Placentia Logistics

TRAFFIC IMPACT ANALYSIS

COUNTY OF RIVERSIDE

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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
E+P	Existing Plus Project
EAP	Existing Plus Ambient Growth Plus Project
EAPC	Existing Plus Ambient Growth Plus Project Plus Cumulative
HCM	Highway Capacity Manual
ITE	Institute of Transportation Engineers
LOS	Level of Service
PCE	Passenger Car Equivalents
PHF	Peak Hour Factor
Project	Placentia Logistics
RivTAM	Riverside County Transportation Analysis Model
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
TIA	Traffic Impact Analysis
TUMF	Transportation Uniform Mitigation Fee
WRCOG	Western Riverside Council of Governments
V/C	Volume to Capacity

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1 INTRODUCTION

This report presents the results of the traffic impact analysis (TIA) for the proposed Placentia Logistics development ("Project"), which is located on the northwest corner of Harvill Avenue and Placentia Street, as shown on Exhibit 1-1.

The purpose of this TIA is to evaluate the potential impacts related to traffic and circulation system deficiencies that may result from the development of the proposed Project, and to recommend improvements to resolve identified deficiencies and to achieve acceptable circulation system operational conditions. This traffic study has been prepared in accordance with the County of Riverside's Traffic Impact Analysis Preparation Guide (August 2008) and through consultation with County of Riverside staff during the scoping process. (1) The approved Project Traffic Study Scoping agreement is provided in Appendix 1.1 of this TIA.

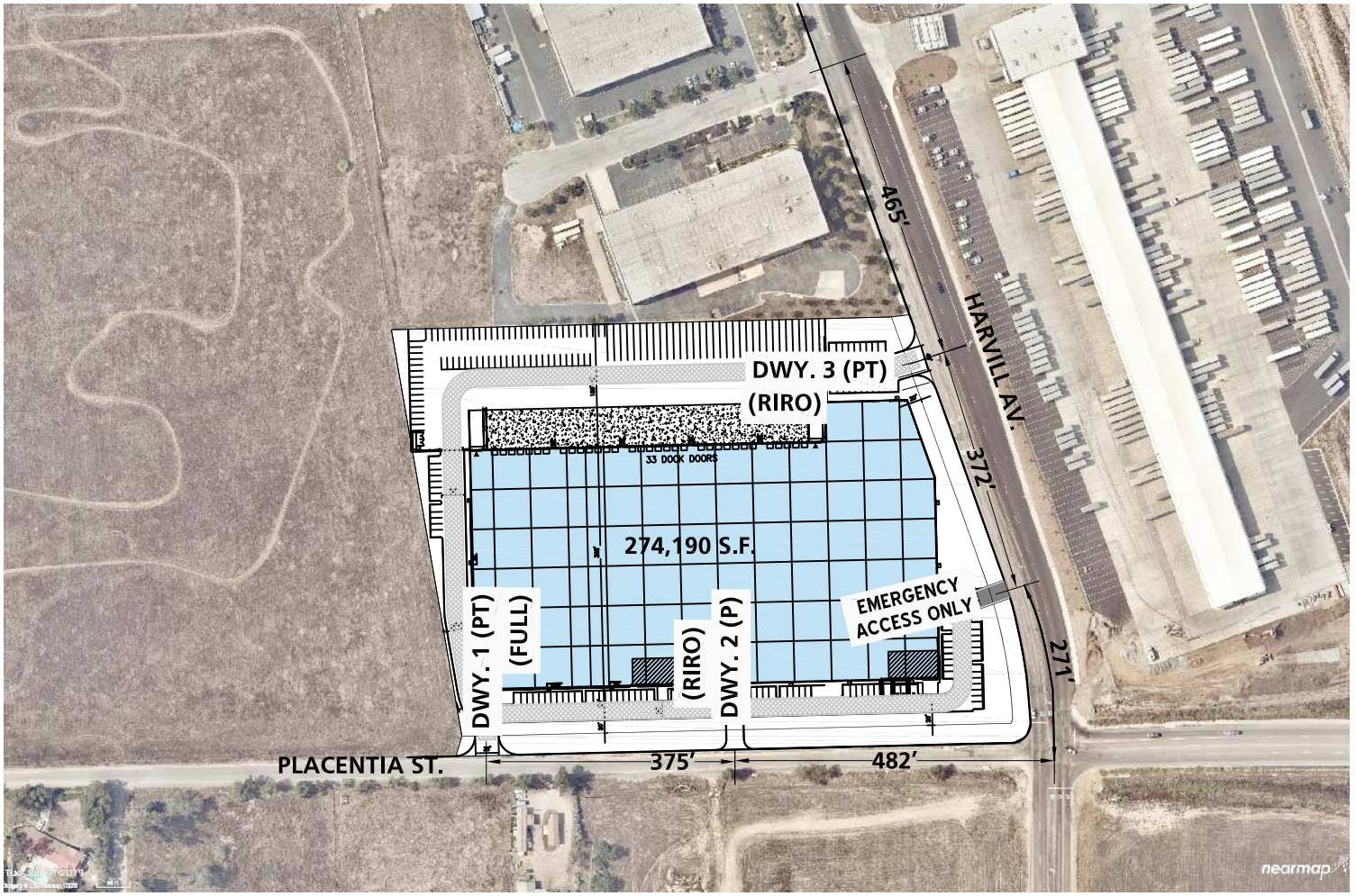
1.1 SUMMARY OF FINDINGS

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

- Project to construct Placentia Street from the Project's western boundary to Harvill Avenue at its ultimate half-section width as a Secondary Highway (100-foot right-of-way) in compliance with the circulation recommendations found in the County of Riverside General Plan Circulation Element.
- Project to construct Harvill Avenue from the Project's northern boundary to Placentia Street at its ultimate half-section width as a Major Highway (118-foot right-of-way) in compliance with the circulation recommendations found in the County of Riverside General Plan Circulation Element.
- Construct Driveway 1 and Driveway 2 on Placentia Street as cross-street stop-controlled intersections, with Driveway 2 as right-in/right-out access only serving only passenger cars. Construct Driveway 3 on Harvill Avenue as cross-street stop-controlled intersections with right-in/right-out access only. The southern driveway on Harvill Avenue is to be for emergency access only.
- Construct a southbound right turn lane with a minimum of 100-feet of storage and an eastbound left turn lane with a minimum of 100-feet of storage at the intersection of Harvill Avenue and Placentia Street.

Additional details are provided in Section 1.6 *Recommendations* of this report.

EXHIBIT 1-1: PRELIMINARY SITE PLAN



LEGEND:

RIRO = RIGHT-IN/RIGHT-OUT ONLY ACCESS
P = PASSENGER CARS ONLY
PT = PASSENGER CARS AND TRUCKS

NOTE: UNLESS NOTED, ALL DRIVEWAYS ARE ASSUMED TO BE FULL ACCESS.

N

1.2 PROJECT OVERVIEW

The Project is proposed to consist of up to 233,062 square feet (sf) of high-cube transload/short-term storage warehouse (without cold storage) use (85 percent of the total square footage) and 41,128 square feet of general light industrial use (15 percent of the total square footage) for a total of 274,190 square feet within a single building. The Project opening year is 2021.

Vehicular and truck traffic access will be provided via the following driveways (see Exhibit 1-1):

- Placentia Street via Driveway 1 – full access for passenger cars and trucks
- Placentia Street via Driveway 2 – right-in right-out access for passenger cars only
- Harvill Avenue via Driveway 3 – right-in right-out access for passenger cars and trucks

Regional access to the Project site will be provided by the I-215 Freeway via Placentia Street.

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). (2) The Project is estimated to generate a total of 748 passenger-car-equivalent (PCE) trip-ends per day on a typical weekday with approximately 63 AM PCE peak hour trips and 65 PM PCE 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 impacts to traffic and circulation have been assessed for each of the following conditions:

- Existing (2019)
- Existing Plus Project (E+P)
- Existing Plus Ambient Growth Plus Project (EAP) (2021)
- Existing Plus Ambient Growth Plus Project Plus Cumulative Projects (EAPC) (2021)
- Horizon Year (2040) Without Project
- Horizon Year (2040) With Project

1.3.1 EXISTING (2019) CONDITIONS

Information for Existing (2019) conditions is disclosed to represent the baseline traffic conditions as they existed at the time this report was prepared. Traffic counts were conducted in February 2019 based on vehicle classification and were converted to PCE. Use of PCE here accounts for the effects of large trucks present within the study area. 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.

1.3.2 EXISTING PLUS PROJECT CONDITIONS

The Existing Plus Project (E+P) analysis determines any potential circulation system deficiencies that would occur on the existing roadway system in the scenario of the Project being placed upon Existing conditions. This analysis scenario has been provided for informational purposes only. As discussed below, Project impacts have been discerned from a comparison of Existing (2019) to EAP (2021) traffic conditions (per the County's traffic study guidelines).

1.3.3 EXISTING PLUS AMBIENT GROWTH PLUS PROJECT (2021) CONDITIONS

The EAP (2021) conditions analysis determines the potential circulation system deficiencies based on a comparison of the EAP traffic conditions to Existing conditions. To account for background traffic growth, an ambient growth factor from Existing (2019) conditions of 4.04% (2 percent per year, compounded over 2 years) is included for EAP (2021) traffic conditions. The assumed ambient growth factor is based on the requirements per the County of Riverside traffic study guidelines. Consistent with Riverside County traffic study guidelines, the EAP analysis is intended to identify "Opening Year" deficiencies associated with the development of the proposed Project based on the expected background growth within the study area.

1.3.4 EXISTING PLUS AMBIENT GROWTH PLUS PROJECT PLUS CUMULATIVE (2021) CONDITIONS

The EAPC (2021) traffic conditions analysis determines the potential near-term cumulative circulation system deficiencies. To account for background traffic growth, an ambient growth factor of 4.04% from Existing conditions are included for EAPC traffic conditions (2 percent per year, compounded over 2 years).

Conservatively, the TIA estimates the area ambient traffic growth and then adds traffic generated by other known or probable related projects. These related projects are at least in part already accounted for in the assumed 4.04% total ambient growth in traffic noted above; and some of these related projects would likely not be implemented and operational within the 2021 Opening Year time frame assumed for the Project. The resulting traffic growth rate utilized in the TIA (4.04% ambient growth plus traffic generated by related projects) would therefore tend to overstate rather than understate background cumulative traffic impacts under 2021 conditions.

1.3.5 HORIZON YEAR (2040) CONDITIONS

Traffic projections for Horizon Year (2040) conditions were derived from the County of Riverside refined version of the Riverside County Transportation Analysis Model (RivTAM) using accepted procedures for model forecast refinement and smoothing. This scenario evaluates the circulation network in order to compare the findings between the County's currently adopted General Plan and the proposed circulation network modification proposed by the Project. The Horizon Year 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 Development Impact Fee (DIF) programs, can accommodate the long-range cumulative traffic at the target level of service (LOS) identified in the County of Riverside (lead agency) General Plan. (3)

Each of these regional transportation fee programs are discussed in more detail in Section 9 *Local and Regional Funding Mechanisms*.

1.4 STUDY AREA

To ensure that this TIA satisfies the County of Riverside's traffic study requirements, Urban Crossroads, Inc. prepared a project traffic study scoping package for review by County of Riverside staff prior to the preparation of this report. The scoping agreement provides an outline of the Project study area, trip generation, trip distribution, and analysis methodology and is included in Appendix 1.1.

1.4.1 STUDY AREA INTERSECTIONS

The following 4 study area intersections shown on Exhibit 1-2 and listed in Table 1-1 were selected for this TIA based on consultation with County of Riverside staff. The study area includes intersections where the Project is anticipated to contribute 50 or more peak hour trips per the County of Riverside's traffic study guidelines. (1) The "50 peak hour trip" criteria represents a minimum number of trips at which a typical intersection would have the potential to be substantively affected by a given development proposal. The 50 peak hour trip criteria is a traffic engineering rule of thumb that is accepted and widely used within Riverside County for estimating a potential area of impact (i.e., study area).

TABLE 1-1: INTERSECTION ANALYSIS LOCATIONS

ID	Intersection Location	Jurisdiction	CMP?
1	Driveway 1 & Placentia St. – Future Intersection	County of Riverside	No
2	Driveway 2 & Placentia St. – Future Intersection	County of Riverside	No
3	Harvill Av. & Driveway 3 – Future Intersection	County of Riverside	No
4	Harvill Av. & Placentia St.	County of Riverside	No

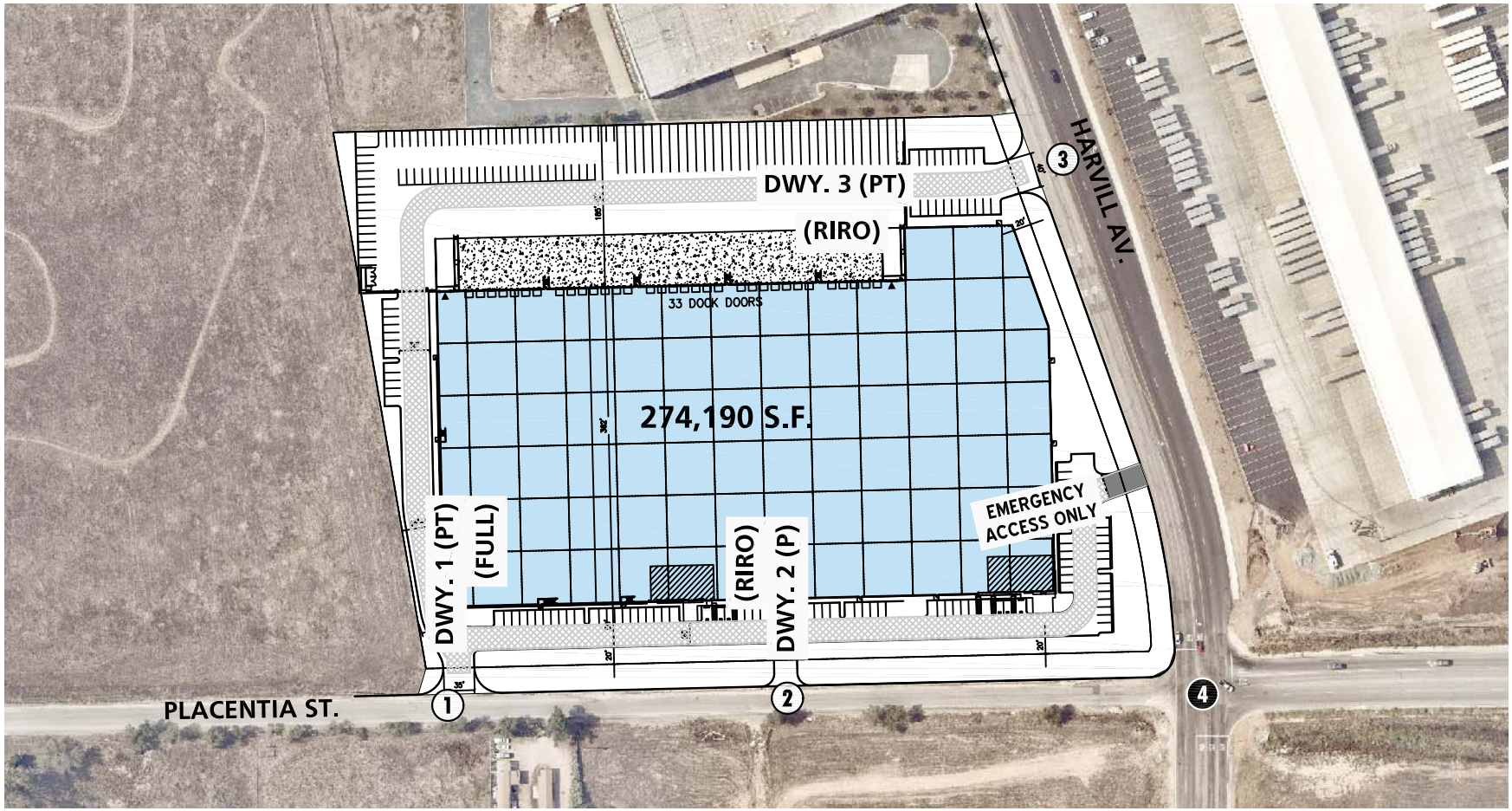
1.4.2 CMP CONSIDERATIONS

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.

1.5 ANALYSIS FINDINGS

This section provides a summary of potential Project traffic impacts. Section 2 *Methodologies* provides information on the methodologies used in the analysis and results for Existing (2019), E+P, EAP (2021), EAPC (2021), and Horizon Year (2040) traffic conditions. A summary of LOS results for all analysis scenarios is presented on Exhibit 1-3.

EXHIBIT 1-2: LOCATION MAP



LEGEND:

0 = EXISTING INTERSECTION ANALYSIS LOCATION

(0) = FUTURE INTERSECTION ANALYSIS LOCATION

N

EXHIBIT 1-3: SUMMARY OF DEFICIENT INTERSECTIONS BY ANALYSIS SCENARIO

#	Intersection	Existing (2019)	E+P	EAP (2021)	EAPC (2021)	Horizon Year (2040) Without Project	Horizon Year (2040) With Project
1	Dwy. 1 & Placentia St.	NA				NA	
2	Dwy. 2 & Placentia St.	NA				NA	
3	Harvill Av. & Dwy. 3	NA				NA	
4	Harvill Av. & Placentia St.						

LEGEND:

- = AM PEAK HOUR
- = PM PEAK HOUR
- = LOS A-D
- = LOS E
- = LOS F

NA = NOT AN ANALYSIS LOCATION FOR THIS SCENARIO

Existing (2019) Conditions:

All of the study area intersections are currently operating at an acceptable LOS.

E+P Conditions:

All study area intersections are anticipated to continue to operate at acceptable LOS for E+P traffic conditions.

EAP (2021) Conditions:

Under EAP (2021) traffic conditions, the I-215/Placentia Avenue interchange is assumed to be in place based on discussions with County of Riverside staff. All study area intersections are anticipated to continue to operate at acceptable LOS for EAP (2021) traffic conditions.

EAPC (2021) Conditions:

The following study area intersection is anticipated to operate at a deficient LOS during one or both peak hours for EAPC (2021) traffic conditions:

- Harvill Avenue & Placentia Street (#4) – LOS E PM peak hour only

It should be noted the I-215/Placentia Avenue interchange is anticipated to be completed and operational and is assumed to be in place for EAPC (2021) traffic conditions. As such, the deficiency at Harvill Avenue & Placentia Street is likely caused by a shift in travel patterns as opposed to the addition of Project traffic or cumulative traffic.

Horizon Year (2040) Conditions:

The following study area intersection is anticipated to operate at a deficient LOS during one or both peak hours for Horizon Year (2040) Without Project traffic conditions:

- Harvill Avenue & Placentia Street (#4) – LOS F AM and PM peak hours

There are no additional study area intersections anticipated to operate at a deficient LOS during the peak hours for Horizon Year (2040) With Project traffic conditions, in addition to the location identified above for Horizon Year (2040) Without Project traffic conditions.

1.6 RECOMMENDATIONS

1.6.1 SITE ADJACENT AND SITE ACCESS RECOMMENDATIONS

The following recommendations are based on the improvements needed to accommodate site access. Exhibit 1-4 shows the site adjacent recommendations.

Recommendation 1.1 – Driveway 1 & Placentia Street (#1) – The following improvements are necessary to accommodate site access:

- Project to install a stop control on the southbound approach and a southbound shared left-right turn lane.

Recommendation 2.1 – Driveway 2 & Placentia Street (#2) – The following improvements are necessary to accommodate site access:

- Project to install a stop control on the southbound approach, a southbound right turn lane, and a westbound shared through-right turn lane.

Recommendation 3.1 – Harvill Avenue & Driveway 3 (#3) – The following improvements are necessary to accommodate site access:

- Project to install a stop control on the eastbound approach and an eastbound right turn lane.

