



Ramona Gateway Commerce Center

TRAFFIC ANALYSIS CITY OF PERRIS

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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
EAC	Existing plus Ambient Growth plus Cumulative
EAPC	Existing plus Ambient Growth plus Project plus Cumulative
HCM	Highway Capacity Manual
ITE	Institute of Transportation Engineers
LOS	Level of Service
N/A	Not Applicable
NP	No Project (or Without Project)
NPRBBD	North Perris Road and Bridge Benefit District
PCE	Passenger Car Equivalents
PHF	Peak Hour Factor
Project	Ramona Gateway Commerce Center
PVCC SP	Perris Valley Commerce Center Specific Plan
RTA	Riverside Transit Authority
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
sf	Square Feet
TA	Traffic Analysis
TSF	Thousand Square Feet
TUMF	Transportation Uniform Mitigation Fee
WP	With Project
WRCOG	Western Riverside Council of Governments
V/C	Volume to Capacity

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1 INTRODUCTION

This report presents the results of the focused traffic analysis (TA) for the proposed Ramona Gateway Commerce Center (“Project”), which is located south of Ramona Expressway and between Nevada Avenue and Webster Avenue within the City of Perris’ *Perris Valley Commerce Center Specific Plan* (PVCC SP) as shown on Exhibit 1-1.

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

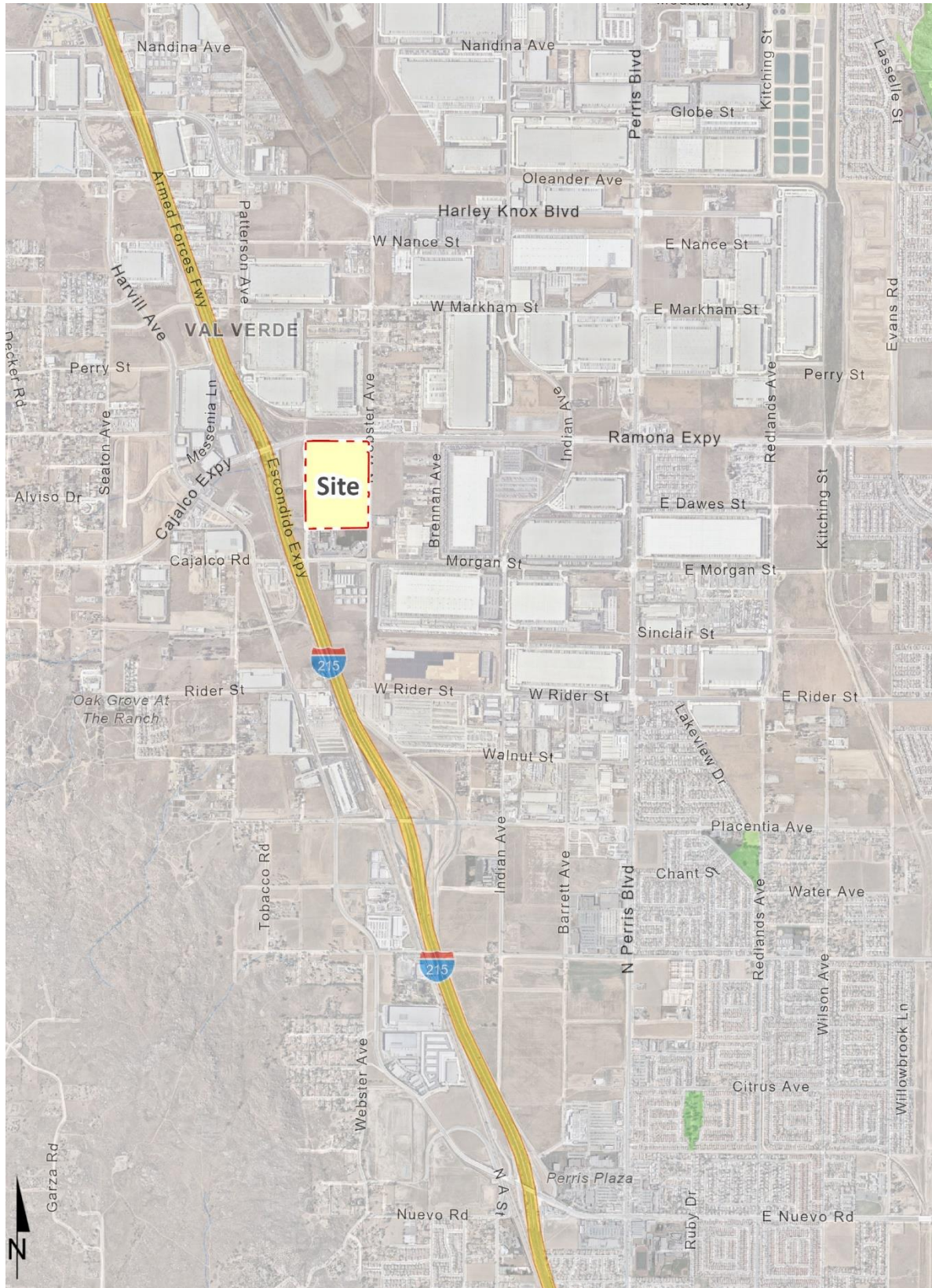
1.1 SUMMARY OF FINDINGS

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

- Construct driveways on Nevada Avenue with stop controls for the westbound traffic (Driveways 1 through 4). Construct Driveway 5 as a signalized intersection with full access. Construct Driveway 6 with right-in access only and stop control for the northbound traffic. Construct Driveways on Webster Avenue with stop controls for the eastbound traffic (Driveways 7 and 8).
- Project to construct Nevada Avenue at its ultimate half-section as a Collector (66-foot right-of-way, 44-foot curb-to-curb) between Ramona Expressway to the southerly Project boundary consistent with the PVCC SP and the City of Perris General Plan Circulation Element. New traffic signal is proposed at Nevada Avenue and Ramona Expressway.
- Webster Avenue is currently constructed to its ultimate half-section as a Secondary Arterial (94-foot right-of-way, 64-foot curb-to-curb) between Ramona Expressway and the southerly Project boundary consistent with the PVCC SP and the City of Perris General Plan Circulation Element.
- Project to construct Ramona Expressway at its ultimate half-section as an Expressway (184-foot right-of-way, 134-foot curb-to-curb) between Nevada Street and Webster Avenue consistent with the PVCC SP and the City of Perris General Plan Circulation Element. New traffic signal is proposed at Driveway 5 on Ramona Expressway.
- The Project would implement a Class I Multipurpose Trail and landscape improvements along the entire perimeter of the site adjacent to the aforementioned roadways.

Additional details and intersection lane geometrics are provided in Section 1.7 *On-Site Roadway Improvements* and Section 1.8 *Site Access Improvements* of this report. As provided in the City of Perris’s VMT Scoping Form for Land Use Projects, the Project’s VMT impact (for the industrial component) is found to have a significant and unavoidable VMT impact, as described in Section 1.12 *VMT Analysis* of this report.

EXHIBIT 1-1: LOCATION MAP



1.2 PROJECT OVERVIEW

The Project is to consist of a 950,224-square-foot (sf) warehouse building which will be evaluated assuming 902,713 square feet of high-cube fulfillment center warehouse use (95% of the total square footage) and 47,511 square feet of high-cube cold storage use (5% of the total square footage). The Project also includes a retail component that fronts Ramona Expressway, which will include 16,500 square feet of fast-food restaurant use with drive-through window, 10,200 square feet of fast-food restaurant without drive-through window, a 2,400-square-foot coffee/donut shop with drive-through, a 3,515-square-foot automated car wash with 1 tunnel, and 16-vehicle fueling position gas station (with a 4,600-square-foot convenience store). The Project is anticipated to be constructed in one phase by the middle of 2024. A preliminary site plan (consistent with that submitted to the City as part of the application process), of which the traffic study will be based on, is shown on Exhibit 1-2. The above paragraph constitutes the definition of the Project (“Project”). The following describes the access proposed for the site:

- Driveway 1 on Nevada Avenue – full access for passenger cars only to the industrial component
- Driveway 2 on Nevada Avenue – full access for all trucks to the industrial component
- Driveway 3 on Nevada Avenue – full access for all trucks to the industrial component
- Driveway 4 on Nevada Avenue – full access to the retail component
- Driveway 5 on Ramona Expressway – full access to the retail component (proposed to be signalized)
- Driveway 6 on Ramona Expressway – right-in access only to the retail component
- Driveway 7 on Webster Avenue – full access to the retail component
- Driveway 8 on Webster Avenue – full access for passenger cars only to the industrial component

Note that Driveway 2 and Driveway 3 associated with the industrial component are only to be utilized by trucks. The parking area shown along the north side of the industrial building is intended to be utilized by maintenance and service vehicles (not by employees). The parking area on the south side of the industrial building access by Driveways 1 and 8 are for employees and visitor passenger vehicles only. Signals would be installed along Ramona Expressway at Nevada Avenue and Driveway 5. These signals along with the existing signal at Webster Avenue will be synchronized to optimize traffic flow along Ramona Expressway.

There are two access alternatives for the proposed retail component that are proposed to be evaluated as part of this TA. The first alternative access requested by the City has been evaluated for the proposed retail component with the following assumptions based on the access shown on Exhibit 1-3 (all other access to the industrial component is consistent with that described above):

- Driveway 4 on Nevada Avenue – right-in/right-out access only to the retail component
- Driveway 6 on Ramona Expressway – will not exist
- Driveway 7 on Webster Avenue – right-in/right-out access only to the retail component

EXHIBIT 1-2: PRELIMINARY SITE PLAN

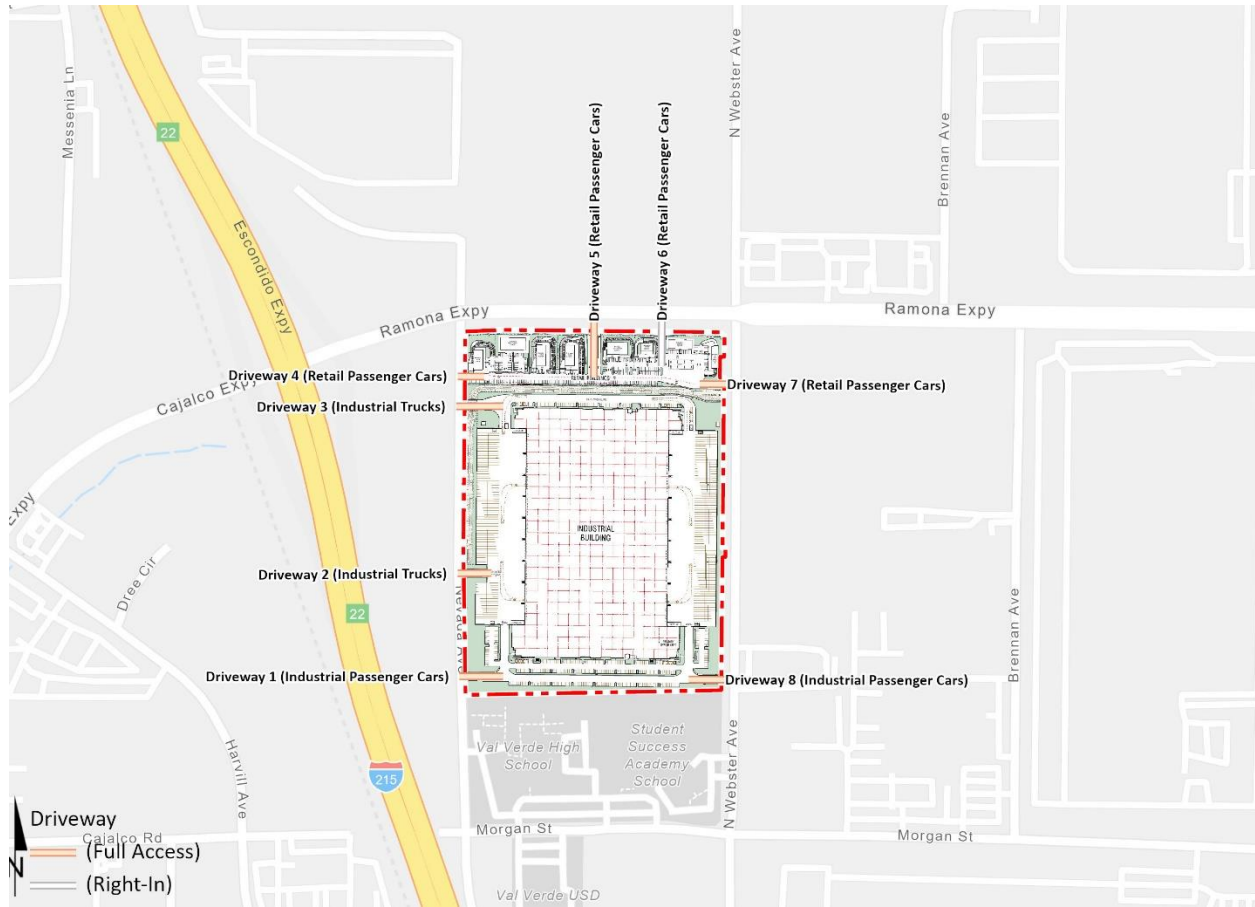


EXHIBIT 1-3: RETAIL COMPONENT ALTERNATIVE ACCESS 1

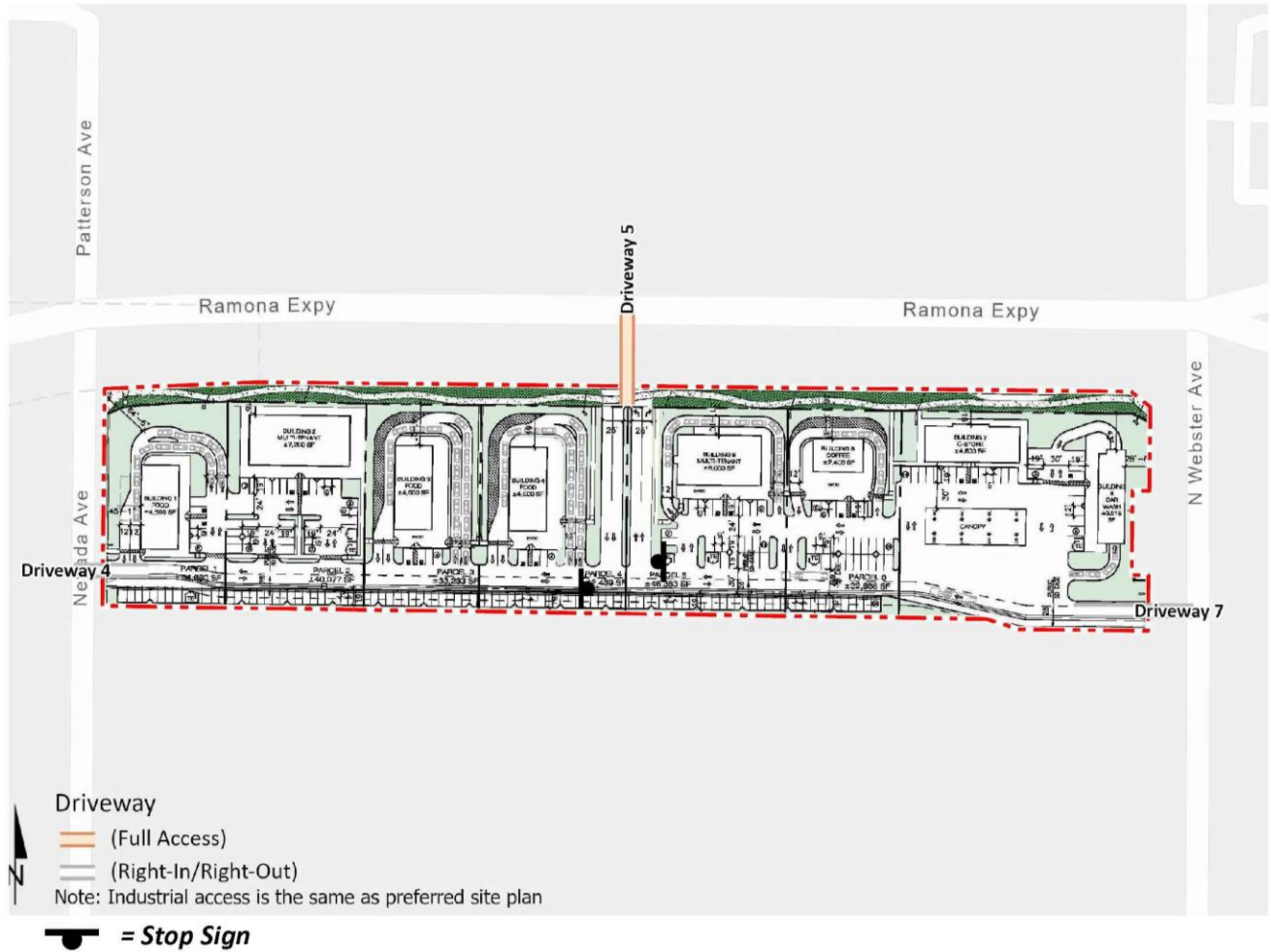
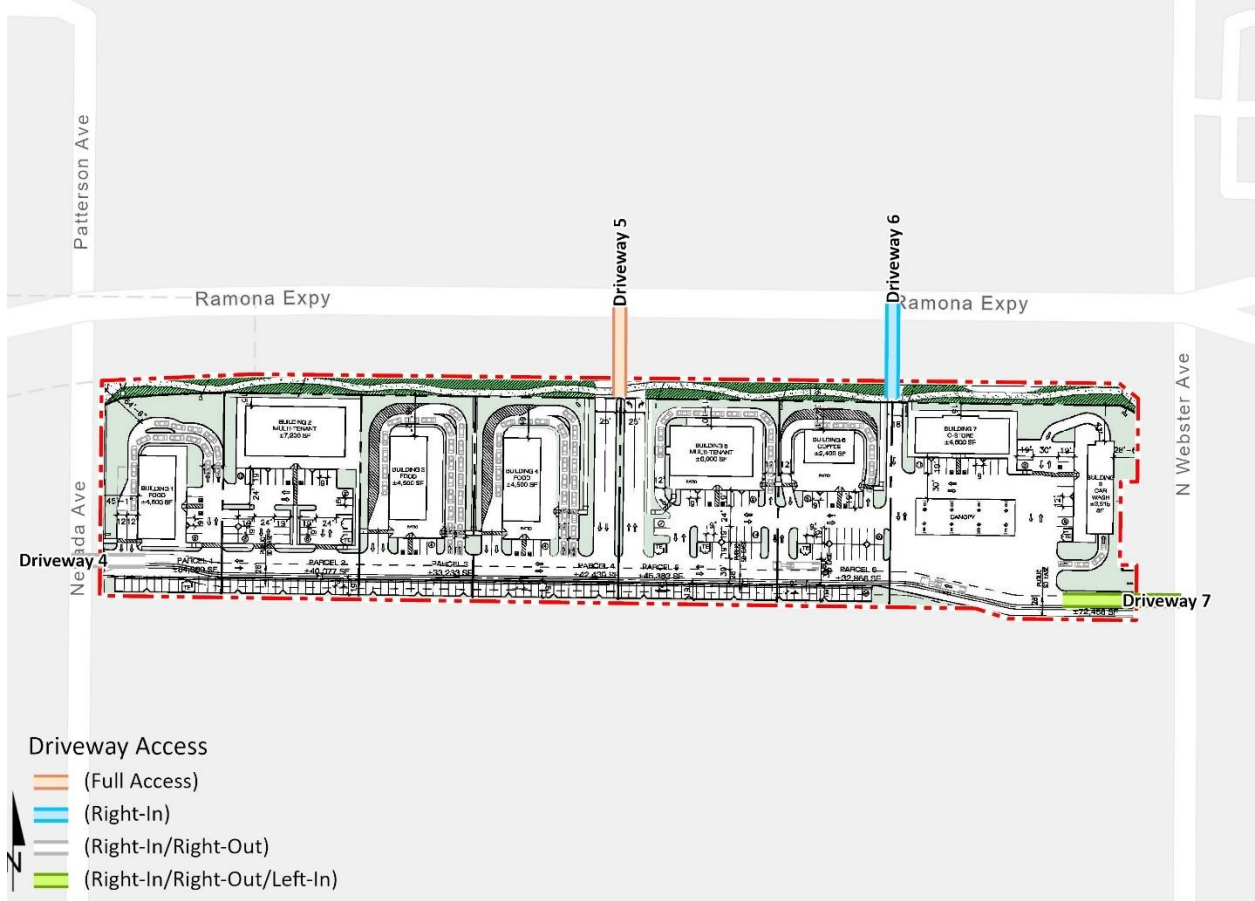


EXHIBIT 1-4: RETAIL COMPONENT ALTERNATIVE ACCESS 2



The second access alternative will assume the following access assumptions as shown on Exhibit 1-4 (all other access to the industrial component will remain the same as described previously):

- Driveway 4 on Nevada Avenue – right-in/right-out access only to the retail component
- Driveway 6 on Ramona Expressway – right-in access only to the retail component
- Driveway 7 on Webster Avenue – right-in/right-out/left-in access only to the retail component

Regional access to the Project site is provided via the I-215 Freeway and Ramona Expressway and future Placentia Interchange (anticipated completion of the interchange per the Riverside County Transportation Commission or RCTC is Summer 2022). Note there is no truck traffic permitted on Ramona Expressway within the City of Perris. As such, all project-related trucks are anticipated to utilize the Placentia Avenue interchange to access the I-215 Freeway via Nevada Avenue/I-215 E. Frontage Road.

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, 11th Edition, 2021. (2) The Project is estimated to generate 8,372 two-way trip-ends per day on a typical weekday with approximately 869 AM peak hour trips and 671 PM peak hour trips (actual vehicles). The assumptions and methods used to estimate the Project’s trip generation characteristics are discussed in greater detail in Section 4.1 *Project Trip Generation* of this report.

1.3 ANALYSIS SCENARIOS

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

- Existing (2022)
- Existing Plus Project (E+P)
- Existing Plus Ambient Growth Plus Cumulative Projects (EAC) (2024)
- Existing Plus Ambient Growth Plus Project Plus Cumulative Projects (EAPC) (2024)
- Horizon Year (2045) Without Project
- Horizon Year (2045) With Project

1.3.1 EXISTING (2022) CONDITIONS

Information for Existing (2022) conditions is disclosed to represent the baseline traffic conditions as they existed at the time this report was prepared. Traffic counts were conducted in January 2022, when local schools were in session (with in-person instruction) and operating on a typical bell schedule. Based on vehicle classification, vehicles were converted to passenger-car-equivalent (PCE) due to the presence of heavy trucks within the study area.

1.3.2 EXISTING PLUS PROJECT CONDITIONS

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

1.3.3 EXISTING PLUS AMBIENT GROWTH PLUS PROJECT PLUS CUMULATIVE (2024) CONDITIONS

To account for growth in traffic between Existing (2022) conditions and the Project Opening Year (2024), a traffic growth rate of 6.09% was assumed (3.0% compounded annually over 2 years). The 3.0 percent annual growth rate (compounded annually) is intended to capture non-specific ambient traffic growth. Conservatively, the TA estimates of area traffic growth then adds traffic generated by other known or probable related projects. These related projects are at least in part already accounted for in the assumed 6.09% total ambient growth in traffic noted above; and in some instances, these related projects would likely not be implemented and operational within the 2024 Opening Year time frame assumed for the Project. The resulting traffic growth rate utilized in the TA (6.09% ambient growth + traffic generated by related projects) would therefore tend to overstate rather than understate background cumulative traffic deficiencies under 2024 conditions.

1.3.4 HORIZON YEAR (2045) CONDITIONS

Traffic projections for Horizon Year (2045) conditions were derived from the latest County of Riverside Transportation Analysis Model (RIVCOM) using accepted procedures for model forecast refinement and smoothing. 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 City Development Impact Fee (DIF) programs, can accommodate the long-range cumulative traffic at the target level of service (LOS) identified in the City of Perris (lead agency) General Plan. (3) Each of these regional transportation fee programs are discussed in more detail in Section 8 *Local and Regional Funding Mechanisms*.

1.4 STUDY AREA

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

1.4.1 INTERSECTIONS

The 18 study area intersections shown on Exhibit 1-5 and listed in Table 1-1 were selected for this TA based on the City’s Traffic Study Guidelines and in consultation with City of Perris staff. The City requires analysis of intersections where the Project would contribute 50 or more peak hour trips. Based on the location of the Project site and the trip distribution patterns, the Project is anticipated to contribute more than 50 peak hour trips to all study area intersections and to the State Highway System. The Project trip generation, distribution, and volumes are further explained in Chapter 4 *Project Future Traffic* of this TA.

TABLE 1-1: INTERSECTION ANALYSIS LOCATIONS

ID	Intersection Location	Jurisdiction	CMP?
1	I-215 SB Ramps & Ramona Exwy.	Caltrans, County of Riverside	No
2	I-215 NB Ramps & Ramona Exwy.	Caltrans, County of Riverside	No
3	Nevada Av. & Ramona Exwy.	County of Riverside, City of Perris	No
4	Nevada Av. & Driveway 4	City of Perris	No
5	Nevada Av. & Driveway 3	City of Perris	No
6	Nevada Av. & Driveway 2	City of Perris	No
7	Nevada Av. & Driveway 1	City of Perris	No
8	Nevada Av. & Morgan St.	City of Perris	No
9	Driveway 5 & Ramona Exwy.	City of Perris	No
10	Driveway 6 & Ramona Exwy.	City of Perris	No
11	Webster Av. & Ramona Exwy.	City of Perris	No
12	Webster Av. & Driveway 7	City of Perris	No
13	Webster Av. & Driveway 8	City of Perris	No
14	Webster Av. & Morgan St.	City of Perris	No
15	Indian Av. & Ramona Exwy.	City of Perris	No
16	Indian Av. & Morgan St.	City of Perris	No
17	Perris Bl. & Ramona Exwy.	City of Perris	No
18	Perris Bl. & Morgan St.	City of Perris	No

* Note: CMP = Congestion Management Program

The intent of a Congestion Management Program (CMP) is to more directly link land use, transportation, and air quality, thereby prompting reasonable growth management programs that will effectively utilize new transportation funds, alleviate traffic congestion and related deficiencies, and improve air quality. Counties within California have developed CMPs with varying methods and strategies to meet the intent of the CMP legislation. None of the study area intersections are identified as CMP facilities in the County of Riverside CMP. (4)

EXHIBIT 1-5: STUDY AREA



1.5 DEFICIENCIES

This section provides a summary of deficiencies by analysis scenario. Section 2 *Methodologies* provides information on the methodologies used in the analysis and Section 5 *E+P Traffic Conditions*, Section 6 *EAC and EAPC (2024) Traffic Conditions*, and Section 7 *Horizon Year (2045) Traffic Conditions* includes the detailed analyses.

1.5.1 E+P CONDITIONS

Consistent with Existing (2022) traffic conditions, with roadway and intersection improvements to be implemented as part of the proposed Project, no study area intersections are anticipated to operate at a deficient LOS (i.e., LOS E or worse) with the addition of Project traffic for E+P traffic conditions.

1.5.2 EAC AND EAPC (2024) CONDITIONS

The following study area intersections are anticipated to operate at a deficient LOS (i.e., LOS E or worse) for EAC (2024) traffic conditions:

- I-215 SB Ramps & Ramona Exwy. (#1) – LOS F PM peak hour only
- I-215 NB Ramps & Ramona Exwy. (#2) – LOS F AM peak hour; LOS E PM peak hour
- Nevada Av. & Ramona Exwy. (#3) – LOS F PM peak hour only

The addition of Project traffic is not anticipated to result in any new deficient intersections as compared to EAC (2024) traffic conditions, however, the Project contributes to the cumulative deficiencies listed above. The peak hour intersection operations at Nevada Avenue and Ramona Expressway are anticipated to improve with the addition of Project traffic due to the anticipated Project design features (site adjacent roadway and intersection improvements).

1.5.1 HORIZON YEAR (2045) CONDITIONS

The following study area intersections are anticipated to operate at a deficient LOS (i.e., LOS E or worse) for Horizon Year (2045) Without Project traffic conditions:

- I-215 SB Ramps & Ramona Exwy. (#1) – LOS F AM and PM peak hours
- I-215 NB Ramps & Ramona Exwy. (#2) – LOS F AM and PM peak hours
- Nevada Av. & Ramona Exwy. (#3) – LOS F AM and PM peak hours
- Webster Av. & Ramona Exwy. (#11) – LOS F AM and PM peak hours
- Indian Av. & Ramona Exwy. (#15) – LOS F PM peak hour only
- Perris Bl. & Ramona Exwy. (#17) – LOS F AM and PM peak hours
- Perris Bl. & Morgan St. (#18) – LOS F PM peak hour only

The addition of Project traffic is anticipated to result in a deficiency at the following intersection in addition to the locations identified under Horizon Year (2045) Without Project traffic conditions:

- Driveway 5 & Ramona Exwy. (#9) – LOS F AM and PM peak hours

In addition, the Project contributes to the cumulative deficiencies listed above under Horizon Year (2045) Without Project traffic conditions.

1.6 RECOMMENDATIONS

This section provides a summary of deficiencies and recommended improvements. Section 2 *Methodologies* provides information on the methodologies used in the analyses and Section 5 *E+P Traffic Analysis*, Section 6 *EAC and EAPC (2024) Traffic Analysis* and Section 7 *Horizon Year (2045) Traffic Analysis* include the detailed analyses. Each development project within the PVCC SP planning area is required to incorporate applicable mitigation from the PVCCSP EIR. The relevant traffic mitigation measures from the PVCCSP EIR are identified in Section 1.6.1.

1.6.1 PVCCSP EIR TRAFFIC MITIGATION MEASURES

Following are the PVCCSP EIR mitigation measures that are applicable to the Project.

- MM Trans 1** Future implementing development projects shall construct on-site roadway improvements pursuant to the general alignments and right-of-way sections set forth in the PVCC Circulation Plan, except where said improvements have previously been constructed.
- MM Trans 2** Sight distance at the project entrance roadway of each implementing development project shall be reviewed with respect to standard City of Perris sight distance standards at the time of preparation of final grading, landscape, and street improvement plans.
- MM Trans 3** Each implementing development project shall participate in the phased construction of off-site traffic signals through payment of that project's fair share of traffic signal mitigation fees and the cost of other off-site improvements through payment of fair share mitigation fees which include TUMF (Transportation Uniform Mitigation Fee), DIF (Development Impact Fee), and the NPRBBD (North Perris Road and Bridge Benefit District). The fees shall be collected and utilized as needed by the City of Perris to construct the improvements necessary to maintain the required level of service and build or improve roads to their build-out level.
- MM Trans 4** Prior to the approval of individual implementing development projects, the Riverside Transit Agency (RTA) shall be contacted to determine if the RTA has plans for the future provision of bus routing in the project area that would require bus stops at the project access points. If the RTA has future plans for the establishment of a bus route that will serve the project area, road improvements adjacent to the project site shall be designed to accommodate future bus turnouts at locations established through consultation with the RTA. RTA shall be responsible for the construction and maintenance of the bus stop facilities. The area set aside for bus turnouts shall conform to RTA design standards, including the design of the contact between sidewalk and curb and gutter at bus stops and the use of ADA-compliant paths to the major building entrances in the project.

