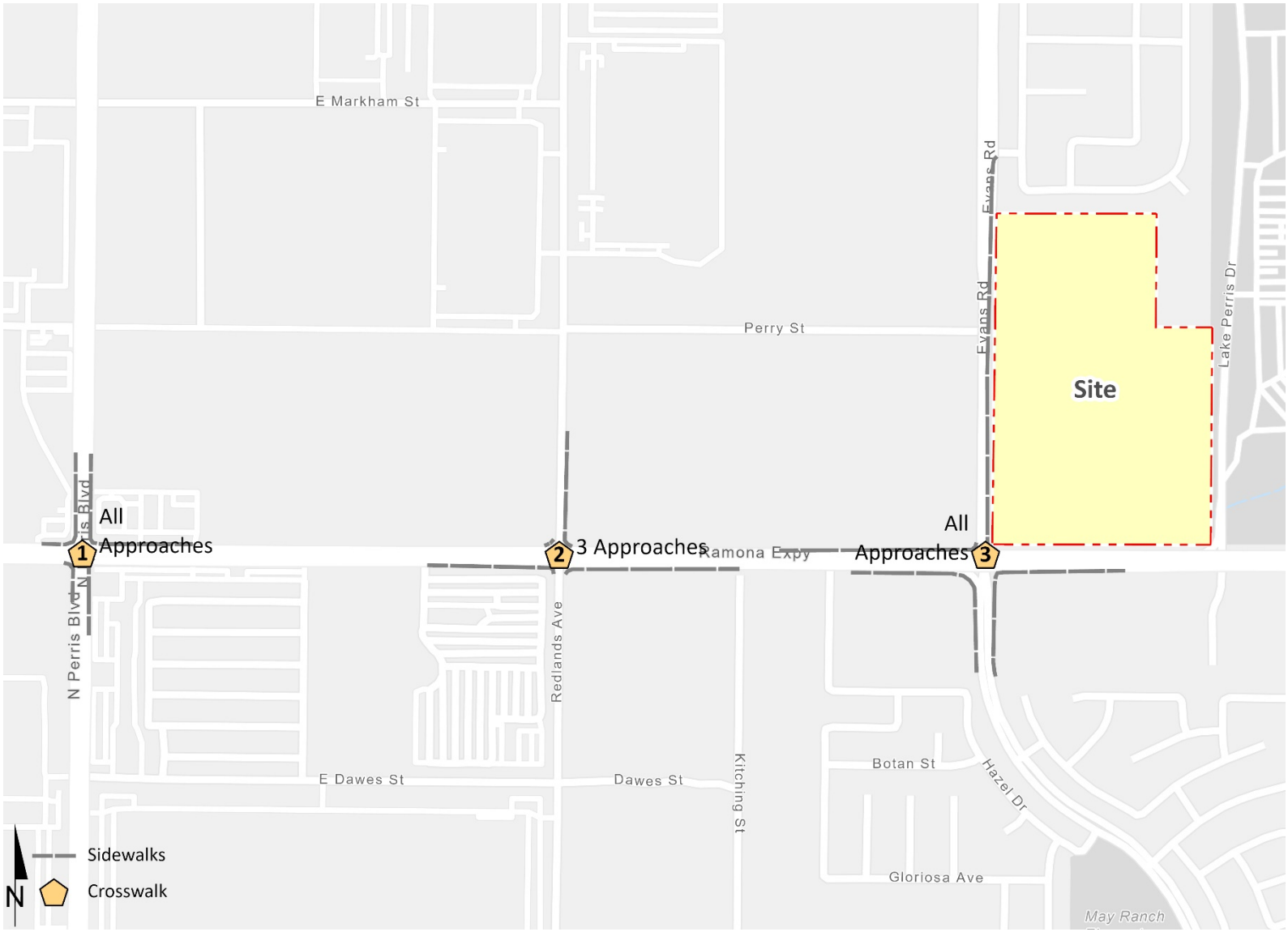
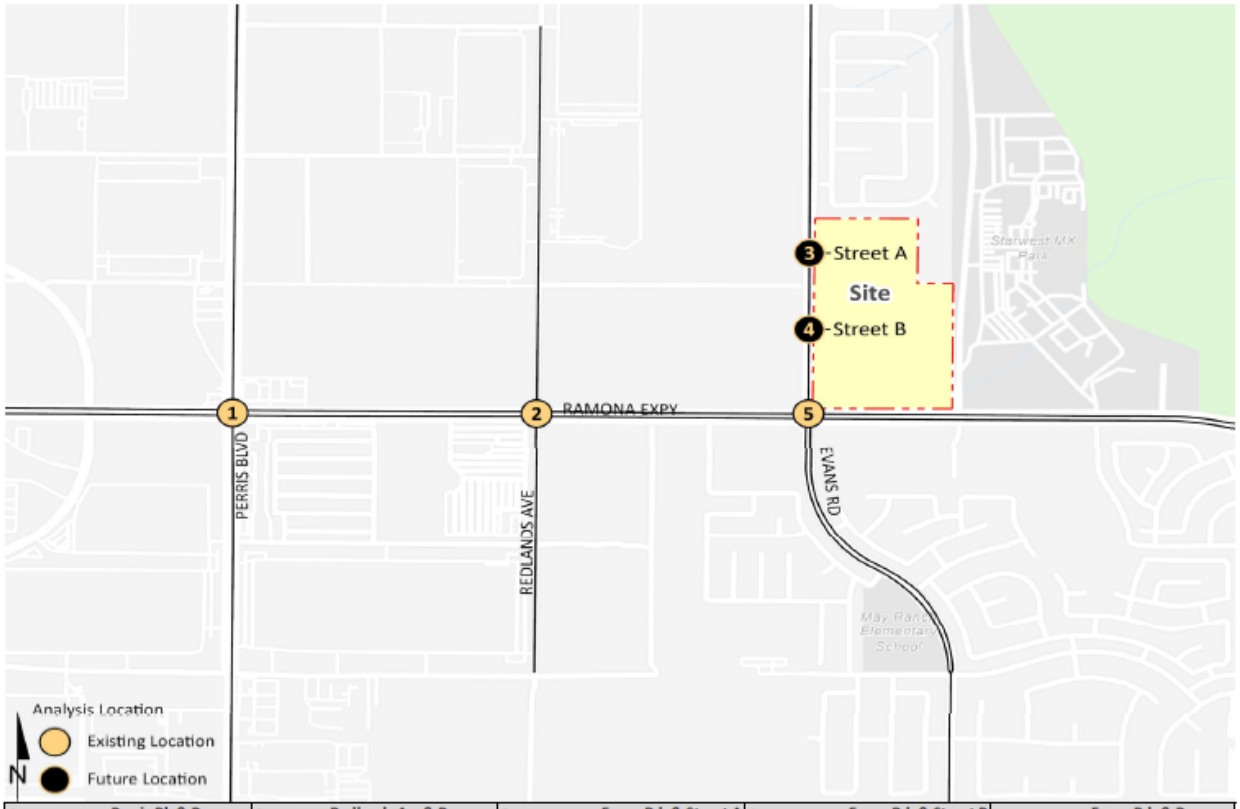


EXHIBIT 3-8: EXISTING (2021) TRAFFIC VOLUMES (IN ACTUAL VEHICLES)



1 Perris Bl. & Ramona Exwy.

21,800		30,100
177(181) ↲		↰ 133(117)
315(604) ↓		← 1153(757)
99(246) ↳		↱ 87(92)
295(244) →	↰	
613(1121) →	↑	
93(244) →	↱	
	276(197)	
	752(370)	
	90(101)	
33,950		19,900

2 Redlands Av. & Ramona Exwy.

4,350		36,700
13(16) ↲		↰ 437(89)
1(5) ↓		← 1443(1044)
53(222) ↳		↱ 70(27)
42(20) →	↰	
744(1510) →	↑	
12(22) →	↱	
	7(10)	
	6(0)	
	62(75)	
32,450		1,700

3 Evans Rd. & Street A

Does Not Exist

4 Evans Rd. & Street B

Does Not Exist

5 Evans Rd. & Ramona Exwy.

25,650		25,900
351(348) ↲		↰ 285(201)
248(536) ↓		← 1152(591)
128(254) ↳		↱ 14(16)
249(406) →	↰	
443(1024) →	↑	
153(433) →	↱	
	447(220)	
	413(329)	
	25(7)	
37,400		19,050

##(##) AM(PM) Peak Hour Intersection Volumes

Average Daily Trips

3.7 INTERSECTION OPERATIONS ANALYSIS

Existing 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 which indicates that the study area intersections are currently operating at an acceptable LOS during the peak hours (i.e., LOS D or better). There are no operational issues for the existing intersection configuration. The intersection operations analysis worksheets are included in Appendix 3.2 of this TA.