Recommendation 4.1 – Harvill Avenue & Placentia Street (#4) – The following improvements are necessary to accommodate site access:

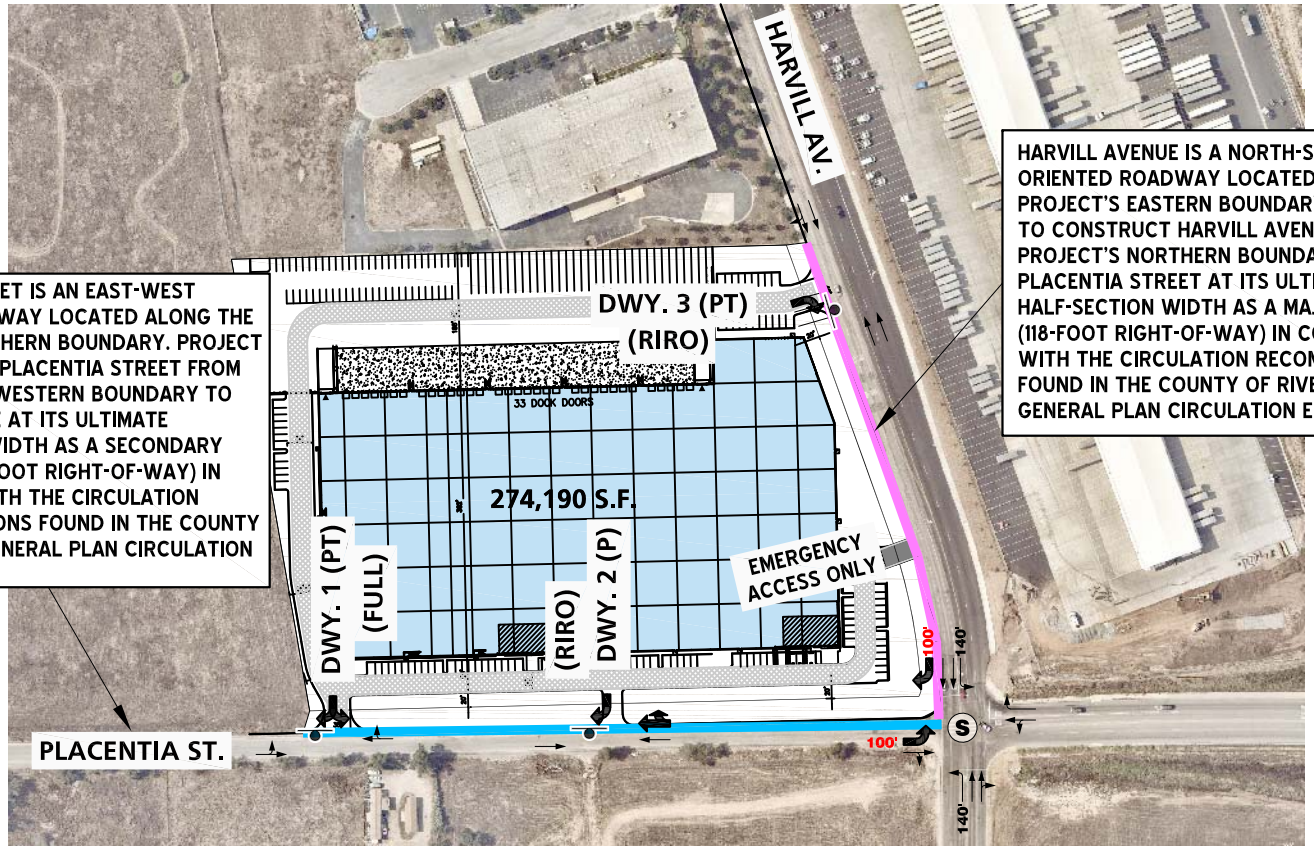
- Project to add a southbound right turn lane with a minimum of 100-feet of storage.
- Project to add an eastbound left turn lane with a minimum of 100-feet of storage.

Recommendation 5.1 – Placentia Street is an east-west oriented roadway located along the Project's southern boundary. Project to construct Placentia Street from the Project's western boundary to Harvill Avenue at its ultimate half-section width as a Secondary Highway (100-foot right-of-way) in compliance with the circulation recommendations found in the County of Riverside General Plan Circulation Element.

Recommendation 6.1 – Harvill Avenue is a north-south oriented roadway located along the project's eastern boundary. Project to construct Harvill Avenue from the Project's northern boundary to Placentia Street at its ultimate half-section width as a Major Highway (118-foot right-of-way) in compliance with the circulation recommendations found in the County of Riverside 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.

EXHIBIT 1-4: SITE ADJACENT ROADWAY AND SITE ACCESS RECOMMENDATIONS



PLACENTIA STREET IS AN EAST-WEST ORIENTED ROADWAY LOCATED ALONG THE PROJECT'S SOUTHERN BOUNDARY. PROJECT TO CONSTRUCT PLACENTIA STREET FROM THE PROJECT'S WESTERN BOUNDARY TO HARVILL AVENUE AT ITS ULTIMATE HALF-SECTION WIDTH AS A SECONDARY HIGHWAY (100-FOOT RIGHT-OF-WAY) IN COMPLIANCE WITH THE CIRCULATION RECOMMENDATIONS FOUND IN THE COUNTY OF RIVERSIDE GENERAL PLAN CIRCULATION ELEMENT.

HARVILL AVENUE IS A NORTH-SOUTH ORIENTED ROADWAY LOCATED ALONG THE PROJECT'S EASTERN BOUNDARY. PROJECT TO CONSTRUCT HARVILL AVENUE FROM THE PROJECT'S NORTHERN BOUNDARY TO PLACENTIA STREET AT ITS ULTIMATE HALF-SECTION WIDTH AS A MAJOR HIGHWAY (118-FOOT RIGHT-OF-WAY) IN COMPLIANCE WITH THE CIRCULATION RECOMMENDATIONS FOUND IN THE COUNTY OF RIVERSIDE GENERAL PLAN CIRCULATION ELEMENT.

LEGEND:

- (S) = ALL WAY STOP
- = STOP SIGN
- = EXISTING LANE
- = LANE IMPROVEMENT
- 150' = MINIMUM TURN POCKET LENGTH IMPROVEMENT
- 150' = MINIMUM TURN POCKET LENGTH
- = SECONDARY HIGHWAY (100-FOOT R.O.W.)
- = MAJOR HIGHWAY (118-FOOT R.O.W.)

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 RIVERSIDE SIGHT DISTANCE STANDARDS AT THE TIME OF PREPARATION OF FINAL GRADING, LANDSCAPE AND STREET IMPROVEMENT PLANS.

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

1.6.2 OFF-SITE RECOMMENDATIONS

The recommended improvements needed to address the cumulative deficiencies identified under Existing (2019), E+P, EAP (2021), EAPC (2021), and Horizon Year (2040) traffic conditions are shown in Table 1-2. For those improvements listed in Table 1-2 and not constructed as part of the Project, the Applicant's responsibility for the Project's contributions towards deficient intersections is fulfilled through payment of fair share and/or DIF fees (if applicable) that would be assigned to construction of the identified recommended improvements. The Project Applicant would be required to pay DIF and/or fair share fees consistent with the County's requirements (see Section 9 *Local and Regional Funding Mechanisms*).

1.7 TRUCK ACCESS

Due to the typical wide turning radius of large trucks, a truck turning template has been overlaid on the site plan at each applicable Project driveway anticipated to be utilized by heavy trucks in order to determine appropriate curb radii and to verify that trucks will have sufficient space to execute turning maneuvers (see Exhibit 1-5). A WB-67 truck (53-foot trailer) has been utilized for the purposes of this analysis.

As shown on Exhibit 1-5, the following curb radius change is necessary in order to accommodate the ingress and egress of heavy trucks:

- Driveway 1 on Placentia Street should be modified to provide a 25-foot curb radius on the northwest corner and a 40-foot curb radius on the northeast corner.
- Driveway 3 on Harvill Avenue should be modified to provide a 50-foot curb radius on the southwest corner and a 60-foot curb radius on the northwest corner.

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Table 1-2

Summary of Improvements by Analysis Scenario

#	Intersection Location	Jurisdiction	Existing (2019)	E+P	EAP (2021)	EAPC (2021)	Horizon Year (2040) Without Project	Horizon Year (2040) With Project	Improvements in County TUMF/DIF?[1]	Project Responsibility[2]	Fair Share %[3]
4	Harvill Av. & Placentia St.	County of Riverside	None	Add SB right turn lane[4]	Same	Same	Same	Same	No	Construct	3.10%
				Add EB left turn lane[4]	Same	Same	Same	Same	No	Construct	
					Install a traffic signal[5]	Same	Same	Same	Yes (TUMF/DIF)	Fee Payment	
					Add WB left turn lane[5]	Same	Same	Same	Yes (TUMF)	Fee Payment	
					Modify the traffic signal to implement overlap phasing for the WB right turn lane[5]	Same	Same	Same	Yes (TUMF)	Fee Payment	
					Restripe the westbound through lane to a shared left-through lane[5]	Not Applicable	Not Applicable	Not Applicable	Yes (TUMF)	Fee Payment	
						Add 2nd SB left turn lane	Same	Same	No	Fair Share	
							Add 2nd NB left turn lane	Same	No	Fair Share	
							Add NB right turn lane	Same	No	Fair Share	
							Add 2nd EB through lane	Same	No	Fair Share	
							Add EB right turn lane	Same	No	Fair Share	
							Add 2nd WB left turn lane	Same	No	Fair Share	
							Add 2nd WB through lane	Same	No	Fair Share	

[1] Improvements included in TUMF Nexus, or County of Riverside DIF fee programs.
[2] Identifies the Project's responsibility to construct an improvement or contribute fair share towards the implementation of the improvements shown.
[3] Program improvements constructed by project may be eligible for fee credit, at discretion of County. See Table 9-1 for Fair Share Calculations.
[4] Improvement will be constructed by the Project as part of the site adjacent improvements.
[5] Improvement is included as part of the I-215 Freeway and Placentia Avenue interchange project.

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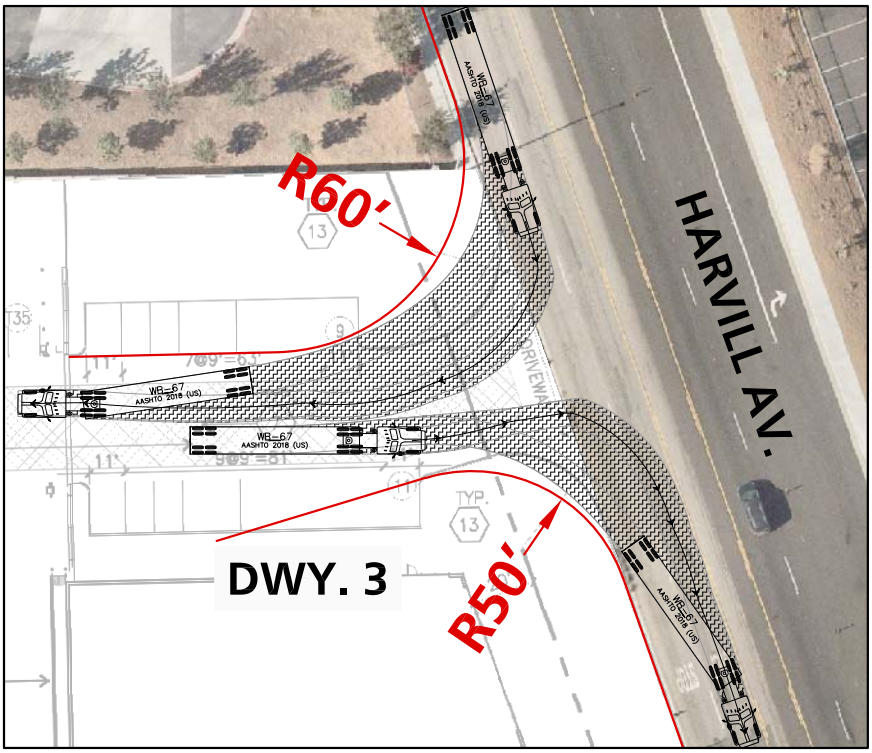
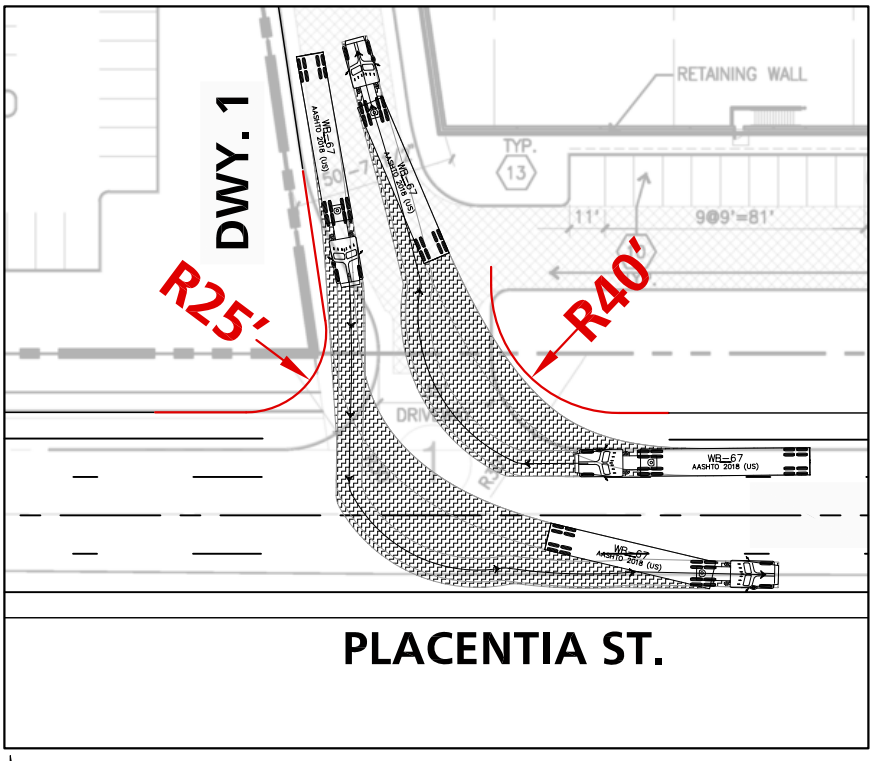
EXHIBIT 1-5: TRUCK ACCESS





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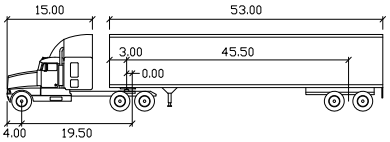

WB-67

feet

Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 28.4
Tractor Track	: 8.00	Articulating Angle	: 75.0
Trailer Track	: 8.50		

GRAPHIC SCALE
0 30 60
1"=60'

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12727 - aturn.dwg

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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 County of Riverside and Caltrans traffic study guidelines. (4)

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 County of Riverside requires signalized intersection operations analysis based on the methodology described in the HCM (6th Edition). 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.

The traffic modeling and signal timing optimization software package Synchro (Version 10) is utilized to analyze signalized intersections within the County of Riverside. 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 are 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 all analysis scenarios. Per the HCM, PHF values over 0.95 often are indicative of high traffic volumes with capacity constraints on peak hour flows while lower PHF values are indicative of greater variability of flow during the peak hour. (5)

2.2.2 UNSIGNALIZED INTERSECTIONS

The County of Riverside 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. 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 TIA uses the signal warrant criteria presented in the latest edition of the 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 TIA 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 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 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 unsignalized study area intersection shown in Table 2-3:

TABLE 2-3: TRAFFIC SIGNAL WARRANT ANALYSIS LOCATIONS

ID	Intersection Location	Jurisdiction
1	Driveway 1 & Placentia Street – Future Intersection	County of Riverside
4	Harvill Avenue & Placentia Street	County of Riverside

Although unsignalized, traffic signal warrants have not been performed for the intersections of Driveway 2 at Placentia Street or Driveway 3 at Harvill Avenue since those intersections will be restricted to right-in/right-out access only. 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 Conditions,* Section 6 *EAP (2021) Traffic Conditions,* Section 7 *EAPC (2021) Traffic Conditions,* and Section 8 *Horizon Year (2040) Traffic Conditions* 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)

2.4.1 COUNTY OF RIVERSIDE

The definition of an intersection deficiency has been obtained from the County of Riverside General Plan. Riverside County General Plan Policy C 2.1 states that the County will maintain the following County-wide target LOS:

The following minimum target levels of service have been designated for the review of development proposals in the unincorporated areas of Riverside County with respect to transportation impacts on roadways designated in the Riverside County Circulation Plan which are currently County maintained, or are intended to be accepted into the County maintained roadway system:

- *LOS C shall apply to all development proposals in any area of the Riverside County not located within the boundaries of an Area Plan, as well as those areas located within the following Area Plans: REMAP, Eastern Coachella Valley, Desert Center, Palo Verde Valley, and those non-Community Development areas of the Elsinore, Lake Mathews/Woodcrest, Mead Valley and Temescal Canyon Area Plans.*
- *LOS D shall apply to all development proposals located within any of the following Area Plans: Eastvale, Jurupa, Highgrove, Reche Canyon/Badlands, Lakeview/Nuevo, Sun City/Menifee Valley, Harvest Valley/Winchester, Southwest Area, The Pass, San Jacinto Valley, Western Coachella*

Valley and those Community Development Areas of the Elsinore, Lake Mathews/Woodcrest, Mead Valley and Temescal Canyon Area Plans.

- *LOS E may be allowed by the Board of Supervisors within designated areas where transit-oriented development and walkable communities are proposed.*

The applicable minimum LOS utilized for the purposes of this analysis is LOS D per the County-wide target LOS for projects located within a Community Development Area of the Mead Valley Area Plan.

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 County of Riverside.

To determine whether the addition of project traffic at a study intersection would result in a deficiency, the following will be utilized:

- A deficiency occurs at study area intersections if the pre-Project condition is at or better than LOS D (i.e., acceptable LOS), and the addition of project trips causes the peak hour LOS of the study area intersection to operate at unacceptable LOS (i.e., LOS E or F). Per the County of Riverside traffic study guidelines, for intersections currently operating at unacceptable LOS (LOS E or F), a deficiency would occur if the Project contributes 50 or more peak hour trips to pre-project traffic conditions.

2.6 PROJECT FAIR SHARE CALCULATION METHODOLOGY

Improvements found to be included in the TUMF and/or 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 County Traffic 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:

Project Fair Share % = Project Traffic / (Horizon Year (2040) Total Traffic – Existing (2019) Traffic)

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3 AREA CONDITIONS

This section provides a summary of the existing circulation network, the County of Riverside 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 County of Riverside staff (Appendix 1.1), the study area includes a total of 4 existing and future intersections as shown previously on Exhibit 1-2 where the Project is anticipated to contribute 50 or more peak hour trips or has been added at the direction of County staff. 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

As noted previously, the Project site is located within the County of Riverside. The roadway classifications and planned (ultimate) roadway cross-sections of the major roadways within the study area, as identified on County of Riverside General Plan Circulation Element, are described subsequently. Exhibit 3-2 shows the County of Riverside General Plan Circulation Element and Exhibit 3-3 illustrates the County of Riverside General Plan roadway cross-sections.