This MM has been addressed with the implementation of the bus stop at Webster Avenue and Ramona Expressway.

MM Trans 5 Bike racks shall be installed in all parking lots in compliance with City of Perris standards.

MM Trans 7 Implementing project-level traffic studies shall be required for all subsequent implementing development proposals within the boundaries of the PVCC as approved by the City of Perris Engineering Department. These subsequent traffic studies shall identify specific project deficiencies and needed roadway improvements to be constructed in conjunction with each implementing development project. All intersection spacing for individual tracts or maps shall conform to the minimum City intersection spacing standards. All turn pocket lengths shall conform at least to the minimum City turn pocket length standards. If any of the proposed improvements are found to be infeasible, the implementing development project applicant would be required to provide alternative feasible improvements to achieve levels of service satisfactory to the City.

MM Trans 8 Proposed mitigation measures resulting from project-level traffic studies shall be coordinated with the North Perris Road and Bridge Benefit District (NPRBBD) to ensure that they are in conformance with the ultimate improvements planned by the NPRBBD. The applicant shall be eligible to receive proportional credits against the NPRBBD for construction of project level mitigation that is included in the NPRBBD.

Mitigation Measure MM Trans 6 below addresses the implementation of MWD trail and is not applicable to the proposed Project since the MWD easement is not located near the Project site.

MM Trans 6 Each implementing development project that is located adjacent to the MWD Trail shall coordinate with the City of Perris Parks and Recreation Department to determine the development plan for the trail.

1.6.2 CIRCULATION SYSTEM DEFICIENCIES AND RECOMMENDED IMPROVEMENTS

A summary of the operationally deficient study area intersections and recommended improvements required to achieve acceptable circulation system performance are described in detail within Section 3 *Area Conditions*, Section 5 *E+P Traffic Conditions*, Section 6 *EAC and EAPC (2024) Traffic Conditions*, and Section 7 *Horizon Year (2045) Traffic Conditions* of this report.

A summary of off-site improvements needed to address intersection operational deficiencies for each analysis scenario is included in Table 1-2. These recommended improvements are consistent with or have fewer lanes than those assumed in the City of Perris and County of Riverside General Plan Circulation Elements. Improvements found to be included in the Western Riverside Council of Governments (WRCOG) Transportation Uniform Mitigation Fee (TUMF) program, City of Perris's (lead agency) Development Impact Fee (DIF) program, or North Perris Road and Bridge Benefit District (NPRBBD) have been identified as such. The NPRBBD includes additional improvements to supplement the TUMF and DIF network. NPRBBD fees are inclusive of TUMF and DIF. Although the addition of Project traffic does not cause any new deficiencies in comparison to Existing (2022) traffic conditions, the Project would cumulatively contribute to each of the deficiencies identified in Table 1-2. For improvements that are not included in a pre-existing fee program or constructed by the Project, will be subject to fair share contributions.

TABLE 1-2: SUMMARY OF IMPROVEMENTS BY ANALYSIS SCENARIO

#	Intersection Location	Jurisdiction	E+P	Recommended Improvements		Improvements in DIF, TUMF, NPRBBD, etc. ^{1,2}	Project Responsibility ³	Project Fair Share ⁴
				EAPC (2024)	Horizon Year (2045) With Project			
1	I-215 SB Ramps & Ramona Exwy.	Caltrans, County	- None	- Add 2nd WB left turn lane - Add 3rd EB through lane - Add 3rd WB through lane	- Same - Same - Same - Add 4th EB through lane - Add EB right turn lane - Add 4th WB through lane	Yes (TUMF) Yes (TUMF) Yes (TUMF) No No No	Fees Fees Fees Fair Share Fair Share Fair Share	11.0%
2	I-215 NB Ramps & Ramona Exwy.	Caltrans, County	- None	- Add 2nd EB left turn lane - Add 3rd EB through lane - Add 3rd WB through lane - Add WB free-right turn lane	- Same - Same - Same - Same	Yes (TUMF) Yes (TUMF) Yes (TUMF) No	Fees Fees Fees Fair Share	15.3%
3	Nevada Av. & Ramona Exwy.	Perris, County	- Install a traffic signal - Add NB left turn lane	- Same - Same	- Same - Same - Add 3rd EB through lane - Add 3rd WB through lane	No No Yes (TUMF, NPRBBD) Yes (TUMF, NPRBBD)	Design Feature Design Feature Fees Fees	--
9	Driveway 5 & Ramona Exwy.	Perris	- Install traffic signal - Add WB left turn lane - Add 3rd EB through lane - Add EB right turn lane	- Same - Same - Same - Same	- Same - Same - Same - Same - Add 3rd WB through lane	No No Yes (TUMF, NPRBBD) No Yes (TUMF, NPRBBD)	Design Feature Design Feature Design Feature Design Feature Fees	--
11	Webster Av. & Ramona Exwy.	Perris	- Add EB right turn lane	- Same	- Same - Add 2nd EB left turn lane - Restripe the WB right turn lane as a shared through-right turn lane - Modify the traffic signal to stripe a SB right turn lane and implement overlap phasing	No No No No	Design Feature Fair Share Fair Share Fair Share	13.0%
15	Indian Av. & Ramona Exwy.	Perris	- None	- None	- Add 2nd EB left turn lane	No	Fair Share	9.9%
17	Perris Bl. & Ramona Exwy.	Perris	- None	- None	- Restripe the NB right turn lane as a shared through-right turn lane - Restripe the SB right turn lane as a shared through-right turn lane - Add 4th EB through lane - Add 4th WB through lane	Yes (TUMF, NPRBBD) Yes (TUMF, NPRBBD) No No	Fees Fees Fair Share Fair Share	7.6%
18	Perris Bl. & Morgan St.	Perris	- None	- None	- Stripe 3rd SB through lane	Yes (TUMF, NPRBBD)	Fees	--

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

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

³ Identifies the Project's responsibility to construct an off-site improvement, contribute fair share, or fee payment towards the improvements shown. If identified as a Project construct obligation/in a fee program, then no fair share percentage has been identified. Improvements to be constructed by the Project as part of their frontage/site access improvements have been identified as Design Features.

⁴ Total project fair share is applicable to the improvements which are not already included in the City-wide DIF/NPRBBD/County TUMF for those intersections wholly or partially within the City of Perris.

1.7 ON-SITE ROADWAY IMPROVEMENTS

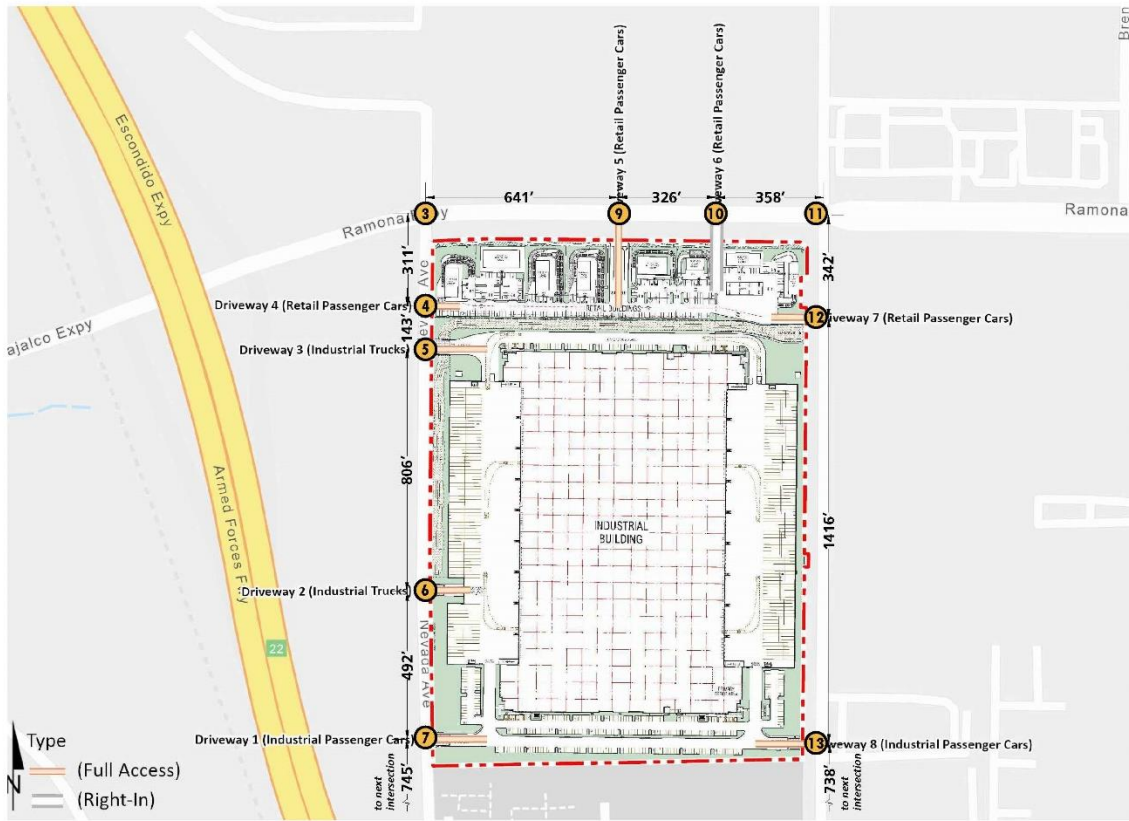
The recommended site-adjacent roadway improvements for the Project are described below and shown in Exhibit 1-6, all of which are being implemented by the Project as part of their frontage/site access improvements (none of which are necessitated by LOS needs alone).

Ramona Expressway – Ramona Expressway is an east-west oriented roadway located along the Project’s northern boundary. Project is to construct Ramona Expressway at its ultimate half-section width as an Expressway (184-foot right-of-way) between Nevada Avenue and Webster Avenue consistent with the PVCC-SP and the City of Perris General Plan Circulation Element. Project improvements along Ramona Expressway will include landscaping and an 8-foot Class I Multipurpose Path in conjunction with a 12-foot acceleration/deceleration lane plus 10-foot shoulder. Improvements along Ramona Expressway will also include the construction of raised median and would ultimately accommodate three travel lanes in the eastbound direction with auxiliary acceleration and deceleration lanes along the Project’s frontage. Lastly, frontage improvements will also include approximately 6-7-foot landscaped areas on either side of an 8-foot meandering Class I Multipurpose Path along with 2-feet on either side of decomposed granite as a buffer between the landscaping and Path. The improvements along Ramona Expressway includes accommodating a third westbound through lane between Nevada Avenue and Webster Avenue.

Nevada Avenue – Nevada Avenue is a north-south oriented roadway located along the Project’s western boundary. Project is to construct Nevada Avenue at its ultimate half-section width as a Collector (66-foot right-of-way) between Ramona Expressway and the southern Project boundary consistent with the PVCC-SP and the City of Perris General Plan Circulation Element. Project improvements along Nevada Avenue include accommodating a two-way left turn lane and landscaping and an 8-foot Class I Multipurpose Path adjacent to the Project. The half-section improvement along the Project’s frontage includes an additional 5-foot easement to accommodate 3-feet of the proposed Class I Multipurpose Path and 2-feet of decomposed granite. Lastly, frontage improvements along Nevada Avenue include 4-feet of landscaping between the traveled way and the Class I Multipurpose Path in conjunction with 2-feet of decomposed granite on either side of the Class I Multipurpose Path.

Webster Avenue – Webster Avenue is a north-south oriented roadway located along the Project’s eastern boundary. Webster Avenue is currently constructed to its ultimate half-section width as a Secondary Arterial (94-foot right-of-way) between Ramona Expressway and the southern Project boundary consistent with the PVCC-SP and the City of Perris General Plan Circulation Element (striped as a 4-lane divided roadway). However, Project improvements along Webster Avenue include accommodating landscaping and an 8-foot Class I Multipurpose Path adjacent to the Project. Frontage improvements along Webster Avenue include 4-feet of landscaping between the traveled way and the Class I Multipurpose Path in conjunction with 2-feet of decomposed granite on either side of the Class I Multipurpose Path.

EXHIBIT 1-6: SITE ACCESS RECOMMENDATIONS



3	Nevada Av. & Ramona Expy.	4	Nevada Av. & Dwy. 4	5	Nevada Av. & Dwy. 3	6	Nevada Av. & Dwy. 2	7	Nevada Av. & Dwy. 1
9	Dwy. 5 & Ramona Expy.	10	Dwy. 6 & Ramona Expy.	11	Webster Av. & Ramona Expy.	12	Webster Av. & Dwy. 7	13	Webster Av. & Dwy. 8

- = Traffic Signal
- = New Traffic Signal
- = Stop Sign Improvement
- = Existing Lane
- = Lane Improvement
- 100'** = Recommended Turn Pocket Length
- TRAP** = Trap Lane
- TWLTL** = Two Way Left Turn Lane

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

1.8 SITE ACCESS IMPROVEMENTS

The proposed site access driveway improvements to be constructed by the Project are described below. Exhibit 1-6 illustrates the site access improvements. Construction of on-site and site adjacent improvements shall occur in conjunction with adjacent Project development activity or as needed for Project access purposes.

Nevada Avenue & Ramona Expressway – Project to install a traffic signal. Project to also accommodate crosswalks on all applicable approaches in conjunction with Americans with Disabilities Act (ADA) compliant ramps to connect the surrounding pedestrian facilities with those to be implemented by the Project (Class I Multipurpose Path). Project to construct the intersection with the following geometrics:

- Northbound Approach: Construct a left turn lane with a minimum of 100-feet of storage.

Nevada Avenue & Driveway 1 – Install a stop control on the westbound approach and construct the intersection with the following geometrics:

- Northbound Approach: One shared through-right turn lane.
- Southbound Approach: One left turn lane with a minimum of 50-feet of storage and one through lane.
- Eastbound Approach: Not Applicable (N/A)
- Westbound Approach (Project Driveway 1): One shared right-left turn lane.
- Due to the low traffic volumes making right turns into the driveway, a right turn deceleration lane is not required for traffic operations.

Nevada Avenue & Driveway 2 – Install a stop control on the westbound approach and construct the intersection with the following geometrics:

- Northbound Approach: One shared through-right turn lane.
- Southbound Approach: One left turn lane with a minimum of 50-feet of storage and one through lane.
- Eastbound Approach: N/A
- Westbound Approach (Project Driveway 2): One shared right-left turn lane.
- Due to the low traffic volumes making right turns into the driveway, a right turn deceleration lane is not required for traffic operations.

Nevada Avenue & Driveway 3 – Install a stop control on the westbound approach and construct the intersection with the following geometrics:

- Northbound Approach: One shared through-right turn lane.
- Southbound Approach: One left turn lane (storage to be accommodated within the painted median) and one through lane.
- Eastbound Approach: N/A
- Westbound Approach (Project Driveway 3): One shared right-left turn lane.
- Due to the low traffic volumes making right turns into the driveway, a right turn deceleration lane is not required for traffic operations.

Nevada Avenue & Driveway 4 – Install a stop control on the westbound approach and construct the intersection with the following geometrics:

- Northbound Approach: One shared through-right turn lane.
- Southbound Approach: One left turn lane (storage to be accommodated within the painted median) and one through lane.
- Eastbound Approach: N/A
- Westbound Approach (Project Driveway 4): One shared right-left turn lane.
- Due to the low traffic volumes making right turns into the driveway, a right turn deceleration lane is not required for traffic operations.

Driveway 5 & Ramona Expressway – Install a traffic signal and construct the intersection with the following geometrics:

- Northbound Approach (Driveway 5): One left turn lane and one right turn lane.
- Southbound Approach: N/A
- Eastbound Approach: Three through lanes and a right turn deceleration lane with a minimum of 250-feet of storage.
- Westbound Approach: One left turn lane with a minimum of 300-feet of storage and three through lanes.
- Project to also accommodate crosswalks on all applicable approaches in conjunction with Americans with Disabilities Act (ADA) compliant ramps to connect the surrounding pedestrian facilities with those to be implemented by the Project (Class I Multipurpose Path).

Driveway 6 & Ramona Expressway – Install a stop control on the northbound approach and construct the intersection with the following geometrics:

- Northbound Approach (Driveway 6): N/A
- Southbound Approach: N/A
- Eastbound Approach: Three through lanes and a shared through-right turn lane.
- Westbound Approach: Three through lanes.

Webster Avenue & Ramona Expressway – Maintain the existing traffic control and modify the intersection with the following geometrics:

- Northbound Approach: Increase the storage to accommodate 250-feet for the northbound left turn lane.
- Eastbound Approach: Construct a 2nd left turn lane and accommodate a minimum of 215-feet of storage and a trap right turn lane.
- Westbound Approach: Modify the left turn storage to accommodate 400-feet.
- Maintain the existing crosswalks (no crosswalk across the west leg).

Webster Avenue & Driveway 7 – Install a stop control on the eastbound approach and construct the intersection with the following geometrics:

- Northbound Approach: One left turn lane (storage to be accommodated within the painted median) and two through lanes.
- Southbound Approach: One through lane and a shared through-right turn lane.
- Eastbound Approach (Driveway 7): One shared left-right turn lane.
- Westbound Approach: N/A

Webster Avenue & Driveway 8 – Install a stop control on the eastbound approach and construct the intersection with the following geometrics:

- Northbound Approach: One left turn lane (storage to be accommodated within the painted median) and two through lanes.
- Southbound Approach: One through lane and a shared through-right turn lane.
- Eastbound Approach (Driveway 8): One shared left-right turn lane.
- Westbound Approach: N/A

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

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

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

1.9 QUEUING ANALYSIS AT THE PROJECT DRIVEWAYS

A queuing analysis was conducted along the site adjacent roadways of Ramona Expressway, Nevada Avenue, and Webster Avenue for Horizon Year (2045) With Project traffic conditions to determine the 95th percentile queues. The analysis was conducted for the weekday AM and weekday PM peak hours for the preferred access alternative and also for access alternatives 1 and 2 as well. The traffic modeling and signal timing optimization software package Synchro/SimTraffic (Version 11) has been utilized to assess queues at the Project access points. Synchro is a macroscopic traffic software program that is based on the signalized and unsignalized intersection capacity analyses as specified in the HCM. SimTraffic is designed to model networks of signalized and unsignalized intersections, with the primary purpose of checking and fine-tuning signal operations. SimTraffic uses the input parameters from Synchro to generate random simulations. The 95th percentile queue is not necessarily ever observed; it is simply based on statistical calculations (or Average Queue plus 1.65 standard deviations). Many jurisdictions utilize the 95th percentile queues for design purposes. SimTraffic simulations have been recorded 5 times, during the weekday AM and weekday PM peak hours, and has been seeded for 15-minute periods with 60-minute recording intervals. Queuing results are provided in Appendix 1.2. Based on the 95th percentile queues under Horizon Year (2045) With Project traffic conditions. The peak hour queuing analysis results were utilized to determine the minimum turn pocket storage at applicable Project driveways. Table 1-3 summarizes the 95th percentile queuing results for each of the access alternatives.

Nevada Avenue is a Collector and per the PVCC SP requires a minimum spacing of 330-feet. Although the retail component Driveway 4 to Ramona Expressway and the spacing between industrial component Driveway 3 and retail component Driveway 4 do not meet this minimum spacing criteria, Table 1-3 indicates that no queuing is anticipated with the proposed driveway locations for the preferred access alternative. The acceptable queuing is likely attributable to lower through volumes along Nevada Avenue due to the vacation of Nevada Avenue north of Ramona Expressway and other alternative parallel facilities (such as Webster Avenue).

Ramona Expressway is an Expressway and per the PVCC SP requires a minimum spacing of 2,640-feet for full access. However, based on discussions with City staff, a new signal located approximately mid-point between Nevada Avenue and Webster Avenue was permitted in order to provide access to the proposed Project. The queuing analysis shown in Table 1-3 indicates there are no queuing issues anticipated with the proposed spacing and signalization for the preferred access alternative. However, this traffic signal (along with the signals at Nevada Avenue and Webster Avenue) must be coordinated with the I-215 Freeway ramps at Ramona Expressway in order to provide optimal traffic flow along Ramona Expressway.

TABLE 1-3: SUMMARY OF SITE ADJACENT PEAK HOUR QUEUES FOR HORIZON YEAR (2045) CONDITIONS

Intersection	Movement	Available Stacking Distance (Feet) ^{1,2}	Preferred Access		Access Alternative 1		Access Alternative 2	
			95th % Queue (Feet) AM Peak	95th % Queue (Feet) PM Peak	95th % Queue (Feet) AM Peak	95th % Queue (Feet) PM Peak	95th % Queue (Feet) AM Peak	95th % Queue (Feet) PM Peak
Nevada Av. & Ramona Exwy.	NBL	100	85	77	114	99	116	108
	NBR	180	92	67	108	62	107	82
	WBL	175	66	158	156	159	58	151
Nevada Av. & Dwy 4	NBT/R	80	0	0	0	0	0	0
	SBT	180	0	0	0	0	0	0
	SBL	TWLT	30	15	0	0	0	0
	WBL/R	100	55	51	50	46	48	46
Nevada Av. & Dwy 3	WBL/R	100	30	42	Same as Preferred		Same as Preferred	
	SBL	TWLT	0	0	0	0	0	0
Nevada Av. & Dwy 2	WBL/R	100	28	40	Same as Preferred		Same as Preferred	
	SBL	50	0	0	0	0	0	0
Nevada Av. & Dwy 1	SBT	450	0	0	Same as Preferred		Same as Preferred	
	SBL	50	16	0	13	5	13	7
	WBL/R	100	27	48	24	48	26	48
Dwy 5 & Ramona Exwy.	EBR	400	394	336	372	394	386	356
	WBL	225	221	160	240	214	268	193
	NBL	250	250	189	254	174	249	195
	NBR	250	185	215	228	186	230	174
Driveway 6 & Ramona Exwy.	EBT	265	46	129	Does Not Exist		7	262
Webster Av. & Ramona Exwy.	NBL	250	202	247	200	261	206	262
	NBR	235	53	48	42	35	42	41
	EBL	195	182	194	194	310	206	280
	EBR	285	72	49	75	56	75	52
	WBL	400	357	353	377	369	350	356
Webster Av. & Dwy 7	NBL	50	43	32	Not Applicable		32	0
	NBT	1,325	0	32	0	152	0	149
	SBT/R	235	7	3	0	0	3	5
	EBL/R	200	78	87	60	54	58	52
Webster Av. & Dwy 8	NBL	50	9	5	Same as Preferred		Same as Preferred	
	EBL/R	100	38	54	39	50	34	51

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

¹ **175** = Improvement; TWLT = Two-way Left-turn Lane

² Stacking Distance is acceptable if the required stacking distance is less than or equal to the stacking distance provided. An additional 15 feet of stacking which is assumed to be provided in the transition for turn pockets is reflected in the stacking distance shown on this table, where applicable.

Lastly, Webster Avenue is a Secondary Arterial and per the PVCC SP requires a minimum spacing of 660-feet for full access. Although Driveway 7 within the retail component does not meet this minimum spacing requirement, Table 1-3 indicates there are no queuing issues anticipated for the proposed access alternative with the exception of the northbound through movement. The PM peak hour northbound queue at the intersection of Webster Avenue and Ramona Expressway is 273-feet which exceeds the available storage by 38-feet or approximately 1.5 car lengths. However, this queue is not anticipated to adversely affect the operations of the free-flow traffic along Webster Avenue or the driveway (Driveway 7) as the painted median will accommodate a refuge for vehicles waiting to turn into the site or out of the site before merging with through traffic.

1.10 CONCEPT STRIPING PLANS

At the request of the City, a concept striping plan has been created for the on-site and site adjacent project design features for Webster Nevada Road and Ramona Expressway, consistent with the recommendations in Section 1.6 *Recommendations*. It should be noted, there is an existing two-way left-turn lane along Webster Avenue. As such, no concept striping plans are necessary since the Project will utilize the existing two-way left-turn lane. The concept striping plans are shown on Exhibit 1-7 for Ramona Expressway and Exhibit 1-8 for Nevada Street. The turn pocket length recommendations are based on the queuing results in Table 1-3.

1.11 TRUCK ACCESS

Due to the typical wide turning radius of large trucks, a truck turning template has been overlaid on the site plan at the applicable Project driveways for the industrial component (Driveway 2 and Driveway 3) in order to determine appropriate curb radii and to verify that trucks will have sufficient space to execute turning maneuvers (see Exhibit 1-9). Only driveways that are to be utilized by heavy trucks have been evaluated. As shown on Exhibit 1-9, the Project driveways will be able to accommodate the wide turning radius of heavy trucks (WB-67, which has a 53-foot trailer) with the following improvements:

- Driveway 2 is recommended to be widened to 50-feet and will maintain the proposed 35-foot curb radius on the northeast and southeast corners.
- Driveway 3 is recommended to modify the southeast corner to accommodate a 35-foot curb radius.

Delivery and fuel trucks will also access the retail driveways on an as-needed basis, but these vehicles are not anticipated to access the site as frequently and are likely to occur during off-peak hours.

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EXHIBIT 1-7: RAMONA EXPRESSWAY CONCEPT STRIPING

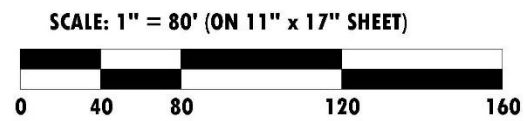
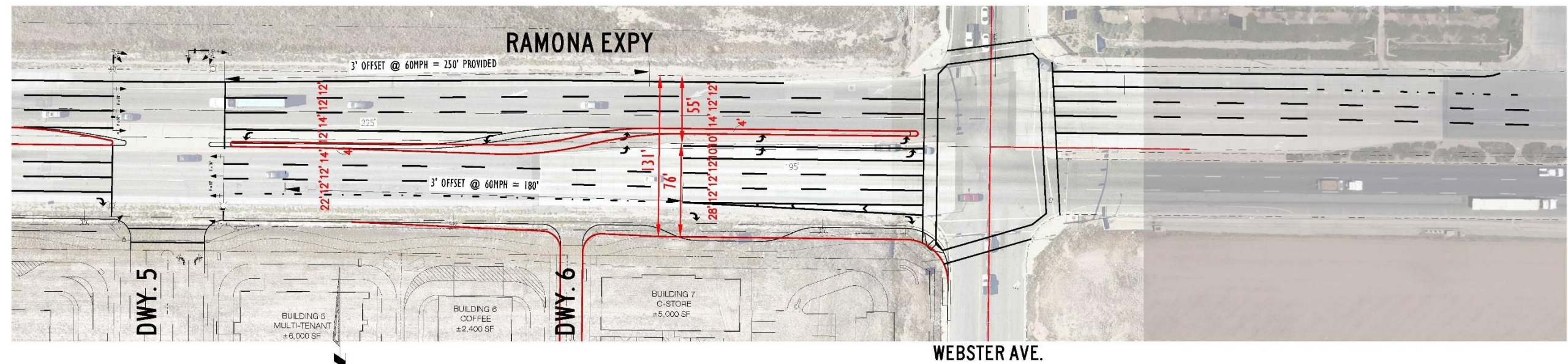
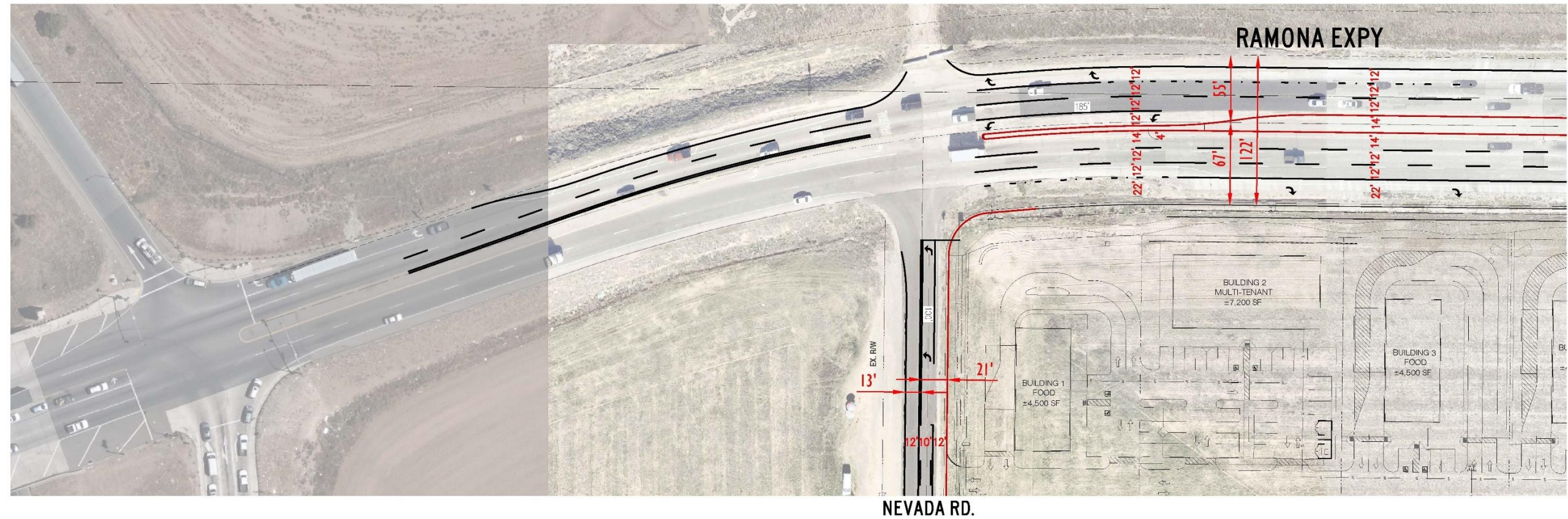