TABLE 3-1: INTERSECTION ANALYSIS FOR EXISTING (2021) CONDITIONS

#	Intersection	Traffic Control[1]	Delay[2] (secs.)		Level of Service	
			AM	PM	AM	PM
1	Perris Bl. & Ramona Exwy.	TS	32.4	27.3	C	C
2	Redlands Av. & Ramona Exwy.	TS	23.5	21.1	C	C
3	Evans Rd. & Street A		Does Not Exist			
4	Evans Rd. & Street B		Does Not Exist			
5	Evans Rd. & Ramona Exwy.	TS	34.8	23.8	C	C

[1] TS = Traffic Signal

[2] Per the Highway Capacity Manual (6th Edition), 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.

3.8 TRAFFIC SIGNAL WARRANTS ANALYSIS

Traffic signal warrants for Existing traffic conditions are based on existing peak hour intersection turning volumes. All existing study area intersections are currently controlled by a traffic signal. As such, traffic signal warrants analysis is not applicable to Existing conditions.

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4 PROJECTED FUTURE TRAFFIC

The Project is proposed to consist of 197 single family detached residential dwelling units. The Project is anticipated to be constructed in a single phase by the year 2027. Vehicular traffic access will be provided via the following driveways:

- Evans Road & Street A – full access (to also serve Tract 36647 to the west)
- Evans Road & Street B – right-in/right-out access only

Regional access to the Project site is provided via the I-215 Freeway and Harley Knox Boulevard/Ramona Expressway/future Placentia Interchange (anticipated completion of the interchange per RCTC is Summer 2022).

4.1 PROJECT TRIP GENERATION

Trip generation represents the amount of traffic that is attracted and produced by a development and is based upon the specific land uses planned for a given project. Trip generation rates for the Project are shown in Table 4-1 together with the trip generation summary illustrating daily and peak hour trip generation estimates based on the ITE Trip Generation Manual (10th Edition, 2017). (1) The proposed Project is anticipated to generate 1,860 trip-ends per day with 145 AM peak hour trips and 195 PM peak hour trips, as shown in Table 4-1.

TABLE 4-1: PROJECT TRIP GENERATION SUMMARY

Land Use	ITE Code	Units[2]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Single Family Detached Residential	210	DU	0.19	0.56	0.74	0.62	0.37	0.99	9.44

Project	Quantity	Units[1]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
TTM No. 38071 (Stratford Ranch East)	197	DU	36	109	145	123	72	195	1,860

[1] DU = Dwelling Units

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 and are consistent with other similar projects that have been reviewed and approved by City of Perris staff. The Project trip distribution patterns were also developed based on an understanding of existing travel patterns in the area, the geographical location of the site, and the site's proximity to the regional arterial and state highway system. It should be noted that the trip distribution patterns assume the I-215 Freeway and Placentia Avenue interchange is in place (anticipated completion of the interchange per RCTC is Summer 2022).

The Project trip distribution pattern is graphically depicted on Exhibit 4-1. These distribution patterns were reviewed and approved by the City of Perris as part of the traffic study scoping process (see Appendix 1.1).

4.3 MODAL SPLIT

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

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 ADT and peak hour intersection turning movement volumes are shown on Exhibit 4-2 in actual vehicles.

4.5 BACKGROUND TRAFFIC

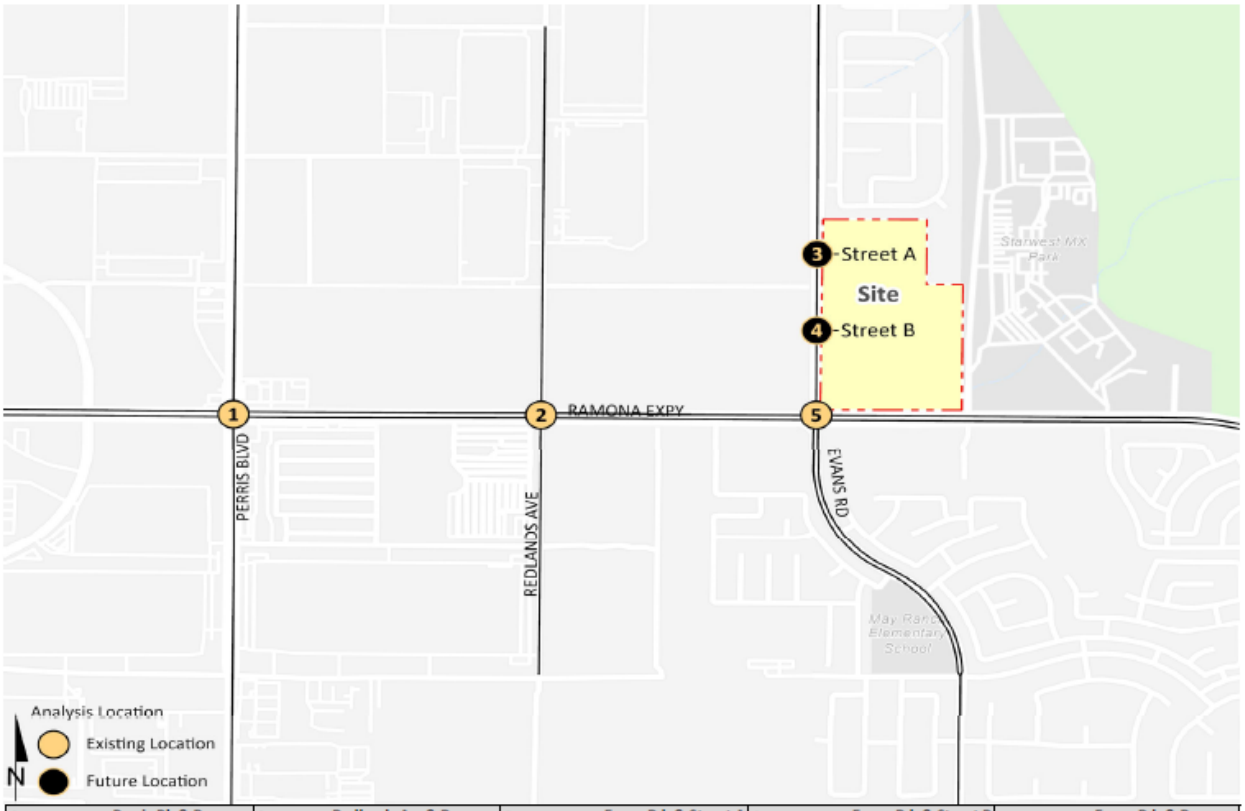
Future year traffic forecasts have been based upon six years of background (ambient) growth at 3% per year over 6 years, for 2027 traffic conditions. The total ambient growth is 19.41% for 2027 traffic conditions. This ambient growth rate is added to existing traffic volumes to account for area-wide 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 that have been approved but not yet built and/or for which development applications have been filed and are under consideration by governing agencies.