Arterial Highways can accommodate six travel lines. These facilities primarily serve through traffic to which access from abutting property shall be kept at a minimum. The following roadway is classified as an Arterial Highway within the study area:

- Placentia Street (east of Harvill Avenue)

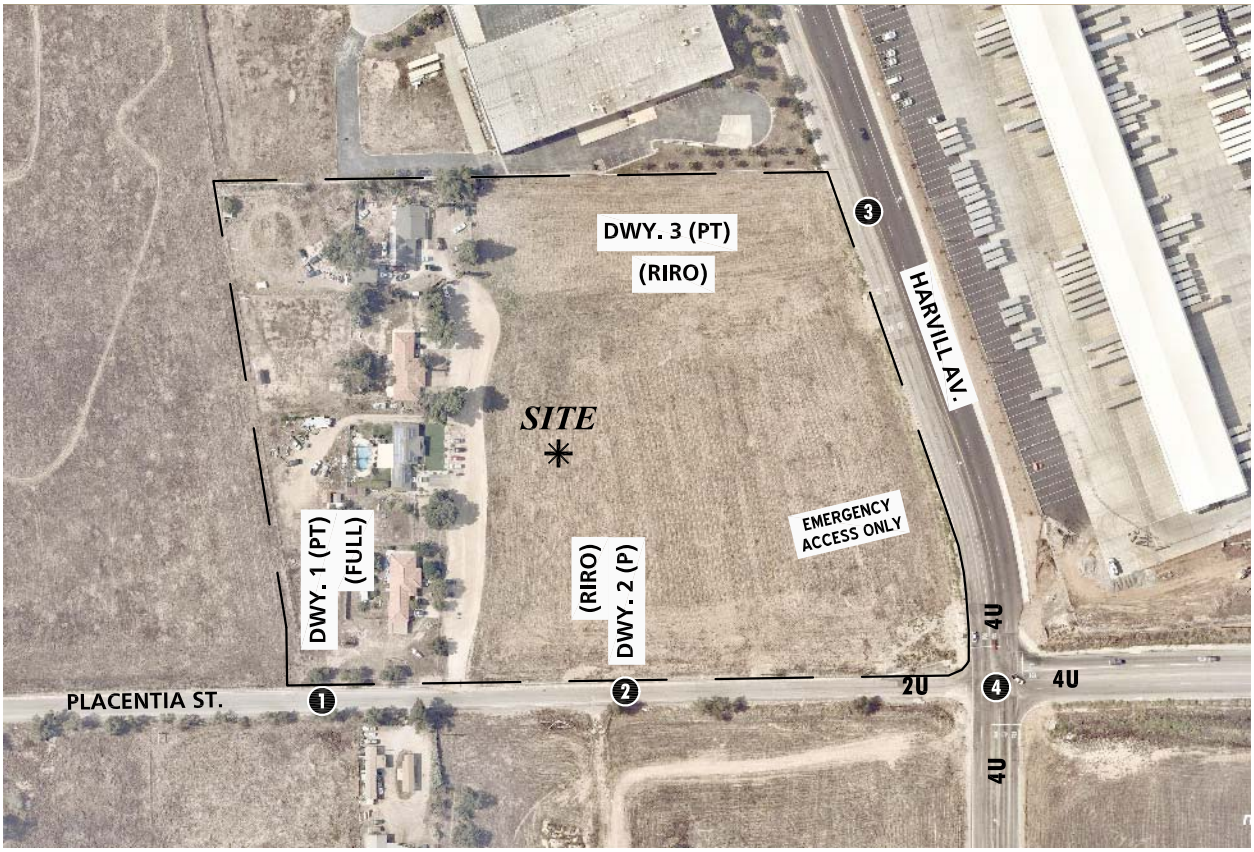
Major Highways can accommodate four travel lanes. These facilities serve property zoned for major industrial and commercial uses, or to serve through traffic. The following roadway is classified as a Major Highway within the study area:

- Harvill Avenue

Secondary Highways can accommodate four travel lanes. These facilities typically provide access between the regional highway system and collector streets. The following roadway is classified as a Secondary Highway within the study area:

- Placentia Street (west of Harvill Avenue)

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



1 Dwy. 1 & Placentia St.	2 Dwy. 2 & Placentia St.	3 Harvill Av. & Dwy. 3	4 Harvill Av. & Placentia St.
Future Intersection	Future Intersection	Future Intersection	S

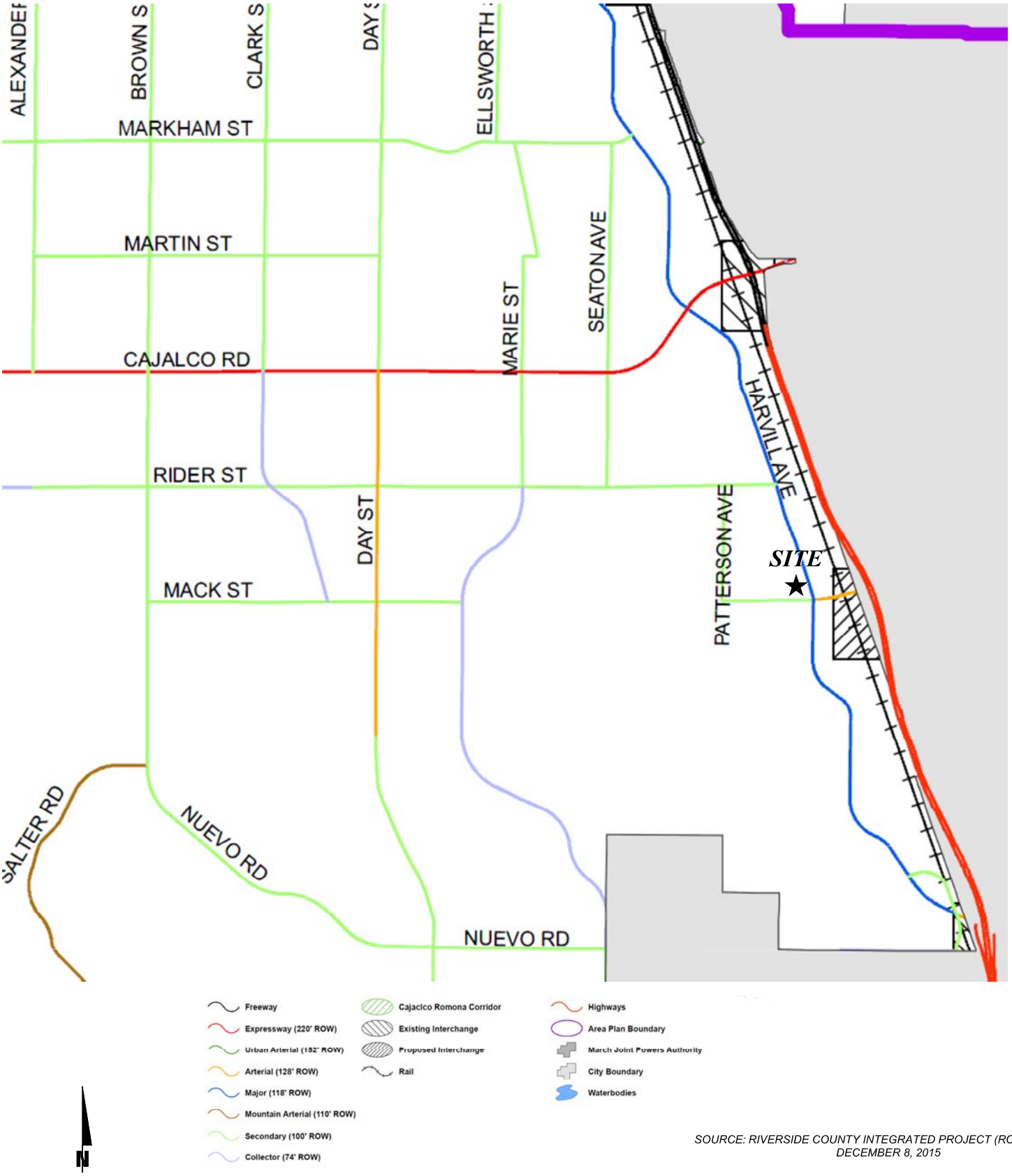
LEGEND:

- (S) = ALL WAY STOP
- 4 = NUMBER OF LANES
- D = DIVIDED
- U = UNDIVIDED

N

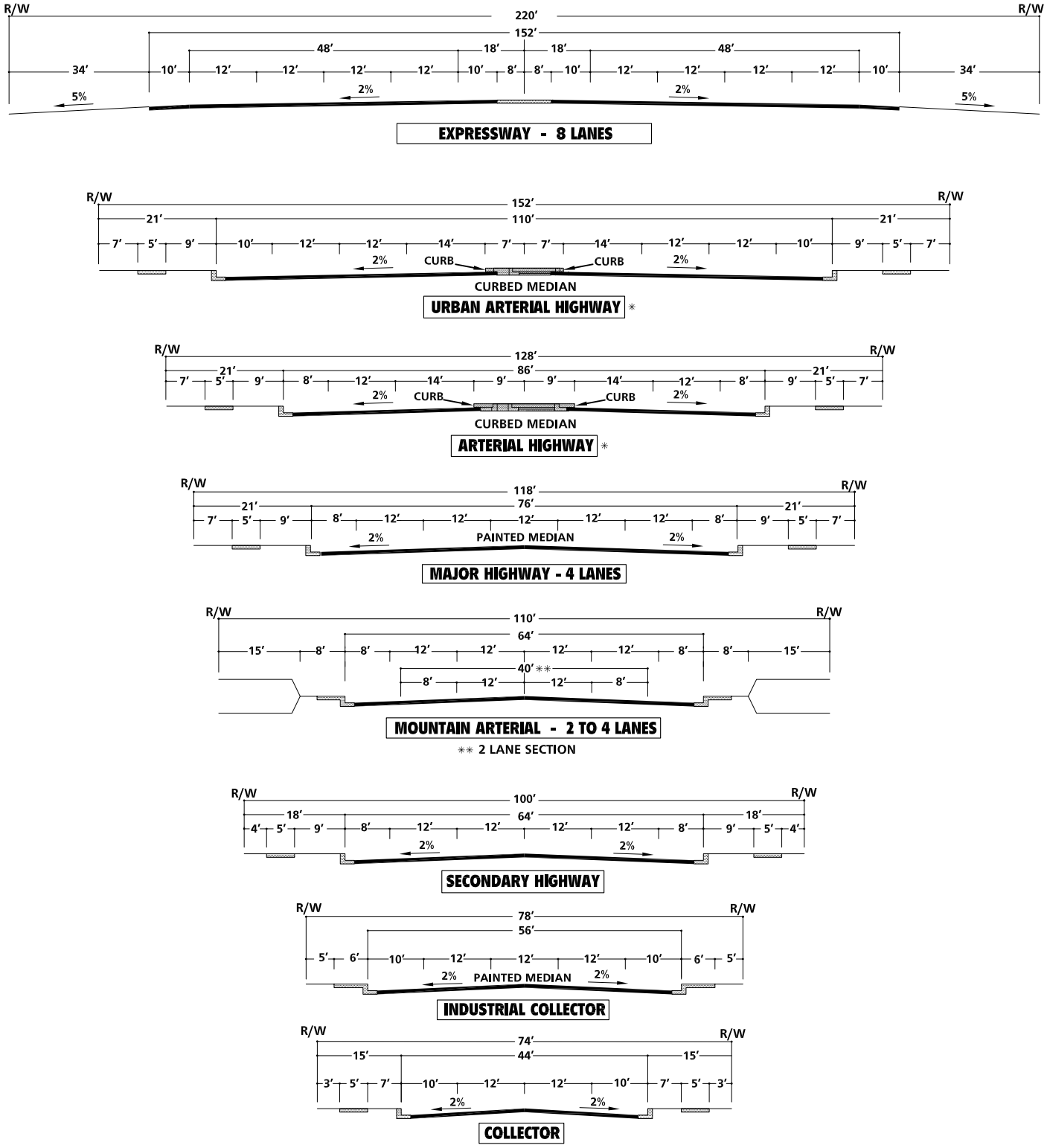
12727 - icon.dwg

EXHIBIT 3-2: COUNTY OF RIVERSIDE GENERAL PLAN CIRCULATION ELEMENT



SOURCE: RIVERSIDE COUNTY INTEGRATED PROJECT (RCIP) DECEMBER 8, 2015

EXHIBIT 3-3: COUNTY OF RIVERSIDE GENERAL PLAN ROADWAY CROSS-SECTIONS



✳ *IMPROVEMENTS MAY BE RECONFIGURED TO ACCOMMODATE EXCLUSIVE TRANSIT LANES OR ALTERNATIVE LANE ARRANGEMENTS ADDITIONAL RIGHT OF WAY MAY BE REQUIRED AT INTERSECTIONS TO ACCOMMODATE ULTIMATE IMPROVEMENTS FOR STATE HIGHWAYS SHALL CONFORM TO CALTRANS DESIGN STANDARDS.*

NOT TO SCALE

SOURCE: COUNTY OF RIVERSIDE

3.3 BICYCLE & PEDESTRIAN FACILITIES

In an effort to promote alternative modes of transportation, the County of Riverside also includes a trails and bikeway system. The trails and bikeway system, shown on Exhibit 3-4, shows the proposed trails connected with major features within the County. There is a proposed Class II bike path along Cajalco Expressway, Regional Trail along Placentia Avenue, and Community Trail along Tobacco Road within the study area.

Field observations conducted in February 2019 indicates nominal pedestrian and bicycle activity within the study area. Exhibit 3-5 illustrates the existing pedestrian facilities, including sidewalks and crosswalks. As shown on Exhibit 3-5, there are existing pedestrian facilities located along portions of Harvill Avenue and Placentia Street within the study area.

3.4 TRANSIT SERVICE

The County of Riverside is currently served by the Riverside Transit Authority (RTA), a public transit agency serving the unincorporated Riverside County region. There are currently no existing bus routes that serve the roadways within the study area in close proximity to 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. As such, it is recommended that the Project Applicant work in conjunction with RTA to potentially accommodate bus service to the site.

3.5 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 February 2019, while schools were in session. 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)

EXHIBIT 3-4: COUNTY OF RIVERSIDE TRAILS AND BIKEWAY SYSTEM

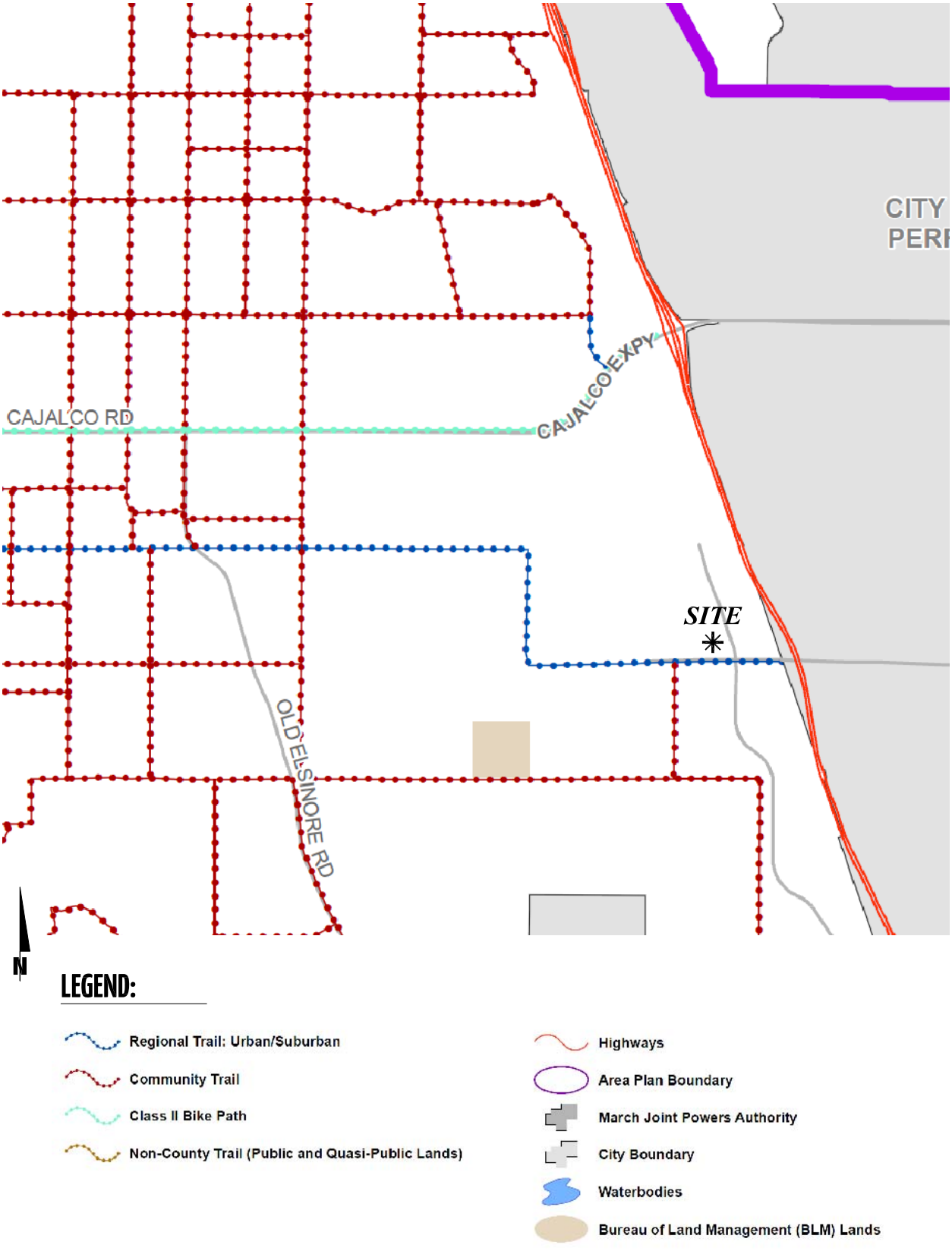


EXHIBIT 3-5: EXISTING PEDESTRIAN FACILITIES

LEGEND:

= SIDEWALK

0 = NO CROSSWALK

0 = FUTURE INTERSECTION

N

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. The traffic counts collected in February 2019 include the vehicle classifications as shown below:

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

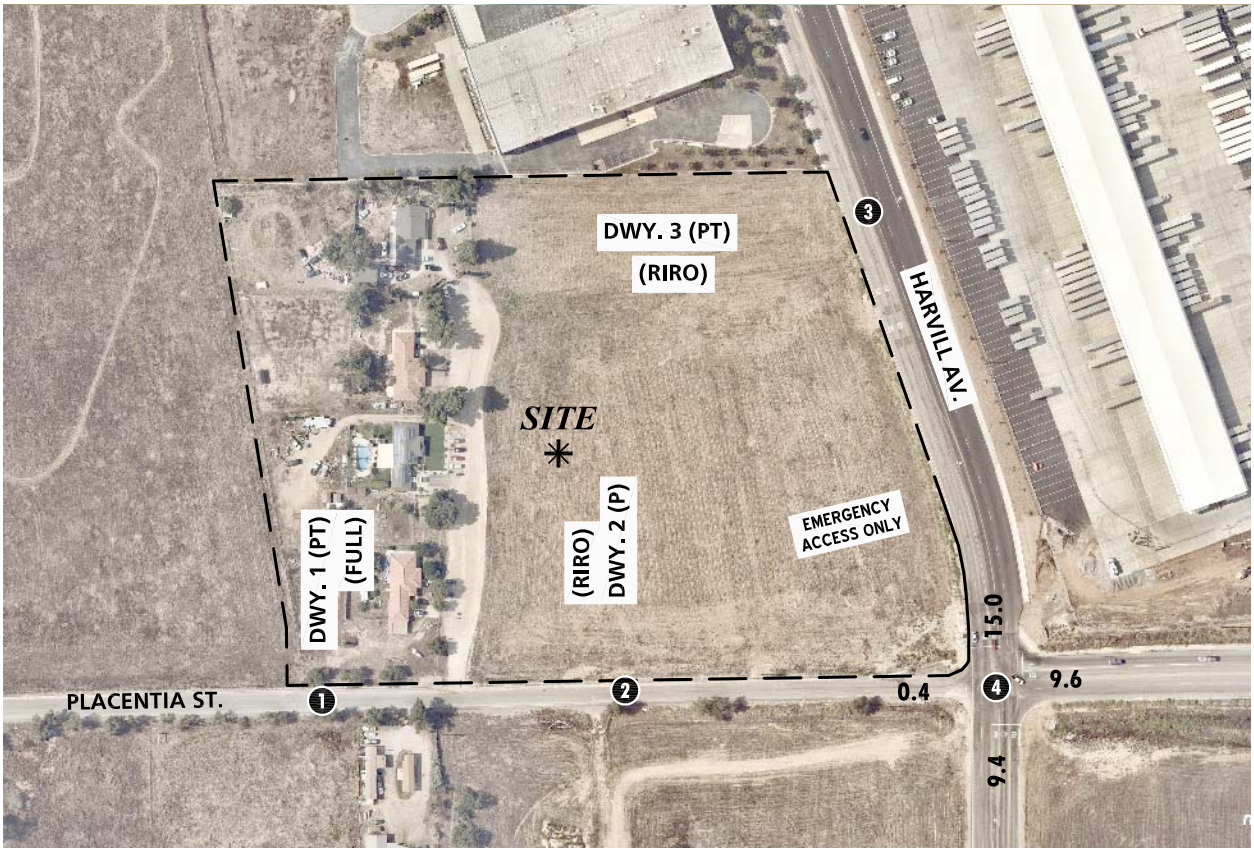
To represent the impact large trucks, buses, and recreational vehicles have on traffic flow, all trucks were converted into passenger car equivalent (PCE). By their size alone, these vehicles occupy the same space as two or more passenger cars. In addition, the time it takes for them to accelerate and slow-down is also much longer than for passenger cars and varies depending on the type of vehicle and number of axles. For this analysis, the following PCE factors have been used to estimate each turning movement: 1.5 for 2-axle trucks, 2.0 for 3-axle trucks, and 3.0 for 4+-axle trucks. These factors are consistent with the values recommended for use in the San Bernardino County CMP and are in excess of the factor recommended for use in the County of Riverside traffic study guidelines. (7) Although the County of Riverside has a recommended PCE factor of 2.0, the San Bernardino County CMP PCE factors have been utilized in an effort to conduct a more conservative analysis.

Existing weekday ADT volumes on arterial highways throughout the study area are shown on Exhibit 3-6. 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 15.94 = 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 6.27 percent. As such, the above equation utilizing a factor of 15.94 estimates the ADT volumes on the study area roadway segments assuming a peak-to-daily relationship of approximately 6.27 percent (i.e., 1/0.0627 = 15.94) and was assumed to sufficiently estimate ADT volumes for planning-level analyses. Existing weekday AM and weekday PM peak hour intersection volumes (in PCE) are also shown on Exhibit 3-6.

EXHIBIT 3-6: EXISTING (2019) TRAFFIC VOLUMES (IN PCE)



1 Dwy. 1 & Placentia St.	2 Dwy. 2 & Placentia St.	3 Harvill Av. & Dwy. 3	4 Harvill Av. & Placentia St.
Future Intersection	Future Intersection	Future Intersection	3(3) 128(296) 149(272) → 318(204) ← 3(4) ← 104(63) 5(4) → 5(3) → 7(5) → 7(6) ↑ 352(161) ↑ 102(56)

LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES
10.0 = VEHICLES PER DAY (1000'S)

N

3.6 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 all of the study area intersections are currently operating at an acceptable LOS during the peak hours (i.e., LOS D or better).

Consistent with Table 3-1, a summary of the peak hour intersection LOS for Existing conditions are shown on Exhibit 3-7. The intersection operations analysis worksheets are included in Appendix 3.2 of this TIA.

3.7 TRAFFIC SIGNAL WARRANTS ANALYSIS

Traffic signal warrants for Existing traffic conditions are based on existing peak hour intersection turning volumes. The following unsignalized study area intersection currently warrants a traffic signal for Existing traffic conditions:

- Harvill Avenue & Placentia Street (#4)

However, this intersection currently operates at an acceptable LOS as an all-way stop-controlled intersection. Existing conditions traffic signal warrant analysis worksheets are provided in Appendix 3.3.