EXHIBIT 1-8: NEVADA ROAD CONCEPT STRIPING

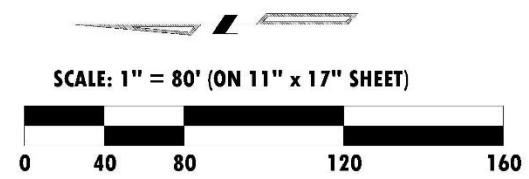
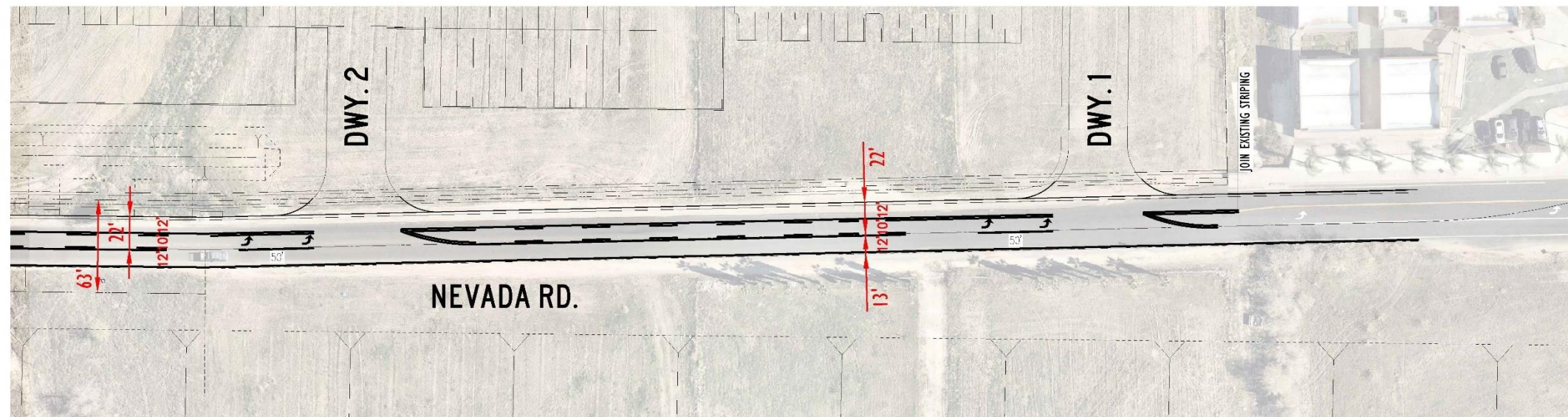
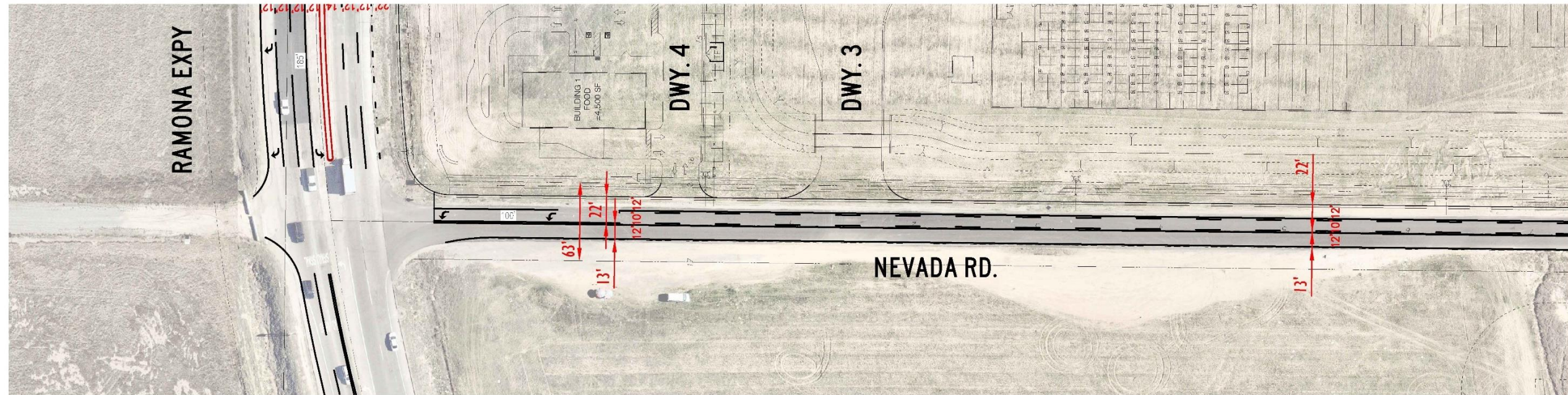
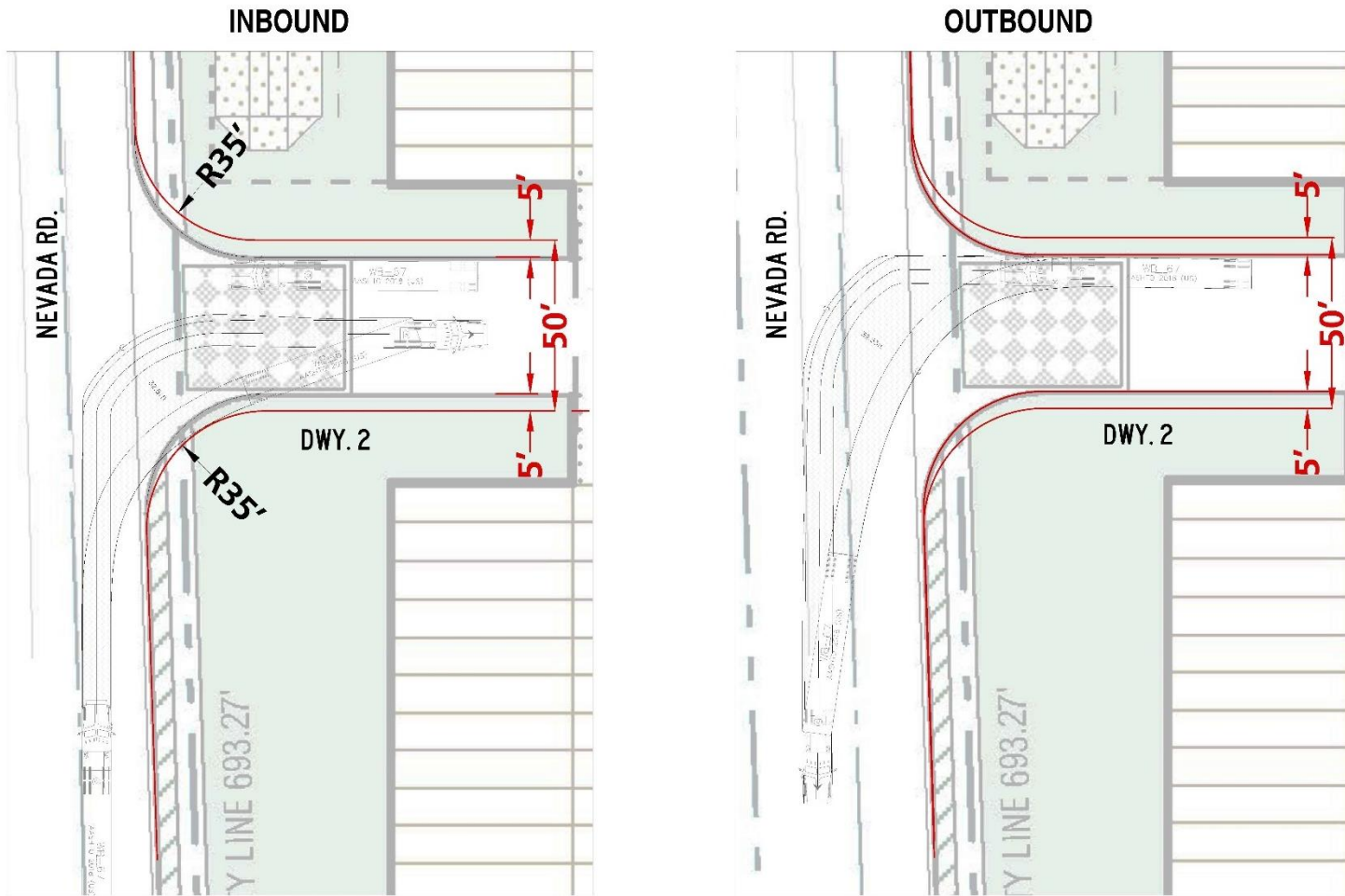


EXHIBIT 1-9: TRUCK TURNING TEMPLATES



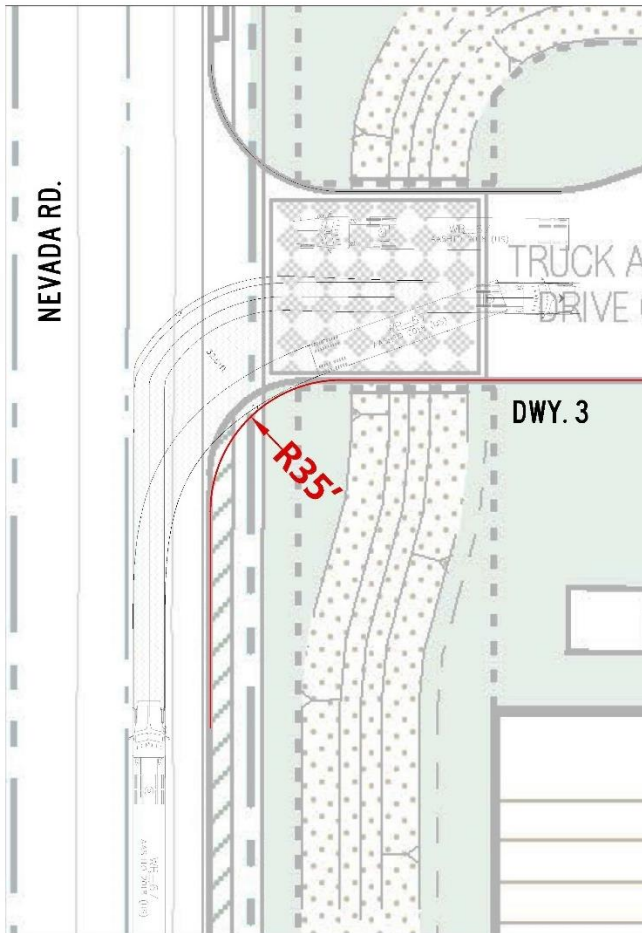
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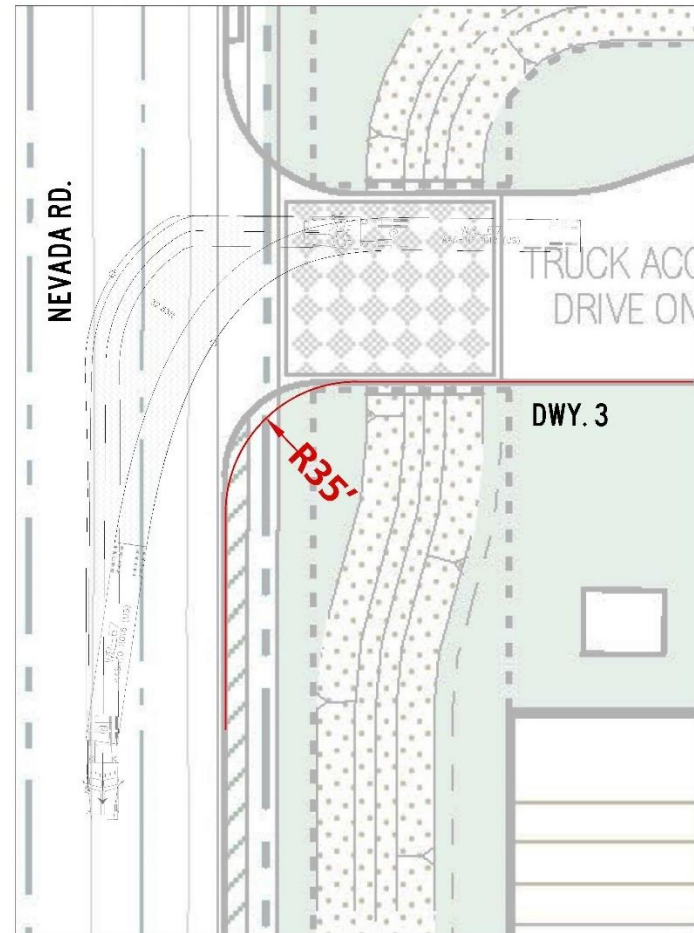
EXHIBIT A: NEVADA RD. DRIVEWAY 2
WB-67 TRUCK TURNS

URBAN CROSSROADS
www.urbanxroads.com
TEL: (951) 978-6600

INBOUND



OUTBOUND



SCALE: 1" = 30' (ON 11" x 17" SHEET)



**EXHIBIT A: NEVADA RD. DRIVEWAY 3
WB-67 TRUCK TURNS**

URBAN CROSSROADS
www.urbanCrossroads.com
T. PHOENIX: 949-660-1994

1.12 VMT ANALYSIS

The City of Perris adopted Transportation Impact Analysis Guidelines for CEQA (City Guidelines). (5) The City Guidelines include VMT thresholds that were recently reviewed and adopted by City Council on May 12, 2020. The VMT Scoping Form for Land Use Projects, provided by the City of Perris, has been completed and reviewed for accuracy. As shown in Appendix 1.1, the proposed Project's retail component would meet the local serving land use screening criteria. However, the industrial component of the Project did not meet any of the available screening criteria and potential VMT mitigation measures were disclosed. While the mitigation measures identified below would reduce VMT, the actual amount of VMT reduction from these measures cannot be guaranteed. Therefore, the Project is found to have a significant and unavoidable VMT impact.

Mitigation may be provided in the form transportation demand management (TDM) measures or participation in a VMT fee program, which is not yet available. Therefore, VMT reduction measures focused on reducing commute VMT and the anticipated reduction in VMT associated with these measures have been estimated based on the research contained in the Quantifying Greenhouse Gas Mitigation Measures (CAPCOA, 2010) and are presented below:

- Measure SDT-1: Provide Pedestrian Network Improvements. Providing a pedestrian access network to link areas of the Project site encourages people to walk instead of drive assuming that desirable destinations are within walking distance of the Project.
Remarks: This measure is evaluated as means of providing a maximum 2.0% reduction in Project VMT.
- Measure TRT-1: Implement Voluntary CTR Programs. This strategy focuses on implementing a voluntary Commute Trip Reduction (CTR) program with employers to discourage single-occupancy vehicle trips and encourage alternative modes of transportation such as carpooling, taking transit, walking, and biking.
Remarks: This measure is evaluated as means of providing a 1.8% reduction in Project VMT.

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2 METHODOLOGIES

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

2.1 LEVEL OF SERVICE

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

2.2 INTERSECTION CAPACITY ANALYSIS

The definitions of LOS for interrupted traffic flow (flow restrained by the existence of traffic signals and other traffic control devices) differ slightly depending on the type of traffic control. The LOS is typically dependent on the quality of traffic flow at the intersections along a roadway. The Highway Capacity Manual (HCM) methodology expresses the LOS at an intersection in terms of delay time for the various intersection approaches. (6) The HCM uses different procedures depending on the type of intersection control.

2.2.1 SIGNALIZED INTERSECTIONS

The City of Perris requires signalized intersection operations analysis based on the methodology described in the HCM. (6) 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 11) analysis software package.

Synchro is a macroscopic traffic software program that is based on the signalized intersection capacity analysis as specified in the HCM. Macroscopic level models represent traffic in terms of aggregate measures for each movement at the study intersections. Equations are used to determine measures of effectiveness such as delay and queue length. The level of service and capacity analysis performed by Synchro takes into consideration optimization and coordination of signalized intersections within a network.

TABLE 2-1: SIGNALIZED INTERSECTION LOS THRESHOLDS

Description	Average Control Delay (Seconds), V/C ≤ 1.0	Level of Service, V/C ≤ 1.0	Level of Service, V/C > 1.0
Operations with very low delay occurring with favorable progression and/or short cycle length.	0 to 10.00	A	F
Operations with low delay occurring with good progression and/or short cycle lengths.	10.01 to 20.00	B	F
Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	20.01 to 35.00	C	F
Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	35.01 to 55.00	D	F
Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	55.01 to 80.00	E	F
Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths	80.01 and up	F	F

Source: HCM, 6th Edition

The peak hour traffic volumes have been adjusted using a peak hour factor (PHF) to reflect peak 15-minute volumes. Common practice for LOS analysis is to use a peak 15-minute rate of flow. However, flow rates are typically expressed in vehicles per hour. The PHF is the relationship between the peak 15-minute flow rate and the full hourly volume (e.g., $PHF = \frac{\text{Hourly Volume}}{4 \times \text{Peak 15-minute Flow Rate}}$). The use of a 15-minute PHF produces a more detailed analysis as compared to analyzing vehicles per hour. Existing PHFs have been used for Existing (2022) baseline, E+P, EAC (2024), EAPC (2024) and Horizon Year (2045) traffic conditions.

2.2.2 UNSIGNALIZED INTERSECTIONS

The City of Perris requires the operations of unsignalized intersections be evaluated using the methodology described the HCM. (6) The LOS rating is based on the weighted average control delay expressed in seconds per vehicle (see Table 2-2).

TABLE 2-2: UNSIGNALIZED INTERSECTION LOS THRESHOLDS

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

Source: HCM, 6th Edition

At two-way or side-street stop-controlled intersections, LOS is calculated for each controlled movement and for the left turn movement from the major street, as well as for the intersection as a whole. For approaches composed of a single lane, the delay is computed as the average of all movements in that lane. The “worst case” movement delay and LOS is reported for the intersection. For all-way stop controlled intersections, LOS is computed for the intersection as a whole.

2.3 TRAFFIC SIGNAL WARRANT ANALYSIS METHODOLOGY

The term "signal warrants" refers to the list of established criteria used by the Caltrans and other public agencies to quantitatively justify or ascertain the potential need for installation of a traffic signal at an otherwise unsignalized intersection. This TA uses the signal warrant criteria presented in the latest edition of the California Department of Transportation (Caltrans) California Manual on Uniform Traffic Control Devices (CA MUTCD) for all study area intersections. (7)

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. (7) Specifically, this TA utilizes the Peak Hour Volume-based Warrant 3 as the appropriate representative traffic signal warrant analysis for existing study area intersections for all analysis scenarios. Warrant 3 is appropriate to use for this TA because it provides specialized warrant criteria for intersections with rural characteristics (e.g., located in communities with populations of less than 10,000 persons or with adjacent major streets operating above 40 miles per hour). For the purposes of this study, the speed limit was the basis for determining whether Urban or Rural warrants were used for a given intersection.

Future intersections that do not currently exist have been assessed regarding the potential need for new traffic signals based on future average daily traffic (ADT) volumes, using the Caltrans planning level ADT-based signal warrant analysis worksheets. Traffic signal warrant analyses were performed for the following study area intersection shown in Table 2-3:

TABLE 2-3: TRAFFIC SIGNAL WARRANT ANALYSIS LOCATIONS

ID	Intersection Location	Jurisdiction
3	Nevada Av. & Ramona Exwy.	County of Riverside, City of Perris
4	Nevada Av. & Driveway 4	City of Perris
5	Nevada Av. & Driveway 3	City of Perris
6	Nevada Av. & Driveway 2	City of Perris
7	Nevada Av. & Driveway 1	City of Perris
8	Nevada Av. & Morgan St.	City of Perris
9	Driveway 5 & Ramona Exwy.	City of Perris
12	Webster Av. & Driveway 7	City of Perris
13	Webster Av. & Driveway 8	City of Perris
14	Webster Av. & Morgan St.	City of Perris

Traffic signal warrant analyses were performed for all of the full access unsignalized study area intersections. The traffic signal warrant analyses for future conditions are presented in Section 5 *E+P Traffic Conditions*, Section 6 *EAC and EAPC (2024) Traffic Analysis*, and Section 7 *Horizon Year (2045) Traffic Analysis* of this report.

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

2.4 QUEUING ANALYSIS

Consistent with Caltrans requirements, the 95th percentile queuing of vehicles has been assessed at the off-ramps to determine potential queuing deficiencies at the freeway ramp intersections at the I-215 Freeway at the Ramona Expressway interchange. Specifically, the off-ramp queuing analysis is utilized to identify any potential queuing and “spill back” onto the I-215 Freeway mainline from the off-ramps.

The traffic progression analysis tool and HCM intersection analysis program, Synchro, has been used to assess the potential deficiencies/needs of the intersections with traffic added from the proposed Project. Storage (turn-pocket) length recommendations at the ramps have been based upon the 95th percentile queue resulting from the Synchro progression analysis. The footnote from the Synchro output sheets indicates if the 95th percentile cycle exceeds capacity. Traffic is simulated for two complete cycles of the 95th percentile traffic in Synchro in order to account for the effects of spillover between cycles. In practice, the 95th percentile queue shown will rarely be exceeded and the queues shown with the footnote are acceptable for the design of storage bays. The 95th percentile queue is derived from the average queue plus 1.65 standard deviations. The 95th percentile queue is not necessarily ever observed it is simply based on statistical calculations.

2.5 MINIMUM LEVEL OF SERVICE (LOS)

The definition of an intersection deficiency has been obtained from the City of Perris' General Plan. LOS D along all City maintained roads (including intersections) and LOS D along I-215 and SR-74 (including intersections with local streets and roads). An exception to the local road standard is LOS E, at intersections of any Arterials and Expressways with SR-74, the Ramona-Cajalco Expressway, or at I-215 Freeway ramps. (8) All intersections will be evaluated with LOS D as acceptable LOS, with the exception of the following intersections along Ramona Expressway, where LOS E will be acceptable LOS:

- Nevada Rd. & Ramona Exwy.
- Driveway 5 & Ramona Exwy.
- Driveway 6 & Ramona Exwy.
- Webster Av. & Ramona Exwy.
- Indian Av. & Ramona Exwy.
- Perris Bl. & Ramona Exwy.

It should be noted, the intersections at the I-215 Freeway/Ramona Expressway have been evaluated with LOS D as acceptable LOS since these locations also fall under the jurisdiction of Caltrans.

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

2.6 DEFICIENCY CRITERIA

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

- A project-related deficiency is considered direct and significant when a study intersection operates at an acceptable LOS for existing conditions (without the project) and the addition of 50 or more AM or PM peak hour project trips causes the intersection to operate at an unacceptable LOS for existing plus project (E+P) traffic conditions.
- A project-related deficiency is considered direct and significant when a study intersection operates at an unacceptable LOS for existing conditions (without the project) and the addition of 50 or more AM or PM peak hour project trips causes the intersection delay to increase by 2 seconds or more.
- A cumulative deficiency is considered significant when a study intersection is forecast to operate at an unacceptable LOS with the addition of cumulative/background traffic and 50 or more AM or PM peak hour project trips.

2.7 PROJECT FAIR SHARE CALCULATION METHODOLOGY

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

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

$$\text{Project Fair Share \%} = \text{Project Traffic} / (\text{Horizon Year (2045) Total Traffic} - \text{Existing Traffic})$$

3 AREA CONDITIONS

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

3.1 EXISTING CIRCULATION NETWORK

Pursuant to the scoping agreement with City of Perris staff (Appendix 1.1), the study area includes a total of 18 existing and future intersections as shown previously on Exhibit 1-5. 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 PVCC SP in the City of Perris. Exhibit 3-2 shows the City of Perris General Plan Circulation Element, and Exhibit 3-3 illustrates the City of Perris General Plan roadway cross-sections. Exhibit 3-4 illustrates the PVCC SP Circulation Plan and Exhibit 3-5 shows the corresponding PVCC SP roadway cross-sections.

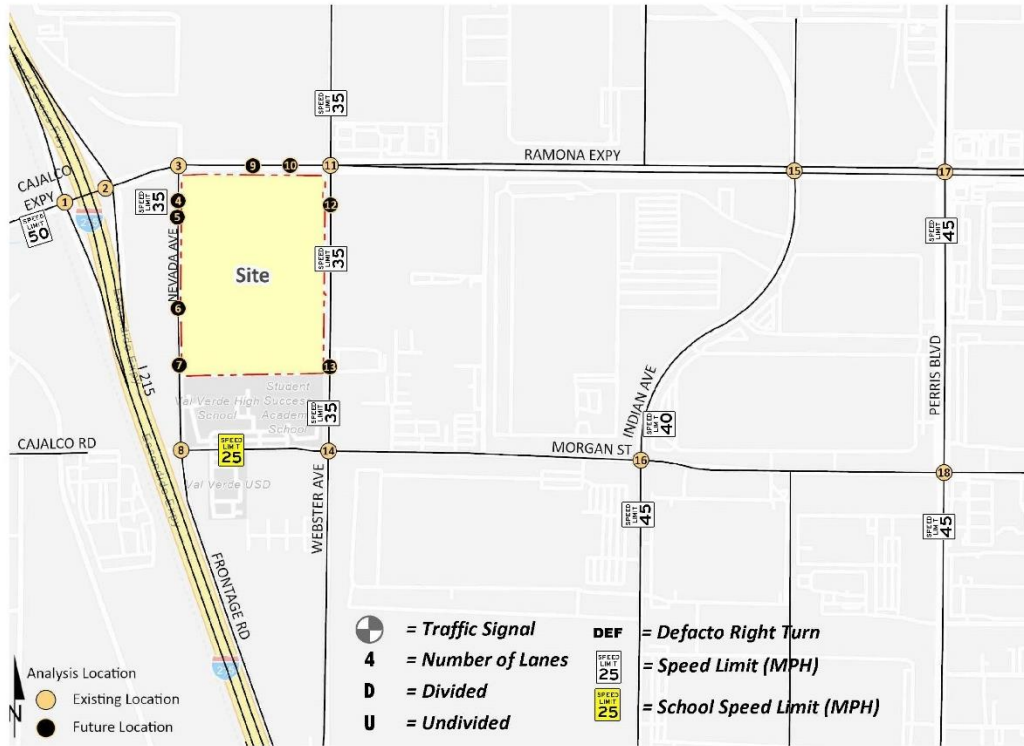
3.3 TRUCK ROUTES

The City of Perris designated truck route map that was recently adopted on January 11, 2022 is shown on Exhibit 3-6. Morgan Street, Indian Avenue, and Placentia Avenue are identified as a designated truck routes. The PVCC SP truck route plan is shown on Exhibit 3-7. The truck routes identified within the study area on Exhibit 3-7 are consistent with those identified on Exhibit 3-6. These designated truck route maps, in conjunction with direction from City staff, have been utilized to route truck traffic to and from the Project and future cumulative development projects throughout the study area. Specifically, Project truck traffic has been routed to and from the south via Nevada Avenue/I-215 E. Frontage Road to the I-215 Freeway at Placentia Avenue (to open Summary 2022).

3.4 TRANSIT SERVICE

Mass transit routes within the PVCC SP are shown on Exhibit 3-8. Exhibit 3-8 also shows existing routes along Indian Avenue and Ramona Expressway. The study area is currently served by the Riverside Transit Authority (RTA), a public transit agency serving the Riverside County region. RTA currently serves the study area via Route 41 and Route 19 (Alternative), which would serve the proposed Project. Both RTA Route 19 (Alternative) and RTA Route 41 run along Ramona Expressway, Webster Avenue, Morgan Street, and Indian Avenue in close proximity to the Project. The Project is to accommodate a bus stop along its frontage on Ramona Expressway that will serve the 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. Specifically, as development increases in the surrounding area, it is likely that existing bus service would be maintained or increased to meet demands.