EXHIBIT 4-1: PROJECT TRIP DISTRIBUTION

10 = *Percent To/From Project*
= *Outbound*
= *Inbound*

EXHIBIT 4-2: PROJECT ONLY TRAFFIC VOLUMES (IN ACTUAL VEHICLES)



1 Perris Bl. & Ramona Exwy.	2 Redlands Av. & Ramona Exwy.	3 Evans Rd. & Street A	4 Evans Rd. & Street B	5 Evans Rd. & Ramona Exwy.
100 / 850	850	350 / 850	1,400 / 1,000	1,500 / 300
2(6) ← 5(4) ← 27(18) ↰ 16(11)	← 49(32)	7(25) ↱ 11(7) ↰ 44(29)	87(58) ← ← 55(36)	49(32) ↲ 22(14) ← 16(11) ↲ 5(18)
9(31) → 5(18) ↱	16(55) →	44(29) ↰ 11(7) → 7(25) ↱	7(25) → 22(74) ↱	16(55) ↳ 7(25) →
450 / 300	850	350 / 1,000	1,500	850 / 350

##(##) AM(PM) Peak Hour Intersection Volumes

Average Daily Trips

The Southern California Association of Governments (SCAG) 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) growth forecasts for the City of Perris identifies projected growth in population of 74,900 in 2016 to 121,000 in 2045, or a 61.6% increase over the 29-year period. The change in population equates to roughly a 1.67 percent growth rate compounded annually. Similarly, growth over the same 29-year period in households is projected to increase by 96.5 percent, or 2.36 percent growth rate, compounded annually. Finally, growth in employment over the same 29-year period is projected to increase by 64.0 percent, or a 1.72 percent annual growth rate. The average annual growth rate between population, households, and employment is 1.92 percent per year. (8) Therefore, the use of an annual growth rate of 3.0 percent would appear to conservatively approximate the anticipated regional growth in traffic volumes in the City of Perris, especially when considered along with the addition of Project-related traffic and traffic generated by other known development projects. As such, the growth in traffic volumes assumed in this traffic analysis would tend to overstate as opposed to understate the potential deficiencies to traffic and circulation.

4.6 CUMULATIVE DEVELOPMENT TRAFFIC

Other reasonably foreseeable development projects which are either approved or being processed concurrently in the study area have also been 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 City of Perris. The cumulative project list includes known and foreseeable projects that are anticipated to contribute traffic to the study area intersections. The adjacent jurisdiction of the County of Riverside has also been contacted to obtain the most current list of cumulative projects from their respective jurisdictions.

Where applicable, cumulative projects anticipated to contribute measurable traffic (i.e., 50 or more peak hour trips) to study area intersections have been manually added to the study area network to generate EAC and EAPC forecasts. In other words, this list of cumulative development projects has been reviewed to determine which projects would likely contribute measurable traffic through the study area intersections (e.g., those cumulative projects in close proximity to the proposed Project). For the purposes of this analysis, the cumulative projects that were determined to affect one or more of the study area intersections are shown on Exhibit 4-3, listed in Table 4-2, and have been considered for inclusion.

Although it is unlikely that these cumulative projects would be fully built and occupied by Year 2027, they have been included in an effort to conduct a conservative analysis and overstate as opposed to understate potential traffic deficiencies.