3.8 RECOMMENDED IMPROVEMENTS

All existing study area intersections currently operate at an acceptable LOS; therefore, no improvements are recommended for Existing (2019) traffic conditions.

Table 3-1

Intersection Analysis for Existing (2019) Conditions

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Delay[2] (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound						
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
1	Dwy. 1 & Placentia St.		Future Intersection															
2	Dwy. 2 & Placentia St.		Future Intersection															
3	Harvill Av. & Dwy. 3		Future Intersection															
4	Harvill Av. & Placentia St.	AWS	1	2	0	1	2	0	0	1	0	0	1	1	15.7	13.9	C	B

[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

[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] AWS = All-way Stop

EXHIBIT 3-7: EXISTING (2019) SUMMARY OF LOS

4 PROJECTED FUTURE TRAFFIC

The Project is proposed to consist of up to 233,062 sf of high-cube transload/short-term storage warehouse (without cold storage) use (85 percent of the total square footage) and 41,128 square feet of general light industrial use (15 percent of the total square footage) for a total of 274,190 square feet within a single building. The Project is anticipated to be constructed in a single phase by the year 2021.

Vehicular and truck traffic access will be provided via the following driveways (see Exhibit 1-1):

- Placentia Street via Driveway 1 – full access for passenger cars and trucks
- Placentia Street via Driveway 2 – right-in right-out access for passenger cars only
- Harvill Avenue via Driveway 3 – right-in right-out access for passenger cars and trucks

Regional access to the Project site will be provided by the I-215 Freeway via Placentia Street.

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 (PCE) and daily and peak hour trip generation estimates for the Project are shown in Table 4-1 and trip generation rates (actual vehicles) and daily and peak hour trip generation estimates for the Project are shown in Table 4-2. These estimates are based on the trip-generation statistics published in the Institute of Transportation Engineers (ITE) Trip Generation Manual, (10th Edition, 2017). (2)

For purposes of this analysis, the following ITE land use codes and vehicle mixes have been utilized:

- High-Cube Transload and Short-Term Storage Warehouse (Without Cold Storage) (ITE 154): Transload facilities have a primary function of consolidation and distribution of pallet loads (or larger) for manufacturers, wholesalers, or retailers. They typically have little storage duration, high throughput, and are high-efficiency facilities. Short-term high-cube warehouses are high-efficiency distribution facilities often with custom/special features built into structure movement of large volumes of freight with only short-term storage of products. The ITE Trip Generation Manual includes data for total vehicles (passenger cars and trucks), but provides no guidance on vehicle mix (passenger cars vs. trucks and breakdown by each truck axle type). As such, data regarding the specific truck mix has been obtained from a separate report: The South Coast Air Quality Management District's (SCAQMD) Warehouse Truck Trip Study Data Results and Usage recommended truck mix, which consists of 32.2% trucks for daily trips, 30.8% trucks for AM peak hour trips and 21.7% trucks for PM peak hour trips. This recommended procedure will be utilized for the purposes of the analysis for the High Cube Transload and Short-term Storage Warehouse land use (ITE land use code 154). (8)

Table 4-1

Project Trip Generation Summary (PCE)

Land Use	ITE LU 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
Project Trip Generation Rates[1]									
General Light Industrial[3]	110	TSF	0.616	0.084	0.700	0.082	0.548	0.630	4.960
Passenger Cars (78.6%)			0.484	0.066	0.550	0.064	0.431	0.495	3.899
2-Axle Trucks (8.0%) (PCE = 1.5)[5]			0.074	0.010	0.084	0.010	0.066	0.076	0.595
3-Axle Trucks (3.9%) (PCE = 2.0)[5]			0.048	0.007	0.055	0.006	0.043	0.049	0.387
4-Axle+ Trucks (9.5%) (PCE = 3.0)[5]			0.176	0.024	0.200	0.023	0.156	0.180	1.414
High-Cube Transload and Short-Term Warehouse[4]	154	TSF	0.062	0.018	0.080	0.028	0.072	0.100	1.400
Passenger Cars (69.2% AM, 78.3% PM, 67.8% Daily)			0.043	0.013	0.055	0.022	0.056	0.078	0.949
2-Axle Trucks (5.14% AM, 3.62% PM, 5.38% Daily, PCE = 1.5)[5]			0.005	0.001	0.006	0.002	0.004	0.005	0.113
3-Axle Trucks (6.38% AM, 4.49% PM, 6.66% Daily, PCE = 2.0)[5]			0.008	0.002	0.010	0.003	0.006	0.009	0.187
4-Axle+ Trucks (19.28% AM, 13.59% PM, 20.16% Daily, PCE = 3.0)[5]			0.036	0.011	0.046	0.011	0.029	0.041	0.847

Project	Quantity	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
Project Trip Generation Summary									
General Light Industrial (15%)	41.128	TSF							
Passenger Cars:			20	3	23	3	18	21	160
Truck Trips:									
2-axle:			3	0	3	0	3	3	24
3-axle:			2	0	2	0	2	2	16
4+-axle:			7	1	8	1	6	7	58
- Net Truck Trips (PCE)			*12*	*1*	*13*	*1*	*11*	*12*	*98*
High-Cube Transload and Short-Term Warehouse (85%)	233.062	TSF							
Passenger Cars:			10	3	13	5	13	18	222
Truck Trips:									
2-axle:			1	0	1	0	1	1	26
3-axle:			2	1	3	1	2	3	44
4+-axle:			8	2	10	3	7	10	198
- Net Truck Trips (PCE)			*11*	*3*	*14*	*4*	*10*	*14*	*268*
TOTAL NET TRIPS (PCE)			***53***	***10***	***63***	***13***	***52***	***65***	***748***

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Tenth Edition (2017).

[2] TSF = Thousand Square Feet

[3] Vehicle Mix Source: City of Fontana Truck Trip Generation Study, August 2003.

[4] Truck Mix Source: SCAQMD Warehouse Truck Trip Study Data Results and Usage (2014).

Normalized % - Without Cold Storage:

16.7% 2-Axle trucks, 20.7% 3-Axle trucks, 62.5% 4-Axle trucks

[5] PCE rates are per SBCTA (more conservative than Riverside County).

Table 4-2

Project Trip Generation Summary (Actual Vehicles)

Land Use	ITE LU 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
Project Trip Generation Rates (Actual Vehicles)[1]									
General Light Industrial[3]	110	TSF	0.616	0.084	0.700	0.082	0.548	0.630	4.960
Passenger Cars (78.6%)			0.484	0.066	0.550	0.064	0.431	0.495	3.899
2-Axle Trucks (8.0%)			0.049	0.007	0.056	0.007	0.044	0.050	0.397
3-Axle Trucks (3.9%)			0.024	0.003	0.027	0.003	0.021	0.025	0.193
4-Axle+ Trucks (9.5%)			0.059	0.008	0.067	0.008	0.052	0.060	0.471
High-Cube Transload and Short-Term Warehouse[4]	154	TSF	0.062	0.018	0.080	0.028	0.072	0.100	1.400
Passenger Cars (69.2% AM, 78.3% PM, 67.8% Daily)			0.043	0.013	0.055	0.022	0.056	0.078	0.949
2-Axle Trucks (5.14% AM, 3.62% PM, 5.38% Daily)			0.003	0.001	0.004	0.001	0.003	0.004	0.075
3-Axle Trucks (6.38% AM, 4.49% PM, 6.66% Daily)			0.004	0.001	0.005	0.001	0.003	0.004	0.093
4-Axle+ Trucks (19.28% AM, 13.59% PM, 20.16% Daily)			0.012	0.004	0.015	0.004	0.010	0.014	0.282

Project	Quantity	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
Project Trip Generation Summary									
General Light Industrial (15%)	41.128	TSF							
Passenger Cars:			20	3	23	3	18	21	160
Truck Trips:									
2-axle:			2	0	2	0	2	2	16
3-axle:			1	0	1	0	1	1	8
4+-axle:			2	0	2	0	2	2	19
- Net Truck Trips (Actual)			*5*	*0*	*5*	*0*	*5*	*5*	*43*
High-Cube Transload and Short-Term Warehouse (85%)	233.062	TSF							
Passenger Cars:			10	3	13	5	13	18	221
Truck Trips:									
2-axle:			1	0	1	0	1	1	18
3-axle:			1	0	1	0	1	1	22
4+-axle:			3	1	4	1	2	3	66
- Net Truck Trips (Actual)			*5*	*1*	*6*	*1*	*4*	*5*	*106*
TOTAL NET TRIPS (Actual)			***40***	***7***	***47***	***9***	***40***	***49***	***530***

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Tenth Edition (2017).

[2] TSF = Thousand Square Feet

[3] Vehicle Mix Source: City of Fontana Truck Trip Generation Study, August 2003.

[4] Truck Mix Source: SCAQMD Warehouse Truck Trip Study Data Results and Usage (2014).
Normalized % - Without Cold Storage:
16.7% 2-Axle trucks, 20.7% 3-Axle trucks, 62.5% 4-Axle trucks

- General light industrial data regarding the truck percentage and vehicle mix has been obtained from the City of Fontana's Truck Trip Generation Study (April 2003). This study provides vehicle mix for general light industrial land uses, which consist of 21.4% trucks for AM, PM, and daily trips. The City of Fontana's recommended truck mix, by axle type for general light industrial has been utilized for the 2-axle, 3-axle, and 4+-axle trucks. (9) Both the County of Riverside and the ITE Trip Generation Manual do not have a recommended vehicle mix for the general light industrial use. As such, the City of Fontana's Truck Trip Generation Study has been utilized as it is the best data available for the general light industrial land use.

As noted in Table 4-1 and Table 4-2, refinements to the raw trip generation estimates have been made to provide a more detailed breakdown of trips between passenger cars and trucks. Trip generation for heavy trucks was further broken down by truck type (or axle type). The total truck percentage is comprised of 3 different truck types: 2-axle, 3-axle, and 4+-axle trucks. PCE factors were applied to the trip generation rates for heavy trucks. PCEs allow the typical "real-world" mix of vehicle types to be represented as a single, standardized unit, such as the passenger car, to be used for the purposes of capacity and level of service analyses. The PCE factors are consistent with the recommended PCE factors in Appendix B of the San Bernardino County Congestion Management Program (CMP), 2016 Update. (7) Note that these procedures are consistent with those adopted by the County of Riverside for warehouse projects, with the exception of the PCE factors, where the San Bernardino County CMP factors have been utilized in an effort to conduct a conservative analysis.

The Project is estimated to generate a net total of 748 PCE trip-ends per day on a typical weekday with approximately 63 net AM PCE peak hour trips and 65 net PM PCE peak hour trips, as shown in Table 4-1. The proposed Project's trip generation, based on actual vehicles, has been included in Table 4-2 for informational purposes only.

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 both passenger cars and truck traffic and are consistent with other similar projects that have been reviewed and approved by County of Riverside staff. The Project trip distribution patterns for both passenger cars and trucks were 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.

The Project is anticipated to be fully constructed and operational in 2021 and the I-215 Freeway and Placentia Avenue interchange is also anticipated to be completed in2021. Based on the location of the Project and its proximity to the proposed I-215 Freeway and Placentia Avenue interchange, it is likely that Project traffic would utilize the new interchange once completed. Each of these distribution patterns were reviewed by the County of Riverside as part of the traffic study scoping process (see Appendix 1.1). The Project passenger car trip distribution patterns are graphically depicted on Exhibit 4-1. The Project truck trip distribution patterns are graphically depicted on Exhibit 4-2.

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 (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 in PCE are shown on Exhibit 4-3.

4.5 BACKGROUND TRAFFIC

Future year traffic forecasts have been based upon a background (ambient) growth factor of 2% per year for 2021 traffic conditions. The ambient growth factor is intended to approximate traffic growth. The total ambient growth is 4.04% for 2021 traffic conditions (compounded growth of 2 percent per year over 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.

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.

The currently adopted Southern California Association of Governments (SCAG) 2016 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) (April 2016) growth forecasts for the County of Riverside identifies projected growth in population of 359,500 in 2012 to 499,200 in 2040, or a 39.1 percent increase over the 28-year period. (10) The change in population equates to roughly a 1.18 percent growth rate, compounded annually. Similarly, growth over the same 28-year period in households is projected to increase by 45.1 percent, or 1.33 percent annual growth rate. Finally, growth in employment over the same 28-year period is projected to increase by 122.1 percent, or a 2.89 percent annual growth rate.

EXHIBIT 4-1: PROJECT (PASSENGER CAR WITH I-215/PLACENTIA INTERCHANGE) TRIP DISTRIBUTION

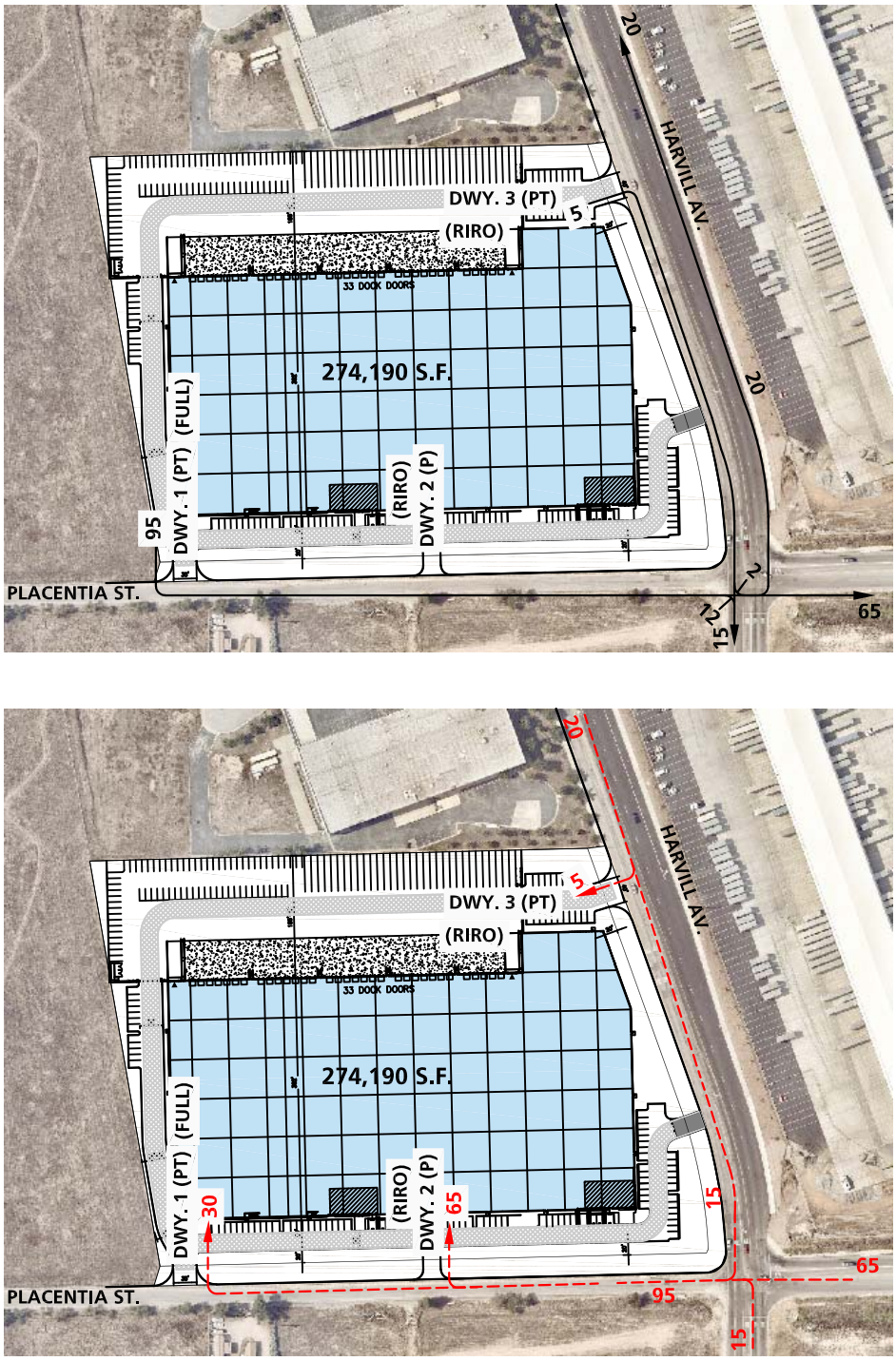


EXHIBIT 4-2: PROJECT (TRUCK WITH I-215/PLACENTIA INTERCHANGE) TRIP DISTRIBUTION

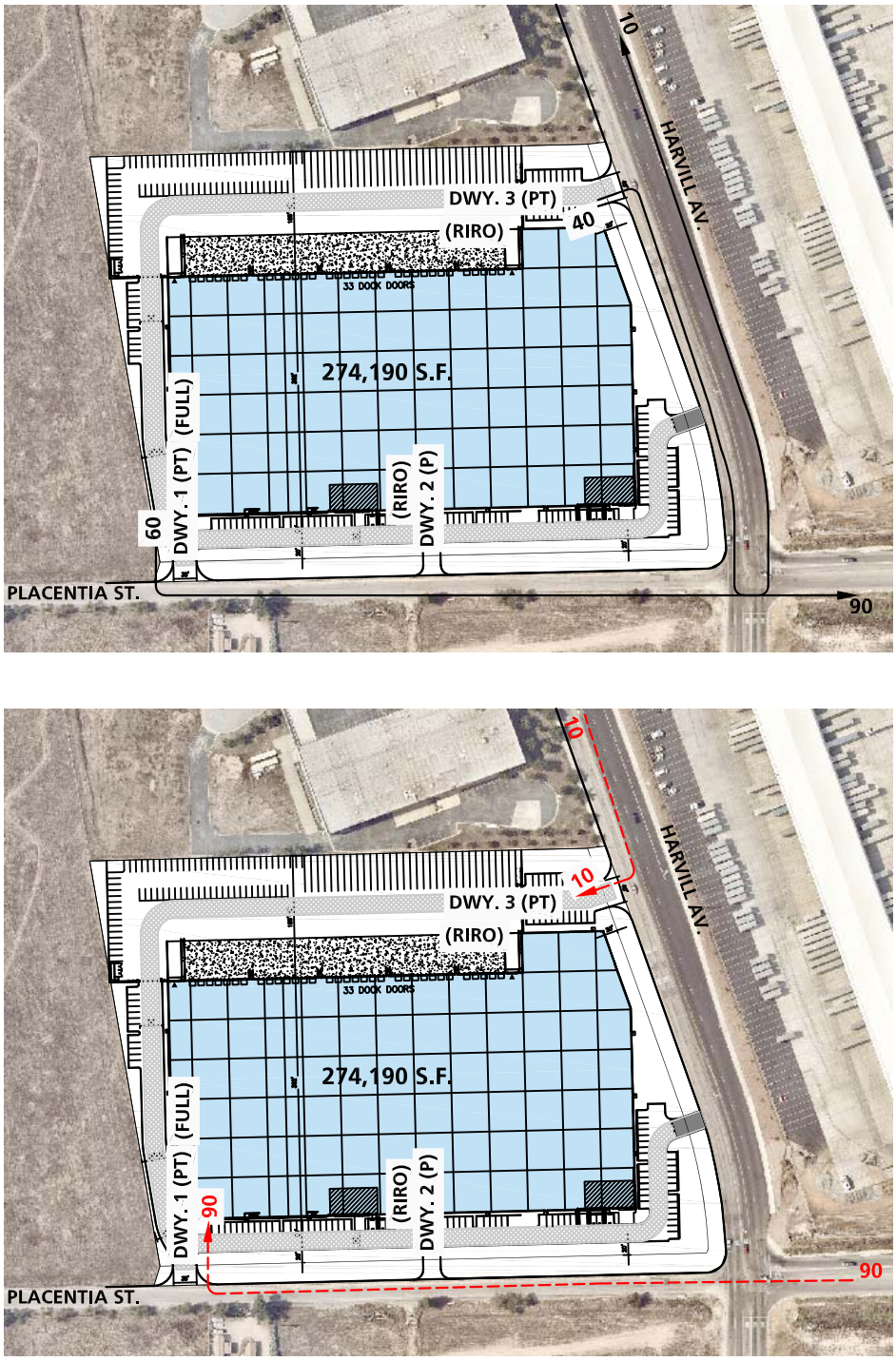
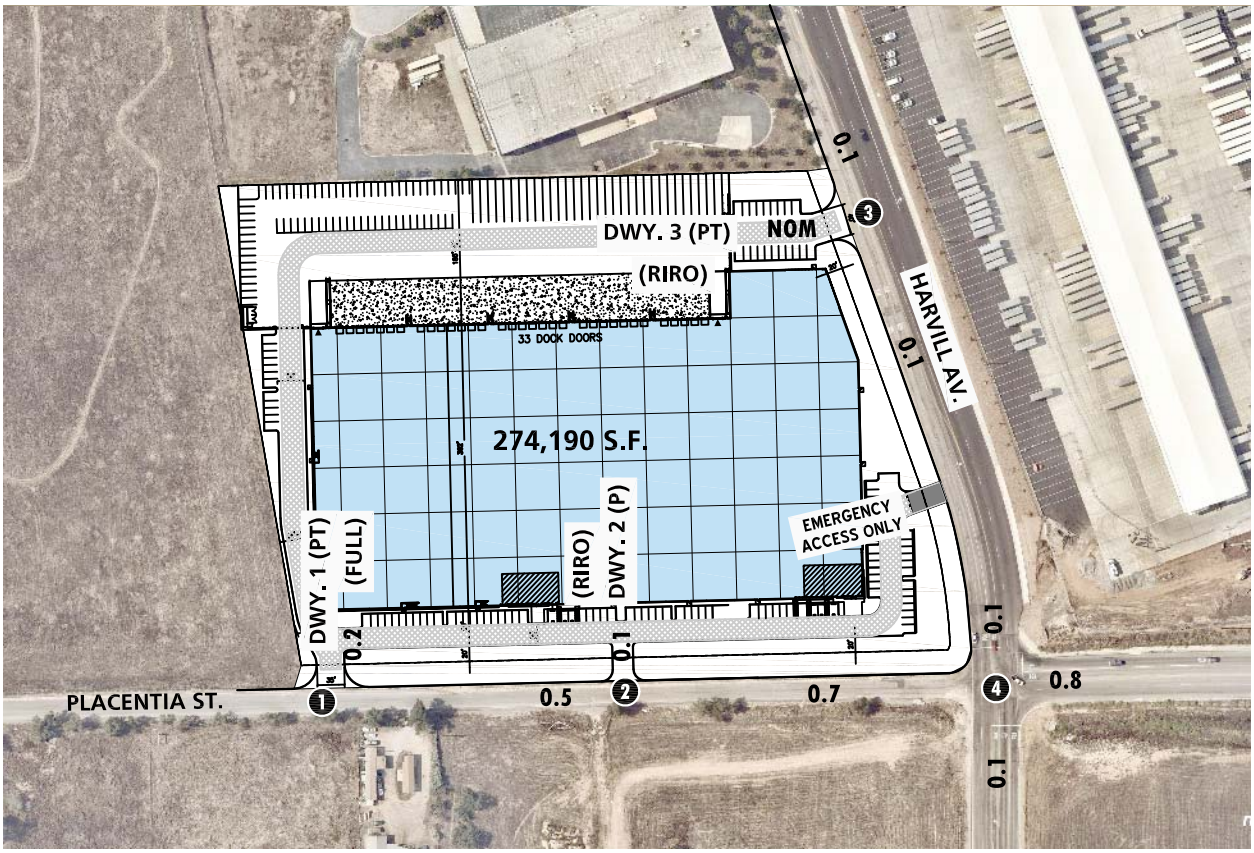
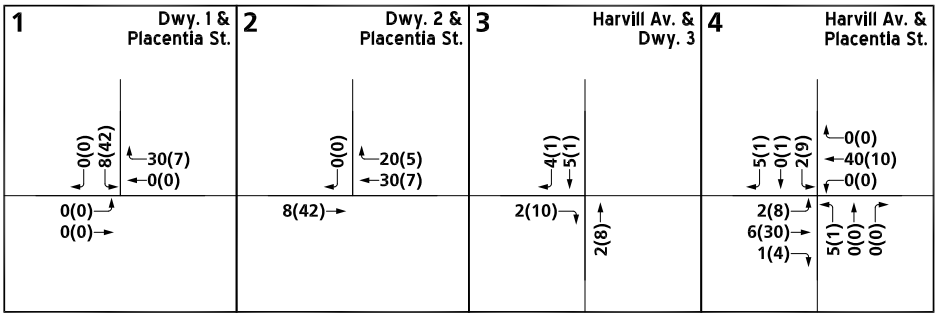