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



1	2	3	4	5	6
I-215 SB Ramps & Ramona Expy.	I-215 NB Ramps & Ramona Expy.	Nevada Av. & Ramona Expy.	Nevada Av. & Dwy. 4	Nevada Av. & Dwy. 3	Nevada Av. & Dwy. 2
			Future Intersection	Future Intersection	Future Intersection
7	8	9	10	11	12
Nevada Av. & Dwy. 1	Nevada Av. & Morgan St.	Dwy. 5 & Ramona Expy.	Dwy. 6 & Ramona Expy.	Webster Av. & Ramona Expy.	Webster Av. & Dwy. 7
Future Intersection		Future Intersection	Future Intersection		Future Intersection
13	14	15	16	17	18
Webster Av. & Dwy. 8	Webster Av. & Morgan St.	Indian Av. & Ramona Expy.	Indian Av. & Morgan St.	Perris Bl. & Ramona Expy.	Perris Bl. & Morgan St.
Future Intersection					

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

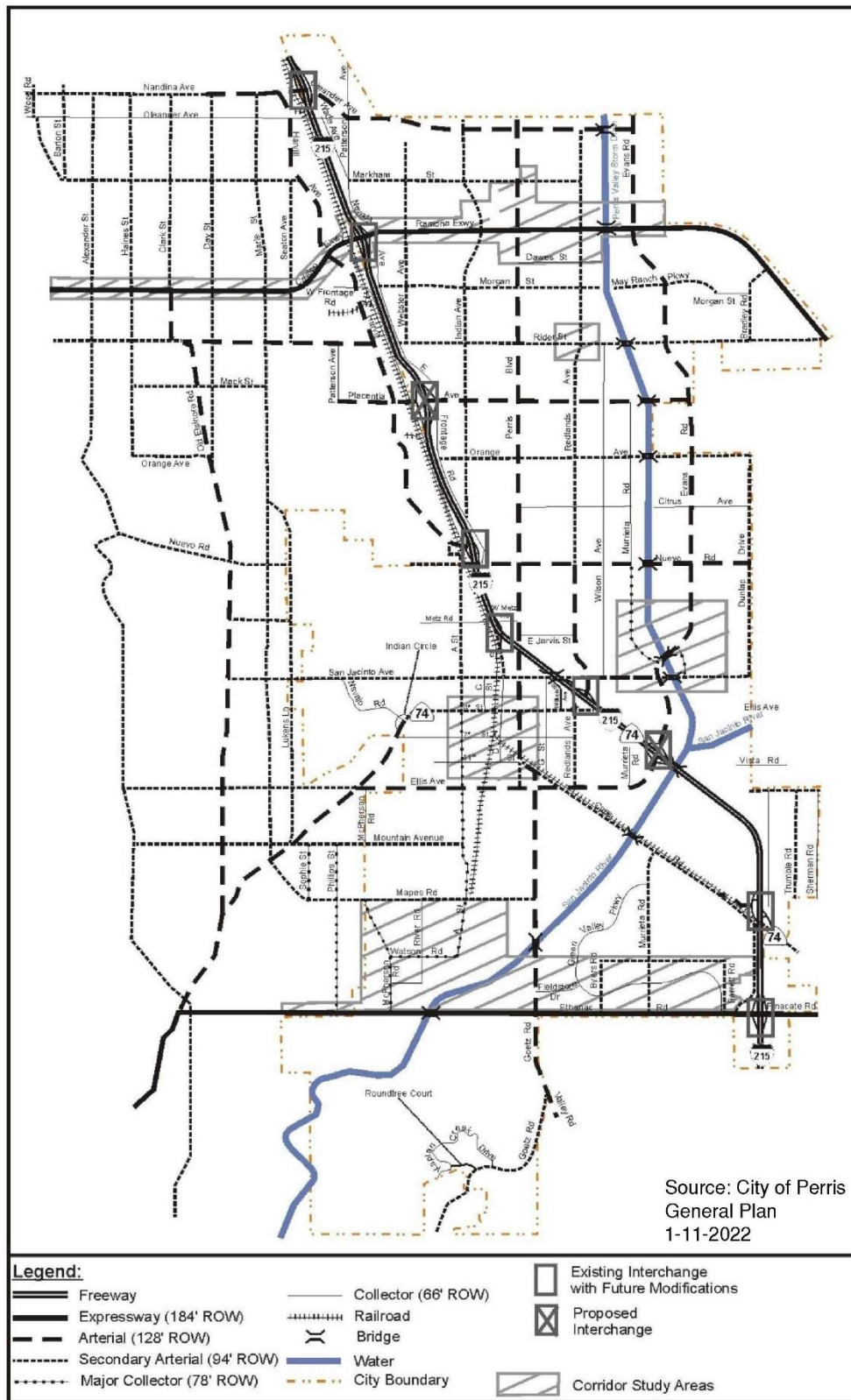
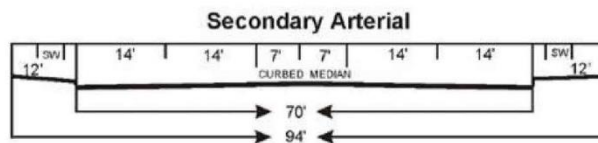
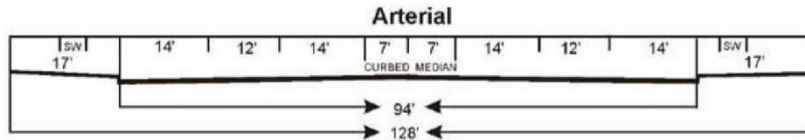
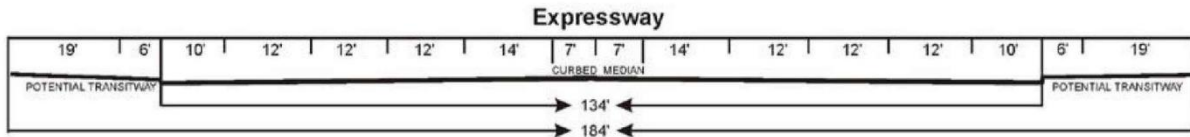
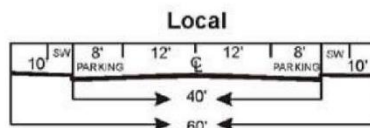
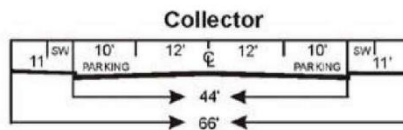
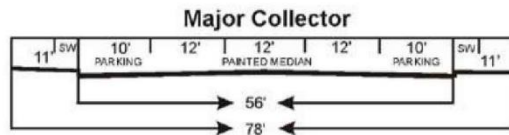
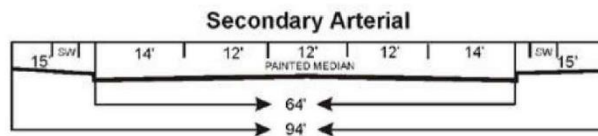


EXHIBIT 3-3: CITY OF PERRIS GENERAL PLAN ROADWAY CROSS-SECTIONS



or



Specific details for each cross-section follow in Figures 4.1 A - 4.1 F

Legend

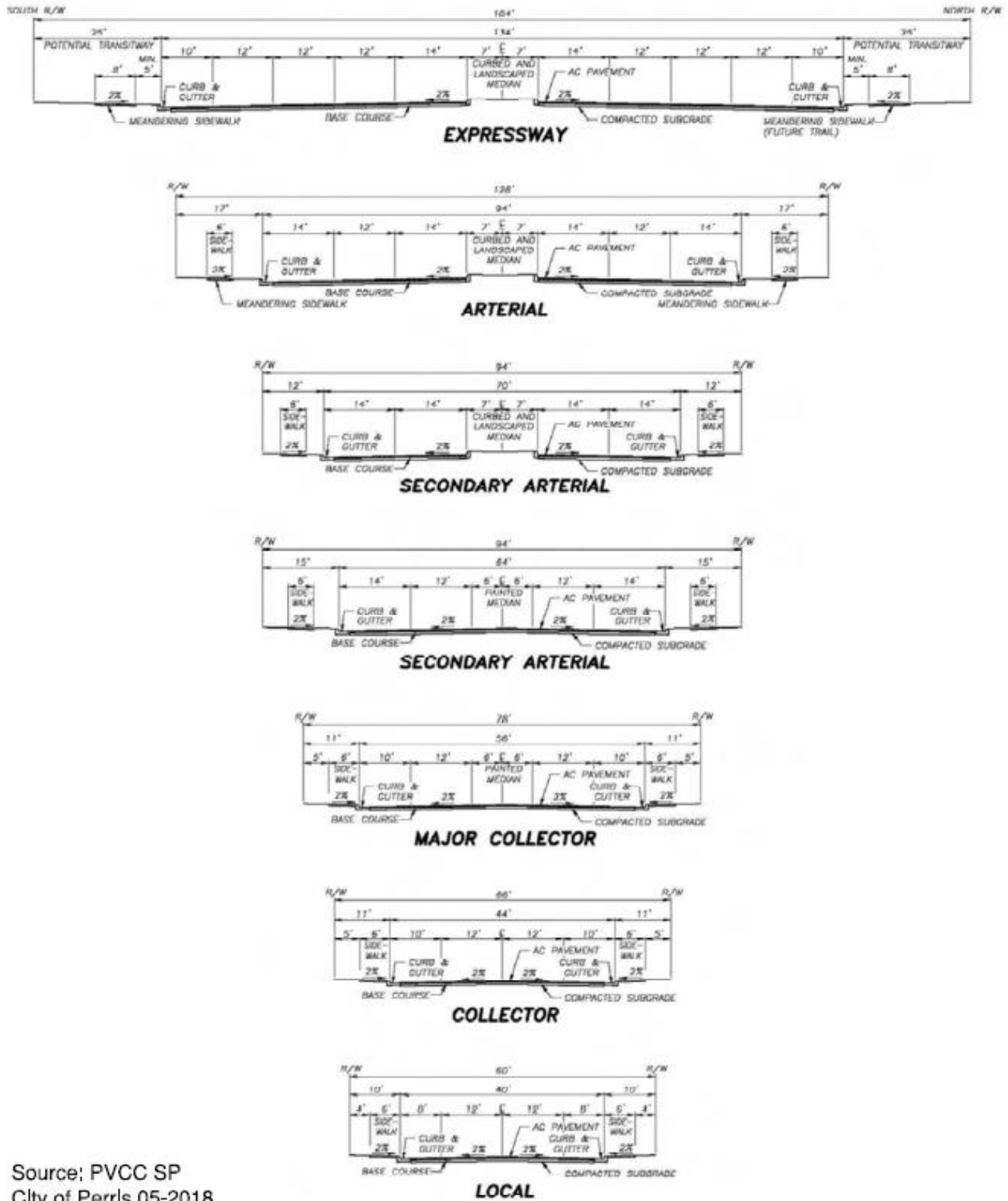
- SW Sidewalk or Trail (at least 4 feet)
- PARKING Parking or Bike Lane
- PAINTED MEDIAN Center Median and/or Continuous Left Turning Lane
- CURBED MEDIAN Landscaped Center Median

Source: City of Perris
General Plan
1-11-2022

EXHIBIT 3-4: PERRIS VALLEY COMMERCE CENTER SPECIFIC PLAN CIRCULATION PLAN



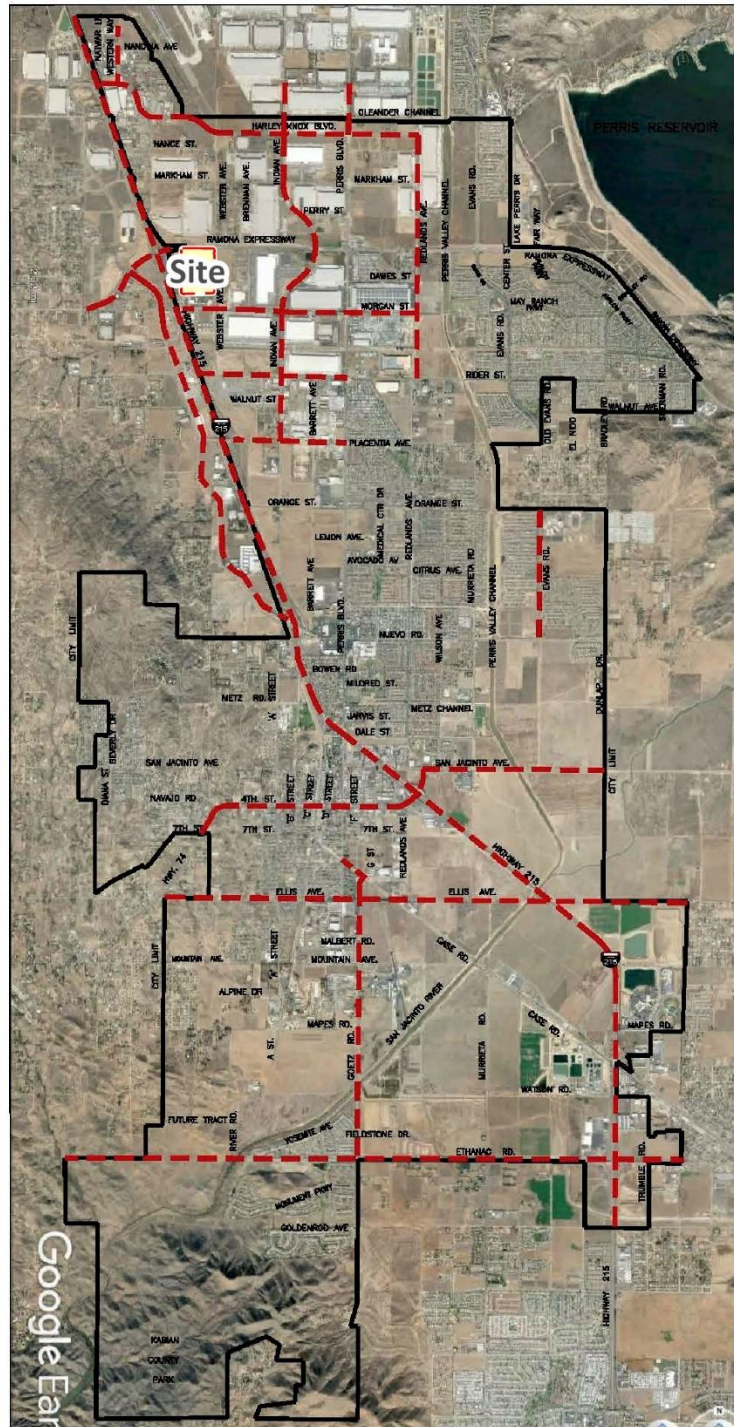
EXHIBIT 3-5: PERRIS VALLEY COMMERCE CENTER SPECIFIC PLAN CROSS-SECTIONS



Source; PVCC SP
City of Perris 05-2018

EXHIBIT 3-6: CITY OF PERRIS TRUCK ROUTES

CITY COUNCIL APPROVED JANUARY 11TH, 2022 - EFFECTIVE FEBRUARY 10TH, 2022



LEGEND:
--- TRUCK ROUTES
 ——— PERRIS CITY LIMITS



EXHIBIT 3-7: PERRIS VALLEY COMMERCE CENTER SPECIFIC PLAN TRUCK ROUTE PLAN



EXHIBIT 3-8: PERRIS VALLEY COMMERCE CENTER SPECIFIC PLAN MASS TRANSIT ROUTES



3.5 BICYCLE & PEDESTRIAN FACILITIES

In an effort to promote alternative modes of transportation, the City of Perris also includes a proposed bikeways and trail system. The City of Perris proposed bikeways are shown on Exhibit 3-9 per the City’s latest Active Transportation Plan. Ramona Expressway, Indian Avenue, and Perris Boulevard are proposed to have Class II bike lanes. The PVCC SP Trail System is shown on Exhibit 3-10. Field observations conducted in January 2022 indicate nominal pedestrian and bicycle activity within the study area. Exhibit 3-11 illustrates the existing bicycle and pedestrian facilities, including bike lanes, sidewalks, and crosswalk locations. As shown, many areas of the study area include crosswalks and sidewalk connections. Development of the proposed Project will provide much needed pedestrian and bicycle facilities (via the Class I Multipurpose Path) to the area bounded by Nevada Avenue, Ramona Expressway, and Webster Avenue.

3.6 EXISTING TRAFFIC COUNTS

The intersection LOS analysis is based on the traffic volumes observed during the peak hour conditions using traffic count data collected on January 25, 2022, when local schools were in session and operating on a typical bell schedule. The following peak hours were selected for analysis:

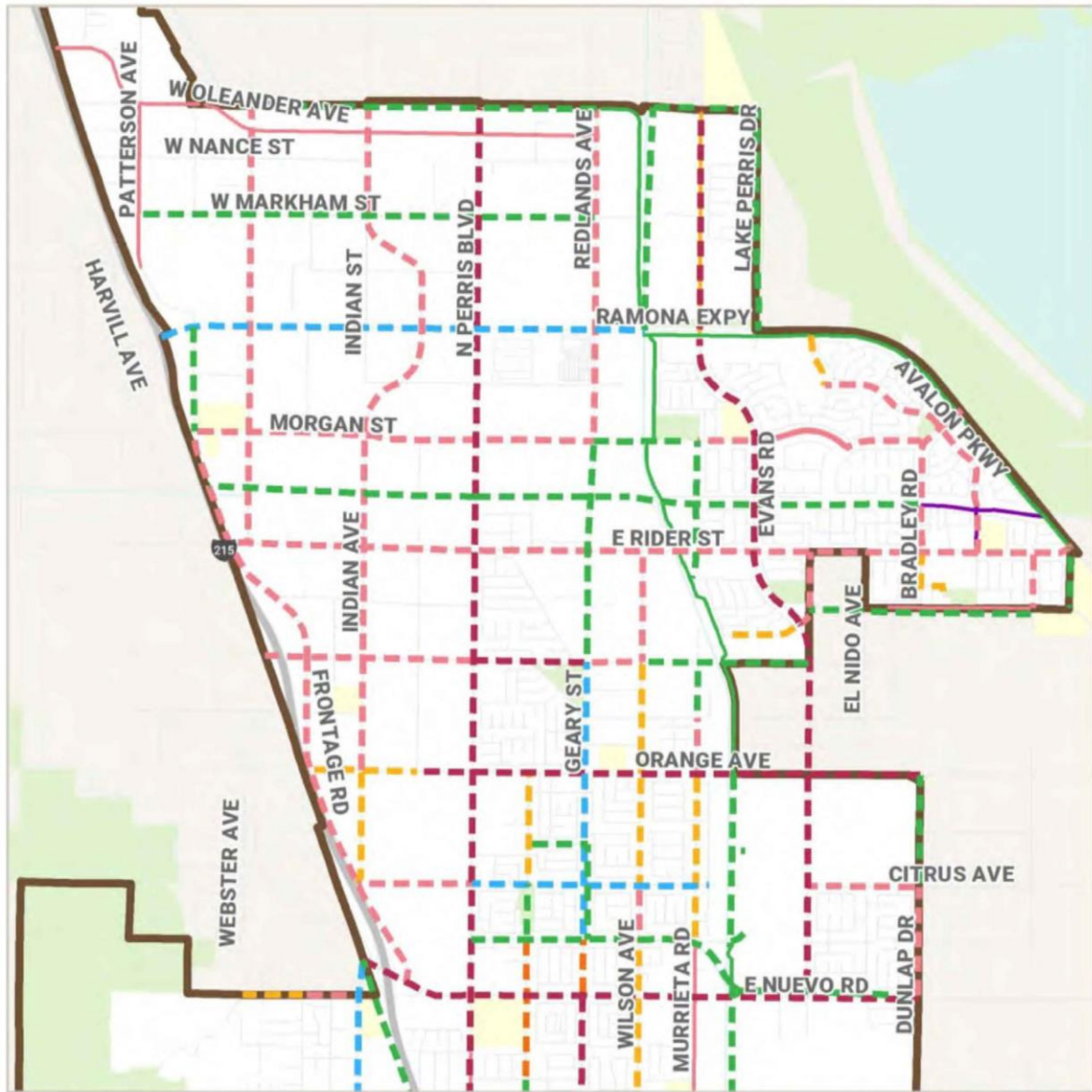
- Weekday AM Peak Hour (peak hour between 7:00 AM and 9:00 AM)
- Weekday PM Peak Hour (peak hour between 4:00 PM and 6:00 PM)

The weekday AM and weekday PM peak hour count data are representative of typical weekday peak hour traffic conditions in the study area. There were no observations made in the field that would indicate atypical traffic conditions on the count dates, such as construction activity or detour routes and near-by schools were in session and operating on normal schedules. The raw manual peak hour turning movement traffic count data sheets are included in Appendix 3.1. These raw turning volumes have been flow conserved between intersections with limited access, no access, and where there are currently no uses generating traffic. The traffic counts collected 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 PCEs. By their size alone, these vehicles occupy the same space as two or more passenger cars. In addition, the time it takes for them to accelerate and slow-down is also much longer than for passenger cars and varies depending on the type of vehicle and number of axles. For this analysis, a PCE factor of 1.5 has been applied to 2-axle trucks, 2.0 for 3-axle trucks, and 3.0 for 4+-axle trucks to estimate each turning movement. These factors are consistent with the values recommended for use in the County of Riverside’s traffic study guidelines. (9)

EXHIBIT 3-9: CITY OF PERRIS PROPOSED BIKEWAYS (ACTIVE TRANSPORTATION PLAN)



Existing / Recommended Bikeways

- - - Shared-Use Path (Class I)
- - - Bicycle Lane (Class II)
- - - Buffered Bike Lane (Class IIB)
- - - Bicycle Route (Class III)
- - - Bicycle Boulevard (Class III B)
- - - Separated Bikeway (Class IV)
- - - Walking Trail

Destinations + Boundaries

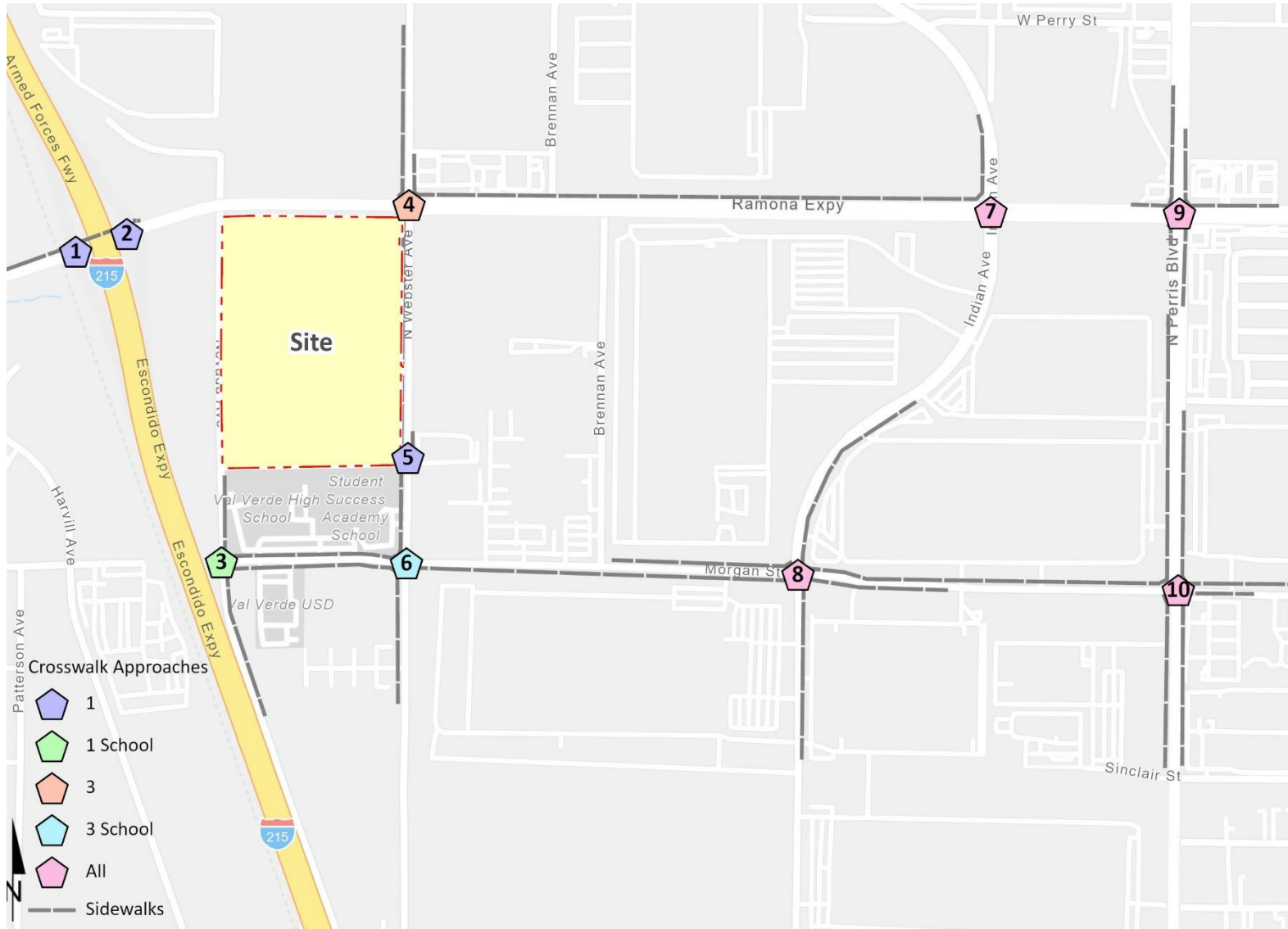
- City Boundary
- School
- Park or Open Space

SOURCE: City of Perris Active Transportation Plan (December 8, 2020)

EXHIBIT 3-10: PERRIS VALLEY COMMERCE CENTER SPECIFIC PLAN TRAIL SYSTEM



EXHIBIT 3-11: EXISTING PEDESTRIAN FACILITIES



Existing weekday average daily traffic (ADT) volumes on arterial highways throughout the study area are shown on Exhibit 3-12 (in actual vehicles). Where actual 24-hour tube count data was not available, Existing ADT volumes were based upon factored intersection peak hour counts collected by Urban Crossroads, Inc. using the following formula for each intersection leg:

$$\text{Weekday PM Peak Hour (Approach Volume + Exit Volume)} \times 14.19 = \text{Leg Volume}$$

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 7.05 percent. As such, the above equation utilizing a factor of 14.19 estimates the ADT volumes on the study area roadway segments assuming a peak-to-daily relationship of approximately 7.05 percent (i.e., $1/0.0705 = 14.19$) and was assumed to sufficiently estimate average daily traffic (ADT) volumes for planning-level analyses. Existing weekday AM and weekday PM peak hour intersection volumes are also shown on Exhibit 3-12 (in actual vehicles). Although the volume exhibits contained within this TA show actual vehicles, the peak hour intersection operations analyses are based on the PCE volumes provided in Appendix 3.1, consistent with the City/County requirements.

3.7 INTERSECTION OPERATIONS ANALYSIS

Existing peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2.2 *Intersection Capacity Analysis* of this report. The intersection operations analysis results are summarized in Table 3-1 which indicates that the study area intersections are currently operating at an acceptable LOS during the peak hours (i.e., LOS D or better). The intersection operations analysis worksheets are included in Appendix 3.2 of this TA.

EXHIBIT 3-12: EXISTING (2022) TRAFFIC VOLUMES



<p>1 I-215 SB Ramps & Ramona Exwy.</p> <p>12,750 144(135) 1(4) 619(760) 943(821) 281(346) 650(820) 307(323) 29,800</p>	<p>2 I-215 NB Ramps & Ramona Exwy.</p> <p>9,750 39,000 9,550 39,000</p>	<p>3 Nevada Av. & Ramona Exwy.</p> <p>47,350 604(583) 910(848) 100(100) 1169(1480) 314(319) 3(3) 552(425) 10,600 47,350</p>	<p>4 Nevada Av. & Driveway 4</p> <p>6,800 258(433) 31(45) 6,800</p>	<p>5 Nevada Av. & Driveway 3</p> <p>6,800 258(433) 31(45) 6,800</p>
<p>6 Nevada Av. & Driveway 2</p> <p>6,800 258(433) 31(45) 6,800</p>	<p>7 Nevada Av. & Driveway 1</p> <p>6,800 258(433) 31(45) 6,800</p>	<p>8 Nevada Av. & Morgan St.</p> <p>1,950 177(425) 62(6) 7(1) 31(82) 23(47) 84(49) 6,550</p>	<p>9 Driveway 5 & Ramona Exwy.</p> <p>46,300 1495(1562) 46,300</p>	<p>10 Driveway 6 & Ramona Exwy.</p> <p>46,300 1495(1562) 46,300</p>
<p>11 Webster Av. & Ramona Exwy.</p> <p>8,700 96(209) 21(84) 36(84) 44(55) 1320(1098) 24(22) 198(154) 1198(1369) 99(39) 99(169) 51(27) 18(13) 4,700 46,300</p>	<p>12 Webster Av. & Driveway 7</p> <p>4,700 144(145) 168(209) 4,700</p>	<p>13 Webster Av. & Driveway 8</p> <p>4,700 144(145) 168(209) 4,700</p>	<p>14 Webster Av. & Morgan St.</p> <p>4,800 56(41) 27(11) 72(87) 80(128) 104(29) 26(7) 93(51) 81(20) 33(8) 5(20) 17(21) 16(33) 1,400 2,400</p>	<p>15 Indian Av. & Ramona Exwy.</p> <p>9,350 43(93) 42(213) 16(90) 57(62) 1320(943) 40(45) 154(101) 1009(1278) 54(55) 72(40) 64(100) 26(118) 9,500 37,050</p>
<p>16 Indian Av. & Morgan St.</p> <p>7,400 24(17) 70(314) 4(15) 5(12) 118(26) 10(16) 12(17) 68(74) 60(88) 83(90) 123(146) 3(12) 9,450</p>	<p>17 Perris Bl. & Ramona Exwy.</p> <p>30,700 169(171) 308(858) 106(316) 122(124) 943(684) 85(168) 298(266) 618(930) 126(291) 305(232) 535(427) 44(105) 33,000 29,550</p>	<p>18 Perris Bl. & Morgan St.</p> <p>1,850 5(26) 475(1214) 25(24) 16(20) 27(13) 6(27) 21(24) 19(27) 20(57) 47(54) 722(711) 8(21) 29,550</p>	<p>##(##) AM(PM) Peak Hour Intersection Volumes ## Average Daily Trips</p>	

TABLE 3-1: INTERSECTION ANALYSIS FOR EXISTING (2022) CONDITIONS

#	Intersection	Traffic Control ¹	Delay ² (secs.)		Level of Service	
			AM	PM	AM	PM
1	I-215 SB Ramps & Ramona Exwy.	TS	26.0	36.5	C	D
2	I-215 NB Ramps & Ramona Exwy.	TS	31.3	19.6	C	B
3	Nevada Av. & Ramona Exwy.	CSS	15.9	22.6	C	C
4	Nevada Av. & Driveway 4		Future Intersection			
5	Nevada Av. & Driveway 3		Future Intersection			
6	Nevada Av. & Driveway 2		Future Intersection			
7	Nevada Av. & Driveway 1		Future Intersection			
8	Nevada Av. & Morgan St.	CSS	11.6	13.7	B	B
9	Driveway 5 & Ramona Exwy.		Future Intersection			
10	Driveway 6 & Ramona Exwy.		Future Intersection			
11	Webster Av. & Ramona Exwy.	TS	34.3	30.4	C	C
12	Webster Av. & Driveway 7		Future Intersection			
13	Webster Av. & Driveway 8		Future Intersection			
14	Webster Av. & Morgan St.	AWS	10.7	9.4	B	A
15	Indian Av. & Ramona Exwy.	TS	22.9	26.8	C	C
16	Indian Av. & Morgan St.	TS	14.3	15.8	B	B
17	Perris Bl. & Ramona Exwy.	TS	30.3	34.2	C	C
18	Perris Bl. & Morgan St.	TS	12.3	15.8	B	B

¹ CSS = Cross-street Stop; AWS = All-way Stop; TS = Traffic Signal

² Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

3.8 TRAFFIC SIGNAL WARRANTS ANALYSIS

Traffic signal warrants for Existing traffic conditions are based on existing peak hour intersection turning volumes. There are no study area intersections that meek peak hour volume-based traffic signal warrants under Existing (2022) traffic conditions (see Appendix 3.3).

3.9 FREEWAY OFF-RAMP QUEUING ANALYSIS

A queuing analysis was performed for the off-ramps at the I-215 Freeway at the Ramona Expressway interchange to assess vehicle queues for the off ramps that may potentially result in deficient peak hour operations at the ramp-to-arterial intersections and may potentially “spill back” onto the I-215 Freeway mainline. Queuing analysis findings are presented in Table 3-2. It is important to note that off-ramp lengths are consistent with the measured distance between the intersection and the freeway mainline. As shown in Table 3-2, there are no movements that are currently experiencing queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows. Worksheets for Existing (2022) traffic conditions off-ramp queuing analysis are provided in Appendix 3.4.

TABLE 3-2: PEAK HOUR FREEWAY OFF-RAMP QUEUING SUMMARY FOR EXISTING (2022) CONDITIONS

Intersection	Movement	Available Stacking Distance (Feet)	95th Percentile Queue (Feet)		Acceptable? ¹	
			AM Peak Hour	PM Peak Hour	AM	PM
I-215 SB Ramps & Ramona Exwy.	SBL	530	418 ²	458 ²	Yes	Yes
	SBL/T	1,100	421 ²	471 ²	Yes	Yes
	SBR	530	119	69	Yes	Yes
I-215 NB Ramps & Ramona Exwy.	NBL	520	144	151	Yes	Yes
	NBL/T	1,120	146	154	Yes	Yes
	NBR	520	535 ^{2,3}	387 ²	Yes	Yes

¹ Stacking Distance is acceptable if the required stacking distance is less than or equal to the stacking distance provided. An additional 15 feet of stacking which is assumed to be provided in the transition for turn pockets is reflected in the stacking distance shown on this table, where applicable.

² 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

³ Although 95th percentile queue is anticipated to exceed the available storage for the turn lane, the adjacent through lane has sufficient storage to accommodate any spillover without spilling back and affecting the I-215 Freeway mainline.