EXHIBIT 4-3: CUMULATIVE DEVELOPMENT LOCATION MAP

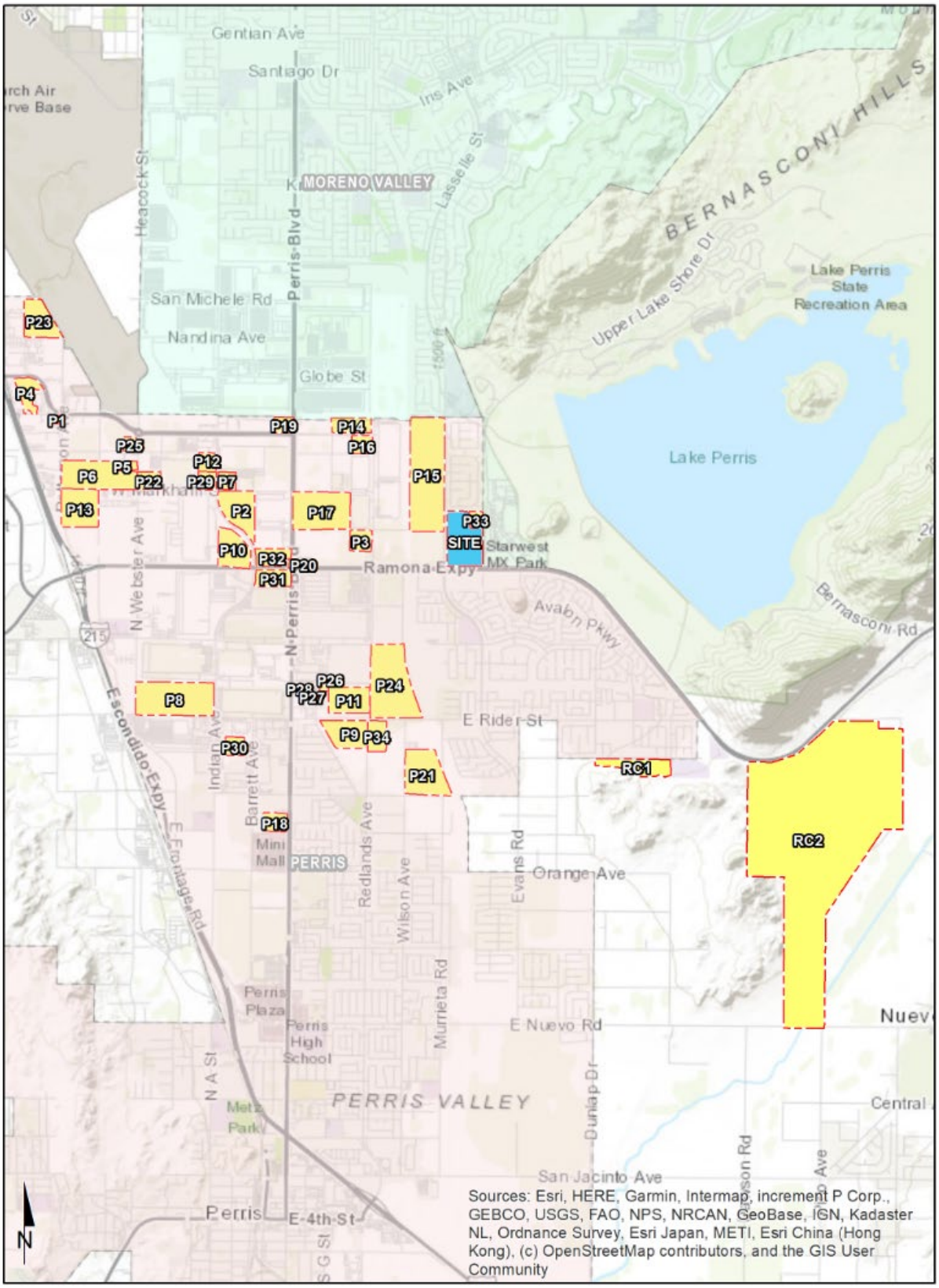


TABLE 4-2: CUMULATIVE DEVELOPMENT LAND USE SUMMARY

No.	Project Name / Case Number	Jurisdiction	Land Use	Quantity	Units[1]	Location
P1	Canyon Steel (CS)	Perris	Industrial	25.000	TSF	NWC OF PATTERSON AVE. & CALFORNIA AVE.
P2	Duke 2 / DPR 16-00008	Perris	High-Cube Warehouse	669.000	TSF	NEC OF INDIAN AVE. & MARKHAM ST.
P3	First Perry / DPR 16-00013	Perris	High-Cube Warehouse	240.000	TSF	SWC OF REDLANDS AVE. & PERRY ST.
P4	Gateway / DPR 16-00003	Perris	High-Cube Warehouse	400.000	TSF	SOUTH OF HARLEY KNOX BLVD. EAST OF HWY. 215
P5	Marijuana Manufacturing (MM)	Perris	Industrial	1.000	TSF	NW CORNER OF WEBSTER AVE. & WASHINGTON ST.
P6	OLC2 / DPR 14-01-0015	Perris	High-Cube Warehouse	1,037.000	TSF	WEST OF WEBSTER AVE. NORTH OF MARKHAM ST.
P7	Markham Industrial / DPR 16-00015	Perris	Warehousing	170.000	TSF	NEC OF INDIAN AVE. & MARKHAM ST.
P8	Rados / DPR 07-0119	Perris	High-Cube Warehouse	1,200.000	TSF	NWC OF INDIAN AVE. & RIDER ST.
P9	Rider 1 / DPR 16-0365	Perris	High-Cube Warehouse	350.000	TSF	SWC OF REDLANDS AVE. & RIDER ST.
P10	Indian/Ramona Warehouse / DPR 18-00002	Perris	High-Cube Warehouse	428.730	TSF	NORTH OF RAMONA EXWY. WEST OF INDIAN AVE.
P11	Rider 3 / DPR 06-0432	Perris	High-Cube Warehouse	640.000	TSF	NORTH OF RIDER ST. WEST OF REDLANDS AVE.
P12	Westcoast Textile / DPR 16-00001	Perris	Warehousing	180.000	TSF	SWC OF INDIAN ST. & NANCE ST.
P13	Duke at Patterson / DPR 17-00001	Perris	High-Cube Warehouse	811.000	TSF	SEC OF PATTERSON AVE. & MARKHAM ST.
P14	Harley Knox Commerce Park / DPR 16-004	Perris	High-Cube Warehouse	386.278	TSF	NWC OF HARLEY KNOX BLVD. & REDLANDS AVE.
P15	Stratford Ranch West / TTM 36648	Perris	Single Family Residential	90	DU	WEST OF EVANS RD. AT MARKHAM ST.
P16	Circle Industrial III	Perris	Warehousing	211.000	TSF	NWC OF REDLANDS AVE. AND NANCE AVE.
P17	Duke @ Perris Blvd.	Perris	High-Cube Warehouse	1,070.000	TSF	SEC OF PERRIS BL. AND MARKHAM ST.
P18	Weinerschnitzel / CUP 17-05083	Perris	Fast-Food Restaurant	2.000	TSF	WEST OF PERRIS BL., SOUTH OF PLACENTIA AVE.
P19	March Plaza / CUP16-05165	Perris	Commercial Retail	47.253	TSF	NWC OF PERRIS BL. AND HARLEY KNOX BL.
P20	Cali Express Carwash / CUP 16-05258	Perris	Carwash	5.600	TSF	NWC OF PERRIS BL. AND RAMONA EXWY.
P21	Wilson Industrial / DPR 19-00007	Perris	High-Cube Warehouse	303.000	TSF	SEC OF WILSON AVE. AND RIDER ST.
P22	Integra Expansion / MMOD 17-05075	Perris	High-Cube Warehouse	273.000	TSF	NCE OF MARKHAM ST. AND WEBSTER AVE.
P23	Western Industrial / DRP 19-00003	Perris	High-Cube Warehouse	250.000	TSF	NEC OF WESTERN WY. AND NANDINA AVE.
P24	Rider 2/4	Perris	High-Cube Warehouse	1,373.449	TSF	NEC OF REDLANDS AV. AND RIDER ST.
P25	AAA	Perris	Industrial	2.000	TSF	SE CORNER OF HARLEY KNOX BL. & WEBSTER AVE.
P26	Pulliam Indus	Perris	Industrial	16.000	TSF	LOTS 10 & 12 ON COMMERCE DR., E OF PERRIS
P27	Burge Indus 1	Perris	Industrial	18.000	TSF	E OF PERRIS BL. & N OF COMMERCE DR.
P28	Burge Indus 2	Perris	Industrial	19.000	TSF	E OF PERRIS BL. & S OF COMMERCE DR.
P29	Phelan Indus	Perris	Industrial	81.000	TSF	N SIDE OF MARKHAM BTW WEBSTER AVE. & PERRIS BLVD.
P30	Dedeaux Walnut Warehouse	Perris	Industrial	205.830	TSF	N SIDE OF WALNUT AVE. BTW INDIAN AVE. & BARRETT AVE.
P31	Perris and Ramona Warehouse	Perris	Industrial	347.938	TSF	S SIDE OF RAMONA EXWY. BTW INDIAN AVE. & PERRIS BLVD.
P32	Ramona E-Commerce Park	Perris	High-Cube Fulfillment	347.938	TSF	NE CORNER OF INDIAN AV. AND RAMONA EXWY.
			Hotel	125	RM	
P33	APN 302200005	Perris	Single Family Residential	19	DU	EAST OF EVANS RD. AND NORTH OF RAMONA EXWY.
P34	First Indus (Goodwin)	Perris	Industrial	338.000	TSF	SE CORNER OF REDLANDS AV. AND RIDER ST.
RC1	McCanna Hills / TTM 33978	Riverside County	Single Family Residential	63	DU	SWC OF SHERMAN AVE. & WALNUT AVE.
RC2	Stoneridge	Riverside County	High-Cube Cold Storage	1695.355	TSF	NORTH OF NUEVO RD., SOUTH OF RAMONA EXWY., EAST OF ANTELOPE RD.
			High-Cube Fulfillment	2966.872	TSF	
			High-Cube Warehouse	2966.872	TSF	
			Manufacturing	847.678	TSF	
			Warehouse	427.759	TSF	
			Industrial Park	641.639	TSF	
			Free-Standing Discount Superstore	100.000	TSF	

[1] DU = Dwelling Units; TSF = Thousand Square Feet; RM = Rooms

Any other cumulative projects that are not expected to contribute measurable traffic to study area intersections have not been included since the traffic would dissipate due to the distance from the Project site and study area intersections. Any additional traffic generated by other projects not on the cumulative projects list is accounted for through background ambient growth factors that have been applied to the peak hour volumes at study area intersections as discussed in Section 4.5 *Background Traffic*. Cumulative Only ADT and peak hour intersection turning movement volumes are shown on Exhibit 4-4 in actual vehicles.

4.7 NEAR-TERM TRAFFIC CONDITIONS

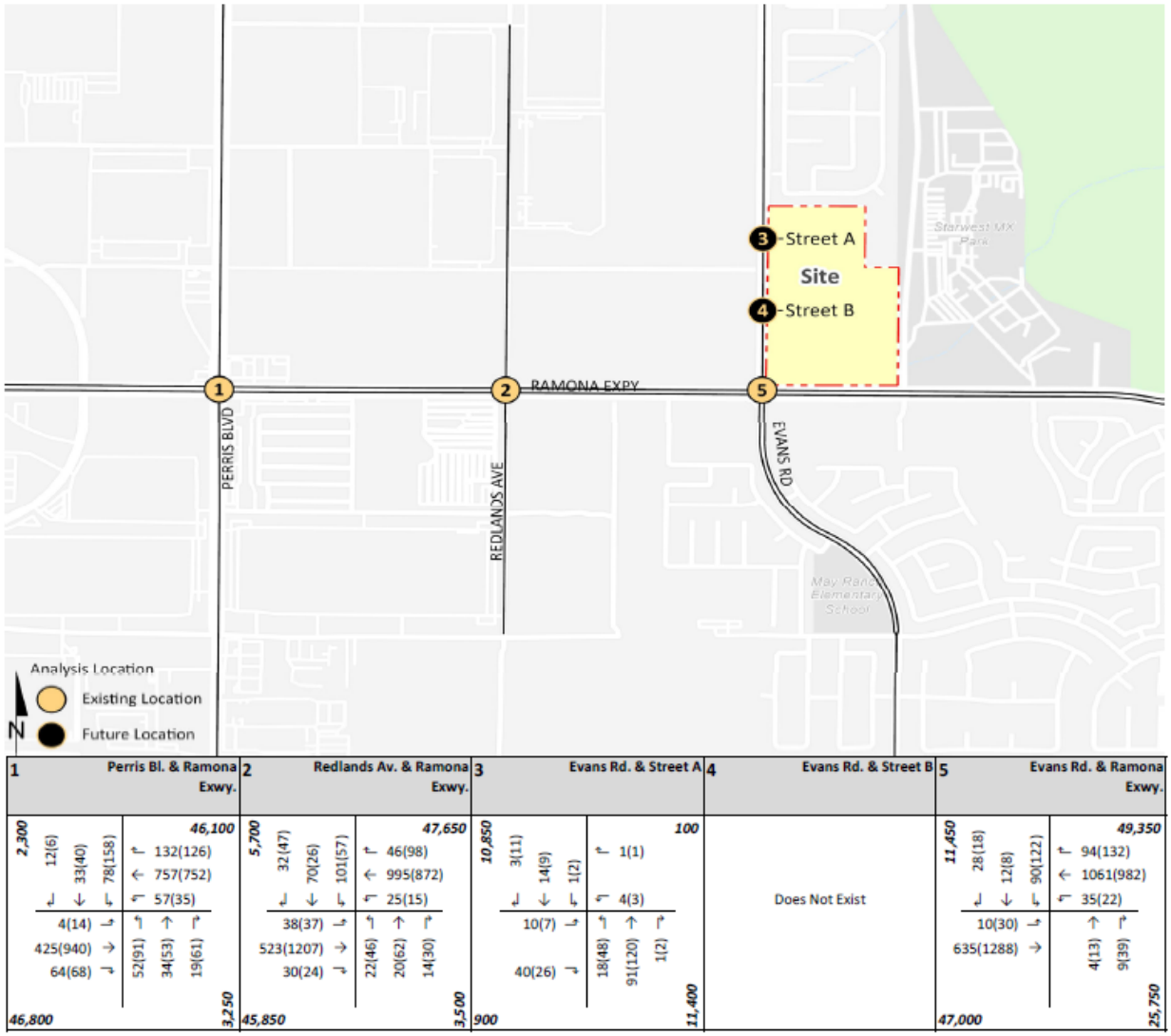
The "buildup" approach combines existing traffic counts with a background ambient growth factor to forecast EAC (2027) and EAPC (2027) traffic conditions. An ambient growth factor of 19.41% to account for background (area-wide) traffic increases that occur over time up to the year 2027 from the year 2021 (3.0 percent per year, compounded annually). Traffic volumes generated by the Project are then added to assess the near-term traffic conditions. The 2027 roadway networks are similar to the Existing conditions roadway network, with the exception of future driveways 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 Plus Cumulative (2027)**
    - Adjusted Existing 2021
    - Ambient growth traffic (19.41%)
    - Cumulative Development traffic
- **Existing Plus Ambient Growth Plus Cumulative Plus Project (2027)**
    - Adjusted Existing 2021
    - Ambient growth traffic (19.41%)
    - Cumulative Development traffic
    - Project traffic