EXHIBIT 4-3: PROJECT ONLY TRAFFIC VOLUMES (IN PCE)





LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES
10.0 = VEHICLES PER DAY (1000'S)
NOM = NOMINAL, LESS THAN 50 VEHICLES PER DAY

N

4.6 CUMULATIVE DEVELOPMENT TRAFFIC

California Environmental Quality Act (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 Riverside. The cumulative project list includes known and foreseeable projects that are anticipated to contribute traffic to the study area intersections. Adjacent jurisdictions of the City of Perris and the City of Moreno Valley have 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 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 4-4, listed in Table 4-3, and have been considered for inclusion.

Although it is unlikely that all of these cumulative projects would be fully built and occupied by Year 2021, they have been included in an effort to conduct a conservative analysis and overstate as opposed to understate potential traffic impacts.

Any other cumulative projects located beyond the cumulative study area 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 traffic volumes in PCE are shown on Exhibit 4-5.

EXHIBIT 4-4: CUMULATIVE DEVELOPMENT LOCATION MAP

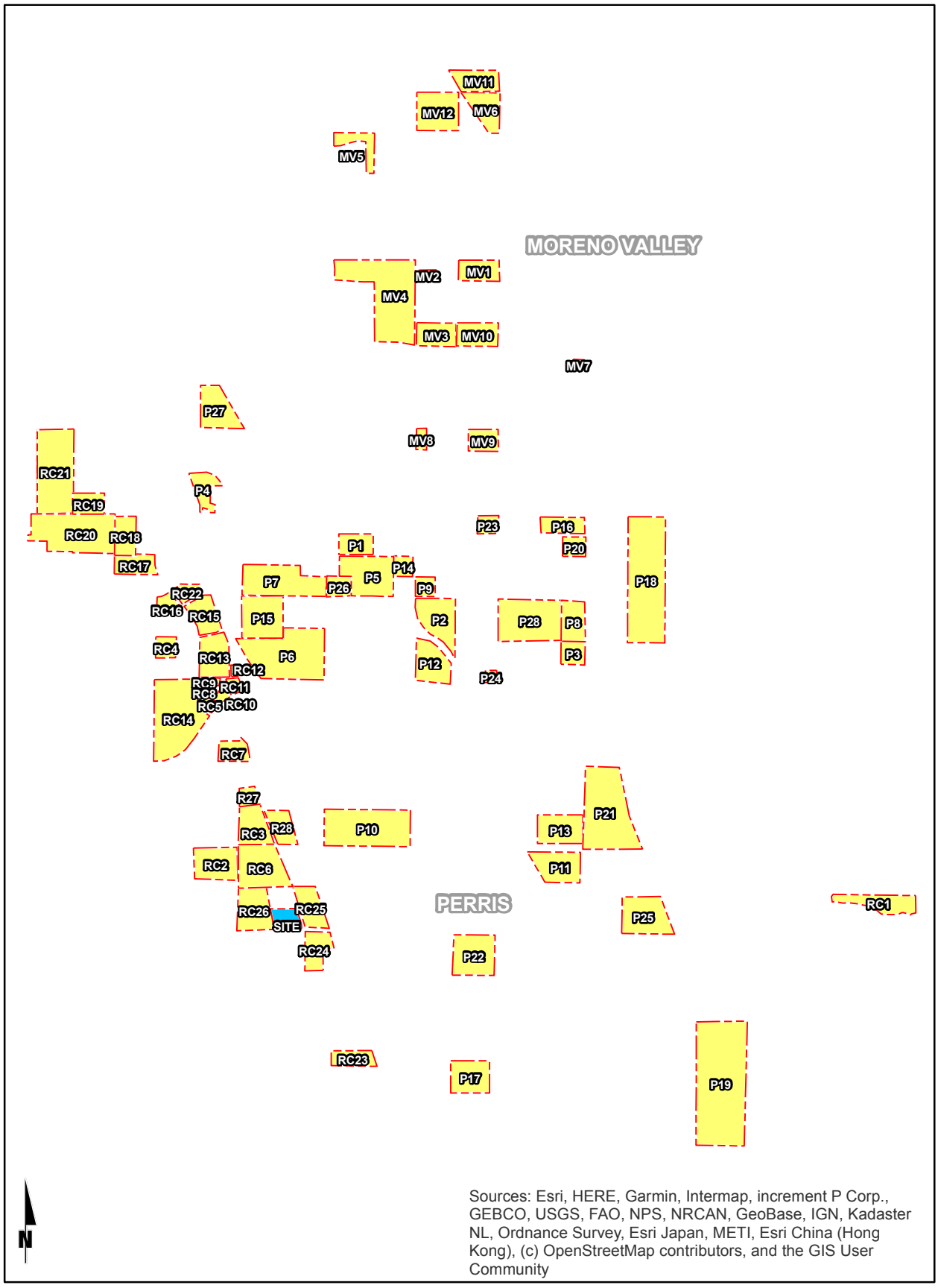
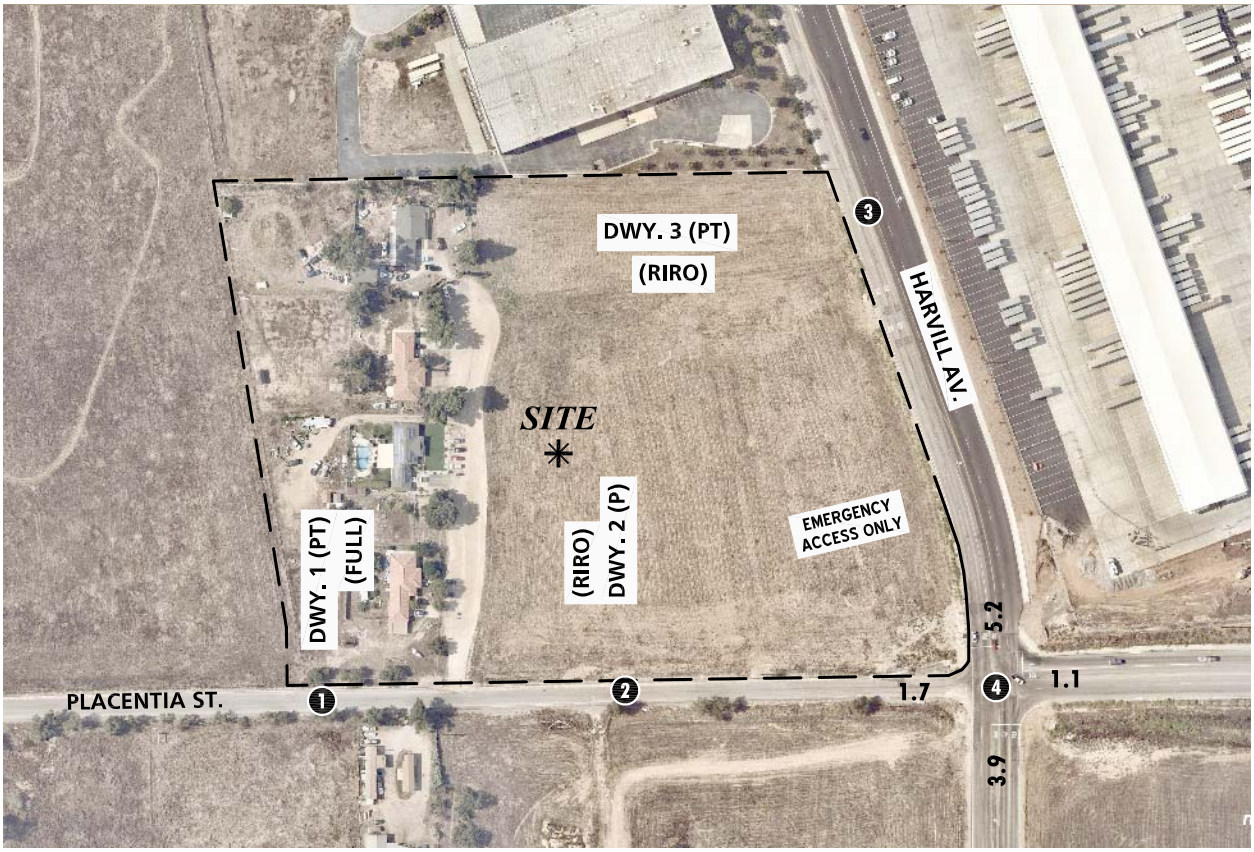


EXHIBIT 4-5: CUMULATIVE ONLY TRAFFIC VOLUMES (IN PCE)



1 Dwy. 1 & Placentia St.	2 Dwy. 2 & Placentia St.	3 Harvill Av. & Dwy. 3	4 Harvill Av. & Placentia St.
0(0) 0(0) 0(0) ←74(34) 0(0) 23(88)→			41(18) 155(87) 65(68) 38(25) ←0(0) ←0(0) 13(47) 0(0) 10(41) 33(16) 66(160) 0(0)
Future Intersection	Future Intersection	Future Intersection	

LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES
10.0 = VEHICLES PER DAY (1000'S)

N

Table 4-3

Cumulative Development Land Use Summary

No.	Project Name / Case Number	Land Use[1]	Quantity	Units[2]	Location
Riverside County					
RC1	McCanna Hills / TTM 33978	SFDR	63	DU	SWC OF SHERMAN AVE. & WALNUT AVE.
RC2	PP26293	High-Cube Warehouse	612.481	TSF	SWC OF PATTERSON AVE. & RIDER ST.
RC3	PPT180023: Rider Commerce Center	Warehousing	204.330	TSF	NEC OF PATTERSON AVE. & RIDER ST.
RC4	PPT180025: Seaton Commerce Center	High-Cube Warehouse	210.800	TSF	SEC OF SEATON AV. & PERRY ST.
RC5	Farmer Boys/Retail Shop	Retail	16.306	TSF	NEC OF HARVILL AVE. & CAJALCO RD.
		Fast-Food with Drive Thru	3.252	TSF	
RC6	PP26173	High-Cube Warehouse	423.665	TSF	SWC OF HARVILL AVE. & RIDER ST.
RC7	Val Verde Logistics Center	High-Cube Warehouse	280.308	TSF	NWC OF HARVILL AVE. & OLD CAJALCO RD.
RC8	Majestic Freeway Business Center - Building 5	Warehousing	40.000	TSF	NEC OF HARVILL AVE. & MESSENIA LN.
RC9	Majestic Freeway Business Center - Building 6	Warehousing	72.000	TSF	NORTH OF MESSENIA LN., EAST OF HARVILL AVE.
RC10	Majestic Freeway Business Center - Building 7	Warehousing	80.000	TSF	NORTH OF CAJALCO EXWY., EAST OF HARVILL AVE.
RC11	Majestic Freeway Business Center - Building 8	Warehousing	110.000	TSF	NORTH OF CAJALCO EXWY., EAST OF HARVILL AVE.
RC12	Majestic Freeway Business Center - Building 9	Warehousing	45.000	TSF	EAST OF MESSENIA LN., NORTH OF HARVILL AVE.
RC13	Majestic Freeway Business Center - Building 10	High-Cube Warehouse	600.000	TSF	SEC OF HARVILL AVE. & PERRY ST.
RC14	Majestic Freeway Business Center - Buildings 1, 3 & 4	Warehousing	48.930	TSF	NWC OF HARVILL AVE. & CAJALCO RD.
		High-Cube Warehouse	1195.740	TSF	
RC15	Majestic Freeway Business Center - Building 11	High-Cube Warehouse	391.045	TSF	NEC OF HARVILL AVE. & PERRY ST.
RC16	Majestic Freeway Business Center - Building 15	Warehousing	90.279	TSF	NWC OF HARVILL AVE. & COMMERCE CENTER DR.
RC17	Majestic Freeway Business Center - Building 19	Warehousing	364.560	TSF	SWC OF HARVILL AVE. & OLD OLEANDER AVE.
RC18	Majestic Freeway Business Center - Building 20	Warehousing	425.830	TSF	SWC OF HARVILL AVE. & OLD OLEANDER AVE.
RC19	Majestic Freeway Business Center - Building 21,22	Warehousing	241.059	TSF	NEC OF DECKER RD. & OLD OLEANDER AVE.
RC20	Knox Logistics Center	High-Cube Warehouse	1259.410	TSF	NWC OF DECKER RD. & OLD OLEANDER AVE.
RC21	Oleander Business Park	High-Cube Warehouse	680.000	TSF	NWC OF DECKER RD. & HARLEY KNOX BLVD.
RC22	Majestic Freeway Business Center - Building 12	Warehousing	154.751	TSF	NEC OF HARVILL AVE. & COMMERCE CENTER DR.
RC23	Harvill Distribution Center	High-Cube Warehouse	345.103	TSF	EAST OF HARVILL AVE., SOUTH OF ORANGE ST.
RC24	PP26241	Warehousing	23.600	TSF	SEC OF HARVILL AVE. & PLACENTIA ST.
RC25	PP26220	Warehousing	66.000	TSF	EAST OF HARVILL AVE., NORTH OF PLACENTIA ST.
RC26	Barker Logistics	High-Cube Warehouse	699.630	TSF	SWC OF PATTERSON AVE. & PLACENTIA ST.
RC27	Dedeaux Harvill Terminal	Truck Terminal	55.700	TSF	NWC OF HARVILL AVE. & RIDER ST.
RC28	28840 Rider Street	Warehousing	296.335	TSF	NEC OF HARVILL AVE. & RIDER ST.
City of Perris					
P1	Bargemann / DPR 07-09-0018	Warehousing	173.000	TSF	NEC OF WEBSTER & NANCE
P2	Duke 2 / DPR 16-00008	High-Cube Warehouse	669.000	TSF	NEC OF INDIAN & MARKHAM
P3	First Perry / DPR 16-00013	High-Cube Warehouse	240.000	TSF	SWC OF REDLANDS AVE. & PERRY ST.
P4	Gateway / DPR 16-00003	High-Cube Warehouse	400.000	TSF	SOUTH OF HARLEY KNOX BLVD., EAST OF HWY. 215
P5	Integra / DPR 14-02-0014	High-Cube Warehouse	864.000	TSF	EAST OF WEBSTER AVE. SOUTH OF NANCE ST.
P6	OLC 1 / DPR 12-10-0005	High-Cube Warehouse	1,455.000	TSF	WEST OF WEBSTER AVE., NORTH OF RAMONA EXWY.
P7	OLC2 / DPR 14-01-0015	High-Cube Warehouse	1,037.000	TSF	WEST OF WEBSTER AVE., NORTH OF MARKHAM ST.

Table 4-3

Cumulative Development Land Use Summary

No.	Project Name / Case Number	Land Use[1]	Quantity	Units[2]	Location
P8	Markham East / DPR 05-0477	High-Cube Warehouse	460.000	TSF	SWC OF REDLANDS AVE. & MARKHAM ST.
P9	Markham Industrial / DPR 16-00015	Warehousing	170.000	TSF	NEC OF INDIAN AVE. & MARKHAM ST.
P10	Rados / DPR 07-0119	High-Cube Warehouse	1,200.000	TSF	NWC OF INDIAN AVE. & RIDER ST.
P11	Rider 1 / DPR 16-0365	High-Cube Warehouse	350.000	TSF	SWC OF REDLANDS AVE. & RIDER ST.
P12	Indian/Ramona Warehouse	High-Cube Warehouse	428.730	TSF	NORTH OF RAMONA EXWY., WEST OF INDIAN AVE.
P13	Rider 3 / DPR 06-0432	High-Cube Warehouse	640.000	TSF	NORTH OF RIDER ST., WEST OF REDLANDS
P14	Westcoast Textile / DPR 16-00001	Warehousing	180.000	TSF	SWC OF INDIAN ST. & NANCE ST.
P15	Duke at Patterson / DPR 17-00001	High-Cube Warehouse	811.000	TSF	SEC OF PATTERSON AVE. & MARKHAM ST.
P16	Harley Knox Commerce Park / DPR 16-004	High-Cube Warehouse	386.278	TSF	NWC OF HARLEY KNOX BLVD. & REDLANDS AVE.
P17	Perris Marketplace / DPR 05-0341	Commercial Retail	520.000	TSF	WEST OF PERRIS BLVD. AT AVOCADO AVE.
P18	Stratford Ranch Residential / TTM 36648	SFDR	270	DU	WEST OF EVANS RD. AT MARKHAM ST.
P19	Pulte Residential / TTM 30850	SFDR	496	DU	WEST OF EVANS RD. AT CITRUS AVE.
P20	Perris Circle 3	Warehousing	210.900	TSF	NWC OF REDLANDS AVE. & NANCE AVE.
P21	Rider 2 and 4	High-Cube Warehouse	1,376.721	TSF	NWC OF REDLANDS AVE. AND RIDER ST.
P22	Weinerschnitzel / CUP 17-05083	Fast-Food Restaurant	2.000	TSF	WEST OF PERRIS BL., SOUTH OF PLACENTIA AVE.
P23	March Plaza / CUP16-05165	Commercial Retail	47.253	TSF	NWC OF PERRIS BL. AND HARLEY KNOX BL.
P24	Cali Express Carwash / CUP 16-05258	Carwash	5.600	TSF	NWC OF PERRIS BL. AND RAMONA EXWY.
P25	Wilson Industrial / DPR 19-00007	High-Cube Warehouse	303.000	TSF	SEC OF WILSON AVE. AND RIDER ST.
P26	Integra Expansion / MMOD 17-05075	High-Cube Warehouse	273.000	TSF	NCE OF MARKHAM ST. AND WEBSTER AVE.
P27	Western Industrial / DRP 19-00003	High-Cube Warehouse	250.000	TSF	NEC or WESTERN WY. AND NANDINA AVE.
P28	Duke Realty - Perris & Markham	High-Cube Warehouse	1,189.860	TSF	SEC OF PERRIS BL. AND MARKHAM ST.
		City of Moreno Valley			
MV1	PEN18-0042	SFDR	2	DU	SEC OF INDIAN ST. & KRAMERIA AVE.
MV2	Tract 33024	SFDR	8	DU	SEC OF INDIAN ST. & KRAMERIA AVE.
MV3	Tract 32716	SFDR	57	DU	NEC OF INDIAN ST. & MARIPOSA AVE.
MV4	Prologis 1	High-Cube Warehouse	1000.000	TSF	NEC OF INDIAN AVE. & MARIPOSA AVE.
MV5	Moreno Valley Industrial Park	High-Cube Warehouse	207.684	TSF	NEC OF HEACOCK ST. & IRIS AVE.
MV6	Moreno Valley Walmart	Retail	193.000	TSF	SWC OF PERRIS BLVD. & GENTIAN AVE.
MV7	Moreno Valley Utility Substation	High-Cube Warehouse	PUBLIC	TSF	NWC OF EDWIN RD. & KITCHING ST.
MV8	Phelan Development	High-Cube Warehouse	98.210	TSF	SEC OF INDIAN ST. & NANDINA AVE.
MV9	Nandina Industrial Center	High-Cube Warehouse	335.966	TSF	SOUTH OF NANDINA AVE., WEST OF PERRIS BLVD.
MV10	Tract 31442	SFDR	63	DU	NWC OF PERRIS BLVD. & MARIPOSA AVE.
MV11	Tract 22180	SFDR	140	DU	NORTH OF GENTIAN AVE., EAST OF INDIAN ST.
MV12	Tract 36760	SFDR	221	DU	SEC OF INDIAN ST. & GENTIAN AVE.