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4 PROJECTED FUTURE TRAFFIC

The Project is to consist of a 950,224 sf warehouse building which will be evaluated assuming 902,713 sf of high-cube fulfillment center warehouse use (95% of the total square footage) and 47,511 sf of high-cube cold storage use (5% of the total square footage). The Project also includes a retail component that fronts Ramona Expressway, which will include 16,500 sf of fast-food restaurant use with drive-through window, 10,200 sf of fast-food restaurant without drive-through window, 2,400 sf coffee/donut shop with drive-through, a 3,515 sf automated car wash with 1 tunnel, and 16 vehicle fueling position gas station (with a 4,600 sf convenience store). The Project is anticipated to be constructed in one phase by the year 2024. The following describes the access proposed for the site:

- Driveway 1 on Nevada Avenue – full access for passenger cars only to the industrial component
- Driveway 2 on Nevada Avenue – full access for all trucks to the industrial component
- Driveway 3 on Nevada Avenue – full access for all trucks to the industrial component
- Driveway 4 on Nevada Avenue – full access to the retail component
- Driveway 5 on Ramona Expressway – full access to the retail component (proposed to be signalized)
- Driveway 6 on Ramona Expressway – right-in access only to the retail component
- Driveway 7 on Webster Avenue – full access to the retail component
- Driveway 8 on Webster Avenue – full access for passenger cars only to the industrial component

Signals along Ramona Expressway will be required at Nevada Avenue and Driveway 5 and are proposed to be implemented by the Project. These signals along with the one at Webster Avenue will be synchronized to optimize traffic flow along Ramona Expressway. There are two access alternatives for the proposed retail component that are proposed to be evaluated as part of this TA. The first alternative access requested by the City has been evaluated for the proposed retail component with the following assumptions (all other access to the industrial component is consistent with that described above):

- Driveway 4 on Nevada Avenue – right-in/right-out access only to the retail component
- Driveway 6 on Ramona Expressway – will not exist
- Driveway 7 on Webster Avenue – right-in/right-out access only to the retail component

The second access alternative will assume the following the following access assumptions (all other access to the industrial component will remain the same as described previously):

- Driveway 4 on Nevada Avenue – right-in/right-out access only to the retail component
- Driveway 6 on Ramona Expressway – right-in access only to the retail component
- Driveway 7 on Webster Avenue – right-in/right-out/left-in access only to the retail component

Regional access to the Project site is provided via the I-215 Freeway and Ramona Expressway and future Placentia Interchange via Nevada Avenue/I-215 E. Frontage Road (anticipated completion

of the interchange per the Riverside County Transportation Commission or RCTC is Summer 2022).

4.1 PROJECT TRIP GENERATION

Trip generation represents the amount of traffic that is attracted and produced by a development and is based upon the specific land uses planned for a given project. Trip generation rates for the Project are shown in Table 4-1 and Table 4-2 shows the PCE trip generation summary illustrating daily and peak hour trip generation estimates based on the ITE Trip Generation Manual (11th Edition, 2021). (2) For purposes of this analysis, the following ITE land use codes and vehicle mixes have been utilized:

- High-Cube Fulfillment Center Warehouse has been used to derive site specific trip generation estimates for up to 902,713 square feet of the proposed Project (95% of the total warehouse building square footage). The ITE Trip Generation Manual has trip generation rates for high-cube fulfillment center use for both non-sort and sort facilities (ITE Land Use Code 155). However, the ITE Trip Generation Manual recommends the use of local data sources where available. As such, the best available source for high-cube fulfillment center use would be the trip-generation and vehicle mix statistics published in the High-Cube Warehouse Trip Generation Study (WSP, January 29, 2019) which was commissioned by the Western Riverside Council of Governments (WRCOG) in support of the Transportation Uniform Mitigation Fee (TUMF) update in the County of Riverside. (10) The WSP trip generation rates were published in January 2019 and are based on data collected at 11 local high-cube fulfillment center sites located throughout Southern California (specifically Riverside County and San Bernardino County). However, the WSP study does not include a split for inbound and outbound vehicles, as such, the inbound and outbound splits per the ITE Trip Generation Manual for Land Use Code 154 have been utilized.
- High-Cube Cold Storage Warehouse (ITE Land Use Code 157) has been used to derive site specific trip generation estimates for up to 47,511 square feet (5% of the total warehouse building square footage). High-cube cold storage warehouses include warehouses characterized by the storage and/or consolidation of manufactured goods (and to a lesser extent, raw materials) prior to their distribution to retail locations or other warehouses. High-cube cold storage warehouses are facilities typified by temperature-controlled environments for frozen food or other perishable products. The High-Cube Cold Storage Warehouse vehicle mix (passenger cars versus trucks) has been obtained from the ITE's Trip Generation Manual. The truck percentages were further broken down by axle type per the following SCAQMD recommended truck mix: 2-Axle = 34.7%; 3-Axle = 11.0%; 4+-Axle = 54.3%.

As noted in Table 4-1, 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. Passenger Car Equivalent (PCE) factors were applied to the trip generation rates for heavy trucks (large 2-axes, 3-axes, 4+-axes). 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 County's Guidelines. (9)

- Fast-Food Restaurant without Drive-Through Window – ITE Land Use Code 933
- Fast-Food Restaurant with Drive-Through Window – ITE Land Use Code 934
- Coffee/Donut Shop with Drive-Through Window – ITE Land Use Code 937
- Automated Car Wash – ITE Land Use Code 948
- Convenience Market/Gas Station – ITE Land Use Code 945

As the Project is proposed to include commercial retail, restaurant, and gas station uses, pass-by percentages have been obtained from the ITE Trip Generation Manual (11th Edition, 2021). (1) Pass-by trips are associated with existing traffic on the roadway network that might visit a use on-site on their way to their primary destination. Pass-by trip reductions will be added back at driveway locations as part of the operations analysis to evaluate the full effect of these trips at the access points. Patrons of the uses may also visit other uses on-site, including the restaurants, and retail uses, without leaving the site thereby also accounting for internal trip reductions. Internal capture is a percentage reduction that can be applied to the trip generation estimates for individual land uses to account for trips internal to the site. In other words, trips may be made between individual retail uses on-site and can be made either by walking or using internal roadways without using external streets. An internal capture reduction was applied to recognize the interactions that would occur between the various complementary on-site land uses. The internal capture is based on the National Cooperative Highway Research Program's (NCHRP Report 684) internal capture trip capture estimation tool. The internal capture worksheets are provided in Appendix 4.1.

The proposed Project's trip generation, based on actual vehicles, is included in Table 4-2 for informational purposes only. The proposed Project is anticipated to generate 8,372 two-way trip-ends per day with 869 AM peak hour trips and 671 PM peak hour trips (actual vehicles), as shown in Table 4-2. For the purposes of the operations analysis, the PCE values shown in Table 4-3 will be utilized. The proposed Project is anticipated to generate 8,960 two-way PCE trip-ends per day with 898 PCE AM peak hour trips and 701 PCE PM peak hour trips.

TABLE 4-1: PROJECT TRIP GENERATION RATES

Land Use ¹	Units ²	ITE LU Code	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Actual Vehicle Trip Generation Rates									
High-Cube Fulfillment Center Warehouse ³	TSF	--	0.094	0.028	0.122	0.046	0.119	0.165	2.129
Passenger Cars			0.079	0.024	0.103	0.040	0.104	0.144	1.750
2-4 Axle Trucks			0.006	0.002	0.008	0.003	0.008	0.011	0.162
5+-Axle Trucks			0.008	0.003	0.011	0.003	0.007	0.010	0.217
High-Cube Cold Storage Warehouse ⁴	TSF	157	0.085	0.025	0.110	0.034	0.086	0.120	2.120
Passenger Cars			0.062	0.018	0.080	0.025	0.065	0.090	1.370
2-Axle Trucks			0.003	0.007	0.010	0.005	0.005	0.010	0.260
3-Axle Trucks			0.001	0.002	0.003	0.002	0.001	0.003	0.083
4+-Axle Trucks			0.005	0.011	0.016	0.008	0.008	0.016	0.407
Fast Food without Drive Thru	TSF	933	25.04	18.14	43.18	16.61	16.60	33.21	450.49
Fast Food with Drive Thru	TSF	934	22.75	21.86	44.61	17.18	15.85	33.03	467.48
Coffee/Donut Shop with Drive Thru	TSF	937	43.80	42.08	85.88	19.50	19.50	38.99	533.57
Automated Car Wash ⁵	TUN	948	N/A	N/A	N/A	38.75	38.75	77.50	775.00
Gas Station/Convenience Market (4,000-5,500 SF)	VFP	945	13.52	13.52	27.04	11.38	11.38	22.76	257.13
Passenger Car Equivalent (PCE) Trip Generation Rates									
High-Cube Fulfillment Center Warehouse ³	TSF	--	0.094	0.028	0.122	0.046	0.119	0.165	2.129
Passenger Cars			0.079	0.024	0.103	0.040	0.104	0.144	1.750
2-4 Axle Trucks (PCE = 2.0)			0.012	0.004	0.016	0.006	0.016	0.022	0.324
5+-Axle Trucks (PCE = 3.0)			0.025	0.008	0.033	0.008	0.022	0.030	0.651
High-Cube Cold Storage Warehouse ⁴	TSF	157	0.085	0.025	0.110	0.034	0.086	0.120	2.120
Passenger Cars			0.062	0.018	0.080	0.025	0.065	0.090	1.370
2-Axle Trucks (PCE = 1.5)			0.005	0.011	0.016	0.008	0.008	0.016	0.390
3-Axle Trucks (PCE = 2.0)			0.002	0.005	0.007	0.004	0.003	0.007	0.165
4+-Axle Trucks (PCE = 3.0)			0.015	0.034	0.049	0.024	0.025	0.049	1.222

¹ Trip Generation & Vehicle Mix Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Eleventh Edition (2021).

² TSF = thousand square feet; TUN = Tunnel; VFP = Vehicle Fueling Position

³ Vehicle Mix Source: High Cube Warehouse Trip Generation Study, WSP, January 29, 2019.

Inbound and outbound split source: High Cube Warehouse Vehicle Trip Generation Analysis, October 2016, ITE.

⁴ Truck Mix Source: ITE Trip Generation Manual (2021).

Normalized % - With Cold Storage: 34.7% 2-Axle trucks, 11.0% 3-Axle trucks, 54.3% 4-Axle trucks.

⁵ Daily trip generation rate not readily available in the ITE Trip Generation Manual. As such, the daily rate is assumed as 10 times the PM rate.

TABLE 4-2: PROJECT TRIP GENERATION SUMMARY (ACTUAL VEHICLES)

Land Use	Quantity Units ¹	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	
Fulfillment Center Warehouse (95%)	902.713 TSF							
Passenger Cars:		72	21	93	36	94	130	1,580
2-4 axle Trucks:		6	2	8	3	7	10	146
5+-axle Trucks:		8	2	10	3	6	9	196
Total Truck:		14	4	18	6	13	19	342
Fulfillment Center Warehouse (Actual Vehicles)		86	25	111	42	107	149	1,922
High-Cube Cold Storage Warehouse (5%)	47.511 TSF							
Passenger Cars:		3	1	4	1	3	4	66
2-axle Trucks:		0	0	0	0	0	0	12
3-axle Trucks:		0	0	0	0	0	0	4
4+-axle Trucks:		0	1	1	0	0	0	20
Total Truck:		0	1	1	0	0	0	36
High-Cube Cold Storage Warehouse (Actual Vehicles)		3	2	5	1	3	4	102
<i>Industrial Total Passenger Cars</i>		75	22	97	37	97	134	1,646
<i>Industrial Total Trucks</i>		14	5	19	6	13	19	378
Industrial Component Total (Actual Vehicles)		89	27	116	43	110	153	2,024
Fast Food with Drive Thru	16.500 TSF	375	361	736	283	262	545	7,714
<i>Internal Capture</i> ²		-10	-16	-26	-63	-36	-99	-1,072
<i>Pass-By (49% AM; 50% PM/Daily)</i> ³		-169	-169	-338	-110	-110	-220	-3,322
Fast Food without Drive Thru	10.200 TSF	255	185	440	169	169	339	4,596
<i>Internal Capture</i> ²		-6	-9	-15	-38	-22	-59	-588
<i>Pass-By (49% AM; 50% PM/Daily)</i> ³		-86	-86	-172	-66	-66	-132	-2,004
Coffee/Donut Shop with Drive Thru	2.400 TSF	105	101	206	47	47	94	1,282
<i>Internal Capture</i> ²		-2	-3	-4	-10	-6	-17	-166
<i>Pass-By (89% AM/PM/Daily)</i> ³		-88	-88	-176	-32	-32	-64	-994
Restaurant Total:		376	276	652	180	206	386	5,446
Automated Car Wash	1 TUN	0	0	0	39	39	78	776
<i>Internal Capture</i> ²		0	0	0	-10	-18	-28	-354
Convenience Market/Gas Station	16 VFP	216	216	433	182	182	364	4,116
<i>Internal Capture</i> ²		-28	-17	-45	-54	-93	-147	-2,112
<i>Pass-By (76% AM/PM/Daily)</i> ³		-143	-143	-286	-67	-67	-134	-1,524
Retail Total:		45	56	101	90	43	133	902
Commercial Retail Component Total		421	332	753	270	248	518	6,348
Project Total Passenger Cars		496	354	850	307	345	652	7,994
Project Total Trucks (Actual Vehicles)		14	5	19	6	13	19	378
Project Total (Actual Vehicles)		510	359	869	313	358	671	8,372

¹ TSF = Thousand Square Feet; TUN = Tunnel; VFP = Vehicle Fueling Position

² Internal capture calculated from NCHRP 684 Internal Trip Capture Estimation Tool.

³ Source: ITE *Trip Generation Handbook*, 3rd Edition, 2017.

TABLE 4-3: PROJECT TRIP GENERATION SUMMARY (PCE)

Land Use	Quantity Units ¹	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	
Fulfillment Center Warehouse (95%)	902.713 TSF							
Passenger Cars:		72	21	93	36	94	130	1,580
2-4 axle Trucks:		11	3	14	6	14	20	292
5+-axle Trucks:		23	7	30	8	19	27	588
Total Truck:		34	10	44	14	33	47	880
Fulfillment Center Warehouse (PCE)		106	31	137	50	127	177	2,460
High-Cube Cold Storage Warehouse (5%)	47.511 TSF							
Passenger Cars:		3	1	4	1	3	4	66
2-axle Trucks:		0	1	1	0	0	0	20
3-axle Trucks:		0	0	0	0	0	0	8
4+-axle Trucks:		1	2	3	1	1	2	58
Total Truck:		1	3	4	1	1	2	86
High-Cube Cold Storage Warehouse (PCE)		4	4	8	2	4	6	152
<i>Industrial Total Passenger Cars</i>		75	22	97	37	97	134	1,646
<i>Industrial Total Trucks</i>		35	13	48	15	34	49	966
Industrial Component Total (PCE)		110	35	145	52	131	183	2,612
Fast Food with Drive Thru	16.500 TSF	375	361	736	283	262	545	7,714
<i>Internal Capture</i> ²		-10	-16	-26	-63	-36	-99	-1,072
<i>Pass-By (49% AM; 50% PM/Daily)</i> ³		-169	-169	-338	-110	-110	-220	-3,322
Fast Food without Drive Thru	10.200 TSF	255	185	440	169	169	339	4,596
<i>Internal Capture</i> ²		-6	-9	-15	-38	-22	-59	-588
<i>Pass-By (49% AM; 50% PM/Daily)</i> ³		-86	-86	-172	-66	-66	-132	-2,004
Coffee/Donut Shop with Drive Thru	2.400 TSF	105	101	206	47	47	94	1,282
<i>Internal Capture</i> ²		-2	-3	-4	-10	-6	-17	-166
<i>Pass-By (89% AM/PM/Daily)</i> ³		-88	-88	-176	-32	-32	-64	-994
Restaurant Total:		376	276	652	180	206	386	5,446
Automated Car Wash	1 TUN	0	0	0	39	39	78	776
<i>Internal Capture</i> ²		0	0	0	-10	-18	-28	-354
Convenience Market/Gas Station	16 VFP	216	216	433	182	182	364	4,116
<i>Internal Capture</i> ²		-28	-17	-45	-54	-93	-147	-2,112
<i>Pass-By (76% AM/PM/Daily)</i> ³		-143	-143	-286	-67	-67	-134	-1,524
Retail Total:		45	56	101	90	43	133	902
Commercial Retail Component Total		421	332	753	270	248	518	6,348
Project Total Passenger Cars		496	354	850	307	345	652	7,994
Project Total Trucks (PCE)		35	13	48	15	34	49	966
Project Total (PCE)		531	367	898	322	379	701	8,960

¹ TSF = Thousand Square Feet; TUN = Tunnel; VFP = Vehicle Fueling Position

² Internal capture calculated from NCHRP 684 Internal Trip Capture Estimation Tool.

³ Source: ITE [Trip Generation Handbook](#), 3rd Edition, 2017.

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 the City of Perris. The truck trip distribution patterns have been developed based on the anticipated travel patterns for the warehousing trucks. 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. It should be noted that the industrial passenger car trip distribution patterns assume the I-215 Freeway and Placentia Avenue interchange is in place (anticipated completion of the interchange is 2022).

The Project industrial passenger car trip distribution pattern is graphically depicted on Exhibit 4-1. The Project industrial truck trip distribution pattern is graphically depicted on Exhibit 4-2. Note that Driveway 2 and Driveway 3 are only to be utilized by trucks. The parking shown along the north side of the industrial building is intended to be utilized by maintenance and service vehicles (not by employees). The parking area shown along the south side of the industrial building is intended to be utilized by employee passenger vehicles only. Note there is no truck traffic permitted on Ramona Expressway within the City of Perris. As such, all project-related trucks are anticipated to utilize the Placentia Avenue interchange to access the I-215 Freeway via Nevada Street. Finally, the Project retail trip distribution pattern is graphically depicted on Exhibit 4-3 for the preferred Project access and each access alternative. Each of these distribution patterns was reviewed and approved by the City of Perris as part of the traffic study scoping process (see Appendix 1.1).

4.3 MODAL SPLIT

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

4.4 PROJECT TRIP ASSIGNMENT

The assignment of traffic from the Project area to the adjoining roadway system is based upon the Project trip generation, trip distribution, and the arterial highway and local street system improvements that would be in place by the time of initial occupancy of the Project. Based on the identified Project traffic generation and trip distribution patterns, Project ADT and peak hour intersection turning movement volumes are shown on Exhibit 4-4 in actual vehicles.

EXHIBIT 4-1: PROJECT (INDUSTRIAL PASSENGER CAR) TRIP DISTRIBUTION

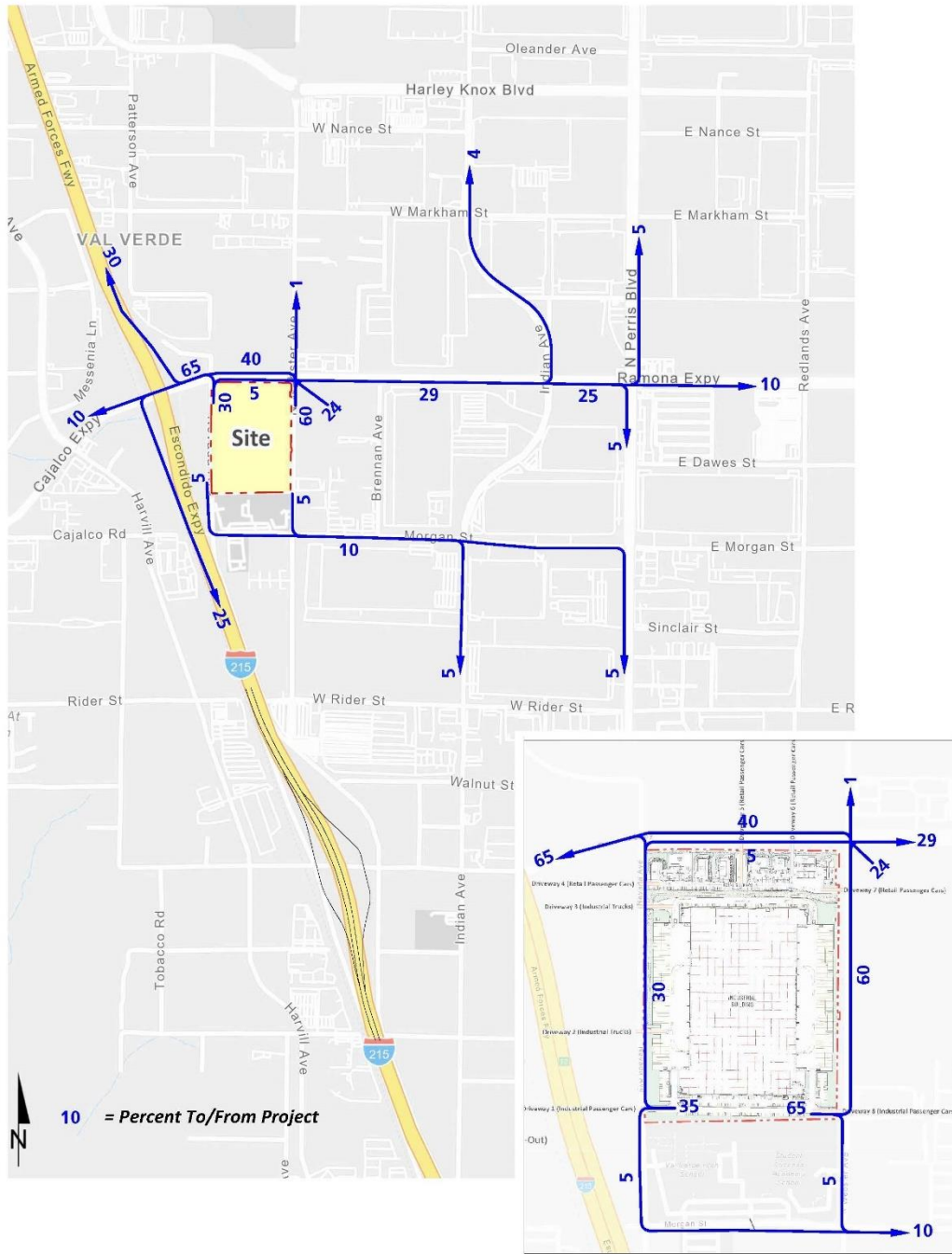


EXHIBIT 4-2: PROJECT (INDUSTRIAL TRUCK) TRIP DISTRIBUTION

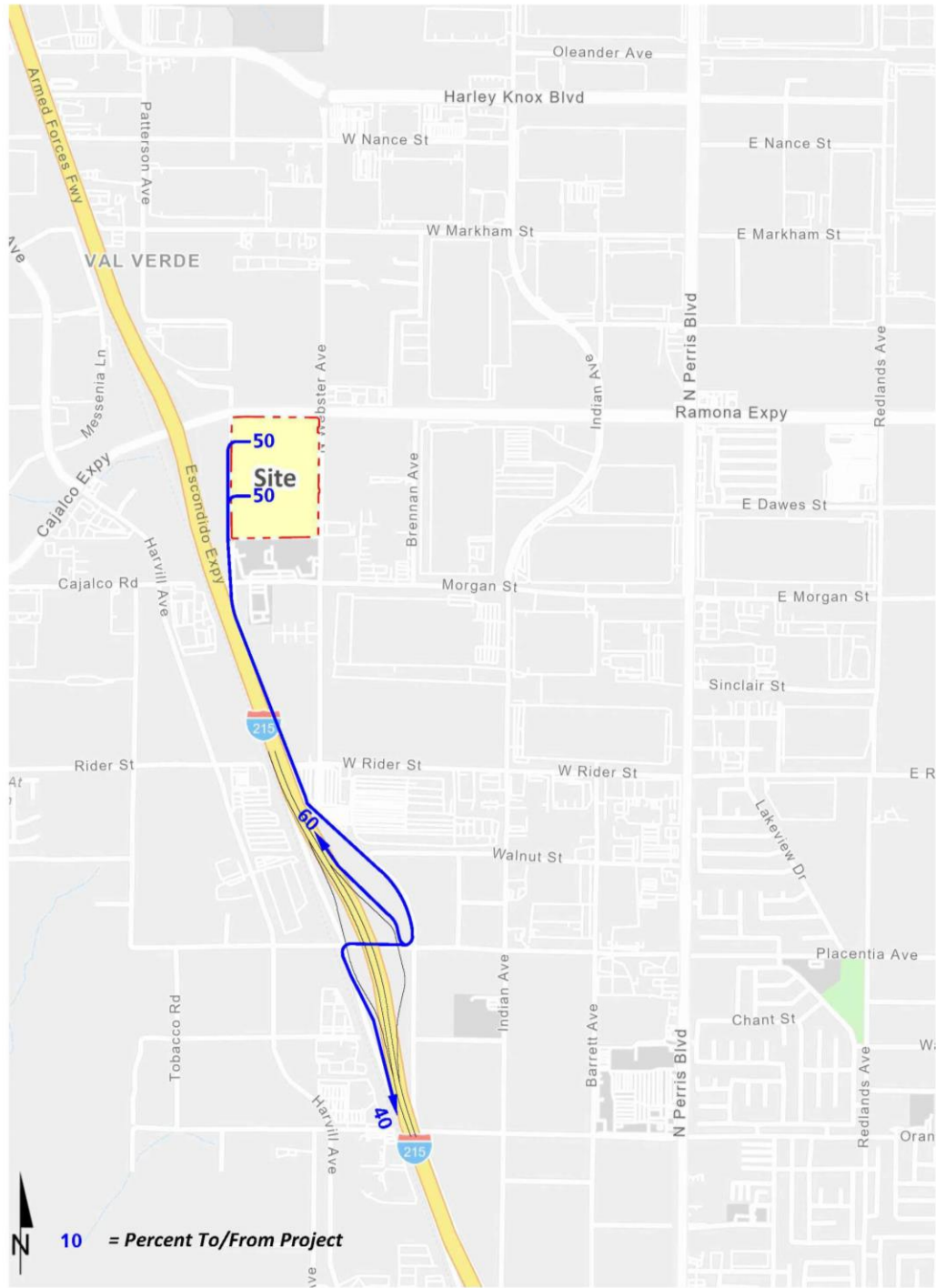


EXHIBIT 4-3: PROJECT (RETAIL) TRIP DISTRIBUTION

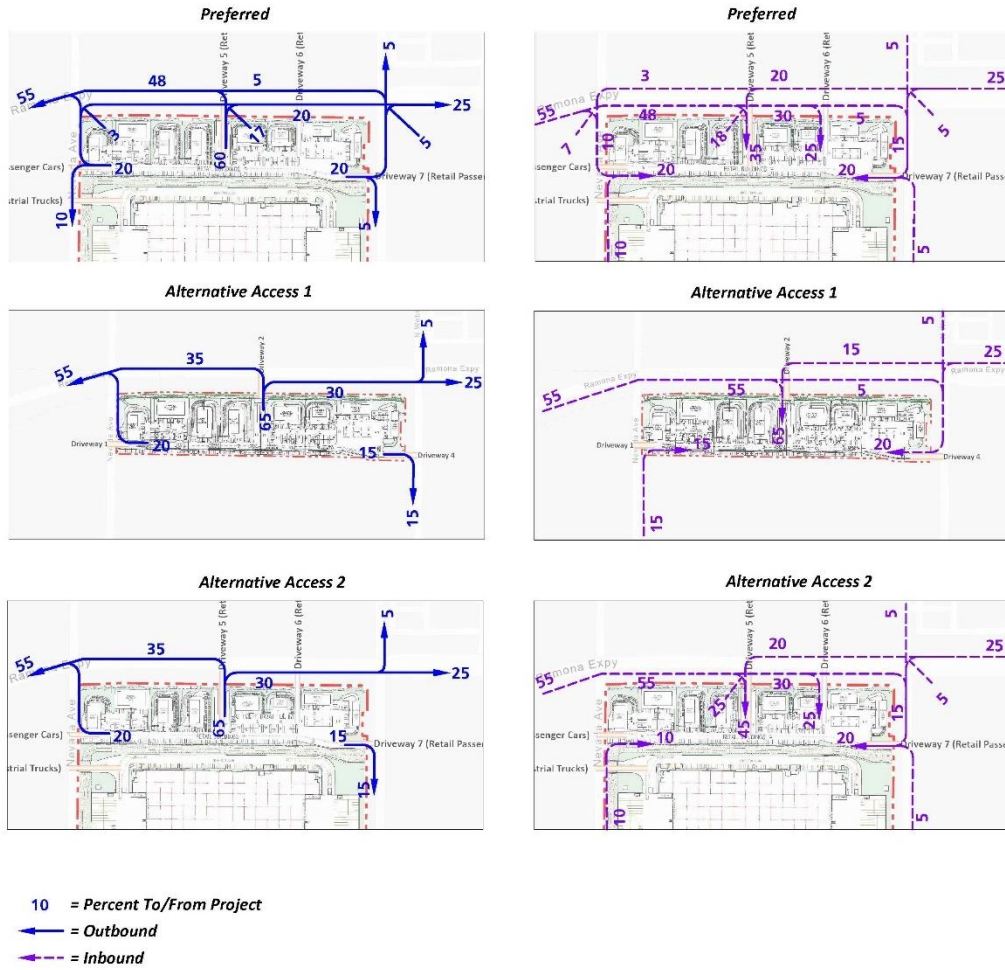
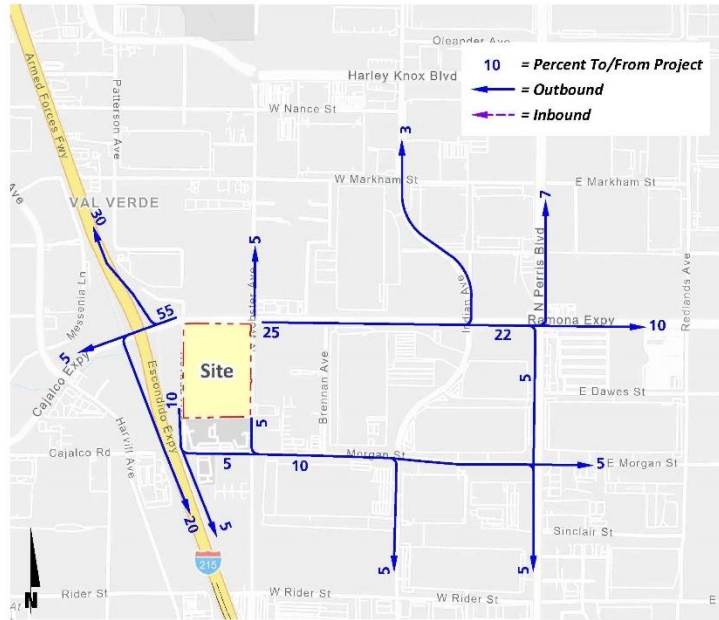


EXHIBIT 4-4: PROJECT ONLY TRAFFIC VOLUMES (PREFERRED ACCESS)



1	2	3	4	5
I-215 SB Ramps & Ramona Exwy.	I-215 NB Ramps & Ramona Exwy.	Nevada Av. & Ramona Exwy.	Nevada Av. & Driveway 4	Nevada Av. & Driveway 3
1,200 1,49(92) 19(22) 70(64) 29(17) →	2,450 1,200 106(104) 89(86) 177(109) → 95(60) ↑	4,400 232(144) → 41(24) ↓ 27(32) → 11(12) ↑	4,000 15(7) ← 42(27) ↑ 33(25) ↑ 33(25) ↑ 4(19) → 42(27) ↑	950 48(32) ← 3(7) → 47(46) → 7(3) ↑
500	750	4,400	950	1,150
6	7	8	9	10
Nevada Av. & Driveway 2	Nevada Av. & Driveway 1	Nevada Av. & Morgan St.	Driveway 5 & Ramona Exwy.	Driveway 6 & Ramona Exwy.
1,150 51(39) ← 3(7) ↑ 54(49) → 7(3) ↑	200 1,350 38(38) ← 15(7) ↓ 4(19) ↑ 3(15) ↑ 56(33) → 11(6) ↑	600 1,250 24(35) ← 18(17) ↓ 25(15) ↑ 43(23) →	400 128(-35) ↑ 242(142) ↑ 70(53) → 173(104) ↓ 313(203) → 275(166) ↑	1,350 113(107) ← 3(14) → 227(136) ↓
1,350	1,350	1,250	850	1,750
11	12	13	14	15
Webster Av. & Ramona Exwy.	Webster Av. & Driveway 7	Webster Av. & Driveway 8	Webster Av. & Morgan St.	Indian Av. & Ramona Exwy.
350 22(14) ← 88(56) ↑ 35(21) ↑ 68(54) → 51(28) ↓ 25(51) → 17(13) → 21(31) ↑	2,000 1,950 111(68) ← 3(-5) ↓ 99(65) ↓ 65(39) ↓ 70(42) ↑ 36(30) ↓	1,300 45(22) ← 17(12) ↓ 13(8) ↓ 1(5) ↓ 4(2) → 21(14) →	400 18(17) → 25(15) ↑ 25(15) ↑	1,750 16(10) ← 11(11) ↓ 77(74) →
2,350	1,950	1,050	400	2,000
16	17	18		
Indian Av. & Morgan St.	Perris Bl. & Ramona Exwy.	Perris Bl. & Morgan St.		
400 25(15) ← 18(17) → 18(17) → 25(15) →	550 33(21) ← 24(22) ↓ 35(35) → 18(17) ↓ 50(31) ↑ 25(15) ↑	300 17(12) ← 17(12) ↓ 1(5) ↓ 4(2) → 21(14) →		
800	400	400		

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

4.5 BACKGROUND TRAFFIC

Future year traffic forecasts have been based upon two years of background (ambient) growth at 3% per year over 2 years, for 2024 traffic conditions. The total ambient growth is 6.09% for 2024 traffic conditions (or 1.03^2 years). This ambient growth rate is added to existing traffic volumes to account for area-wide growth not reflected by cumulative development projects.