The EAPC traffic conditions analysis was utilized to determine if improvements funded through regional transportation mitigation fee programs, such as the TUMF or DIF, can accommodate the cumulative traffic at the target LOS identified in the City of Perris General Plan.

EXHIBIT 4-4: CUMULATIVE ONLY TRAFFIC VOLUMES (IN ACTUAL VEHICLES)



1 Perris Bl. & Ramona Exwy.

2,300 | 12(6) | 33(40) | 78(158) | 46,100
132(126) ← | 757(752) ← | 57(35) ←
4(14) → | 425(940) → | 64(68) →
52(91) → | 34(53) → | 19(61) → | 3,250
46,800

2 Redlands Av. & Ramona Exwy.

5,700 | 32(47) | 70(26) | 101(57) | 47,650
46(98) ← | 995(872) ← | 25(15) ←
38(37) → | 523(1207) → | 30(24) →
22(46) → | 20(62) → | 14(30) → | 3,500
45,850

3 Evans Rd. & Street A

10,850 | 3(11) | 14(9) | 1(2) | 100
1(1) ← | 4(3) ←
10(7) → | 40(26) →
18(48) → | 91(120) → | 1(2) → | 11,400
900

4 Evans Rd. & Street B

Does Not Exist

5 Evans Rd. & Ramona Exwy.

11,450 | 28(18) | 12(8) | 90(122) | 49,350
94(132) ← | 1061(982) ← | 35(22) ←
10(30) → | 635(1288) →
4(13) → | 9(39) → | 25,750
47,000

##(##) AM(PM) Peak Hour Intersection Volumes
Average Daily Trips

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5 E+P TRAFFIC ANALYSIS

This section discusses the traffic forecasts for Existing Plus Project (E+P) conditions and the resulting intersection operations and traffic signal warrant analyses.

5.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for E+P conditions are consistent with those shown previously on Exhibit 3-1, with the exception of the following:

- Project driveways and those facilities assumed to be constructed by the Project to provide site access are also assumed to be in place for E+P conditions only (e.g., intersection and roadway improvements at the Project's frontage and driveways).

5.2 E+P TRAFFIC VOLUME FORECASTS

This scenario includes Existing traffic volumes plus Project traffic. The ADT and peak hour intersection turning movement volumes (in actual vehicles), which can be expected for E+P traffic conditions are shown on Exhibit 5-1.

5.3 INTERSECTION OPERATIONS ANALYSIS

E+P peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2 *Methodologies* of this TA. The intersection analysis results are summarized in Table 5-1, which indicates that the following study area intersection is anticipated to operate at an unacceptable LOS:

- Evans Rd. & Street A – LOS F AM and PM peak hours

The intersection operations analysis worksheets are included in Appendix 5.1 of this TA.

TABLE 5-1: INTERSECTION ANALYSIS FOR E+P CONDITIONS

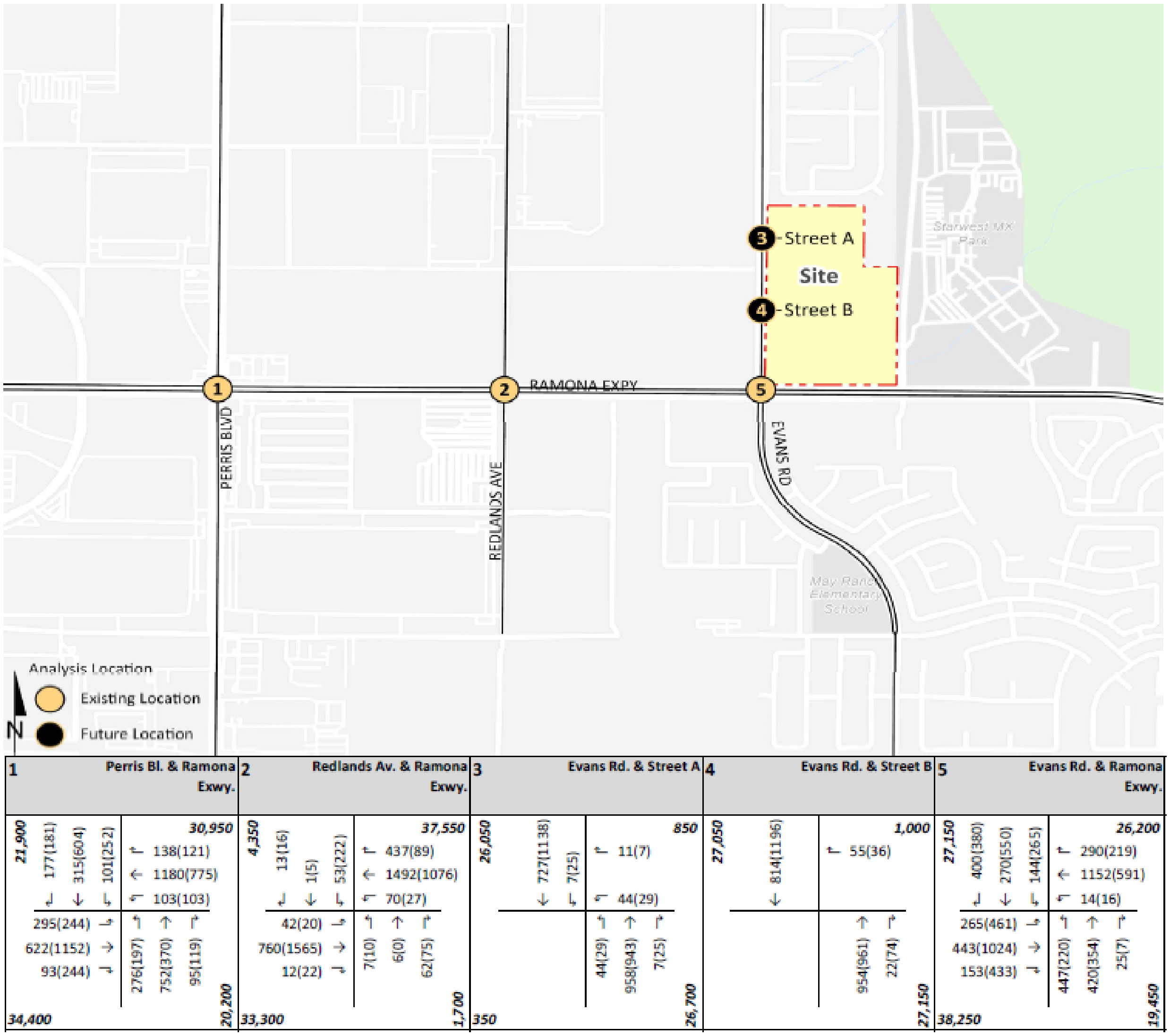
			Existing				Existing + Project			
			Delay[2] (secs.)		Level of Service		Delay[2] (secs.)		Level of Service	
#	Intersection	Traffic Control[1]	AM	PM	AM	PM	AM	PM	AM	PM
1	Perris Bl. & Ramona Exwy.	TS	32.4	27.3	C	C	32.8	27.6	C	C
2	Redlands Av. & Ramona Exwy.	TS	23.5	21.1	C	C	23.7	21.5	C	C
3	Evans Rd. & Street A	CSS	Does Not Exist				**71.2**	**98.7**	**F**	**F**
4	Evans Rd. & Street B	CSS	Does Not Exist				13.3	13.4	B	B
5	Evans Rd. & Ramona Exwy.	TS	34.8	23.8	C	C	39.4	25.6	D	C