[1] SFDR = Single Family Detached Residential

[2] DU = Dwelling Units; TSF = Thousand Square Feet

4.7 NEAR-TERM TRAFFIC CONDITIONS

The "buildup" approach combines existing traffic counts with a background ambient growth factor to forecast EAP (2021) and EAPC (2021) traffic conditions. An ambient growth factor of 2.0% per year account for background (area-wide) traffic increases that occur over time up to the year 2021 from the year 2019 (2.0 percent per year growth rate, compounded over a 2-year period). Traffic volumes generated by the Project are then added to assess the near-term traffic conditions. The 2021 roadway network is 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 Project (2021)
  - Existing 2019 counts
  - Ambient growth traffic (4.04%)
  - Project traffic

- Existing Plus Ambient Growth Plus Project Plus Cumulative (2021)
  - Existing 2019 counts
  - Ambient growth traffic (4.04%)
  - Cumulative Development traffic
  - Project traffic

4.8 HORIZON YEAR (2040) CONDITIONS

"Buildout" traffic projections for Horizon Year conditions are based on traffic model forecasts and were derived from the RivTAM. The Horizon Year traffic conditions analyses will be utilized to determine if improvements funded through regional transportation mitigation fee programs, such as the TUMF, can accommodate the long-range traffic at the target LOS identified in the County of Riverside General Plan.

In some instances, 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 (2040) turning volumes were compared to EAPC volumes in order to ensure a minimum growth as a part of the refinement process, where applicable. The minimum growth includes any additional growth between EAPC (2024) and Horizon Year With Project traffic conditions that is not accounted for by the traffic generated by cumulative development projects and the ambient growth between Existing and EAPC (2024) traffic conditions.

The initial estimate of the future Horizon Year (2040) peak hour turning movements were 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 (where applicable), reasonable growth, and reasonable diversion between parallel routes. Post processing worksheets are included in Appendix 4.1 of this TIA.

5 E+P TRAFFIC CONDITIONS

This section discusses the traffic forecasts for Existing Plus Project (E+P) conditions and the resulting intersection operations and traffic signal warrant analyses. This analysis scenario has also been provided for informational purposes only as Project impacts have been discerned from a comparison of Existing (2019) to EAP (2021) traffic conditions (per the County's traffic study guidelines).

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. Exhibit 5-1 shows the ADT and peak hour intersection turning movement volumes, which can be expected for E+P traffic conditions.

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 TIA. The intersection analysis results are summarized in Table 5-1, which indicates that the study area intersections are anticipated to continue to operate at acceptable LOS under E+P traffic conditions with the addition of Project traffic, consistent with Existing traffic conditions.

A summary of the peak hour intersection LOS for E+P conditions are shown on Exhibit 5-2. The intersection operations analysis worksheets for E+P traffic conditions are included in Appendix 5.1 of this TIA.

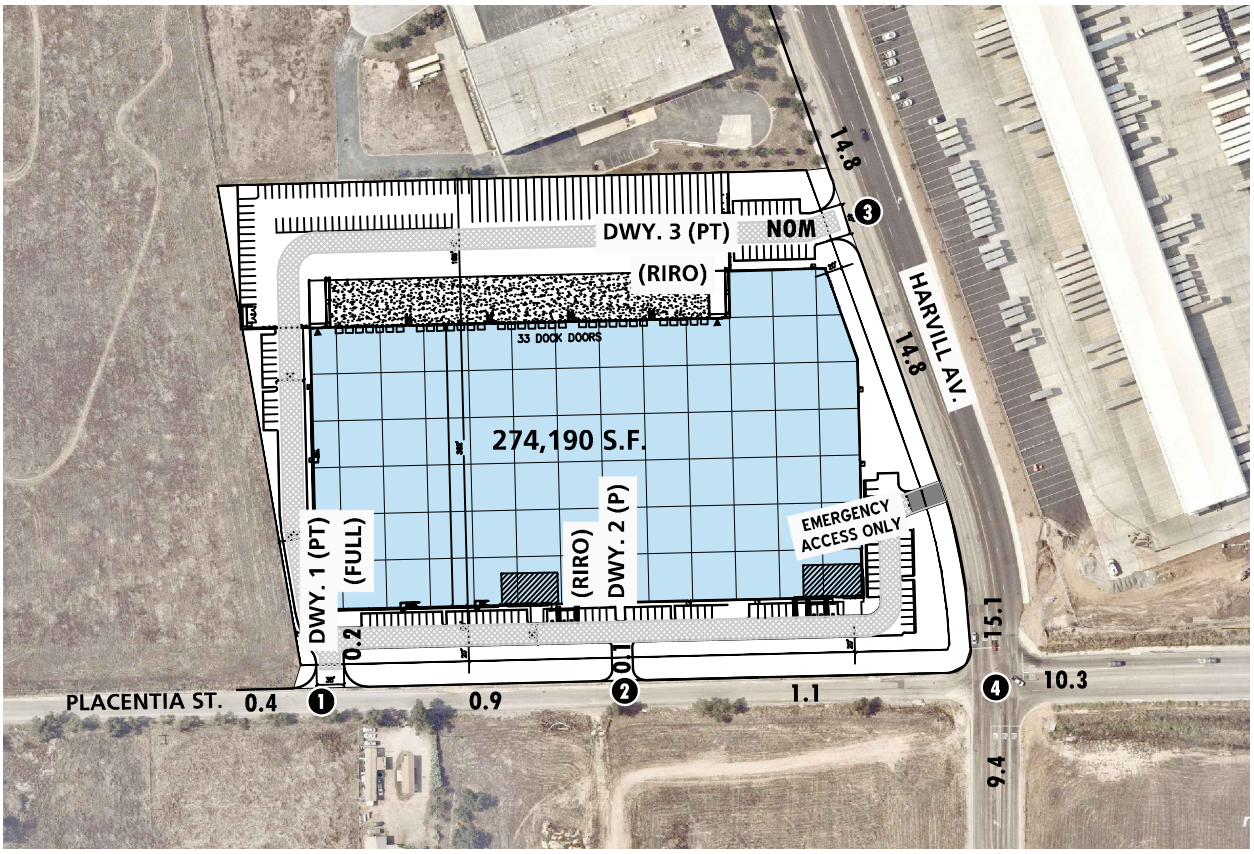
5.4 TRAFFIC SIGNAL WARRANTS ANALYSIS

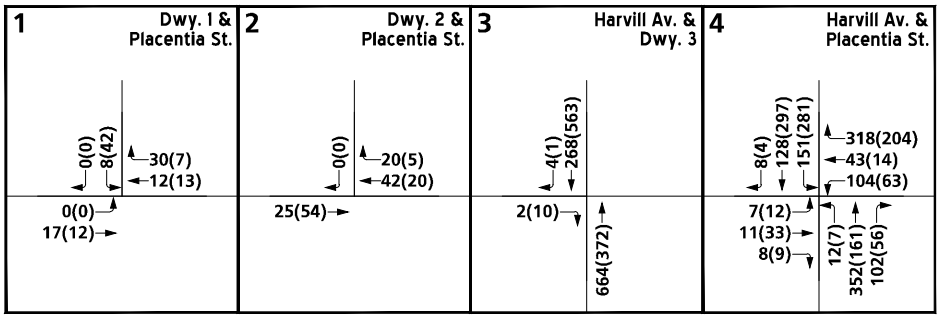
There are no additional study area intersections anticipated to meet planning-level ADT or peak hour volume-based traffic signal warrants under E+P traffic conditions in addition to the intersection previously identified under Existing (2019) traffic conditions (see Appendix 5.2).

5.5 RECOMMENDED IMPROVEMENTS

All study area intersections are anticipated to operate at an acceptable LOS, therefore no improvements have been recommended for E+P traffic conditions.

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





LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES
10.0 = VEHICLES PER DAY (1000'S)
NOM = NOMINAL, LESS THAN 50 VEHICLES PER DAY

EXHIBIT 5-2: E+P SUMMARY OF LOS

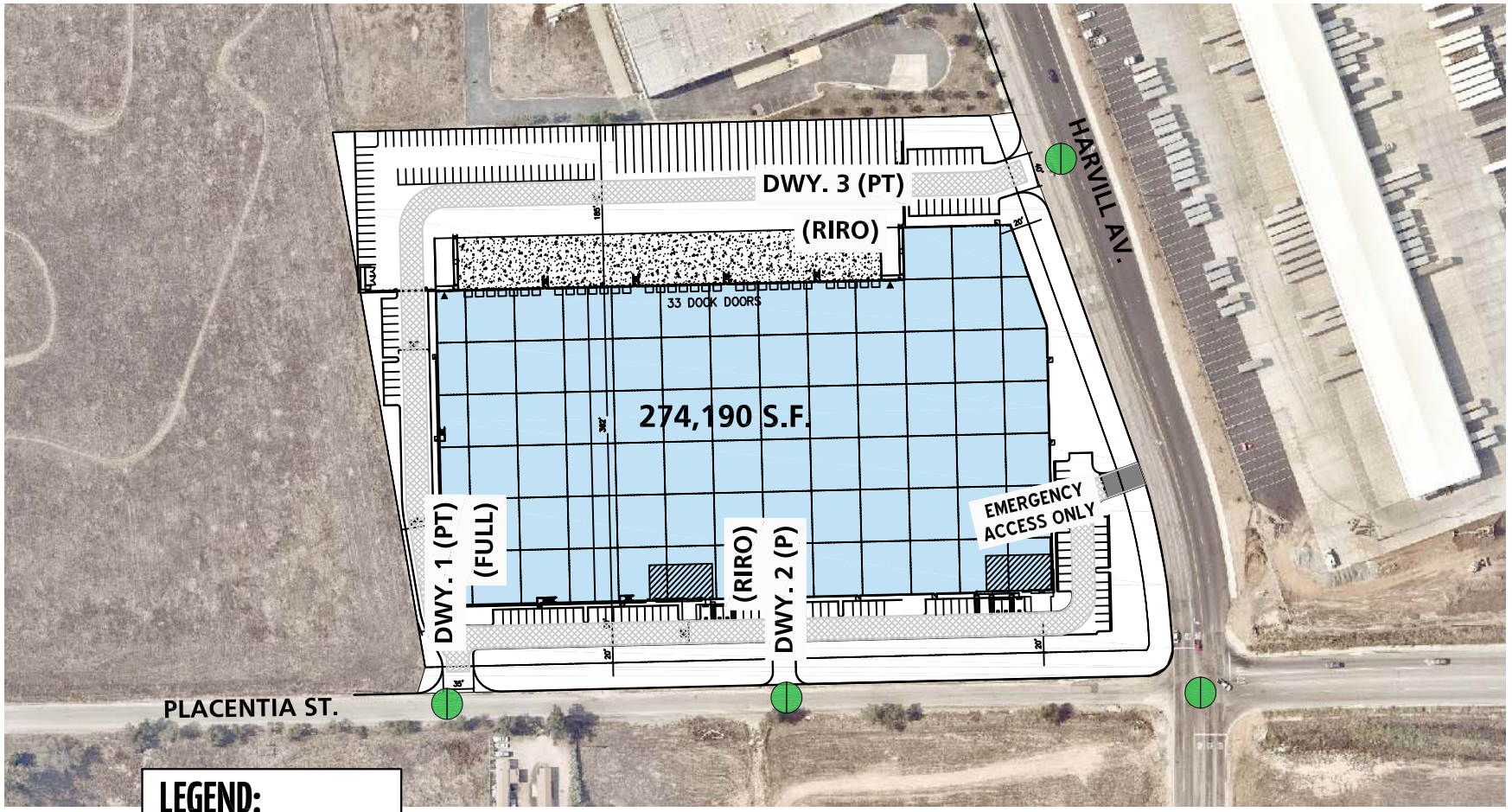


Table 5-1

Intersection Analysis for E+P Conditions

#	Intersection	Traffic Control[2]	Existing (2019)				E+P			
			Delay[1] (secs.)		Level of Service		Delay[1] (secs.)		Level of Service	
			AM	PM	AM	PM	AM	PM	AM	PM
1	Dwy. 1 & Placentia St.	**CSS**	Future Interserction				8.8	8.8	A	A
2	Dwy. 2 & Placentia St.	**CSS**	Future Interserction				0.0	0.0	A	A
3	Harvill Av. & Dwy. 3	**CSS**	Future Interserction				9.1	10.3	A	B
4	Harvill Av. & Placentia St.	AWS	15.7	13.9	C	B	16.3	15.3	C	C

[1] 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.

[2] AWS = All-Way Stop; CSS = Cross-street Stop; **CSS** = Improvement

[3] The Project will construct a southbound right turn lane as a Project design feature. However, HCM (6th Edition) methodology for unsignalized intersections is limited to a maximum of three lanes per approach. As such, for the purposes of this analysis, the southbound approach has been analyzed with a left turn lane, a through lane, and a shared through-right turn lane, which reflects a more conservative evaluation of intersection delay.

6 EAP (2021) TRAFFIC CONDITIONS

This section discusses the methods used to develop EAP (2021) 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 EAP (2021) 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 EAP conditions only (e.g., intersection and roadway improvements at the Project's frontage and driveways).
- The I-215/Placentia Avenue Interchange is assumed to be in place (to be completed in 2021).

6.2 EAP (2021) TRAFFIC VOLUME FORECASTS

This scenario includes Existing (2019) traffic volumes plus an ambient growth factor of 4.04% and the addition of Project traffic. Since the I-215/Placentia Avenue interchange is anticipated to be in place for 2021, the baseline traffic volumes have been adjusted to reflect the shift in travel patterns for EAP (2021) traffic conditions. Exhibit 6-1 shows the weekday ADT volumes and peak hour volumes which can be expected for EAP (2021) traffic conditions (in PCE).

6.3 INTERSECTION OPERATIONS ANALYSIS

LOS calculations were conducted for the study intersections to evaluate their operations under EAP conditions with roadway and intersection geometrics consistent with Section 6.1 *Roadway Improvements*. As shown in Table 6-1, all study area intersections are anticipated to continue to operate at an acceptable LOS during the peak hours for EAP (2021) traffic conditions.

A summary of the peak hour intersection LOS for EAP traffic conditions is shown on Exhibit 6-2. The intersection operations analysis worksheets for EAP (2021) traffic conditions are included in Appendix 6.1 of this TIA.

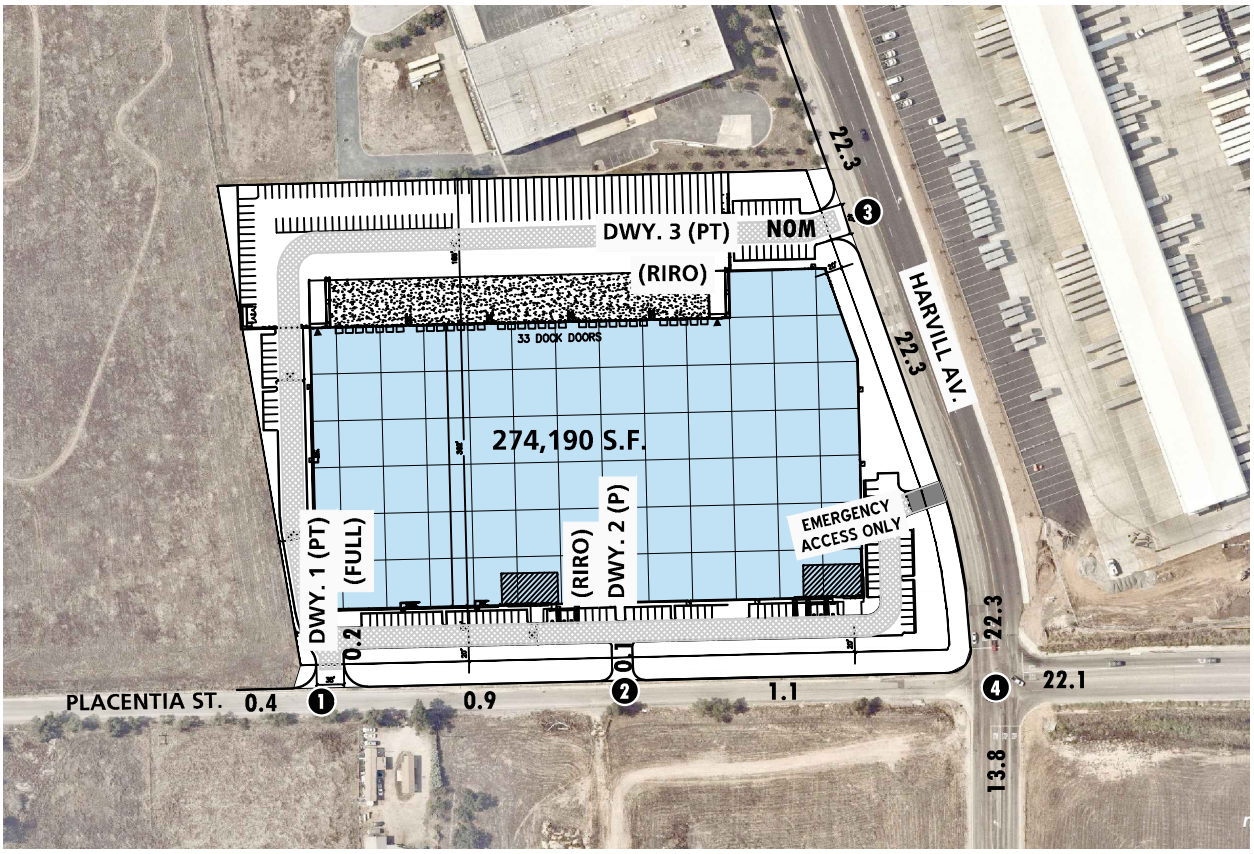
6.4 TRAFFIC SIGNAL WARRANTS ANALYSIS

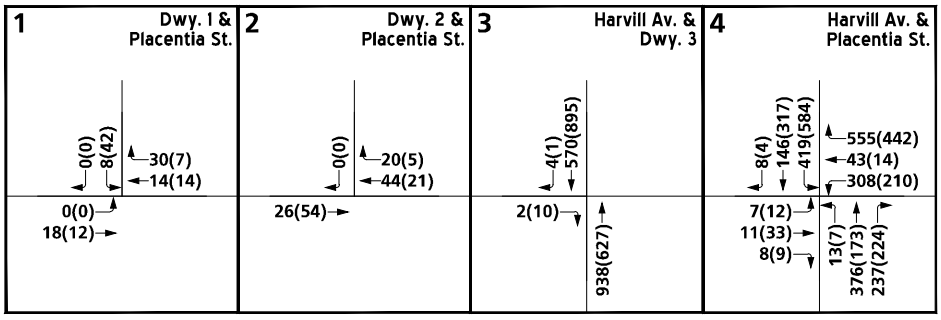
Traffic signal warrants have been performed (based on CA MUTCD) for EAP (2021) traffic conditions based on daily volumes. There are no additional study area intersections anticipated to meet planning-level ADT traffic signal warrants under EAP traffic conditions, in addition to the intersection previously warranted under Existing (2019) traffic conditions (see Appendix 6.2).

6.5 RECOMMENDED IMPROVEMENTS

All study area intersections are anticipated to operate at an acceptable LOS, therefore no improvements have been recommended for EAP (2021) traffic conditions.