Ambient growth has been added to daily and peak hour traffic volumes on surrounding roadways, in addition to traffic generated by the development of future projects that have been approved but not yet built and/or for which development applications have been filed and are under consideration by governing agencies.

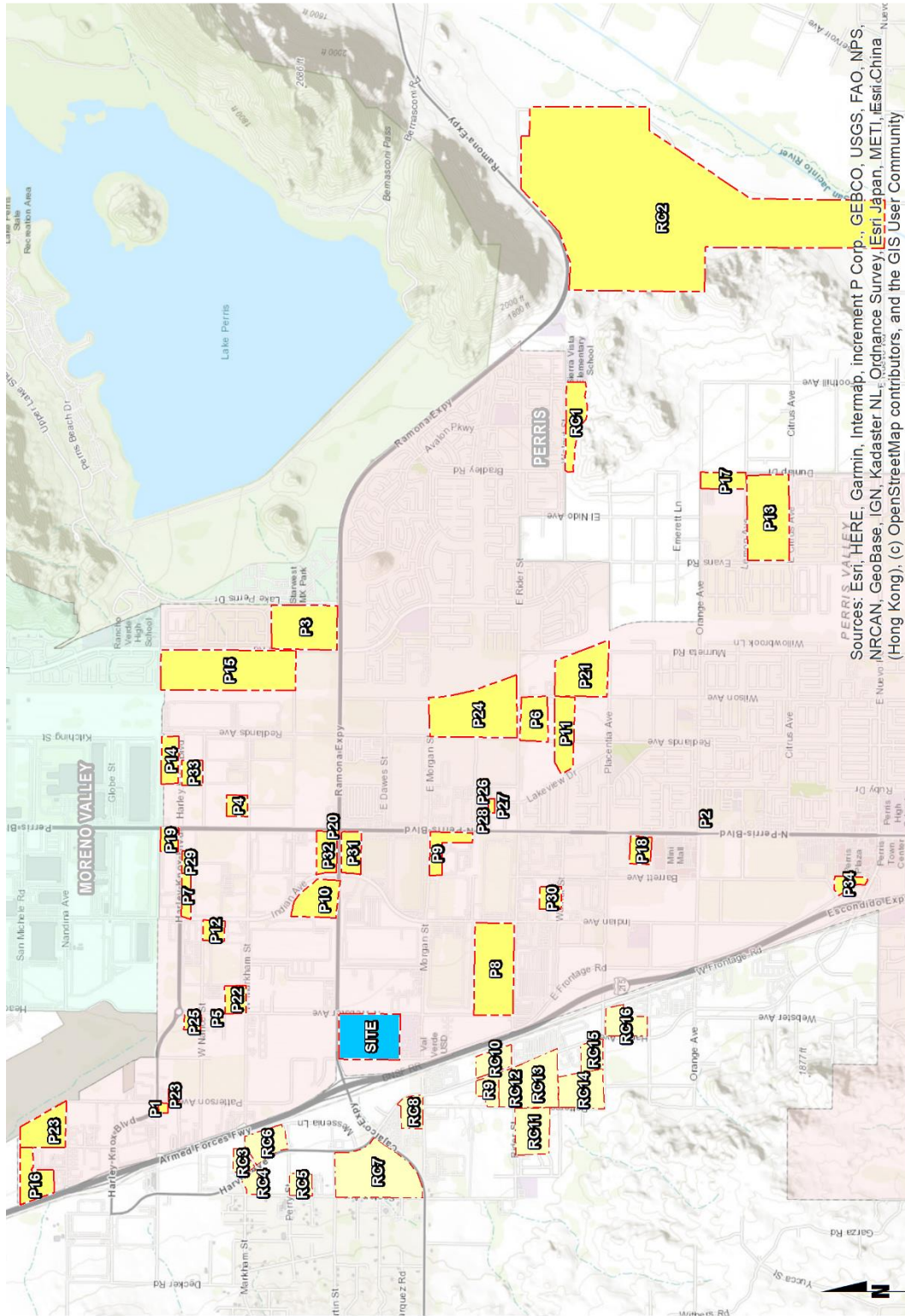
The Southern California Association of Governments (SCAG) 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) growth forecasts for the City of Perris identifies projected growth in population of 74,900 in 2016 to 121,000 in 2045, or a 61.6% increase over the 29-year period. The change in population equates to roughly a 1.67 percent growth rate compounded annually. Similarly, growth over the same 29-year period in households is projected to increase by 96.5 percent, or 2.36 percent growth rate, compounded annually. Finally, growth in employment over the same 29-year period is projected to increase by 64.0 percent, or a 1.72 percent annual growth rate. The average annual growth rate between population, households, and employment is 1.92 percent per year. (12) Therefore, the use of an annual growth rate of 3.0 percent would appear to conservatively approximate the anticipated regional growth in traffic volumes in the City of Perris, especially when considered along with the addition of Project-related traffic and traffic generated by other known development projects. As such, the growth in traffic volumes assumed in this traffic analysis would tend to overstate as opposed to understate the potential deficiencies to traffic and circulation.

4.6 CUMULATIVE DEVELOPMENT TRAFFIC

Other reasonably foreseeable development projects which are either approved or being processed concurrently in the study area have also been included as part of a cumulative analysis scenario. A cumulative project list was developed for the purposes of this analysis through consultation with planning and engineering staff from the City of Perris. The cumulative project list includes known and foreseeable projects that are anticipated to contribute traffic to the study area intersections. The adjacent jurisdiction of the County of Riverside has also been contacted to obtain the most current list of cumulative projects within their agency.

Where applicable, cumulative projects anticipated to contribute measurable traffic (i.e., 50 or more peak hour trips) to study area intersections have been manually added to the study area network to generate EAC and EAPC forecasts. In other words, this list of cumulative development projects has been reviewed to determine which projects would likely contribute measurable traffic through the study area intersections (e.g., those cumulative projects in close proximity to the proposed Project). For the purposes of this analysis, the cumulative projects that were determined to affect one or more of the study area intersections are shown on Exhibit 4-5, listed in Table 4-3, and have been considered for inclusion.

EXHIBIT 4-5: CUMULATIVE DEVELOPMENT LOCATION MAP



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

TABLE 4-4: CUMULATIVE DEVELOPMENT LAND USE SUMMARY

No.	Project Name / Case Number	Jurisdiction	Land Use	Quantity Units ¹	Location
P1	Canyon Steel (CS)	Perris	Industrial	25.000 TSF	NWC OF PATTERSON AVE. & CALIFORNIA AVE.
P2	Tract 32497	Perris	Single Family Detached	131 DU	SWC OF MEDICAL CENTER DR. & ORANGE AV.
P3	Stratford Ranch East / TTM 38071	Perris	Single Family Detached	197 DU	NEC OF EVANS RD. & RAMONA EXWY.
	APN 302200005	Perris	Single Family Detached	19 DU	NEC OF EVANS RD. & RAMONA EXWY.
P4	Perris Truck Yard	Perris	Truck Yard	9.5 AC	NORTH OF MARKHAM ST. & EAST OF PERRIS BL.
P5	Marijuana Manufacturing (MM)	Perris	Industrial	1.000 TSF	NWC OF WEBSTER AVE. & WASHINGTON ST.
	Holistic Inc.	Perris	Cultivation	5.000 TSF	872 WASHINGTON AVE.
P6	First Indus (Goodwin)	Perris	High-Cube Warehouse	338.000 TSF	SEC OF REDLANDS AVE. & RIDER ST.
P7	Kwasizur Industrial	Perris	Warehousing	138.000 TSF	SEC OF INDIAN AVE. & HARLEY KNOX BL.
P8	Rados / DPR 07-0119	Perris	High-Cube Warehouse	1,200.000 TSF	NWC OF INDIAN AVE. & RIDER ST.
P9	Patriot Industrial	Perris	Warehousing	286.000 TSF	SWC OF PERRIS BL. & MORGAN ST.
P10	Indian/Ramona Warehouse / DPR 18-00002	Perris	High-Cube Warehouse	428.730 TSF	NORTH OF RAMONA EXWY. WEST OF INDIAN AVE.
P11	Lakecreek East and West	Perris	High-Cube Warehouse	556.000 TSF	SOUTH OF RIDER ST. & EITHER SIDE OF REDLANDS AVE.
P12	Westcoast Textile / DPR 16-00001	Perris	Warehousing	180.000 TSF	SWC OF INDIAN ST. & NANCE ST.
P13	Tract 31659	Perris	Single Family Detached	161 DU	NEC OF EVANS RD. & CITRUS AVE.
	Tract 32041	Perris	Single Family Detached	122 DU	NWC OF DUNLAP RD. & CITRUS AVE.
P14	Harley Knox Commerce Park / DPR 16-004	Perris	High-Cube Warehouse	386.278 TSF	NWC OF HARLEY KNOX BLVD. & REDLANDS AVE.
P15	Stratford Ranch West / TTM 36648	Perris	Single Family Detached	90 DU	WEST OF EVANS RD. AT MARKHAM ST.
P16	First March Logistics	Perris	Warehousing	589.971 TSF	NWC OF NATWAR LN & NANDINA AV.
P17	Citrus Court / TTM 37038	Perris	Single Family Detached	111 DU	SWC OF DUNLAP RD. & ORANGE AVE.
P18	Weinerschnitzel / CUP 17-05083	Perris	Fast-Food Restaurant	2.000 TSF	WEST OF PERRIS BL., SOUTH OF PLACENTIA AVE.
P19	March Plaza / CUP16-05165	Perris	Commercial Retail	47.253 TSF	NWC OF PERRIS BL. AND HARLEY KNOX BL.
P20	Cali Express Carwash / CUP 16-05258	Perris	Carwash	5.600 TSF	NWC OF PERRIS BL. AND RAMONA EXWY.
P21	Wilson Industrial / DPR 19-00007	Perris	High-Cube Warehouse	303.000 TSF	SEC OF WILSON AVE. AND RIDER ST.
P22	Integra Expansion / MMOD 17-05075	Perris	High-Cube Warehouse	273.000 TSF	NCE OF MARKHAM ST. AND WEBSTER AVE.
P23	Duke - Patterson at Nance	Perris	High-Cube Warehouse	580.000 TSF	NEC OF PATTERSON AVE. & NANCE ST.
P24	Rider 2/4	Perris	High-Cube Warehouse	1,373.449 TSF	NEC OF REDLANDS AV. AND RIDER ST.
P25	AAA	Perris	Industrial	2.000 TSF	SEC OF HARLEY KNOX BL. & WEBSTER AVE.
P26	Pulliam Indus	Perris	Industrial	16.000 TSF	LOTS 10 & 12 ON COMMERCE DR., E OF PERRIS
P27	Burge Indus 1	Perris	Industrial	18.000 TSF	E OF PERRIS BL. & N OF COMMERCE DR.
P28	Burge Indus 2	Perris	Industrial	19.000 TSF	E OF PERRIS BL. & S OF COMMERCE DR.
P29	Nance Industrial	Perris	Warehousing	156.000 TSF	BETWEEN HARLEY KNOX BL. & NANCE ST.
P30	Dedeaux Walnut Warehouse	Perris	Industrial	205.830 TSF	N SIDE OF WALNUT AVE. BTW INDIAN AVE. & BARRETT AVE.
P31	Perris and Ramona Warehouse	Perris	Industrial	347.938 TSF	S SIDE OF RAMONA EXWY. BTW INDIAN AVE. & PERRIS BLVD.
P32	JM Realty Perris and Indian	Perris	Warehouse	232.575 TSF	N SIDE OF RAMONA EXWY. BTW INDIAN AVE. & PERRIS BLVD.
			Hotel	125 Room	
P33	Harley Knox Commerce Center	Perris	Warehousing	156.780 TSF	S SIDE OF HARLEY KNOX BL. AND W OF REDLANDS AV.
P34	Perris Plaza (Buildout)	Perris	Shopping Center	173.000 TSF	NEC OF NEEVO RD. & FRONTAGE RD.

No.	Project Name / Case Number	Jurisdiction	Land Use	Quantity Units ¹	Location
RC1	McCanna Hills / TTM 33978	Riverside County	Single Family Detached	63 DU	SWC OF SHERMAN AVE. & WALNUT AVE.
RC2	Stoneridge	Riverside County	High-Cube Cold Storage	1695.355 TSF	NORTH OF NUEVO RD., SOUTH OF RAMONA EXWY., EAST OF ANTELOPE RD.
			High-Cube Fulfillment	2966.872 TSF	
			High-Cube Warehouse	2966.872 TSF	
			Manufacturing	847.678 TSF	
			Warehouse	427.759 TSF	
			Industrial Park	641.639 TSF	
			Free-Standing Discount Superstore	100.000 TSF	
			Commercial Retail	21.968 TSF	
RC3	Majestic Freeway Business Center - Building 12	Riverside County	Warehousing	154.751 TSF	NEC OF HARVILL AVE. & COMMERCE CENTER DR.
RC4	Majestic Freeway Business Center - Building 15	Riverside County	Warehousing	90.279 TSF	NWC OF HARVILL AVE. & COMMERCE CENTER DR.
RC5	PPT180025: Seaton Commerce Center	Riverside County	High-Cube Warehouse	210.800 TSF	SEC OF SEATON AV. & PERRY ST.
RC6	Majestic Freeway Business Center - Building 11	Riverside County	High-Cube Warehouse	391.045 TSF	NEC OF HARVILL AVE. & PERRY ST.
RC7	Majestic Freeway Business Center - Buildings 1, 3 & 4	Riverside County	Warehousing	48.930 TSF	NWC OF HARVILL AVE. & CAJALCO RD.
			High-Cube Warehouse	1195.740 TSF	
RC8	Val Verde Logistics Center	Riverside County	High-Cube Warehouse	280.308 TSF	NWC OF HARVILL AVE. & OLD CAJALCO RD.
RC9	Dedeaux Truck Terminal	Riverside County	Truck Terminal	55.700 TSF	NORTH OF RIDER ST., WEST OF HARVILL AV.
RC10	Harvill & Rider Warehouse	Riverside County	High-Cube Warehouse	284.746 TSF	NORTH OF RIDER ST., EAST OF HARVILL AV.
			General Light Industrial	50.249 TSF	
RC11	PP26293	Riverside County	High-Cube Warehouse	612.481 TSF	SWC OF PATTERSON AVE. & RIDER ST.
RC12	PPT180023: Rider Commerce Center	Riverside County	Warehousing	204.330 TSF	NEC OF PATTERSON AVE. & RIDER ST.
RC13	PP26173	Riverside County	High-Cube Warehouse	423.665 TSF	SWC OF HARVILL AVE. & RIDER ST.
RC14	Barker Logistics	Riverside County	High-Cube Warehouse	699.630 TSF	SWC OF PATTERSON AVE. & PLACENTIA ST.
RC15	Placentia Truck Trailer Parking Lot	Riverside County	High-Cube Warehouse	335 Space	NWC OF HARVILL AV. & PLACENTIA AV.
RC16	PP26241	Riverside County	Warehousing	23.600 TSF	SEC OF HARVILL AVE. & PLACENTIA ST.

¹ DU = Dwelling Units; TSF = Thousand Square Feet

Although it is unlikely that these cumulative projects would be fully built and occupied by Year 2024, they have been included in an effort to conduct a conservative analysis and overstate as opposed to understate potential traffic deficiencies. Any other cumulative projects that are not expected to contribute measurable traffic to study area intersections have not been included since the traffic would dissipate due to the distance from the Project site and study area intersections. Any additional traffic generated by other projects not on the cumulative projects list is accounted for through background ambient growth factors that have been applied to the peak hour volumes at study area intersections as discussed in Section 4.5 *Background Traffic*. Cumulative Only ADT and peak hour intersection turning movement volumes are shown on Exhibit 4-6 in actual vehicles.

4.7 NEAR-TERM TRAFFIC CONDITIONS

The “buildup” approach combines existing traffic counts with a background ambient growth factor to forecast EAC (2024) and EAPC (2024) traffic conditions. An ambient growth factor of 6.09% to account for background (area-wide) traffic increases that occur over time up to the year 2024 from the year 2022 (3.0 percent per year, compounded annually over 2 years). Traffic volumes generated by the Project are then added to assess the near-term traffic conditions. The 2024 roadway networks are similar to the Existing conditions roadway network, with the exception of future driveways proposed to be developed by the Project.

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

- **Existing Plus Ambient Growth Plus Cumulative (2024)**
 - Existing 2022 counts
 - Ambient growth traffic (6.09%)
 - Cumulative Development traffic
- **Existing Plus Ambient Growth Plus Cumulative Plus Project (2024)**
 - Existing 2022 counts
 - Ambient growth traffic (6.09%)
 - Cumulative Development traffic
 - Project traffic

4.8 HORIZON YEAR (2045) CONDITIONS

“Buildout” traffic projections for Horizon Year conditions are based on traffic model forecasts and were derived from WRCOG’s latest Riverside County Transportation Analysis Model (RIVCOM) using accepted procedures for model forecast refinement and smoothing for study area intersections located within the County of Riverside. The Horizon Year traffic conditions analyses was 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 City of Perris General Plan.

EXHIBIT 4-6: CUMULATIVE ONLY TRAFFIC VOLUMES



1	2	3	4	5
I-215 SB Ramps & Ramona Exwy.	I-215 NB Ramps & Ramona Exwy.	Nevada Av. & Ramona Exwy.	Nevada Av. & Driveway 4	Nevada Av. & Driveway 3
10,850 66(26) 213(319) ← 149(93) ↑ 46(71) 49(162) → 21(71) → 8,650	5,200 6,700 21,300 20(66) → 242(416) → 67(45) ↑ 28(23) ↑ 1,350 14,500	21,300 270(439) → 21,300	21,300 ← 372(405) 21,300	
6 Nevada Av. & Driveway 2	7 Nevada Av. & Driveway 1	8 Nevada Av. & Morgan St.	9 Driveway 5 & Ramona Exwy.	10 Driveway 6 & Ramona Exwy.
			21,300 ↑ 4(13) 12(5) → 21,300	21,200 ← 4(13) 12(5) → 21,300
11 Webster Av. & Ramona Exwy.	12 Webster Av. & Driveway 7	13 Webster Av. & Driveway 8	14 Webster Av. & Morgan St.	15 Indian Av. & Ramona Exwy.
350 3(0) 5(2) ↑ 1(5) ↑ 368(433) 4(0) 9(0) ↓ 247(387) → 14(26) ↓ 21,300	21,150 300 18(26) ← 3(18) ↑ 300	300 18(26) ← 3(18) → 300	300 18(26) ↓ 3(18) ↑ 300	650 36(45) 13(5) 8(41) ↑ 20(44) ← 335(334) 56(108) ↓ 207(405) → 10(6) ↓ 5(14) ↑ 2(43) ↑ 21,150
16 Indian Av. & Morgan St.	17 Perris Bl. & Ramona Exwy.	18 Perris Bl. & Morgan St.	##(##) AM(PM) Peak Hour Intersection Volumes ## Average Daily Trips	
400 13(5) ↓ 7(3) → 11(23) ↓ 300	200 1,000 5(2) 17(19) 33(68) ↑ 57(55) ↑ 330(328) 25(16) 2(6) ↓ 186(410) → 28(30) → 27(53) ↑ 15(24) ↑ 8(27) ↑ 1,500 700	1,750 51(59) ↓ 9(5) ↓ 5(17) ↓ 29(20) → 39(72) ↑ 1,350	800 2(11) ↑ 7(23) ↑ 39(72) ↑ 1,350	

The traffic forecasts reflect the area-wide growth anticipated between Existing (2022) conditions and Horizon Year (2045) traffic conditions. In most instances the traffic model zone structure is not designed to provide accurate turning movements along arterial roadways unless refinement and reasonableness checking is performed. Therefore, the Horizon Year peak hour forecasts were refined using the model derived long range forecasts, base (validation) year model forecasts, along with existing peak hour traffic count data collected at each analysis location in January 2022. The RIVCOM has a base (validation) year of 2018 and a horizon (future forecast) year of 2045. The RIVCOM 2045 model utilized for the purposes of this analysis includes the future Mid-County Parkway.

The refined future peak hour approach and departure volumes obtained from the model output data are then entered into a spreadsheet program consistent with the National Cooperative Highway Research Program (NCHRP Report 765), along with initial estimates of turning movement proportions. A linear programming algorithm is used to calculate individual turning movements which match the known directional roadway segment forecast volumes computed in the previous step. This program computes a likely set of intersection turning movements from intersection approach counts and the initial turning proportions from each approach leg.

As previously discussed in Section 4.5 *Background Traffic*, the currently adopted SCAG 2020 RTP/SCS growth forecasts for the City of Perris identifies a projected average growth of 1.92 percent per year. Typically, the model growth is prorated and is subsequently added to the existing (base validation) traffic volumes to represent Horizon Year traffic conditions. Horizon Year turning volumes were compared to EAPC (2024) volumes in order to ensure a minimum growth as a part of the refinement process. The minimum growth includes any additional growth between EAPC (2024) and Horizon Year (2045) traffic conditions that is not accounted for by the traffic generated by cumulative development projects and ambient growth rates assumed between Existing (2022) and EAPC (2024) conditions.

The future Horizon Year (2045) Without Project peak hour turning movements were then reviewed by Urban Crossroads, Inc. for reasonableness, and in some cases, were adjusted to achieve flow conservation, reasonable growth, and reasonable diversion between parallel routes. Flow conservation checks ensure that traffic flow between two closely spaced intersections, such as two adjacent driveway locations, is verified in order to make certain that vehicles leaving one intersection are entering the adjacent intersection and that there is no unexplained loss of vehicles. The result of this traffic forecasting procedure is a series of traffic volumes which are suitable for traffic operations analysis. Post-processing worksheets for Horizon Year (2045) Without Project traffic conditions are provided in Appendix 4.2.

5 E+P TRAFFIC CONDITIONS

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

5.1 ROADWAY IMPROVEMENTS

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

- Project driveways and those facilities assumed to be constructed by the Project to provide site access are also assumed to be in place for E+P conditions only (e.g., intersection and roadway improvements at the Project's frontage and driveways). Specific site adjacent improvements to be implemented by the Project can be found in Section 1.7 and 1.8 of this report.

5.2 E+P TRAFFIC VOLUME FORECASTS

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

5.3 INTERSECTION OPERATIONS ANALYSIS

E+P peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2 *Methodologies* of this TA. The intersection analysis results are summarized in Table 5-1, which indicates that the study area intersections are anticipated to continue to operate at an acceptable LOS during the peak hours, consistent with Existing (2022) traffic conditions. The intersection operations analysis worksheets are included in Appendix 5.1 of this TA.

As noted previously, the affected intersections have also been evaluated for each of the access alternatives. The analysis results are summarized in Table 5-2 which shows that the study area intersections are anticipated to continue to operate at an acceptable LOS for each of the access alternatives evaluated. The intersection operations analysis worksheets are included in Appendix 5.2 of this TA for access alternative 1 and in Appendix 5.3 for access alternative 2.

EXHIBIT 5-1: E+P TRAFFIC VOLUMES



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
I-215 SB Ramps & Ramona Expy.		I-215 NB Ramps & Ramona Expy.		Nevada Av. & Ramona Expy.		Nevada Av. & Ramona Expy.		Nevada Av. & Ramona Expy.		Nevada Av. & Ramona Expy.		Nevada Av. & Ramona Expy.		Nevada Av. & Ramona Expy.		Nevada Av. & Ramona Expy.	
13,950		10,950		50,250		50,250		1,250		7,750		7,750		200		200	
144(135)		710(687)		1674(1580)		1674(1580)		33(25)		7,750		7,750		306(465)		78(91)	
1(4)		999(934)		25(64)		25(64)		33(25)		33(25)		33(25)		7(3)		7(3)	
768(85.2)		314(319)		35(41)		35(41)		35(64)		35(64)		35(64)		78(91)		78(91)	
962(843)		3(3)		34(48)		34(48)		42(27)		42(27)		42(27)		7(3)		7(3)	
351(410)		647(485)		1704(1670)		1704(1670)		33(25)		33(25)		33(25)		7(3)		7(3)	
679(837)		100(100)		290(403)		290(403)		35(64)		35(64)		35(64)		7(3)		7(3)	
307(323)		1346(1589)		3(3)		3(3)		42(27)		42(27)		42(27)		7(3)		7(3)	
30,250		10,300		51,750		51,750		7,750		7,750		7,750		200		200	
41,400		41,400		11,350		11,350		7,750		7,750		7,750		200		200	
Nevada Av. & Driveway 2		Nevada Av. & Driveway 1		Nevada Av. & Morgan St.		Nevada Av. & Morgan St.		Driveway 5 & Ramona Expy.		Driveway 5 & Ramona Expy.		Driveway 6 & Ramona Expy.		Driveway 6 & Ramona Expy.		Driveway 6 & Ramona Expy.	
7,950		8,150		8,050		8,050		47,650		47,650		9,050		9,050		39,450	
309(472)		296(471)		201(460)		201(460)		1387(1441)		1387(1441)		1628(1583)		1628(1583)		1628(1583)	
3(7)		15(7)		80(23)		80(23)		242(142)		242(142)		1492(1576)		1492(1576)		1492(1576)	
85(94)		4(19)		32(16)		32(16)		313(203)		313(203)		227(136)		227(136)		227(136)	
7(3)		3(15)		66(70)		66(70)		275(166)		275(166)		1565(1615)		1565(1615)		1565(1615)	
85(94)		87(78)		84(49)		84(49)		1565(1615)		1565(1615)		173(104)		173(104)		173(104)	
7(3)		11(6)		189(223)		189(223)		1565(1615)		1565(1615)		173(104)		173(104)		173(104)	
8,150		8,050		9,400		9,400		49,400		49,400		48,600		48,600		48,600	
200		200		2,350		2,350		1,750		1,750		1,750		1,750		1,750	
3(7)		3(15)		31(82)		31(82)		1565(1615)		1565(1615)		173(104)		173(104)		173(104)	
85(94)		87(78)		84(49)		84(49)		1565(1615)		1565(1615)		173(104)		173(104)		173(104)	
7(3)		11(6)		189(223)		189(223)		1565(1615)		1565(1615)		173(104)		173(104)		173(104)	
8,150		8,050		9,400		9,400		49,400		49,400		48,600		48,600		48,600	
200		200		2,350		2,350		1,750		1,750		1,750		1,750		1,750	
3(7)		3(15)		31(82)		31(82)		1565(1615)		1565(1615)		173(104)		173(104)		173(104)	
85(94)		87(78)		84(49)		84(49)		1565(1615)		1565(1615)		173(104)		173(104)		173(104)	
7(3)		11(6)		189(223)		189(223)		1565(1615)		1565(1615)		173(104)		173(104)		173(104)	
8,150		8,050		9,400		9,400		49,400		49,400		48,600		48,600		48,600	
200		200		2,350		2,350		1,750		1,750		1,750		1,750		1,750	
3(7)		3(15)		31(82)		31(82)		1565(1615)		1565(1615)		173(104)		173(104)		173(104)	
85(94)		87(78)		84(49)		84(49)		1565(1615)		1565(1615)		173(104)		173(104)		173(104)	
7(3)		11(6)		189(223)		189(223)		1565(1615)		1565(1615)		173(104)		173(104)		173(104)	
8,150		8,050		9,400		9,400		49,400		49,400		48,600		48,600		48,600	
200		200		2,350		2,350		1,750		1,750		1,750		1,750		1,750	
3(7)		3(15)		31(82)		31(82)		1565(1615)		1565(1615)		173(104)		173(104)		173(104)	
85(94)		87(78)		84(49)		84(49)		1565(1615)		1565(1615)		173(104)		173(104)		173(104)	
7(3)		11(6)		189(223)		189(223)		1565(1615)		1565(1615)		173(104)		173(104)		173(104)	
8,150		8,050		9,400		9,400		49,400		49,400		48,600		48,600		48,600	
200		200		2,350		2,350		1,750		1,750		1,750		1,750		1,750	
3(7)		3(15)		31(82)		31(82)		1565(1615)		1565(1615)		173(104)		173(104)		173(104)	
85(94)		87(78)		84(49)		84(49)		1565(1615)		1565(1615)		173(104)		173(104)		173(104)	
7(3)		11(6)		189(223)		189(223)		1565(1615)		1565(1615)		173(104)		173(104)		173(104)	
8,150		8,050		9,400		9,400		49,400		49,400		48,600		48,600		48,600	
200		200		2,350		2,350		1,750		1,750		1,750		1,750		1,750	
3(7)		3(15)		31(82)		31(82)		1565(1615)		1565(1615)		173(104)		173(104)		173(104)	
85(94)		87(78)		84(49)		84(49)		1565(1615)		1565(1615)		173(104)		173(104)		173(104)	
7(3)		11(6)		189(223)		189(223)		1565(1615)		1565(1615)		173(104)		173(104)		173(104)	
8,150		8,050		9,400		9,400		49,400		49,400		48,600		48,600		48,600	
200		200		2,350		2,350		1,750		1,750		1,750		1,750		1,750	
3(7)		3(15)		31(82)		31(82)		1565(1615)		1565(1615)		173(104)		173(104)		173(104)	
85(94)		87(78)		84(49)		84(49)		1565(1615)		1565(1615)		173(104)		173(104)		173(104)	
7(3)		11(6)		189(223)		189(223)		1565(1615)		1565(1615)		173(104)		173(104)		173(104)	
8,150		8,050		9,400		9,400		49,400		49,400		48,600		48,600		48,600	
200		200		2,350		2,350		1,750		1,750		1,750		1,750		1,750	
3(7)		3(15)		31(82)		31(82)		1565(1615)		1565(1615)		173(104)		173(104)		173(104)	
85(94)		87(78)		84(49)		84(49)		1565(1615)		1565(1615)		173(104)		173(104)		173(104)	
7(3)		11(6)		189(223)		189(223)		1565(1615)		1565(1615)		173(104)		173(104)		173(104)	
8,150		8,050		9,400		9,400		49,400		49,400		48,600		48,600		48,600	
200		200		2,350		2,350		1,750		1,750		1,750		1,750		1,750	
3(7)		3(15)		31(82)		31(82)		1565(1615)		1565(1615)		173(104)		173(104)		173(104)	
85(94)		87(78)		84(49)		84(49)		1565(1615)		1565(1615)		173(104)		173(104)		173(104)	
7(3)		11(6)		189(223)		189(223)		1565(1615)		1565(1615)		173(104)		173(104)		173(104)	
8,150		8,050		9,400		9,400		49,400		49,400		48,600		48,600		48,600	
200		200		2,350		2,350		1,750		1,750		1,750		1,750		1,750	
3(7)		3(15)		31(82)		31(82)		1565(1615)		1565(1615)		173(104)		173(104)		173(104)	
85(94)		87(78)		84(49)		84(49)		1565(1615)		1565(1615)		173(104)		173(104)		173(104)	
7(3)		11(6)		189(223)		189(223)		1565(1615)		1565(1615)		173(104)		173(104)		173(104)	
8,150		8,050		9,400		9,400		49,400		49,400		48,600		48,600		48,600	
200		200		2,350		2,350		1,750		1,750		1,750		1,750		1,750	
3(7)		3(15)		31(82)		31(82)		1565(1615)		1565(1615)		173(104)		173(104)		173(104)	
85(94)		87(78)		84(49)		84(49)		1565(1615)		1565(1615)		173(104)		173(104)		173(104)	
7(3)		11(6)		189(223)		189(223)		1565(1615)		1565(1615)		173(104)		173(104)		173(104)	
8,150		8,050		9,400		9,400		49,400		49,400		48,600		48,600		48,600	
200		200		2,350		2,350		1,750		1,750		1,750		1,750		1,750	
3(7)		3(15)		31(82)		31(82)		1565(1615)		1565(1615)		173(104)		173(104)		173(104)	
85(94)		87(78)		84(49)		84(49)		1565(1615)		1565(1615)		173(104)		173(104)		173(104)	
7(3)		11(6)		189(223)		189(223)		1565(1615)		1565(1615)		173(104)		173(104)		173(104)	
8,150		8,050		9,400		9,400		49,400		49,400		48,600		48,600		48,600	
200		200		2,350		2,350		1,750		1,750		1,750		1,750		1,750	
3(7)		3(15)		31(82)		31(82)		1565(1615)		1565(1615)		173(104)		173(104)		173(104)	
85(94)		87(78)		84(49)		84(49)		1565(1615)		1565(1615)		173(104)		173(104)		173(104)	
7(3)		11(6)		189(223)		189(223)		1565(1615)		1565(1615)		173(104)					