* **BOLD** = Level of Service (LOS) does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

[1] CSS = Cross-street Stop; TS = Traffic Signal; **CSS** = Improvement

[2] Per the Highway Capacity Manual (6th Edition), 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.

EXHIBIT 5-1: E+P TRAFFIC VOLUMES (IN ACTUAL VEHICLES)



##(##) AM(PM) Peak Hour Intersection Volumes

Average Daily Trips

URBAN CROSSROADS

5.4 TRAFFIC SIGNAL WARRANTS ANALYSIS

There are no study area intersections anticipated to meet peak hour volume-based or planning level (ADT) traffic signal warrants under E+P traffic conditions (see Appendix 5.2).

5.5 RECOMMENDED IMPROVEMENTS

Improvement strategies have been recommended at intersections that have been identified as deficient under E+P traffic conditions in an effort to achieve an acceptable LOS (i.e., LOS E or better). The effectiveness of the recommended improvement strategies to address E+P traffic deficiencies are presented in Table 5-2. As shown on Table 5-2, the Project should install a traffic signal in conjunction with the turn lanes needed to facilitate site access. Worksheets for E+P conditions, with improvements, HCM calculation worksheets are provided in Appendix 5.3.

TABLE 5-2: INTERSECTION ANALYSIS FOR E+P CONDITIONS WITH IMPROVEMENTS

			Intersection Approach Lanes[2]												Delay[3] (secs.)		Level of Service	
		Traffic	Northbound			Southbound			Eastbound			Westbound						
#	Intersection	Control[1]	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
3	Evans Rd. & Street A																	
	-Without Improvements	CSS	1	2	0	1	2	0	0	0	0	0	1	0	71.2	98.7	F	F
	- With Improvements	TS	1	2	0	1	2	0	0	0	0	0	1	0	5.8	5.5	A	A

* BOLD = Level of Service (LOS) does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

[1] CSS = Cross-street Stop; TS = Traffic Signal; TS = Improvement

[2] 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; 1 = Improvement

[3] Per the Highway Capacity Manual (6th Edition), 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

[4] Per the City of Perris General Plan, LOS E is permitted at intersections along the Ramona-Cajalco Expressway.

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6 EAC AND EAPC (2027) TRAFFIC ANALYSIS

This section discusses the methods used to develop EAC and EAPC (2027) traffic forecasts and the resulting intersection operations and traffic signal warrant analyses.

6.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for EAC and EAPC (2027) conditions are consistent with those shown previously on Exhibit 3-1, with the exception of the following:

- Project driveways and those facilities assumed to be constructed by the Project to provide site access are also assumed to be in place for EAPC conditions only (e.g., intersection and roadway improvements along the Project's frontage and driveways).
- Driveways and those facilities assumed to be constructed by cumulative developments to provide site access are also assumed to be in place for EAC and EAPC (2027) conditions only (e.g., intersection and roadway improvements along the cumulative development's frontages).

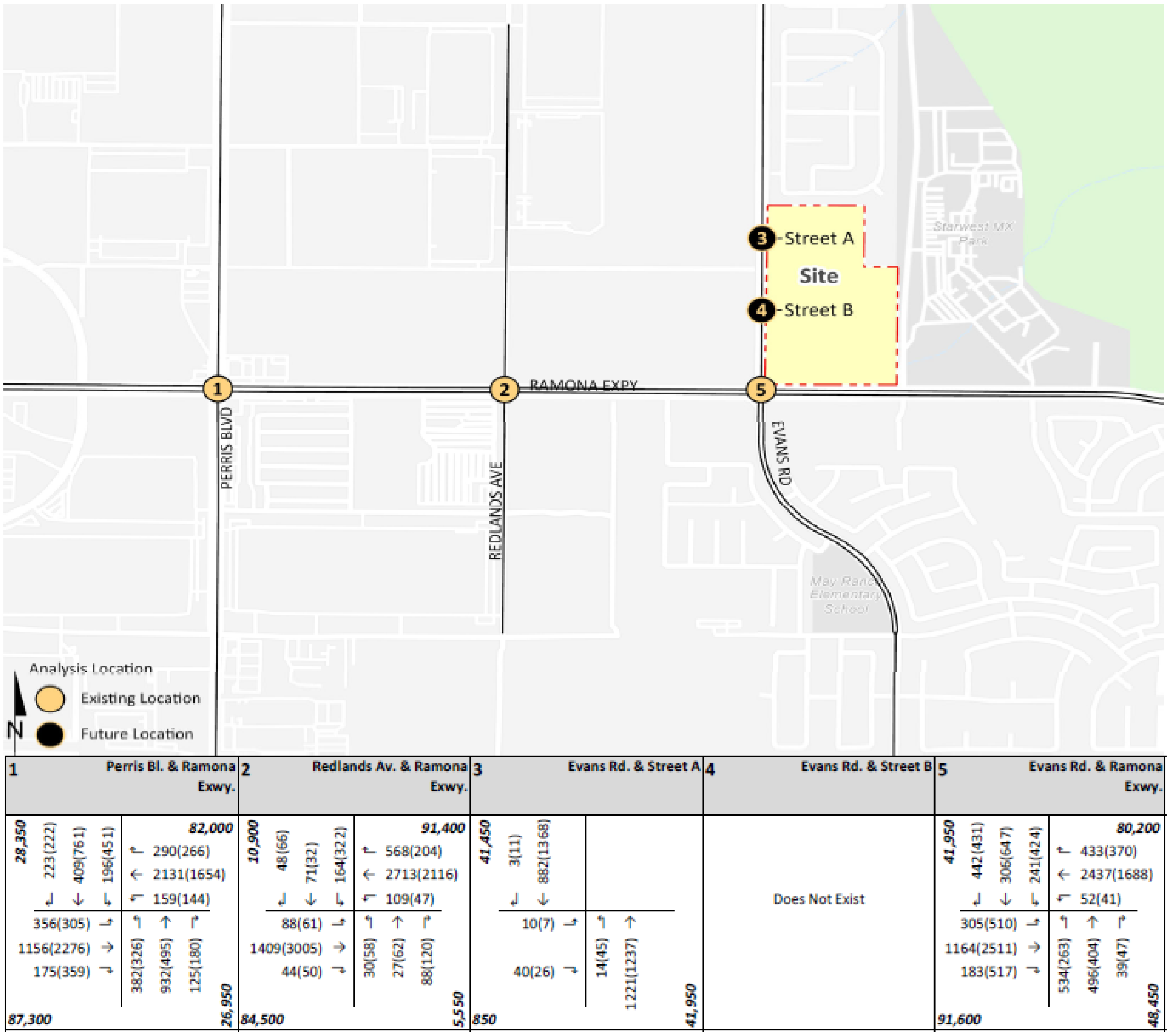
6.2 EAC (2027) TRAFFIC VOLUME FORECASTS

To account for background traffic, other known cumulative development projects in the study area were included in addition to 19.41% of ambient growth for EAC (2027) traffic conditions. The weekday ADT and weekday AM and PM peak hour volumes (in actual vehicles) which can be expected for EAC (2027) traffic conditions are shown on Exhibit 6-1.