EXHIBIT 6-1: EAP (2021) TRAFFIC VOLUMES (IN PCE)





LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES
10.0 = VEHICLES PER DAY (1000'S)
NOM = NOMINAL, LESS THAN 50 VEHICLES PER DAY

EXHIBIT 6-2: EAP (2021) SUMMARY OF LOS

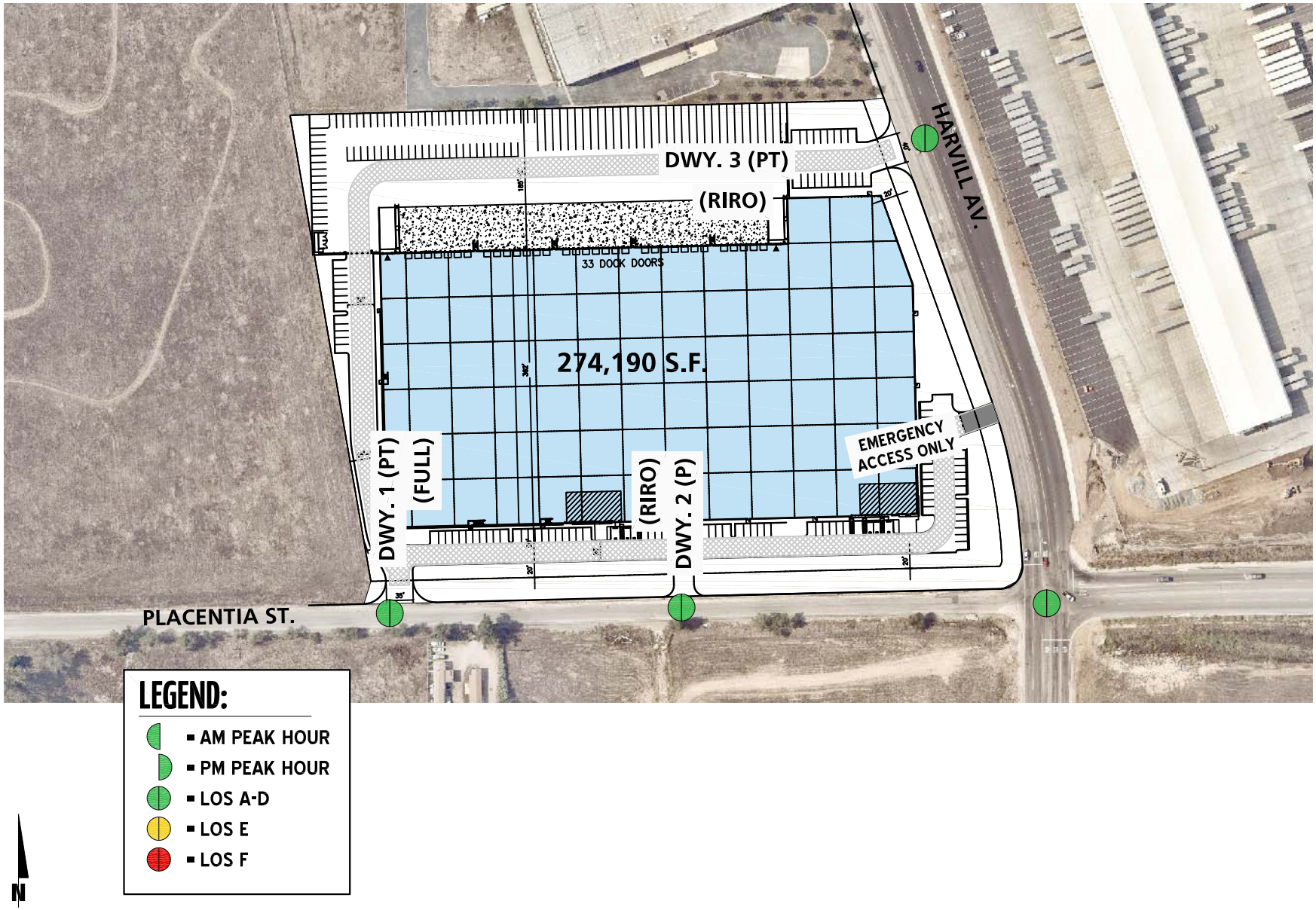


Table 6-1

Intersection Analysis for EAP (2021) Conditions

#	Intersection	Traffic Control[2]	Existing (2019)				EAP (2021)			
			Delay[1] (secs.)		Level of Service		Delay[1] (secs.)		Level of Service	
			AM	PM	AM	PM	AM	PM	AM	PM
1	Dwy. 1 & Placentia St.	**CSS**	Future Intersection				8.8	8.8	A	A
2	Dwy. 2 & Placentia St.	**CSS**	Future Intersection				0.0	0.0	A	A
3	Harvill Av. & Dwy. 3	**CSS**	Future Intersection				10.2	11.9	A	B
4	Harvill Av. & Placentia St.[3]	**TS**	15.7	13.9	C	B	36.4	45.8	D	D

[1] 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. HCM delay reported in seconds.

[2] AWS = All-Way Stop; CSS = Cross-street Stop; **CSS** = Improvement

[3] Assumes the completion of the I-215 Freeway and Placentia Avenue interchange project.

7 EAPC (2021) TRAFFIC CONDITIONS

This section discusses the methods used to develop EAPC (2021) traffic forecasts and the resulting intersection operations and traffic signal warrant analyses.

7.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for EAPC (2021) 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 EAPC (2021) conditions only (e.g., intersection and roadway improvements along the cumulative development's frontages).
- The I-215/Placentia Avenue Interchange is assumed to be in place (to be completed in 2021).

7.2 EAPC (2021) TRAFFIC VOLUME FORECASTS

To account for background traffic, other known cumulative development projects in the study area were included in addition to 4.04% of ambient growth for EAPC (2021) traffic conditions in conjunction with traffic associated with the proposed Project. Since the I-215/Placentia Avenue interchange is anticipated to be in place for 2021, the baseline traffic volumes have been adjusted to reflect the shift in travel patterns for EAPC (2021) traffic conditions. The weekday ADT and weekday AM and PM peak hour volumes which can be expected for EAPC (2021) traffic conditions are shown on Exhibit 7-1.

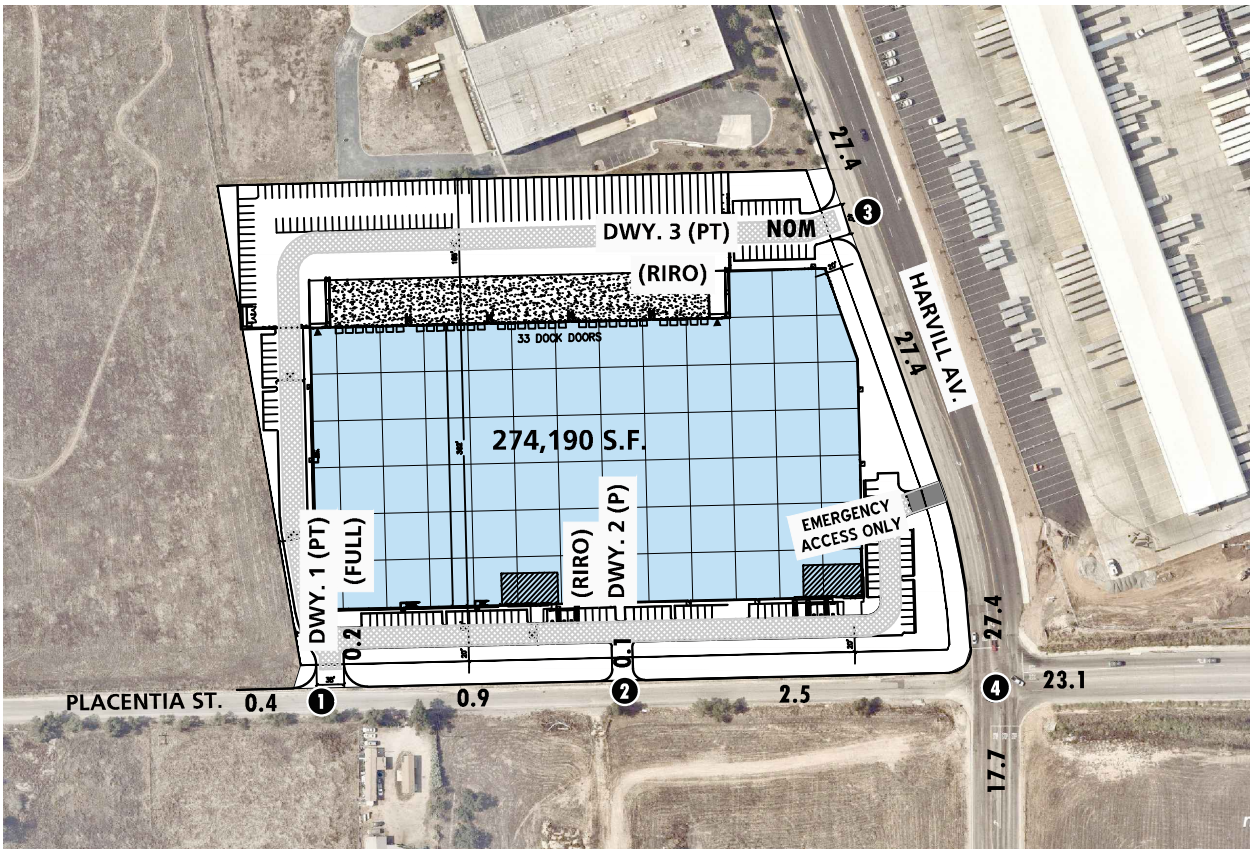
7.3 INTERSECTION OPERATIONS ANALYSIS

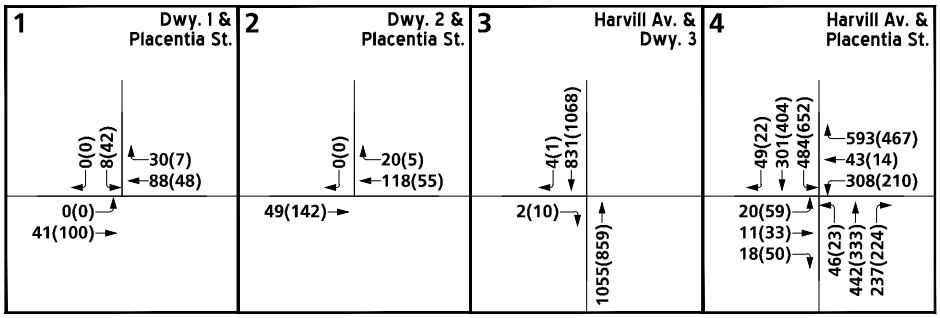
LOS calculations were conducted for the study intersections to evaluate their operations under EAPC conditions with roadway and intersection geometrics consistent with Section 7.1 *Roadway Improvements*. As shown in Table 7-1, the following study area intersection is anticipated to operate at an unacceptable LOS (i.e., LOS E or worse) during the peak hours:

- Harvill Avenue & Placentia Street (#4) – LOS E PM peak hour only

It should be noted the deficiency at this location is likely caused by the shift in travel patterns due to the I-215/Placentia Avenue interchange project as opposed to the addition of Project traffic or cumulative traffic. A summary of the peak hour intersection LOS for EAPC (2021) traffic conditions is shown on Exhibit 7-2. The intersection operations analysis worksheets for EAPC (2021) traffic conditions are included in Appendix 7.1 of this TIA.

EXHIBIT 7-1: EAPC (2021) TRAFFIC VOLUMES (IN PCE)





LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES
10.0 = VEHICLES PER DAY (1000'S)
NOM = NOMINAL, LESS THAN 50 VEHICLES PER DAY

N

EXHIBIT 7-2: EAPC (2021) SUMMARY OF LOS

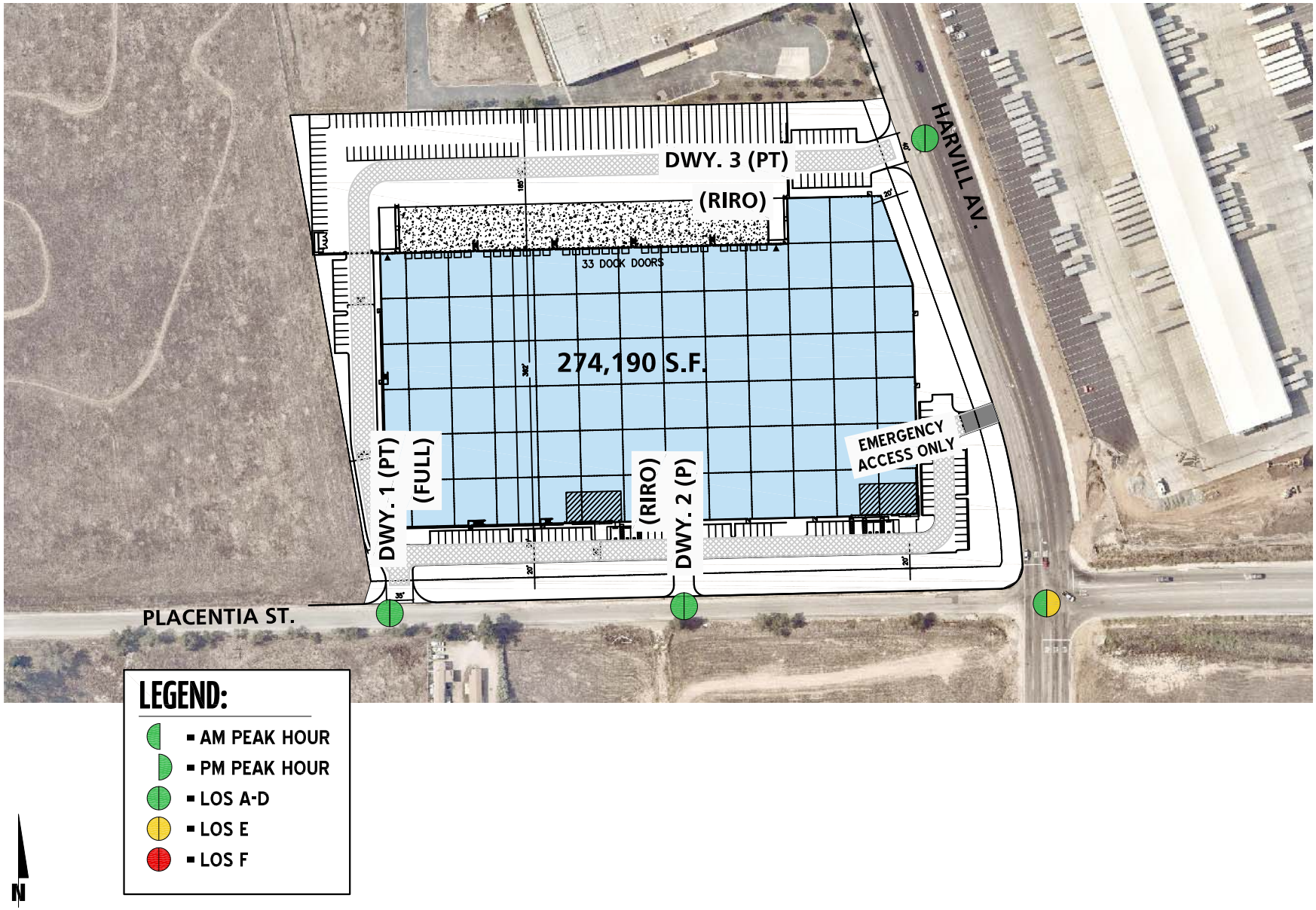


Table 7-1

Intersection Analysis for EAPC (2021) Conditions

#	Intersection	Traffic Control[2]	Delay[1] (secs.)		Level of Service	
			AM	PM	AM	PM
1	Dwy. 1 & Placentia St.	**CSS**	9.3	9.6	A	A
2	Dwy. 2 & Placentia St.	**CSS**	0.0	0.0	A	A
3	Harvill Av. & Dwy. 3	**CSS**	11.5	13.0	B	B
4	Harvill Av. & Placentia St.[3]	**TS**	47.2	**79.0**	D	**E**

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

1 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.

2 AWS = All-Way Stop; CSS = Cross-street Stop; **CSS** = Improvement

3 Assumes the completion of the I-215 Freeway and Placentia Avenue interchange project.

7.4 TRAFFIC SIGNAL WARRANTS ANALYSIS

Traffic signal warrants have been performed (based on CA MUTCD) for EAPC (2021) traffic conditions based on daily volumes. For EAPC (2021) traffic conditions, no additional study area intersections are anticipated to meet planning-level ADT traffic signal warrants in addition to the intersection previously warranted under Existing (2019) traffic conditions (see Appendix 7.2).

7.5 RECOMMENDED IMPROVEMENTS

The following improvement strategies have been recommended at the intersection that is anticipated to operate at an unacceptable LOS under EAPC (2021) conditions. The effectiveness of the recommended improvements to address EAPC (2021) traffic deficiencies are presented in Table 7-2. Improvement strategies have been recommended at the intersections to achieve acceptable LOS. The intersection operations analysis worksheets for EAPC (2021) traffic conditions, with improvements, are included in Appendix 7.3 of this TIA.

Harvill Avenue & Placentia Street (#4) – The following improvements would be necessary to improve the intersection's peak hour operations to acceptable levels:

- Install a traffic signal.
- Add a 2nd southbound left turn lane.
- Add a southbound right turn lane (Project design feature).
- Add an eastbound left turn lane (Project design feature).
- Add a westbound left turn lane.
- Modify the traffic signal to implement overlap phasing for the westbound right turn lane and protected left-turn phasing for all approaches.

The proposed traffic signal and the improvements to the westbound approach will be implemented as part of the I-215/Placentia Avenue interchange project. It is recommended that the Project coordinate with the I-215/Placentia Avenue interchange project as it relates to constructing the Project design features so that improvements at the intersection of Harvill Avenue and Placentia Street are implemented efficiently between the two projects.

Table 7-2

Intersection Analysis for EAPC (2021) Conditions With Improvements

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Delay[2] (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound						
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
4	Harvill Av. & Placentia St.																	
	Without Improvements[3]:	**TS**	1	2	0	1	2	**1**	**1**	1	0	**1**	1	**1>**	47.2	**79.0**	D	**E**
	With Improvements[4]:	**TS**	1	2	0	**2**	2	**1**	**1**	1	0	**1**	1	**1>**	38.4	28.5	D	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; **1** = Improvement; > = Right-Turn Overlap Phasing

[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

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

[4] Improvements are consistent with the Project design features and I-215 Freeway and Placentia Avenue interchange project.

[5] Improvement includes modifying the traffic signal to protect the eastbound and westbound left turns.

8 HORIZON YEAR (2040) TRAFFIC CONDITIONS

This section discusses the methods used to develop Horizon Year (2040) traffic forecasts and the resulting peak hour intersection operations and traffic signal warrant analyses.

8.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for Horizon Year (2040) 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 Horizon Year (2040) 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 Horizon Year (2040) conditions only (e.g., intersection and roadway improvements along the cumulative development's frontages).
- The I-215/Placentia Avenue Interchange is assumed to be in place (to be completed in 2021).

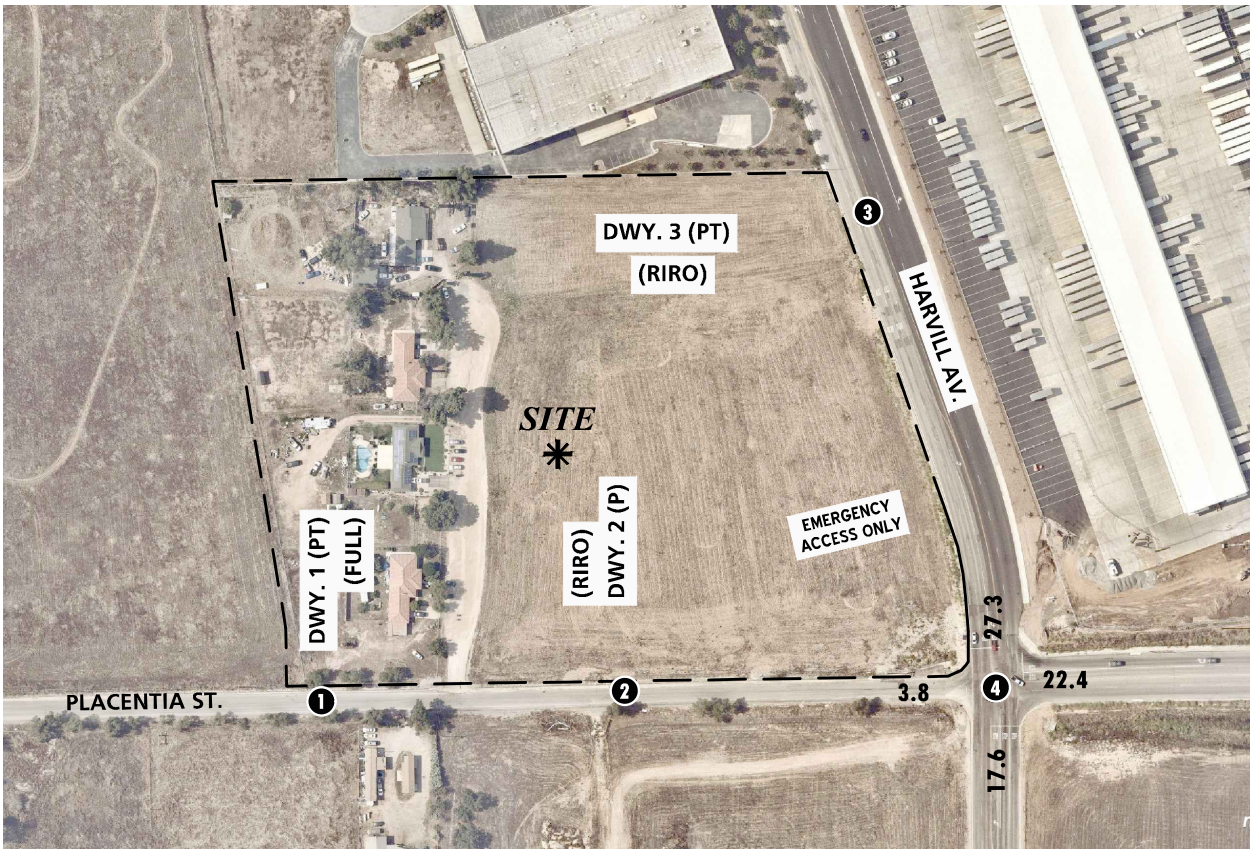
8.2 HORIZON YEAR (2040) WITHOUT PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes the refined post-processed volumes obtained from the RivTAM consistent with the currently adopted General Plan Circulation Element. The Horizon Year (2040) Without Project traffic forecasts reflect the future roadway network contemplated by the County's General Plan, which includes the future interchange at the I-215 Freeway and Placentia Avenue. The weekday ADT and weekday AM and PM peak hour volumes which can be expected for Horizon Year (2040) Without Project traffic conditions are shown on Exhibit 8-1.