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

#	Intersection	Traffic Control ¹	Existing				Existing + Project			
			Delay ² (secs.)		Level of Service		Delay ² (secs.)		Level of Service	
			AM	PM	AM	PM	AM	PM	AM	PM
1	I-215 SB Ramps & Ramona Exwy.	TS	26.0	36.5	C	D	38.2	49.6	D	D
2	I-215 NB Ramps & Ramona Exwy.	TS	31.3	19.6	C	B	52.2	19.1	D	B
3	Nevada Av. & Ramona Exwy.	CSS/TS	15.9	22.6	C	C	6.9	10.4	A	B
4	Nevada Av. & Driveway 4	CSS	Future Intersection				10.5	11.0	B	B
5	Nevada Av. & Driveway 3	CSS	Future Intersection				11.0	12.3	B	B
6	Nevada Av. & Driveway 2	CSS	Future Intersection				11.1	12.5	B	B
7	Nevada Av. & Driveway 1	CSS	Future Intersection				10.3	11.2	B	B
8	Nevada Av. & Morgan St.	CSS	11.6	13.7	B	B	12.5	15.4	B	C
9	Driveway 5 & Ramona Exwy.	TS	Future Intersection				15.6	13.3	B	B
10	Driveway 6 & Ramona Exwy. ³	CSS	Future Intersection				0.0	0.0	A	A
11	Webster Av. & Ramona Exwy.	TS	34.3	30.4	C	C	20.0	47.4	C	D
12	Webster Av. & Driveway 7	CSS	Future Intersection				11.4	10.5	B	B
13	Webster Av. & Driveway 8	CSS	Future Intersection				9.9	10.2	A	B
14	Webster Av. & Morgan St.	AWS	10.7	9.4	B	A	11.8	10.1	B	B
15	Indian Av. & Ramona Exwy.	TS	22.9	26.8	C	C	24.3	28.1	C	C
16	Indian Av. & Morgan St.	TS	14.3	15.8	B	B	15.0	16.4	B	B
17	Perris Bl. & Ramona Exwy.	TS	30.3	34.2	C	C	33.2	35.9	C	D
18	Perris Bl. & Morgan St.	TS	12.3	15.8	B	B	13.2	17.2	B	B

¹ CSS = Cross-street Stop; AWS = All-way Stop; TS = Traffic Signal; CSS = Improvement

² Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

³ The eastbound approach is 3 through lanes and a shared through-right turn lane. However, the current HCM does not support evaluation of more than 3 through lanes per approach. As such, the intersection has been evaluated with 3 through lanes and a right turn lane for the eastbound approach. Since the driveway is a right-turn in only driveway, there is no exiting volume and therefore no intersection delay. As such, evaluation of the eastbound approach with additional through lanes would not change the results.

TABLE 5-2: INTERSECTION ANALYSIS FOR E+P CONDITIONS – ALTERNATIVE ACCESS

#	Intersection	Traffic Control ¹	E+P Alternative 1				E+P Alternative 2			
			Delay ² (secs.)		Level of Service		Delay ² (secs.)		Level of Service	
			AM	PM	AM	PM	AM	PM	AM	PM
3	Nevada Av. & Ramona Exwy.	TS	7.0	10.0	A	B	7.0	10.0	A	B
4	Nevada Av. & Driveway 4	CSS	8.9	8.9	A	A	8.9	8.9	A	A
9	Driveway 5 & Ramona Exwy.	TS	15.9	16.4	B	B	15.8	12.2	B	B
10	Driveway 6 & Ramona Exwy. ³	CSS	Does Not Exist				0.0	0.0	A	A
11	Webster Av. & Ramona Exwy.	TS	20.5	50.9	C	D	20.2	50.5	C	D
12	Webster Av. & Driveway 7	CSS	9.6	8.8	A	A	9.5	8.8	A	A

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

² Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

³ The eastbound approach is 3 through lanes and a shared through-right turn lane. However, the current HCM does not support evaluation of more than 3 through lanes per approach. As such, the intersection has been evaluated with 3 through lanes and a right turn lane for the eastbound approach. Since the driveway is a right-turn in only driveway, there is no exiting volume and therefore no intersection delay. As such, evaluation of the eastbound approach with additional through lanes would not change the results.

5.4 TRAFFIC SIGNAL WARRANTS ANALYSIS

Based on either peak hour or planning level (ADT) volume-based traffic signal warrants, the following study area intersections are anticipated to meet a traffic signal warrant under E+P traffic conditions (see Appendix 5.4) and are proposed to be installed as part of the Project at the following locations:

- Nevada Av. & Ramona Exwy. (#3)
- Driveway 5 & Ramona Exwy. (#5)

5.5 QUEUING ANALYSIS

Queuing analysis findings for E+P are presented in Table 5-3. As shown on Table 5-3, there are no movements that are anticipated to experience queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows with the addition of Project traffic. Worksheets for E+P traffic conditions queuing analysis are provided in Appendix 5.5.

TABLE 5-3: PEAK HOUR QUEUING SUMMARY FOR E+P CONDITIONS

Intersection	Movement	Available Stacking Distance (Feet)	Existing (2022)				E+P			
			95th Percentile Queue (Feet)		Acceptable? ¹		95th Percentile Queue (Feet)		Acceptable? ¹	
			AM Peak Hour	PM Peak Hour	AM	PM	AM Peak Hour	PM Peak Hour	AM	PM
I-215 SB Ramps & Ramona Exwy.	SBL	530	418 ²	458 ²	Yes	Yes	526 ²	526 ²	Yes	Yes
	SBL/T	1,100	421 ²	471 ²	Yes	Yes	527 ²	536 ²	Yes	Yes
	SBR	530	119	69	Yes	Yes	119	73	Yes	Yes
			0	0						
I-215 NB Ramps & Ramona Exwy.	NBL	520	144	151	Yes	Yes	144	151	Yes	Yes
	NBL/T	1,120	146	154	Yes	Yes	146	154	Yes	Yes
	NBR	520	535 ^{2,3}	387 ²	Yes	Yes	664 ^{2,3}	474 ²	Yes	Yes

¹ Stacking Distance is acceptable if the required stacking distance is less than or equal to the stacking distance provided. An additional 15 feet of stacking which is assumed to be provided in the transition for turn pockets is reflected in the stacking distance shown on this table, where applicable.

² 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

³ Although 95th percentile queue is anticipated to exceed the available storage for the turn lane, the adjacent through lane has sufficient storage to accommodate any spillover without spilling back and affecting the I-215 Freeway mainline.

5.6 PROJECT DEFICIENCIES AND RECOMMENDED IMPROVEMENTS

This section provides a summary of Project deficiencies and recommended improvements. Based on the City of Perris deficiency criteria discussed in Section 2.6 *Deficiency Criteria*, improvements necessary to improve project-related traffic deficiencies are also discussed below.

5.6.1 IMPROVEMENTS TO ADDRESS DEFICIENCIES AT INTERSECTIONS

As shown on Table 5-1 and Table 5-2, the peak hour intersection operations analyses indicate all the study area intersections are anticipated to operate at an acceptable LOS. The improvements to be implemented by the Project as discussed in Section 1.7 and 1.8 of this report have been assumed to be in place. As such, no additional improvements have been recommended for E+P traffic conditions beyond those to be implemented by the Project adjacent to the site or as needed to facilitate site access.

5.6.2 IMPROVEMENTS TO ADDRESS DEFICIENCIES ON OFF-RAMP QUEUES

As shown previously in Table 5-3, there are no movements that are anticipated to experience queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows for E+P traffic conditions. As such, no improvements have been identified.

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6 EAC AND EAPC (2024) TRAFFIC CONDITIONS

This section discusses the methods used to develop EAC and EAPC (2022) traffic forecasts and the resulting intersection operations, traffic signal warrant, and freeway off-ramp queuing analyses.

6.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for EAC and EAPC (2024) conditions are consistent with those shown previously on Exhibit 3-1, with the exception of the following, which would also be in place:

- Project driveways and those facilities assumed to be constructed by the Project to provide site access are also assumed to be in place for EAPC conditions only (e.g., intersection and roadway improvements along the Project's frontage and driveways).
- Driveways and those facilities assumed to be constructed by cumulative developments to provide site access are also assumed to be in place for EAC and EAPC (2024) conditions only (e.g., intersection and roadway improvements along the cumulative development's frontages).

6.2 EAC (2024) TRAFFIC VOLUME FORECASTS

To account for background traffic, other known cumulative development projects in the study area were included in addition to 6.09% of ambient growth for EAC (2024) traffic conditions. The weekday ADT and weekday AM and PM peak hour volumes (in actual vehicles) which can be expected for EAC (2024) traffic conditions are shown on Exhibit 6-1.

6.3 EAPC (2024) TRAFFIC VOLUME FORECASTS

To account for background traffic, other known cumulative development projects in the study area were included in addition to 6.09% of ambient growth for EAPC (2024) traffic conditions in conjunction with traffic associated with the proposed Project. The weekday ADT and weekday AM and PM peak hour volumes (in actual vehicles) which can be expected for EAPC (2024) traffic conditions are shown on Exhibit 6-2.

EXHIBIT 6-1: EAC (2024) TRAFFIC VOLUMES



1	2	3	4	5
I-215 SB Ramps & Ramona Exwy.	I-215 NB Ramps & Ramona Exwy.	Nevada Av. & Ramona Exwy.	Nevada Av. & Driveway 4	Nevada Av. & Driveway 3
24,350 219(169) 1(4) 870(1125) 1150(964) 344(438) 739(1032) 347(413) 40,250	46,600 17,050 126(172) 1482(1986) 11,500 55,850	71,550 884(905) 1094(1018) 126(172) 400(384) 3(3) 613(474) 12,450 71,550	70,450 1970(1914) 10(57) 8(10) 24(38) 7,200 7,200	7,200 274(459) 33(48) 7,200 7,200
6	7	8	9	10
Nevada Av. & Driveway 2	Nevada Av. & Driveway 1	Nevada Av. & Morgan St.	Driveway 5 & Ramona Exwy.	Driveway 6 & Ramona Exwy.
7,200 274(459) 33(48) 7,200	7,200 274(459) 33(48) 7,200	7,200 188(451) 66(6) 7(1) 33(87) 24(50) 89(52) 9,100	2,100 1598(1662) 70,450 70,450	70,350 1611(1579) 1598(1662) 70,450
11	12	13	14	15
Webster Av. & Ramona Exwy.	Webster Av. & Driveway 7	Webster Av. & Driveway 8	Webster Av. & Morgan St.	Indian Av. & Ramona Exwy.
9,600 105(222) 22(89) 43(91) 48(63) 1768(1598) 29(23) 219(163) 1518(1840) 119(68) 70,450	60,950 5,250 171(180) 181(240) 5,250	5,250 171(180) 181(240) 5,250	5,400 59(43) 29(12) 94(119) 88(154) 110(31) 28(7) 99(54) 86(21) 35(8) 5(21) 18(22) 17(35) 2,550	58,600 10,550 82(143) 58(231) 25(136) 80(110) 1736(1334) 42(48) 219(215) 1277(1761) 68(65) 82(163) 70(149) 28(125) 10,650
16	17	18		
Indian Av. & Morgan St.	Perris Bl. & Ramona Exwy.	Perris Bl. & Morgan St.		
7,900 25(18) 74(333) 17(21) 5(13) 125(28) 11(17) 13(18) 79(82) 75(117) 10,350	2,550 33,550 185(184) 344(929) 145(403) 187(187) 1330(1054) 115(194) 318(288) 841(1397) 162(338) 350(299) 583(477) 54(138) 59,300	32,150 60(28) 555(1347) 35(30) 27(42) 49(48) 21(60) 50(57) 805(827) 8(22) 3,750		

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

EXHIBIT 6-2: EAPC (2024) TRAFFIC VOLUMES



1	I-215 SB Ramps & Ramona Expy.	2	I-215 NB Ramps & Ramona Expy.	3	Nevada Av. & Ramona Expy.	4	Nevada Av. & Driveway 4	5	Nevada Av. & Driveway 3
25,550 219(169) ↓ 1(4) ↑ 1019(1217)	49,000 ↑ 1169(986) ↓ 414(502)	18,250 126(172) ↓ 1659(2095) → 400(384) ↑ 3(3) ↓ 708(534) ↑	75,950 ↑ 990(1009) ↓ 1183(1104) ↑ 2064(2202) → 305(426) ↓ 35(42) ↑ 35(50) ↓	74,400 ↑ 2138(2072) ↓ 26(67) ↑ 35(42) ↓ 35(50) ↑	8,150 ↓ 289(466) ↑ 42(27)	1,250 ↑ 33(25) ↓ 33(25) ↑ 37(67) ↓ 42(27) ↑	8,150 ↓ 322(491) ↑ 3(7)	200 ↑ 3(7) ↓ 80(94) ↑ 7(3) ↓	8,350
40,750	12,250	58,300	13,200	75,950	8,150	8,150	8,150	8,350	
6	Nevada Av. & Driveway 2	7	Nevada Av. & Driveway 1	8	Nevada Av. & Morgan St.	9	Driveway 5 & Ramona Expy.	10	Driveway 6 & Ramona Expy.
8,350 ↓ 325(498) ↑ 3(7)	200 ↑ 87(97) ↓ 7(3) ↑	8,550 ↓ 312(497) ↑ 15(7)	600 ↑ 4(19) ↓ 3(15) ↑ 89(81) ↓ 11(6) ↑	8,450 ↓ 212(486) ↑ 84(23)	2,500 ↑ 32(16) ↓ 33(87) ↑ 67(73) ↓ 89(52) ↑	74,550 ↑ 1483(1544) ↓ 242(142) ↑ 1668(1715) ↓ 173(104) ↑ 313(203) ↓ 275(166) ↑	73,550 ↑ 1595(1676) ↓ 227(136) ↑	71,650 ← 1724(1686) ↑	8,350
8,350	8,550	8,450	8,450	9,950	9,950	74,400	73,550	71,650	8,350
11	Webster Av. & Ramona Expy.	12	Webster Av. & Driveway 7	13	Webster Av. & Driveway 8	14	Webster Av. & Morgan St.	15	Indian Av. & Ramona Expy.
9,900 ↓ 105(222) ↑ 44(103) ↓ 43(91) ↑ 64(44)	62,900 ↑ 48(63) ↓ 1856(1654) ↑ 64(44) ↓ 219(163) ↑ 1586(1894) ↓ 170(96) ↑ 132(248) ↓ 71(42) ↑ 41(45) ↓	7,200 ↓ 111(68) ↑ 168(175) ↓ 99(65) ↑ 65(39) ↓ 70(42) ↑ 145(270) ↓ 1(5)	6,600 ↓ 45(22) ↑ 188(192) ↓ 13(58) ↑ 1(5) ↓ 4(2) ↑ 202(254) ↓	5,800 ↓ 59(43) ↑ 29(12) ↓ 112(136) ↑ 99(54) ↓ 104(38) ↑ 35(8) ↓ 5(21) ↑ 18(22) ↓ 17(35) ↑	5,650 ↑ 113(169) ↓ 135(46) ↑ 28(7) ↓ 99(54) ↑ 104(38) ↓ 35(8) ↑ 5(21) ↓ 18(22) ↑ 17(35) ↓	10,800 ↓ 98(153) ↑ 58(231) ↓ 25(136) ↑ 230(226) ↓ 1354(1835) ↑ 68(65) ↓ 82(163) ↑ 70(149) ↓ 28(125) ↑	60,300 ↑ 80(110) ↓ 1844(1401) ↑ 42(48) ↓ 82(163) ↑ 70(149) ↓ 28(125) ↑	10,650	
72,750	7,200	2,850	6,600	1,050	5,650	2,950	52,450	60,300	10,650
16	Indian Av. & Morgan St.	17	Perris Bl. & Ramona Expy.	18	Perris Bl. & Morgan St.				
7,900 ↓ 25(18) ↑ 74(333) ↓ 17(21) ↑ 13(18) ↓ 97(99) ↑ 93(134) ↓ 116(129) ↑ 130(155) ↓ 18(19) ↑	2,950 ↑ 5(13) ↓ 150(43) ↑ 11(17) ↓ 342(310) ↑ 876(1432) ↓ 180(355) ↑ 375(314) ↓ 583(477) ↑ 54(138) ↓	34,100 ↓ 218(205) ↑ 344(929) ↓ 145(403) ↑ 187(187) ↓ 1380(1085) ↑ 115(194) ↓ 375(314) ↑ 583(477) ↓ 54(138) ↑	32,450 ↓ 60(28) ↑ 572(1359) ↓ 35(30) ↑ 27(42) ↓ 66(60) ↑ 22(65) ↓ 54(59) ↑ 826(841) ↓ 8(22) ↑	3,100 ↑ 19(32) ↓ 57(51) ↑ 6(29) ↓ 54(59) ↑ 826(841) ↓ 8(22) ↑					
5,800	10,750	61,000	33,250	4,150	33,150				

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

6.4 INTERSECTION OPERATIONS ANALYSIS

LOS calculations were conducted for the study intersections to evaluate their operations under EAC (2024) conditions with roadway and intersection geometrics consistent with Section 6.1 *Roadway Improvements*. As shown in Table 6-1, all the study area intersections are anticipated to operate at acceptable LOS during the peak hours under EAC (2024) traffic conditions, with the exception of the following intersections:

- I-215 SB Ramps & Ramona Exwy. (#1) – LOS F PM peak hour only
- I-215 NB Ramps & Ramona Exwy. (#2) – LOS F AM peak hour; LOS E PM peak hour
- Nevada Av. & Ramona Exwy. (#3) – LOS F PM peak hour only

It should be noted, with the addition of the Project design features as discussed in Section 1.8 *Site Access Improvements*, the intersection of Nevada Avenue & Ramona Expressway (#3) is anticipated to improve operations to acceptable LOS under EAPC (2024) traffic conditions. The intersection operations analysis worksheets for EAC (2024) traffic conditions are included in Appendix 6.1 of this TA.

The addition of Project traffic is not anticipated to result in any new deficient intersections as compared to EAC (2024) traffic conditions, however, the Project contributes to the cumulative deficiencies listed above (see Appendix 6.2). The peak hour intersection operations at Webster Avenue and Ramona Expressway are anticipated to improve with the addition of Project traffic due to the anticipated Project design features (site adjacent improvements).

The affected intersections have also been evaluated for each of the access alternatives. The analysis results are summarized in Table 6-2 which shows that the study area intersections are anticipated to continue to operate at an acceptable LOS for each of the access alternatives evaluated. The intersection operations analysis worksheets are included in Appendix 6.3 of this TA for access alternative 1 and in Appendix 6.4 for access alternative 2.

TABLE 6-1: INTERSECTION ANALYSIS FOR EAPC (2024) CONDITIONS

#	Intersection	Traffic Control ¹	EAC (2024)				EAPC (2024)			
			Delay ² (secs.)		Level of Service		Delay ² (secs.)		Level of Service	
			AM	PM	AM	PM	AM	PM	AM	PM
1	I-215 SB Ramps & Ramona Exwy.	TS	49.4	111.0	D	F	78.0	134.5	E	F
2	I-215 NB Ramps & Ramona Exwy.	TS	81.9	78.6	F	E	128.3	108.4	F	F
3	Nevada Av. & Ramona Exwy.	CSS/TS	28.1	> 200.0	D	F	11.4	64.5	B	E
4	Nevada Av. & Driveway 4	<u>CSS</u>	Future Intersection		10.6	11.2	B	B		
5	Nevada Av. & Driveway 3	<u>CSS</u>	Future Intersection		11.1	12.5	B	B		
6	Nevada Av. & Driveway 2	<u>CSS</u>	Future Intersection		11.2	12.7	B	B		
7	Nevada Av. & Driveway 1	<u>CSS</u>	Future Intersection		10.4	11.5	B	B		
8	Nevada Av. & Morgan St.	CSS	11.8	14.3	B	B	12.8	16.1	B	C
9	Driveway 5 & Ramona Exwy.	<u>CSS</u>	Future Intersection		15.0	23.3	B	C		
10	Driveway 6 & Ramona Exwy. ³	<u>CSS</u>	Future Intersection		0.0	0.0	A	A		
11	Webster Av. & Ramona Exwy.	TS	60.2	60.1	E	E	23.0	54.2	C	D
12	Webster Av. & Driveway 7	<u>CSS</u>	Future Intersection		11.7	10.9	B	B		
13	Webster Av. & Driveway 8	<u>CSS</u>	Future Intersection		9.8	10.2	A	B		
14	Webster Av. & Morgan St.	AWS	11.2	10.2	B	B	12.6	10.9	B	B
15	Indian Av. & Ramona Exwy.	TS	35.5	58.5	D	E	44.5	63.7	D	E
16	Indian Av. & Morgan St.	TS	15.1	16.8	B	B	15.6	17.3	B	B
17	Perris Bl. & Ramona Exwy.	TS	47.9	59.1	D	E	54.1	62.8	D	E
18	Perris Bl. & Morgan St.	TS	14.1	26.4	B	C	14.5	28.3	B	C

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

¹ CSS = Cross-street Stop; AWS = All-way Stop; TS = Traffic Signal; CSS = Improvement

² Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

³ The eastbound approach is 3 through lanes and a shared through-right turn lane. However, the current HCM does not support evaluation of more than 3 through lanes per approach. As such, the intersection has been evaluated with 3 through lanes and a right turn lane for the eastbound approach. Since the driveway is a right-turn in only driveway, there is no exiting volume and therefore no intersection delay. As such, evaluation of the eastbound approach with additional through lanes would not change the results.

TABLE 6-2: INTERSECTION ANALYSIS FOR EAC & EAPC (2024) CONDITIONS – ALTERNATIVE ACCESS

#	Intersection	Traffic Control ¹	2024 Alternative 1				2024 Alternative 2			
			Delay ² (secs.)		Level of Service		Delay ² (secs.)		Level of Service	
			AM	PM	AM	PM	AM	PM	AM	PM
3	Nevada Av. & Ramona Exwy.	TS	10.6	64.1	B	E	10.7	64.1	B	E
4	Nevada Av. & Driveway 4	CSS	9.0	9.0	A	A	8.9	8.9	A	A
9	Driveway 5 & Ramona Exwy.	TS	14.9	13.3	B	B	15.1	14.6	B	B
10	Driveway 6 & Ramona Exwy. ³	CSS	Does Not Exist				0.0	0.0	A	A
11	Webster Av. & Ramona Exwy.	TS	23.6	57.3	C	E	23.4	56.6	C	E
12	Webster Av. & Driveway 7	CSS	9.7	9.0	A	A	9.6	8.9	A	A

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

² Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

³ The eastbound approach is 3 through lanes and a shared through-right turn lane. However, the current HCM does not support evaluation of more than 3 through lanes per approach. As such, the intersection has been evaluated with 3 through lanes and a right turn lane for the eastbound approach. Since the driveway is a right-turn in only driveway, there is no exiting volume and therefore no intersection delay. As such, evaluation of the eastbound approach with additional through lanes would not change the results.

6.5 TRAFFIC SIGNAL WARRANTS ANALYSIS

Traffic signal warrants have been performed for EAC and EAPC (2024) traffic conditions based on peak hour volumes and planning level (ADT) daily volumes. No traffic signals are warranted at the study area intersections in addition to the locations previously warranted under EAC and EAPC (2024) traffic conditions (see Appendices 6.5 and 6.6).

6.6 QUEUING ANALYSIS

Queuing analysis findings for EAC and EAPC (2024) are presented on Table 6-3. As shown on Table 6-3, there are no movements that are anticipated to experience queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows with the addition of Project traffic. Worksheets for EAC and EAPC (2024) traffic conditions queuing analysis are provided in Appendix 6.7 and Appendix 6.8, respectively.

TABLE 6-3: PEAK HOUR QUEUING SUMMARY FOR EAC & EAPC (2024) CONDITIONS

Intersection	Movement	Available Stacking Distance (Feet)	EAC (2024)				EAPC (2024)			
			95th Percentile Queue (Feet)		Acceptable? ¹		95th Percentile Queue (Feet)		Acceptable? ¹	
			AM Peak Hour	PM Peak Hour	AM	PM	AM Peak Hour	PM Peak Hour	AM	PM
I-215 SB Ramps & Ramona Exwy.	SBL	530	606 ^{2,3}	721 ^{2,3}	Yes	Yes	709 ^{2,3}	784 ^{2,3}	Yes	Yes
	SBL/T	1,100	608 ²	730 ²	Yes	Yes	713 ²	793 ²	Yes	Yes
	SBR	530	184	120	Yes	Yes	184	123	Yes	Yes
I-215 NB Ramps & Ramona Exwy.	NBL	520	176	178	Yes	Yes	176	178	Yes	Yes
	NBL/T	1,120	180	182	Yes	Yes	180	183	Yes	Yes
	NBR	520	624 ^{2,3}	461 ²	Yes	Yes	752 ^{2,3}	547 ^{2,3}	Yes	Yes

¹ Stacking Distance is acceptable if the required stacking distance is less than or equal to the stacking distance provided. An additional 15 feet of stacking which is assumed to be provided in the transition for turn pockets is reflected in the stacking distance shown on this table, where applicable.

² 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

³ Although 95th percentile queue is anticipated to exceed the available storage for the turn lane, the adjacent through lane has sufficient storage to accommodate any spillover without spilling back and affecting the I-215 Freeway mainline.

6.7 RECOMMENDED IMPROVEMENTS

Improvement strategies have been recommended at intersections that have been identified as deficient under EAPC (2024) traffic conditions in an effort to achieve an acceptable LOS (i.e., LOS E or better).

6.7.1 IMPROVEMENTS TO ADDRESS DEFICIENCIES AT INTERSECTIONS

Table 6-4 indicates the physical improvements needed to address LOS deficiencies at each of the study area intersections under EAPC (2024) traffic conditions. The improvements have been identified to improve the EAPC (2024) deficiencies back to acceptable levels. Intersection analysis worksheets for EAPC (2024) traffic conditions, with improvements, are provided in Appendix 6.9.