6.3 EAPC (2027) TRAFFIC VOLUME FORECASTS

To account for background traffic, other known cumulative development projects in the study area were included in addition to 19.41% of ambient growth for EAPC (2027) traffic conditions in conjunction with traffic associated with the proposed Project. The weekday ADT and weekday AM and PM peak hour volumes (in actual vehicles) which can be expected for EAPC (2027) traffic conditions are shown on Exhibit 6-2.

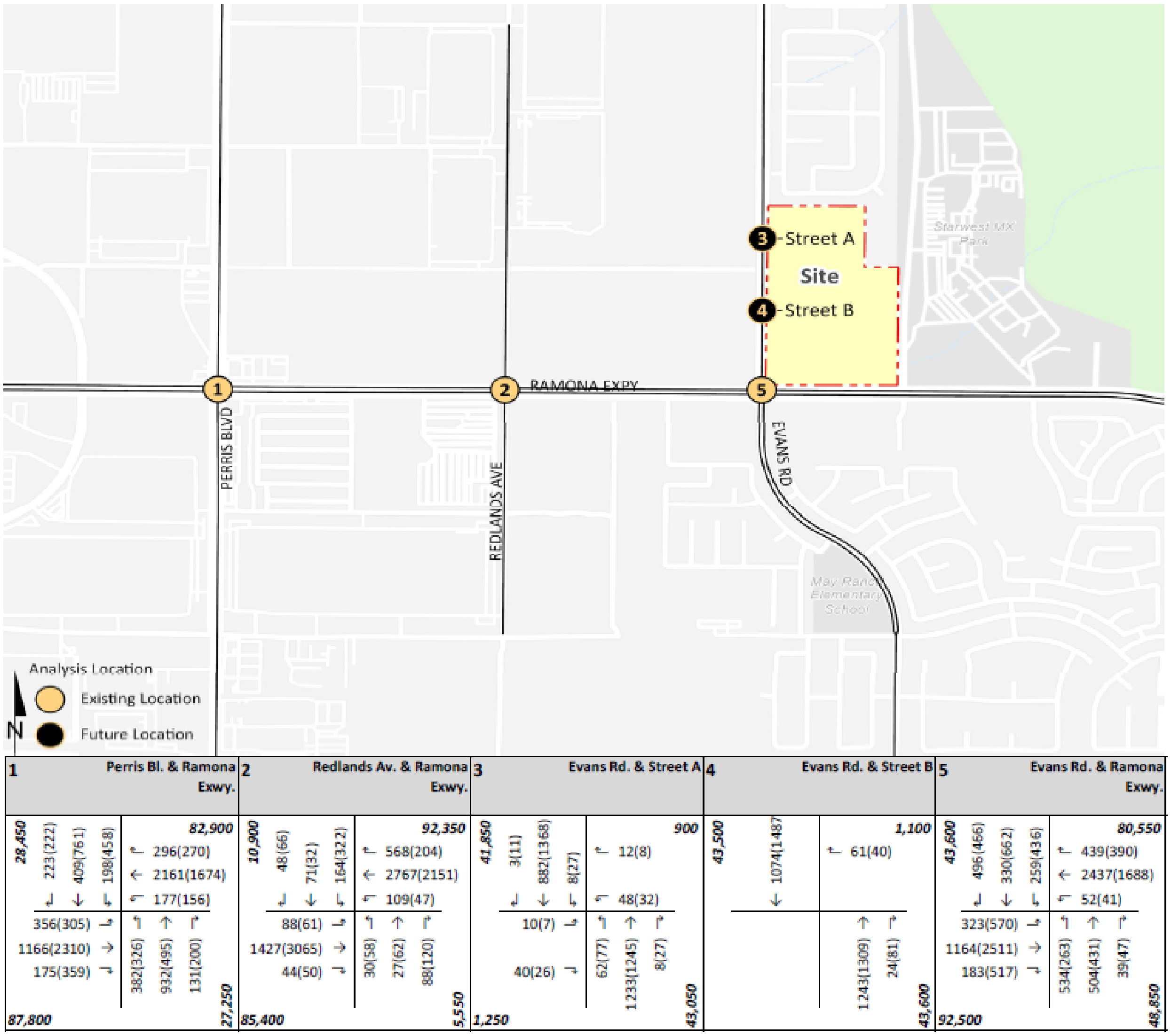
EXHIBIT 6-1: EAC (2027) TRAFFIC VOLUMES (IN ACTUAL VEHICLES)



##(##) AM(PM) Peak Hour Intersection Volumes

Average Daily Trips

EXHIBIT 6-2: EAPC (2027) TRAFFIC VOLUMES (IN ACTUAL VEHICLES)



##(##) AM(PM) Peak Hour Intersection Volumes

Average Daily Trips

6.4 INTERSECTION OPERATIONS ANALYSIS

LOS calculations were conducted for the study intersections to evaluate their operations under EAC (2027) conditions with roadway and intersection geometrics consistent with Section 6.1 *Roadway Improvements*. As shown in Table 6-1, the following study area intersections are anticipated to operate at unacceptable LOS during the peak hours under EAC (2027) traffic conditions:

- Perris Bl. & Ramona Exwy. (#1) – LOS F AM and PM peak hours
- Redlands Av. & Ramona Exwy. (#2) – LOS F AM and PM peak hours
- Evans Rd. & Street A (#3) – LOS F PM peak hour only
- Evans Rd. & Ramona Expy. (#5) – LOS F AM and PM peak hours

With the addition of Project traffic, no additional intersections are anticipated to operate at unacceptable LOS consistent with EAC (2027) traffic conditions. The intersection operations analysis worksheets for EAC and EAPC (2027) traffic conditions are included in Appendix 6.1 and Appendix 6.2 of this TA, respectively.

TABLE 6-1: INTERSECTION ANALYSIS FOR EAC & EAPC (2027) CONDITIONS

			EAC (2027)				EAPC (2027)			
			Delay[2] (secs.)		Level of Service		Delay[2] (secs.)		Level of Service	
#	Intersection	Traffic Control[1]	AM	PM	AM	PM	AM	PM	AM	PM
1	Perris Bl. & Ramona Exwy.	TS	**137.4**	**125.1**	**F**	**F**	**141.8**	**130.2**	**F**	**F**
2	Redlands Av. & Ramona Exwy.	TS	**132.5**	**179.6**	**F**	**F**	**139.4**	**189.7**	**F**	**F**
3	Evans Rd. & Street A	**CSS**	22.2	**54.1**	C	**F**	**>100.0**	**>100.0**	**F**	**F**
4	Evans Rd. & Street B	**CSS**	Does Not Exist				16.2	16.7	C	C
5	Evans Rd. & Ramona Exwy.	TS	**>200.0**	**104.0**	**F**	**F**	**>200.0**	**115.9**	**F**	**F**

* **BOLD** = Level of Service (LOS) does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

[1] CSS = Cross-street Stop; TS = Traffic Signal; **CSS** = Improvement

[2] Per the Highway Capacity Manual (6th Edition), 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.

6.5 TRAFFIC SIGNAL WARRANTS ANALYSIS

Traffic signal warrants have been performed for EAC and EAPC (2027) traffic conditions based on peak hour volumes and daily traffic (ADT). No traffic signals are warranted at the study area intersections (see Appendices 6.3 and 6.4).

6.6 RECOMMENDED IMPROVEMENTS

Improvement strategies have been recommended at intersections that have been identified as deficient under EAPC (2027) traffic conditions in an effort to achieve an acceptable LOS (i.e., LOS E or better). The effectiveness of the recommended improvement strategies to address EAPC (2027) traffic deficiencies are presented in Table 6-2. Worksheets for EAPC (2027) conditions, with improvements, HCM calculation worksheets are provided in Appendix 6.5.