8.3 HORIZON YEAR (2040) WITH PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes the refined post-processed volumes obtained from the RivTAM consistent with the currently adopted General Plan Circulation Element, plus proposed Project volumes. The weekday ADT and weekday AM and PM peak hour volumes which can be expected for Horizon Year (2040) With Project traffic conditions are shown on Exhibit 8-2.

EXHIBIT 8-1: HORIZON YEAR (2040) WITHOUT PROJECT TRAFFIC VOLUMES (IN PCE)



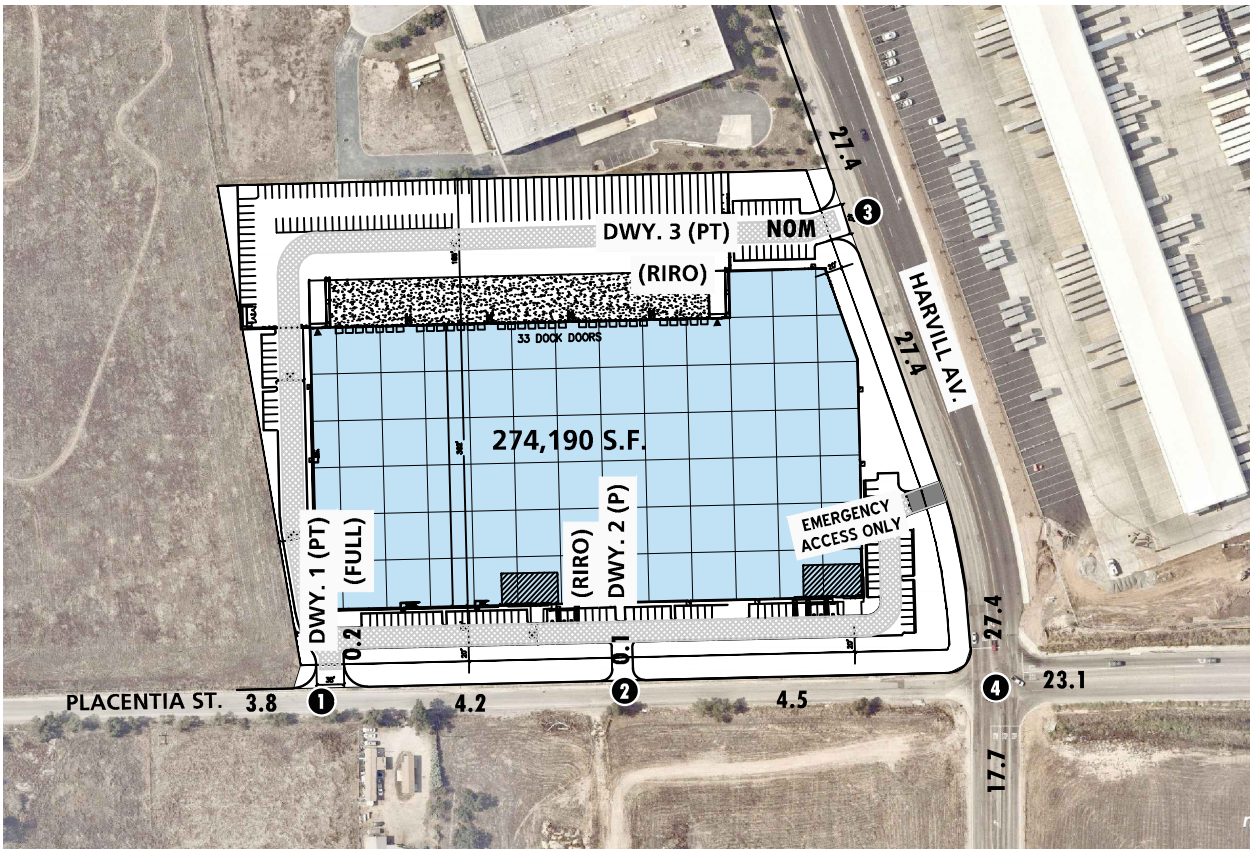
1 Dwy. 1 & Placentia St.	2 Dwy. 2 & Placentia St.	3 Harvill Av. & Dwy. 3	4 Harvill Av. & Placentia St.
0(0) 0(0) 0(0) 390(56) 0(0) 41(729)			61(21) 301(876) 482(728) 673(467) 288(13) 308(221) 18(108) 6(548) 17(73) 41(22) 653(333) 237(224)
Future Intersection	Future Intersection	Future Intersection	

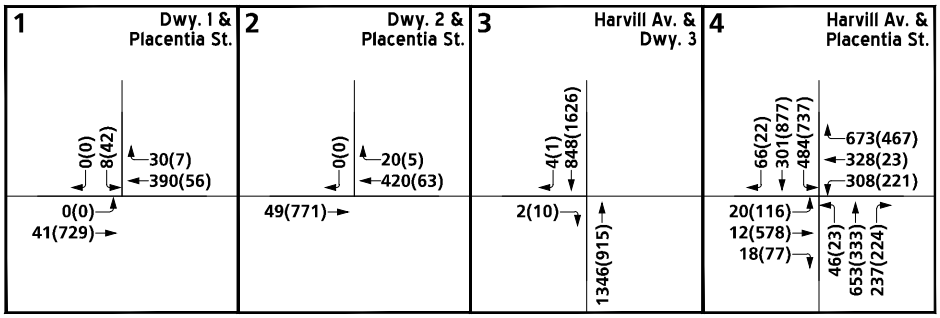
LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES
10.0 = VEHICLES PER DAY (1000'S)

N

EXHIBIT 8-2: HORIZON YEAR (2040) WITH PROJECT TRAFFIC VOLUMES (IN PCE)





LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES
10.0 = VEHICLES PER DAY (1000'S)
NOM = NOMINAL, LESS THAN 50 VEHICLES PER DAY

N

8.4 INTERSECTION OPERATIONS ANALYSIS

8.4.1 HORIZON YEAR (2040) WITHOUT PROJECT TRAFFIC CONDITIONS

Level of service calculations were conducted for the study intersections to evaluate their operations under Horizon Year (2040) Without Project traffic conditions with existing roadway and intersection geometrics consistent with those described under Section 8.1 *Roadway Improvements*. As shown in Table 8-1 and illustrated on Exhibit 8-3, the following study area intersection is anticipated to operate at an unacceptable LOS under Horizon Year (2040) Without Project traffic conditions:

- Harvill Avenue & Placentia Street (#4) – LOS F AM and PM peak hours

The intersection operations analysis worksheets for Horizon Year (2040) Without Project traffic conditions are included in Appendix 8.1 of this report.

8.4.2 HORIZON YEAR (2040) WITH PROJECT TRAFFIC CONDITIONS

As shown in Table 8-1 and illustrated on Exhibit 8-4, there are no additional intersections anticipated to result in an unacceptable LOS in addition to the intersections previously identified under Horizon Year (2040) Without Project traffic conditions with the addition of Project traffic. The intersection operations analysis worksheets for Horizon Year (2040) With Project traffic conditions are included in Appendix 8.2 of this report.

8.5 TRAFFIC SIGNAL WARRANTS ANALYSIS

8.5.1 HORIZON YEAR (2040) WITHOUT PROJECT TRAFFIC CONDITIONS

The only existing study area intersection currently meets a traffic signal warrant under Existing (2019) traffic conditions. Since there are no other unsignalized intersections under Horizon Year (2040) Without Project traffic conditions, no traffic signal warrant analysis has been performed for this analysis scenario.

8.5.2 HORIZON YEAR (2040) WITH PROJECT TRAFFIC CONDITIONS

Traffic signal warrants have been performed (based on CA MUTCD) for Horizon Year (2040) With Project traffic conditions based on daily volumes. No additional intersections are anticipated to meet traffic signal warrants under Horizon Year (2040) With Project traffic conditions (see Appendix 8.3) in addition to the intersections previously warranted under Existing (2019) traffic conditions.

Table 8-1

Intersection Analysis for Horizon Year (2040) Conditions

#	Intersection	Traffic Control[2]	2040 Without Project				2040 With Project			
			Delay (secs.)[1]		LOS		Delay (secs.)[1]		LOS[2]	
			AM	PM	AM	PM	AM	PM	AM	PM
1	Dwy. 1 & Placentia St.	**CSS**	Future Intersection				11.7	17.7	B	C
2	Dwy. 2 & Placentia St.	**CSS**	Future Intersection				0.0	0.0	A	A
3	Harvill Av. & Dwy. 3	**CSS**	Future Intersection				11.6	17.8	B	C
4	Harvill Av. & Placentia St.[3]	**TS**	**81.1**	**>200.0**	**F**	**F**	**85.3**	**185.1**	**F**	**F**

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

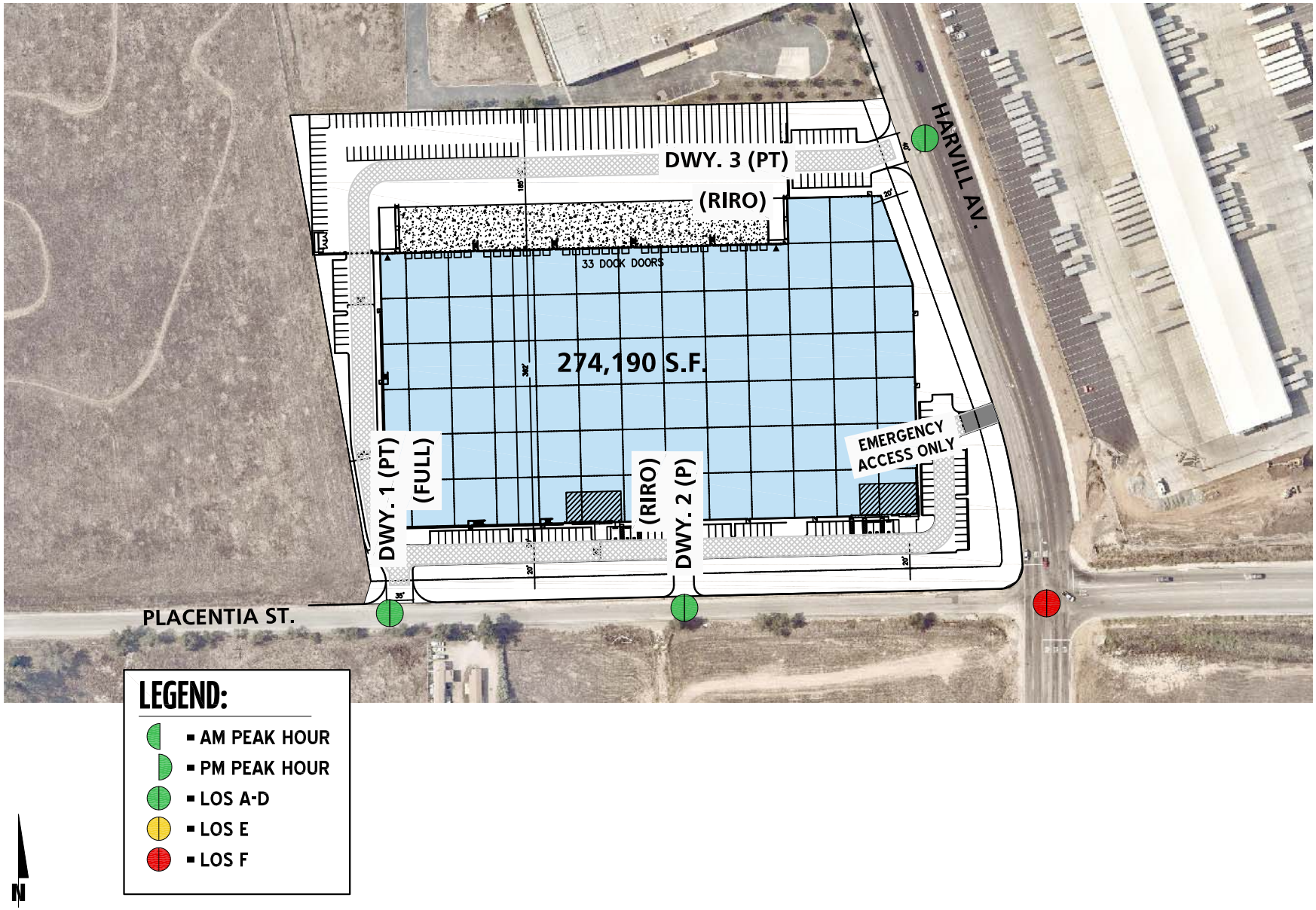
[1] Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all-way stop control. For intersections with cross street-stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[2] AWS = All-Way Stop; CSS = Cross-street Stop; **CSS** = Improvement

[3] Assumes the completion of the I-215 Freeway and Placentia Avenue interchange project.

EXHIBIT 8-3: HORIZON YEAR (2040) WITHOUT PROJECT SUMMARY OF LOS

EXHIBIT 8-4: HORIZON YEAR (2040) WITH PROJECT SUMMARY OF LOS



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URBAN CROSSROADS

8.6 RECOMMENDED IMPROVEMENTS

8.6.1 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES AT INTERSECTIONS

Improvement strategies have been recommended at the intersection that has been identified as deficient under Horizon Year (2040) traffic conditions in an effort to achieve an acceptable LOS. The effectiveness of the recommended improvement strategies to address Horizon Year (2040) traffic deficiencies are presented in Table 8-2 and are described below.

Harvill Avenue & Placentia Street (#4):

- Install a traffic signal.
- Add a 2nd northbound left turn lane.
- Add a northbound right turn lane.
- Add a 2nd southbound left turn lane.
- Add a southbound right turn lane (Project design feature).
- Add an eastbound left turn lane (Project design feature).
- Add a 2nd eastbound through lane.
- Add an eastbound right turn lane.
- Add dual westbound left turn lanes.
- Add a 2nd westbound through lane.
- Modify the traffic signal to implement overlap phasing for the westbound right turn lane and protected left-turn phasing for all approaches.

The proposed traffic signal and the improvements to the westbound approach will be implemented as part of the I-215/Placentia Avenue interchange project. It is recommended that the Project coordinate with the I-215/Placentia Avenue interchange project as it relates to constructing the Project design features so that improvements at the intersection of Harvill Avenue and Placentia Street are implemented efficiently between the two projects.

Worksheets for Horizon Year (2040) Without Project and With Project traffic conditions, with improvements, HCM calculation worksheets are provided in Appendices 8.4 and 8.5, respectively.

The Project Applicant shall participate in the funding of off-site improvements, including traffic signals, that are needed to serve future traffic conditions through the payment of Western Riverside County TUMF and DIF fee programs. 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.

Table 8-2

Intersection Analysis for Horizon Year (2040) Conditions With Improvements

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Delay[2] (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound						
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
4	Harvill Av. & Placentia St.																	
	Without Project:	**TS**	**2**	2	**1**	**2**	2	**1**	**1**	**2**	**1**	**2**	**2**	**1>**	38.8	20.9	D	C
	With Project:	**TS**	**2**	2	**1**	**2**	2	**1**	**1**	**2**	**1**	**2**	**2**	**1>**	38.9	33.5	D	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; **1** = Improvement; > = Right-Turn Overlap Phasing

[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

[3] TS = Traffic Signal; **TS** = Improvement

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9 LOCAL AND REGIONAL FUNDING MECHANISMS

Transportation improvements within the County of Riverside are funded through a combination of improvements constructed by the Project, development impact fee programs or fair share contributions. Fee programs applicable to the Project are described below.

9.1 RIVERSIDE COUNTY TRANSPORTATION UNIFORM MITIGATION FEE (TUMF)

The TUMF program is administered by the WRCOG based upon a regional Nexus Study most recently updated in 2016 to address major changes in right of way acquisition and improvement cost factors. (11) This regional program was put into place to ensure that development pays its fair share and that funding is in place for construction of facilities needed to maintain the requisite level of service and critical to mobility in the region. TUMF is a truly regional mitigation fee program and is imposed and implemented in every jurisdiction in Western Riverside County.

9.2 COUNTY OF RIVERSIDE DEVELOPMENT IMPACT FEE (DIF) PROGRAM

The Project is located within the County's Mead Valley Area Plan and therefore will be subject to County of Riverside DIF in an effort by the County to address development throughout its unincorporated area. The DIF program consists of two separate transportation components: the Roads, Bridges and Major Improvements component and the Traffic Signals component. Eligible facilities for funding by the County DIF program are identified on the County's Public Needs List, which currently extends through the year 2020. (12) A comprehensive review of the DIF program is now planned in order to update the nexus study. This will result in development of a revised "needs list" extending the program time horizon from 2010 to 2030.

The cost of signalizing DIF network intersections is identified under the Traffic Signals component of the DIF program. County staff generally defines DIF eligible intersections as those consisting of two intersecting general plan roadways. If the intersection meets this requirement, it is potentially eligible for up to $235,000 of credit, which is subject to negotiations with the County.

9.3 MEASURE A

Measure A, Riverside County's half-cent sales tax for transportation, was adopted by voters in 1988 and extended in 2002. It will continue to fund transportation improvements through 2039. Measure A funds a wide variety of transportation projects and services throughout the County. RCTC is responsible for administering the program. Measure A dollars are spent in accordance with a voter-approved expenditure plan that was adopted as part of the 1988 election.

9.4 FAIR SHARE CONTRIBUTION

Project improvement 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 9-1 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 9-1

Project Fair Share Calculations

#	Intersection		Existing	Project Only	Horizon Year (2040) With Project	Net New Traffic	Project % of New Traffic
4	Harvill Av. & Placentia St.						
		AM:	1,180	61	3,146	1,966	**3.10%**
		PM:	1,076	64	3,697	2,621	2.44%

BOLD = Denotes highest fair share percentage.

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10 REFERENCES

1. **Riverside County Transportation Department.** *Traffic Impact Analysis Preparation Guide.* County of Riverside : s.n., April 2008.
2. **Institute of Transportationi Engineers (ITE).** *Trip Generation Manual.* 10th Edition. 2017.
3. **Western Riverside Council of Governments.** *TUMF Nexus Study, 2016 Program Update.* July 2017.
4. **California Department of Transportation.** *Guide for the Preparation of Traffic Impact Studies.* December 2002.
5. **Transportation Research Board.** *Highway Capacity Manual (HCM).* 6th Edition. s.l. : National Academy of Sciences, 2016.
6. **California Department of Transportation.** California Manual on Uniform Traffic Control Devices (MUTCD). [book auth.] California Department of Transportation. *California Manual on Uniform Traffic Control Devices (CAMUTCD).* 2017.
7. **San Bernardino Associated Governments.** *Congestion Management Program for County of San Bernardino.* County of San Bernardino : s.n., Updated 2016.
8. **South Coast Air Quality Managment District (SCAQMD).** *Warehouse Truck Trip Study Data Results and Usage.* June 2014.
9. **City of Fontana.** *Truck Trip Generation Study.* Fontana : s.n., August 2003.
10. **Southern California Association of Governments.** *2016 Regional Transportation Plan / Sustainable Communities Strategy.* April 2016.
11. **Western Riverside Council of Governments.** *TUMF Nexus Study, 2016 Program Update.* July 2017.
12. **Willdan Financial Services.** *County of Riverside Development Impact Fee Study Update.* County of Riverside : s.n., 2013.

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