TABLE 6-4: INTERSECTION ANALYSIS FOR EAPC (2024) CONDITIONS WITH IMPROVEMENTS

#	Intersection	Traffic Control ¹	Intersection Approach Lanes ²												Delay ³ (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound			AM	PM	AM	PM
			L	T	R	L	T	R	L	T	R	L	T	R				
1	I-215 SB Ramps & Ramona Exwy.																	
	-Without Improvements	TS	0	0	0	1	1	1	0	2	0	1	2	0	78.0	134.5	E	F
	- With Improvements (Preferred)	TS	0	0	0	1	1	1	0	<u>3</u>	0	<u>2</u>	<u>3</u>	0	25.2	41.6	C	D
2	I-215 NB Ramps & Ramona Exwy.																	
	-Without Improvements	TS	1	1	1	0	0	0	1	2	0	0	2	1	128.3	108.4	F	F
	- With Improvements (Preferred)	TS	1	1	1	0	0	0	<u>2</u>	<u>3</u>	0	0	<u>3</u>	<u>1>></u>	28.9	11.5	C	B

* **BOLD** = Level of Service (LOS) does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).
¹ TS = Traffic Signal; **TS** = Improvement
² When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.
L = Left; T = Through; R = Right; d = Defacto Right Turn Lane; 1 = Improvement; >> = Free-Right Turn Lane
³ Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

6.7.2 IMPROVEMENTS TO ADDRESS DEFICIENCIES ON OFF-RAMP QUEUES

As shown previously in Table 6-3, there are no movements that are anticipated to experience queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows for EAPC (2024) traffic conditions. As such, no improvements have been identified.

7 HORIZON YEAR (2045) TRAFFIC CONDITIONS

This section discusses the methods used to develop Horizon Year (2045) Without and With Project traffic forecasts, and the resulting intersection operations, traffic signal warrant, and off-ramp queuing operations analyses.

7.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for Horizon Year (2045) 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 (2045) 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 (2045) conditions only (e.g., intersection and roadway improvements along the cumulative development’s frontages).
- The regional, grade-separated transportation facility referred to as the Mid-County Parkway between the I-215 Freeway (at Placentia Avenue) and SR-79 is assumed to be in place consistent with the County’s long-range plans (and RIVCOM traffic model infrastructure).

7.2 HORIZON YEAR (2045) WITHOUT PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes the refined post-processed volumes obtained from the RIVCOM (see Section 4.8 *Horizon Year Volume Development* of this TA for a detailed discussion on the post-processing methodology). The Horizon Year (2045) Without Project traffic forecasts reflect the future roadway network contemplated by the City’s General Plan. The weekday ADT and weekday AM and PM peak hour volumes (in actual vehicles) which can be expected for Horizon Year (2045) Without Project traffic conditions is shown on Exhibit 7-1.

7.3 HORIZON YEAR (2045) WITH PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes the refined post-processed volumes obtained from the RIVCOM plus proposed Project volumes. The weekday ADT and weekday AM and PM peak hour volumes (in actual vehicles) which can be expected for Horizon Year (2045) With Project traffic conditions are shown on Exhibit 7-2.

EXHIBIT 7-1: HORIZON YEAR (2045) WITHOUT PROJECT TRAFFIC VOLUMES



1	2	3	4	5
I-215 SB Ramps & Ramona Exwy.	I-215 NB Ramps & Ramona Exwy.	Nevada Av. & Ramona Exwy.	Nevada Av. & Driveway 4	Nevada Av. & Driveway 3
30,550 223(209) 219 958(1176) 1632(1270) 698(809) 1005(1268) 533(500)	65,500 21,750 73,400 934(902) 1660(1493) 155(155) 1808(2289) 670(586) 5(5) 898(657)	72,250 2560(2380) 14(84) 2317(2361) 389(586) 34(15) 76(56)	10,500 403(670) 110(71)	10,500 403(670) 110(71)
54,750	20,100 65,500	17,600 73,400	10,500	10,500
6	7	8	9	10
Nevada Av. & Driveway 2	Nevada Av. & Driveway 1	Nevada Av. & Morgan St.	Driveway 5 & Ramona Exwy.	Driveway 6 & Ramona Exwy.
10,500 403(670) 110(71)	10,500 403(670) 110(71)	10,500 274(657) 96(14) 11(2) 48(127) 90(73) 140(76)	3,050 2574(2463) 2393(2416)	72,250 2574(2463) 2393(2416)
10,500	10,500	13,250 72,250	72,250	72,150
11	12	13	14	15
Webster Av. & Ramona Exwy.	Webster Av. & Driveway 7	Webster Av. & Driveway 8	Webster Av. & Morgan St.	Indian Av. & Ramona Exwy.
25,000 165(348) 32(130) 59(130) 74(85) 2241(1832) 37(34) 316(238) 1918(2118) 158(60)	62,400 7,550 228(224) 275(344)	7,550 228(224) 275(344)	7,750 87(63) 42(17) 111(135) 125(198) 161(45) 40(11) 8(31) 26(32) 25(51)	6,950 15,100 67(144) 65(329) 25(139) 242(156) 1561(1977) 99(172)
72,250	7,550	7,550	3,700	2,200 61,900
16	17	18		
Indian Av. & Morgan St.	Perris Bl. & Ramona Exwy.	Perris Bl. & Morgan St.		
11,500 37(26) 116(487) 6(23) 8(19) 183(40) 19(35) 19(26) 105(114) 93(178)	3,650 48,450 261(265) 476(1327) 164(489) 189(225) 1459(1058) 131(260) 461(411) 956(1439) 195(450)	56,500 46,050 127(46) 735(1878) 39(37) 25(31) 42(20) 9(42) 73(84) 1117(1100) 12(32)		
7,150	14,950 60,700	47,200 13,750		

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

EXHIBIT 7-2: HORIZON YEAR (2045) WITH PROJECT TRAFFIC VOLUMES



1	I-215 SB Ramps & Ramona Exwy.	2	I-215 NB Ramps & Ramona Exwy.	3	Nevada Av. & Ramona Exwy.	4	Nevada Av. & Driveway 4	5	Nevada Av. & Driveway 3
31,750 223(209) 2(9) 1107(1268) 1034(1285) 533(500) 55,200	67,950 1651(1292) 768(873) 20,900	22,950 155(155) 1985(2398) 67,950	77,800 1040(1006) 1749(1579) 670(586) 5(5) 993(717) 18,350	76,200 2728(2538) 30(94) 2549(2505) 430(610) 61(47) 87(68) 77,800	11,450 418(677) 42(27) 33(25) 33(25) 114(90) 42(27) 11,450	1,250 33(25) 114(90) 42(27) 11,450	11,450 451(702) 3(7) 157(117) 7(3) 11,650	200 3(7) 157(117) 7(3) 11,650	200 3(7) 157(117) 7(3) 11,650
6	Nevada Av. & Driveway 2	7	Nevada Av. & Driveway 1	8	Nevada Av. & Morgan St.	9	Driveway 5 & Ramona Exwy.	10	Driveway 6 & Ramona Exwy.
11,650 454(709) 3(7) 164(120) 7(3) 11,850	200 3(7) 7(3) 11,850	11,850 441(708) 15(7) 4(19) 3(15) 166(104) 11(6) 11,750	600 4(19) 3(15) 166(104) 11(6) 11,750	11,750 298(692) 114(31) 36(17) 48(127) 133(96) 140(76) 14,100	3,450 36(17) 48(127) 133(96) 140(76) 2463(2469) 173(104) 76,200	76,350 2446(2428) 242(142) 313(203) 275(166) 8,300	75,350 2390(2430) 227(136) 75,350	73,500 2687(2570) 73,500	
11	Webster Av. & Ramona Exwy.	12	Webster Av. & Driveway 7	13	Webster Av. & Driveway 8	14	Webster Av. & Morgan St.	15	Indian Av. & Ramona Exwy.
25,350 165(348) 54(144) 59(130) 316(238) 1986(2172) 209(88) 74,550	64,400 74(85) 2329(1888) 72(55) 96(55) 49(51) 193(333) 9,500	9,500 111(68) 225(219) 99(65) 70(42) 239(374) 65(39) 2,850	8,850 45(22) 245(236) 13(58) 1(5) 4(2) 296(358) 8,850	8,850 45(22) 245(236) 13(58) 1(5) 4(2) 296(358) 7,950	8,150 87(63) 42(17) 129(152) 150(213) 186(60) 40(11) 144(79) 143(48) 51(12) 4,100	7,750 150(213) 186(60) 40(11) 26(32) 25(51) 2,200	15,350 83(154) 65(329) 25(139) 253(167) 1638(2051) 99(172) 63,900	61,750 88(96) 2150(1526) 62(74) 203(217) 143(155) 47(183) 15,250	
16	Indian Av. & Morgan St.	17	Perris Bl. & Ramona Exwy.	18	Perris Bl. & Morgan St.	##(##) AM(PM) Peak Hour Intersection Volumes ## Average Daily Trips			
11,500 37(26) 116(487) 6(23) 19(26) 123(131) 111(195) 7,950	4,050 8(19) 208(55) 19(35) 255(154) 305(226) 12(23) 15,350	49,000 294(286) 476(1327) 164(489) 485(433) 991(1474) 213(467) 62,450	57,300 189(225) 1509(1089) 131(260) 497(374) 828(749) 68(162) 47,600	46,400 127(46) 752(1890) 39(37) 32(72) 46(54) 32(93) 11,388(1114) 12(32) 14,150	4,000 25(31) 63(34) 9(42) 77(86) 11388(1114) 12(32) 47,500				

7.4 INTERSECTION OPERATIONS ANALYSIS

LOS calculations were conducted for the study intersections to evaluate their operations under Horizon Year (2045) conditions with roadway and intersection geometrics consistent with Section 7.1 *Roadway Improvements*. As shown in Table 7-1, all the study area intersections are anticipated to operate at acceptable LOS during the peak hours under Horizon Year (2045) Without Project traffic conditions, with the exception of the following intersections:

- I-215 SB Ramps & Ramona Exwy. (#1) – LOS F AM and PM peak hours
- I-215 NB Ramps & Ramona Exwy. (#2) – LOS F AM and PM peak hours
- Nevada Av. & Ramona Exwy. (#3) – LOS F AM and PM peak hours
- Webster Av. & Ramona Exwy. (#11) – LOS F AM and PM peak hours
- Indian Av. & Ramona Exwy. (#15) –LOS F PM peak hour only
- Perris Bl. & Ramona Exwy. (#17) – LOS F AM and PM peak hours
- Perris Bl. & Morgan St. (#18) – LOS F PM peak hour only

Vehicles will utilize Mid-County Parkway which will reduce the traffic volumes along Ramona Expressway. As such, the peak hour intersection operations could potentially improve at some locations along Ramona Expressway in comparison to EAPC (2024) traffic conditions. The intersection operations analysis worksheets for Horizon Year (2045) Without Project traffic conditions are included in Appendix 7.1.

The addition of Project traffic is anticipated to result in the following new deficient intersection as compared to Horizon Year (2045) Without Project traffic conditions:

- Driveway 5 & Ramona Exwy. (#9) – LOS F AM and PM peak hours

The intersection operations analysis worksheets for Horizon Year (2045) With Project traffic conditions are included in Appendix 7.2 of this TA.

The affected intersections have also been evaluated for each of the access alternatives. The analysis results are summarized in Table 7-2 which shows that the study area intersections are anticipated to continue to operate at an acceptable LOS for each of the access alternatives evaluated, with the exception of the following intersections which are anticipated to operate at a deficient LOS for both access alternatives:

- Nevada Av. & Ramona Exwy. (#3) – LOS F PM peak hour only
- Driveway 5 & Ramona Exwy. (#9) – LOS F AM and PM peak hours
- Webster Av. & Ramona Exwy. (#11) – LOS F PM peak hour only

The intersection operations analysis worksheets are included in Appendix 7.3 of this TA for access alternative 1 and in Appendix 7.4 for access alternative 2.

TABLE 7-1: INTERSECTION ANALYSIS FOR HORIZON YEAR (2045) CONDITIONS

#	Intersection	Traffic Control ¹	2045 Without Project				2045 With Project			
			Delay ² (secs.)		Level of Service		Delay ² (secs.)		Level of Service	
			AM	PM	AM	PM	AM	PM	AM	PM
1	I-215 SB Ramps & Ramona Exwy.	TS	154.3	>200.0	F	F	188.8	>200.0	F	F
2	I-215 NB Ramps & Ramona Exwy.	TS	>200.0	151.9	F	F	>200.0	178.2	F	F
3	Nevada Av. & Ramona Exwy.	CSS/TS	>200.0	>200.0	F	F	77.4	143.4	E	F
4	Nevada Av. & Driveway 4	CSS	Future Intersection		11.7	12.6	B	B		
5	Nevada Av. & Driveway 3	CSS	Future Intersection		12.4	14.9	B	C		
6	Nevada Av. & Driveway 2	CSS	Future Intersection		12.5	15.1	B	C		
7	Nevada Av. & Driveway 1	CSS	Future Intersection		11.7	13.5	B	B		
8	Nevada Av. & Morgan St.	CSS	14.5	21.8	B	C	16.1	26.5	C	D
9	Driveway 5 & Ramona Exwy.	TS	Future Intersection		142.1	137.9	F	F		
10	Driveway 6 & Ramona Exwy. ³	CSS	Future Intersection		0.0	0.0	A	A		
11	Webster Av. & Ramona Exwy.	TS	194.3	>200.0	F	F	55.1	>200.0	E	F
12	Webster Av. & Driveway 7	CSS	Future Intersection		12.2	11.1	B	B		
13	Webster Av. & Driveway 8	CSS	Future Intersection		10.2	10.8	B	B		
14	Webster Av. & Morgan St.	AWS	16.6	12.2	C	B	21.4	13.6	C	B
15	Indian Av. & Ramona Exwy.	TS	77.5	86.0	E	F	92.9	93.0	F	F
16	Indian Av. & Morgan St.	TS	21.9	19.4	C	B	27.5	20.2	C	C
17	Perris Bl. & Ramona Exwy.	TS	122.1	111.0	F	F	132.9	116.8	F	F
18	Perris Bl. & Morgan St.	TS	14.6	114.4	B	F	15.3	118.4	B	F

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

¹ CSS = Cross-street Stop; AWS = All-way Stop; TS = Traffic Signal; **CSS** = Improvement

² Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

³ The eastbound approach is 3 through lanes and a shared through-right turn lane. However, the current HCM does not support evaluation of more than 3 through lanes per approach. As such, the intersection has been evaluated with 3 through lanes and a right turn lane for the eastbound approach. Since the driveway is a right-turn in only driveway, there is no exiting volume and therefore no intersection delay. As such, evaluation of the eastbound approach with additional through lanes would not change the results.

TABLE 7-2: INTERSECTION ANALYSIS FOR HORIZON YEAR (2045) CONDITIONS – ALTERNATIVE ACCESS

#	Intersection	Traffic Control ¹	2045 Alternative 1				2045 Alternative 2			
			Delay ² (secs.)		Level of Service		Delay ² (secs.)		Level of Service	
			AM	PM	AM	PM	AM	PM	AM	PM
3	Nevada Av. & Ramona Exwy.	TS	71.7	142.8	E	F	71.7	142.8	E	F
4	Nevada Av. & Driveway 4	CSS	9.4	9.1	A	A	9.3	9.1	A	A
9	Driveway 5 & Ramona Exwy.	TS	112.0	121.3	F	F	124.0	116.2	F	F
10	Driveway 6 & Ramona Exwy. ³	CSS	Does Not Exist				0.0	0.0	A	A
11	Webster Av. & Ramona Exwy.	TS	52.7	>200.0	D	F	53.6	>200.0	D	F
12	Webster Av. & Driveway 7	CSS	9.3	8.9	A	A	9.3	8.9	A	A

* **BOLD** = Level of Service (LOS) does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).
¹ CSS = Cross-street Stop; TS = Traffic Signal; **TS** = Improvement
² 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 The eastbound approach is 3 through lanes and a shared through-right turn lane. However, the current HCM does not support evaluation of more than 3 through lanes per approach. As such, the intersection has been evaluated with 3 through lanes and a right turn lane for the eastbound approach. Since the driveway is a right-turn in only driveway, there is no exiting volume and therefore no intersection delay. As such, evaluation of the eastbound approach with additional through lanes would not change the results.

7.5 TRAFFIC SIGNAL WARRANTS ANALYSIS

Traffic signal warrants have been performed for Horizon Year (2045) Without and With Project traffic conditions based on peak hour or planning level (ADT) volumes. No traffic signals are warranted at the study area intersections for Horizon Year (2045) Without Project conditions in addition to those previously warranted under E+P traffic conditions (see Appendix 7.5). The intersection of Webster Avenue and Morgan Street is anticipated to meet a peak hour volume-based traffic signal warrant under Horizon Year (2045) With Project traffic conditions (see Appendix 7.6). However, installation of the traffic signal at this location has not been recommended as the intersection is anticipated to operate at an acceptable LOS with the existing traffic control. The intersection should be monitored, and a traffic signal should be installed at the City Traffic Engineer’s discretion.

7.6 QUEUING ANALYSIS

Queuing analysis findings for Horizon Year (2045) Without and With Project are presented on Table 7-3. As shown on Table 7-3, there are no movements that are anticipated to experience queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows with the addition of Project traffic. Worksheets for Horizon Year (2045) Without and With Project traffic conditions queuing analysis are provided in Appendix 7.7 and Appendix 7.8, respectively.

TABLE 7-3: PEAK HOUR QUEUING SUMMARY FOR HORIZON YEAR (2045) CONDITIONS

Intersection	Movement	Available Stacking Distance (Feet)	2045 Without Project				2045 With Project			
			95th Percentile Queue (Feet)		Acceptable? ¹		95th Percentile Queue (Feet)		Acceptable? ¹	
			AM Peak Hour	PM Peak Hour	AM	PM	AM Peak Hour	PM Peak Hour	AM	PM
I-215 SB Ramps & Ramona Exwy.	SBL	530	733 ^{2 3}	791 ^{2 3}	Yes	Yes	837 ²	854 ²	No	No
	SBL/T	1,100	737 ²	808 ²	Yes	Yes	841 ²	871 ²	Yes	Yes
	SBR	530	216	180	Yes	Yes	216	180	Yes	Yes
I-215 NB Ramps & Ramona Exwy.	NBL	520	262	263	Yes	Yes	262	263	Yes	Yes
	NBL/T	1,120	267	268	Yes	Yes	267	268	Yes	Yes
	NBR	520	985 ^{2 3}	743 ^{2 3}	Yes	Yes	1,110 ²	826 ^{2 3}	Yes	Yes

¹ Stacking Distance is acceptable if the required stacking distance is less than or equal to the stacking distance provided. An additional 15 feet of stacking which is assumed to be provided in the transition for turn pockets is reflected in the stacking distance shown on this table, where applicable.

² 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

³ Although 95th percentile queue is anticipated to exceed the available storage for the turn lane, the adjacent through lane has sufficient storage to accommodate any spillover without spilling back and affecting the I-215 Freeway mainline.

7.7 RECOMMENDED IMPROVEMENTS

Improvement strategies have been recommended at intersections that have been identified as deficient under Horizon Year (2045) With Project traffic conditions in an effort to achieve an acceptable LOS (i.e., LOS E or better).

7.7.1 IMPROVEMENTS TO ADDRESS DEFICIENCIES AT INTERSECTIONS

The effectiveness of the recommended improvement strategies to address Horizon Year (2045) With Project traffic deficiencies are presented in Table 7-4. Worksheets for Horizon Year (2045) With Project conditions, with improvements, HCM calculation worksheets are provided in Appendix 7.9. The Project Applicant shall participate in the funding of off-site improvements, including traffic signals that are needed to serve cumulative traffic conditions through the payment of TUMF/DIF/NPRBBD fees (if the improvements are included in a pre-existing fee program) or on a fair share basis (if the improvements are not included in a pre-existing fee program). These fees shall be collected by the City of Perris, with the proceeds solely used as part of a funding mechanism aimed at ensuring that regional highways and arterial expansions keep pace with the projected population increases.

TABLE 7-4: INTERSECTION ANALYSIS FOR HORIZON YEAR (2045) WITH PROJECT CONDITIONS WITH IMPROVEMENTS

#	Intersection	Traffic Control ¹	Intersection Approach Lanes ²												Delay ³ (secs.)		Level of Service		
			Northbound			Southbound			Eastbound			Westbound			AM	PM	AM	PM	
			L	T	R	L	T	R	L	T	R	L	T	R	L	T	R		
1	I-215 SB Ramps & Ramona Exwy.																		
	-Without Improvements	TS	0	0	0	1	1	1	0	2	0	1	2	0	188.8	>200.0	F	F	
	- With Improvements (Preferred)	TS	0	0	0	1	1	1	0	<u>4</u>	<u>1</u>	<u>2</u>	<u>4</u>	0	44.1	47.9	D	D	
2	I-215 NB Ramps & Ramona Exwy.																		
	-Without Improvements	TS	1	1	1	0	0	0	1	2	0	0	2	1	>200.0	178.2	F	F	
	- With Improvements (Preferred)	TS	1	1	1	0	0	0	<u>2</u>	<u>3</u>	0	0	<u>3</u>	<u>1>></u>	35.8	44.3	D	D	
3	Nevada Av. & Ramona Exwy.																		
	-Without Improvements	TS	0	1	0	0	0	0	0	2	0	1	2	0	77.4	143.4	E	F	
	- With Improvements (Preferred)	TS	<u>1</u>	0	<u>1</u>	0	0	0	0	<u>3</u>	0	1	<u>3</u>	0	2.0	6.0	A	A	
	- With Improvements (Alt 1)	TS	<u>1</u>	0	<u>1</u>	0	0	0	0	<u>3</u>	0	1	<u>3</u>	0	7.2	13.2	A	B	
	- With Improvements (Alt 2)	TS	<u>1</u>	0	<u>1</u>	0	0	0	0	<u>3</u>	0	1	<u>3</u>	0	7.2	13.2	A	B	
9	Driveway 5 & Ramona Exwy.																		
	-Without Improvements	TS	<u>1</u>	0	<u>1</u>	0	0	0	0	<u>3</u>	<u>1</u>	<u>1</u>	2	0	142.1	137.9	F	F	
	- With Improvements (Preferred)	TS	<u>1</u>	0	<u>1</u>	0	0	0	0	<u>3</u>	<u>1</u>	<u>1</u>	<u>3</u>	0	51.9	22.1	D	C	
	- With Improvements (Alt 1)	TS	<u>1</u>	0	<u>1</u>	0	0	0	0	<u>3</u>	<u>1</u>	<u>1</u>	<u>3</u>	0	30.8	12.4	C	B	
	- With Improvements (Alt 2)	TS	<u>1</u>	0	<u>1</u>	0	0	0	0	<u>3</u>	<u>1</u>	<u>1</u>	<u>3</u>	0	44.3	36.6	D	D	
11	Webster Av. & Ramona Exwy.																		
	-Without Improvements	TS	1	1	1	1	1	d	1	3	0	1	3	1	55.1	>200.0	E	F	
	- With Improvements (Preferred)	TS	1	1	1	1	1	d	<u>2</u>	3	0	1	<u>4</u>	<u>0</u>	26.0	52.9	C	D	
	- With Improvements (Alt 1)	TS	1	1	1	1	1	d	<u>2</u>	3	0	1	<u>4</u>	<u>0</u>	26.0	53.0	C	D	
	- With Improvements (Alt 2)	TS	1	1	1	1	1	d	<u>2</u>	3	0	1	<u>4</u>	<u>0</u>	25.6	52.4	C	D	
15	Indian Av. & Ramona Exwy.																		
	-Without Improvements	TS	1	2	0	1	2	1	1	3	0	1	3	1	92.9	93.0	F	F	
	- With Improvements (Preferred)	TS	1	2	0	1	2	1	<u>2</u>	3	0	1	3	1	54.6	54.5	D	D	
17	Perris Bl. & Ramona Exwy.																		
	-Without Improvements	TS	2	2	1	2	2	1	2	3	1	2	3	0	132.9	116.8	F	F	
	- With Improvements (Preferred) ⁴	TS	2	<u>3</u>	<u>0</u>	2	<u>3</u>	<u>0</u>	2	3	1	2	3	0	74.0	70.2	E	E	
18	Perris Bl. & Morgan St.																		
	-Without Improvements	TS	1	3	0	1	2	1	1	2	1	1	1	1	15.3	118.4	B	F	
	- With Improvements (Preferred)	TS	1	3	0	1	<u>3</u>	1	1	2	1	1	1	1	14.8	25.6	B	C	

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

¹ TS = Traffic Signal

² When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; d = Defacto Right Turn Lane; 1 = Improvement

³ Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or

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

7.7.2 IMPROVEMENTS TO ADDRESS DEFICIENCIES ON OFF-RAMP QUEUES

As shown previously in Table 7-3, there are no movements that are anticipated to experience queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows for Horizon Year (2045) With Project traffic conditions. As such, no improvements have been identified.

It should be noted, the northbound right turn movement at the intersection of I-215 Northbound Ramp & Ramona Expressway is anticipated to exceed the available stacking distance under Horizon Year (2045) conditions, however there is sufficient stacking distance available in the adjacent through lane to prevent vehicles from spilling back onto the I-215 Freeway. In the worst-case scenario, the northbound right turn traffic may block vehicles from accessing the left turn and shared left-through lanes, thereby adding additional queuing behind the northbound right turn traffic. As such and at the request of the City of Perris, additional simulations have been conducted utilizing SimTraffic during the AM peak hour only, to evaluate whether the northbound right turn traffic volumes would block other vehicles and add additional queues under Horizon Year (2045) With Project conditions With Improvements. Although the anticipated PM peak hour queues are anticipated to exceed the available stacking distance for the northbound right turn lane, the total queue length of all movements during the PM peak hour is not long enough to spill back onto the I-215 Freeway, even if the northbound right turn traffic volumes block the left and shared left-through lanes. For a detailed discussion about the SimTraffic software, see Section 1.9 *Queuing Analysis at the Project Driveways*. As shown in Table 7-5, based on the results of the SimTraffic simulations, the queue is not anticipated to spill back onto the I-215 Freeway during the AM peak hour. The SimTraffic queuing worksheets are provided in Appendix 7.10.

TABLE 7-5: PEAK HOUR QUEUING SUMMARY FOR HORIZON YEAR (2045) CONDITIONS WITH IMPROVEMENTS

Intersection	Movement	Available Stacking Distance (Feet)	2045 With 95th Percentile Queue (Feet) AM Peak Hour
I-215 NB Ramps & Ramona Exwy.	NBL	520	170
	NBL/T	1,120	632
	NBR	520	603

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8 LOCAL AND REGIONAL FUNDING MECHANISMS

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

8.1 TRANSPORTATION UNIFORM MITIGATION FEE (TUMF) PROGRAM

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

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

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

8.2 CITY OF PERRIS DEVELOPMENT IMPACT FEE (DIF) PROGRAM

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

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

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

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

8.3 NORTH PERRIS ROAD AND BRIDGE BENEFIT DISTRICT (NPRBBD)

The NPRBBD is comprised of approximately 3,500 acres of land located within the northern portion of the City of Perris. The NPRBBD boundary is consistent with the boundary of the PVCC SP. As such, the Project will be subject to the NPRBBD. The purpose of the NPRBBD is to improve the efficiency of the financing of specific regional road and bridge improvements that are determined to provide benefit to the developing properties within the NPRBBD boundary. In addition, the NPRBBD includes additional improvements to supplement the TUMF and DIF network. NPRBBD fees are inclusive of TUMF and DIF. A significant portion of the fees collected through this mechanism are earmarked for use within the boundary sufficient to fully fund the included improvements. The balance of TUMF is transmitted to WRCOG for use in addressing cumulative impacts elsewhere within Western Riverside County. The City treats the DIF component collected within the NPRBBD in a similar way to ensure the local circulation network outside the program boundaries is adequately addressed.

Table 8-1 lists each facility identified within the NPRBBD, the General Plan roadway classification and the current estimated construction cost for the facilities.

TABLE 8-1: NPRBBD FACILITES

Facility Name	General Plan Classification	Estimated Cost
Indian Avenue	Secondary Arterial	\$11,343,500
Perris Boulevard	Arterial	\$17,350,800
Redlands Avenue	Secondary Arterial	\$14,845,000
Harley Knox Boulevard	Arterial	\$31,813,700
Markham Street	Secondary Arterial	\$2,132,000
Ramona Expressway	Expressway	\$10,865,000
Morgan Street	Secondary Arterial	\$2,899,500
Rider Street	Secondary Arterial	\$3,803,000
Placentia Avenue	Arterial	\$18,705,900
Indian Avenue Bridge	Secondary Arterial	\$701,800
Harley Knox Boulevard Bridge	Arterial	\$4,210,800
Ramona Expressway Bridge	Expressway	\$2,105,800
Placentia Avenue Bridge	Arterial	\$6,316,200
Harley Knox Boulevard Interchange @ I-215	Arterial	\$17,371,000
Placentia Avenue Interchange @ I-215	Arterial	\$8,389,000
4-Lane Intersections – Traffic Signals	4 – Signal Locations	\$870,000
6-Lane Intersections – Traffic Signals	11 – Signal Locations	\$3,190,000
District Totals		\$156,913,000

The facilities identified within the NPRBBD provide additional benefit by providing alternate truck routes within the City of Perris. It should be noted that NPRBBD fees are to be paid in conjunction with TUMF and City DIF fees as a one-time fee payment to the City prior to the issuance of a building permit.

8.4 FAIR SHARE CONTRIBUTION

Project improvements may include a combination of fee payments to established programs, construction of specific improvements, payment of a fair share contribution toward future improvements or a combination of these approaches. Improvements constructed by development may be eligible for a fee credit or reimbursement through the program where appropriate (to be determined at the City’s discretion). When off-site improvements are identified with a minor share of responsibility assigned to proposed development, the approving jurisdiction may elect to collect a fair share contribution or require the development to construct improvements. Detailed fair share calculations, for each peak hour, have been provided in Table 8-2 for the applicable deficient study area intersection based on PCE volumes. 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 8-2: FAIR SHARE CONTRIBUTION

#	Intersection	Existing	Project	2045 WP Volume	Net New Traffic	Project % of New Traffic	
1	I-215 SB Ramps & Ramona Exwy.	AM:	3,599	267	6,025	2,426	11.0%
		PM:	3,586	195	5,981	2,395	8.1%
2	I-215 NB Ramps & Ramona Exwy.	AM:	4,384	467	7,439	3,055	15.3%
		PM:	4,164	359	7,039	2,875	12.5%
11	Webster Av. & Ramona Exwy.	AM:	3,809	327	6,334	2,525	13.0%
		PM:	3,648	268	6,093	2,445	11.0%
15	Indian Av. & Ramona Exwy.	AM:	3,464	212	5,612	2,148	9.9%
		PM:	3,605	162	5,787	2,182	7.4%
17	Perris Bl. & Ramona Exwy.	AM:	4,088	185	6,508	2,420	7.6%
		PM:	4,907	141	7,787	2,880	4.9%

BOLD = Denotes highest fair share percentage.

9 REFERENCES

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