The Project Applicant shall participate in the funding of off-site improvements, including traffic signals that are needed to serve cumulative traffic conditions through the payment of TUMF or DIF fees (if the improvements are included in the aforementioned fee programs) or on a fair share basis (if the improvements are not included in the aforementioned fee programs). These fees shall be collected by the City of Perris, with the proceeds solely used as part of a funding mechanism aimed at ensuring that regional highways and arterial expansions keep pace with the projected population increases.

TABLE 6-2: INTERSECTION ANALYSIS FOR EAC & EAPC (2027) CONDITIONS WITH IMPROVEMENTS

			Intersection Approach Lanes[2]												Delay[3] (secs.)		Level of Service	
		Traffic	Northbound			Southbound			Eastbound			Westbound						
#	Intersection	Control[1]	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
1	Perris Bl. & Ramona Exwy.																	
	-Without Improvements	TS	2	2	1	2	2	1	2	3	1	2	3	0	**141.8**	**130.2**	**F**	**F**
	- With Improvements[4]	TS	2	**3**	**0**	2	**3**	**0**	2	3	1	2	3	0	72.7	70.6	E	E
2	Redlands Av. & Ramona Exwy.																	
	-Without Improvements	TS	1	1	0	1	1	1	1	3	1	1	3	1	**139.4**	**189.7**	**F**	**F**
	- With Improvements[4]	TS	1	1	**1**	**2**	1	1	**2**	**4**	1	**2**	**4**	**1>**	57.1	65.3	E	E
3	Evans Rd. & Street A																	
	-Without Improvements	CSS	**1**	2	0	**1**	2	0	0	**1**	0	0	**1**	0	**>100.0**	**>100.0**	**F**	**F**
	- With Improvements	**TS**	**1**	2	0	**1**	2	0	0	**1**	0	0	**1**	0	10.6	10.8	B	B
5	Evans Rd. & Ramona Exwy.																	
	-Without Improvements	TS	2	2	1	2	2	1	2	3	1	1	2	1	**>200.0**	**115.9**	**F**	**F**
	- With Improvements[4]	TS	2	2	1	2	2	1	2	3	1	1	**3**	1	59.2	59.0	E	E

* BOLD = Level of Service (LOS) does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

[1] CSS = Cross-street Stop; TS = Traffic Signal; **TS** = Improvement

[2] 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; **1** = Improvement

[3] Per the Highway Capacity Manual (6th Edition), 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

[4] Per the City of Perris General Plan, LOS E is permitted at intersections along the Ramona-Cajalco Expressway.

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7 LOCAL AND REGIONAL FUNDING MECHANISMS

Transportation improvements throughout the City of Perris are funded through a combination of project mitigation, fair share contributions or development impact fee programs, such as TUMF program or the City's DIF program.

7.1 TRANSPORTATION UNIFORM MITIGATION FEE (TUMF) PROGRAM

The Western Riverside Council of Governments (WRCOG) is responsible for establishing and updating TUMF rates. The County may grant to developers a credit against the specific components of fees for the dedication of land or the construction of facilities identified in the list of improvements funded by each of these fee programs. Fees are based upon projected land uses and a related transportation need to address growth based upon a 2016 Nexus study.

TUMF is an ambitious regional program created to address cumulative impacts of growth throughout western Riverside County. Program guidelines are being handled on an iterative basis. Exemptions, credits, reimbursements, and local administration are being deferred to primary agencies. The County of Riverside serves this function for the proposed Project. Fees submitted to the County are passed on to the WRCOG as the ultimate program administrator.

TUMF guidelines empower a local zone committee to prioritize and arbitrate certain projects. The Project is located in the Central Zone. The zone has developed a 5-year capital improvement program to prioritize public construction of certain roads. TUMF is focused on improvements necessitated by regional growth.

7.2 CITY OF PERRIS DEVELOPMENT IMPACT FEE (DIF) PROGRAM

In 1991, the City of Perris created a Development Impact Fee program to impose and collect fees from new residential, commercial, and industrial development for the purpose of funding roadways and intersections necessary to accommodate City growth as identified in the City's General Plan Circulation Element. This DIF program has been successfully implemented by the City since 1991 and was updated in 2014. The City updated the DIF program to add new roadway segments and intersections necessary to accommodate future growth and to ensure that the identified street improvements would operate at or above the City's LOS performance threshold. The City's DIF program includes facilities that are not part of, or which may exceed improvements identified and covered by the TUMF program. As a result, the pairing of the regional and local fee programs provides a more comprehensive funding and implementation plan to ensure an adequate and interconnected transportation system. Under the City's DIF program, the City may grant to developers a credit against specific components of fees when those developers construct certain facilities and landscaped medians identified in the list of improvements funded by the DIF program.

Similar to the TUMF Program, after the City's DIF fees are collected, they are placed in a separate interest-bearing account pursuant to the requirements of Government Code sections 66000 *et seq*. The timing to use the DIF fees is established through periodic capital improvement programs which are overseen by the City's Public Works Department. Periodic traffic counts, review of

traffic accidents, and a review of traffic trends throughout the City are also periodically performed by City staff and consultants. The City uses this data to determine the timing of the improvements listed in its facilities list. The City also uses this data to ensure that the improvements listed on the facilities list are constructed before the LOS falls below the LOS performance standards adopted by the City. In this way, the improvements are constructed before the LOS falls below the City's LOS performance thresholds. The City's DIF program establishes a timeline to fund, design, and build the improvements.

The City has an established, proven track record with respect to implementing the City's DIF Program. Many of the roadway segments and intersections included within the study area for this Traffic Impact Analysis are at various stages of widening and improvement based on the City's collection of DIF fees. Under this Program, as a result of the City's continual monitoring of the local circulation system, the City ensures that DIF improvements are constructed prior to when the LOS would otherwise fall below the City's established performance criteria.

7.3 FAIR SHARE CONTRIBUTION

Project improvements 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. Improvements constructed by development may be eligible for a fee credit or reimbursement through the program where appropriate (to be determined at the City's discretion). When off-site improvements are identified with a minor share of responsibility assigned to proposed 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 in Table 7-1 for the applicable deficient study area intersection. These fees are collected with the proceeds solely used as part of a funding mechanism aimed at ensuring that regional highways and arterial expansions keep pace with the projected population increases.

TABLE 7-1: FAIR SHARE CONTRIBUTION

#	Intersection		Existing	Project	EAPC (2027) Volume	Net New Traffic	Project % of New Traffic
1	Perris Bl. & Ramona Exwy.						
		AM:	4,083	64	6,606	2,523	2.5%
		PM:	4,274	88	7,535	3,261	**2.7%**
2	Redlands Av. & Ramona Exwy.						
		AM:	2,890	65	5,432	2,542	2.6%
		PM:	3,040	87	6,238	3,198	**2.7%**
5	Evans Rd. & Ramona Exwy.						
		AM:	3,908	115	6,759	2,851	4.0%
		PM:	4,365	155	8,021	3,656	**4.2%**

BOLD = Denotes highest fair share percentage.

8 REFERENCES

1. **Institute of Transportation Engineers.** *Trip Generation.* 10th Edition. 2017.

2. **Western Riverside Council of Governments.** *TUMF Nexus Study, 2016 Program Update.* July 2017.

3. **Riverside County Transportation Commission.** *2011 Riverside County Congestion Management Program.* County of Riverside : RCTC, December 14, 2011.

4. **City of Perris.** *Transportation Impact Analysis Guidelines for CEQA.* City of Perris : s.n., May 2020.

5. **Transportation Research Board.** *Highway Capacity Manual (HCM).* s.l. : National Academy of Sciences, 2016.

6. **Caltrans.** California Manual on Uniform Traffic Control Devices (MUTCD). [book auth.] California Department of Transportation. *California Manual on Uniform Traffic Control Devices (CAMUTCD).* 2017.

7. **City of Perris.** *General Plan Circulation Element.* City of Perris : s.n., August 26, 2008.

8. **Southern California Association of Governments.** *Connect SoCal: 2020-20415 Regional Transportation Plan/Sustainable Communities Strategy of the SCAG.* SCAG Region : s.n., Adopted September 2020.

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