First March Logistics (DPR20-00004)

TRAFFIC ANALYSIS

CITY OF PERRIS

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MARCH 2, 2023

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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
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
NPRBBD	North Perris Road and Bridge Benefit District
PCE	Passenger Car Equivalents
PHF	Peak Hour Factor
Project	First March Logistics
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
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 First March Logistics development ("Project"), which is located north of Nandina Avenue and west of Natwar Lane, 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 mitigate 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.

The PVCC SP Environmental Impact Report (EIR) concluded that the potential deficiencies related to level of service on study area roadways were less than significant. The PVCC SP EIR did not evaluate peak hour operations of any key study area intersections. (1)

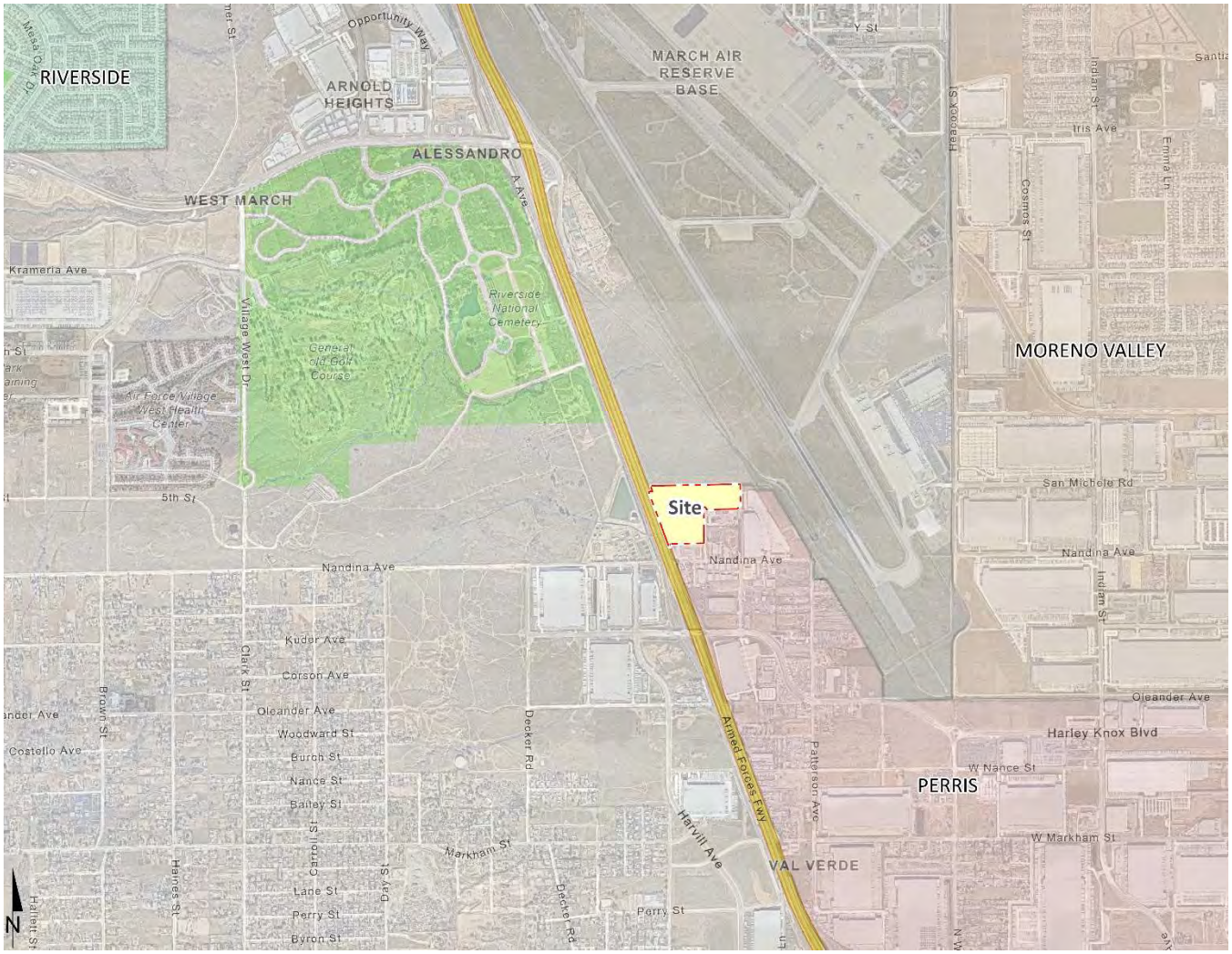
1.1 SUMMARY OF FINDINGS

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

- Project to construct Natwar Lane at its ultimate half-section pavement width as a Collector (64-foot right-of-way) between the Project's northern and southern boundaries consistent with the PVCC SP and the City of Perris General Plan Circulation Element.
- Project to construct Driveway 1 and Driveway 2 on Natwar Lane with stop controls for the eastbound traffic in order to facilitate site access (Phase 1).
- Project to construct Driveway 3 on Natwar Lane with stop controls for the southbound traffic in order to facilitate site access (Phase 2).
- Project to construct Driveway 4 on Western Way with stop controls for the eastbound traffic in order to facilitate site access (Phase 2).

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.

EXHIBIT 1-1: LOCATION MAP



1.2 PROJECT OVERVIEW

The Project is proposed to consist of a single 419,034 square foot (sf) warehouse building (Building 1) and a second 139,971 sf warehouse building (Building 2). However, for the purposes of this traffic study, the building size evaluated for Building 1 will assume up to 450,000 sf. Building 1 is anticipated to be constructed by the year 2023 while Project Buildout is anticipated by year 2025. The proposed Project land use is consistent with the PVCC SP, which is Light Industrial. Vehicular and truck traffic access will be provided via the following driveways (see Exhibit 1-2):

- Natwar Ln./Driveway 3 & Driveway 1 – full access at for trucks only at Driveway 1; right-in access only for trucks at Driveway 3; full access for passenger cars at Driveway 3
- Natwar Ln. & Driveway 2 – full access for both passenger cars and trucks
- Western Wy. & Driveway 4 – full access for passenger cars; right-out access only for trucks

Regional access to the Project site is provided via the I-215 Freeway and Harley Knox Boulevard Interchange.

Trips generated by the Project's proposed land uses have been estimated based on trip generation rates collected by the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition, 2017. (2) The Project is anticipated to generate 1,390 two-way trips per day, with 127 AM peak hour trips and 152 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 (2021)
- Existing Plus Project (E+P) – Phase 1
- E+P – Project Buildout (Phase 1 + Phase 2)
- Existing Plus Ambient Growth Plus Cumulative (E+A+C) (2023)
- Existing Plus Ambient Growth Plus Project (Phase 1) Plus Cumulative (E+A+P+C) (2023)
- Existing Plus Ambient Growth Plus Cumulative (E+A+C) (2025)
- Existing Plus Ambient Growth Plus Project Buildout Plus Cumulative (E+A+P+C) (2025)

EXHIBIT 1-2: PRELIMINARY SITE PLAN

1.3.1 EXISTING (2021) CONDITIONS

Information for Existing (2021) conditions is disclosed to represent the baseline traffic conditions as they existed at the time this report was prepared. Traffic counts were conducted in March 2019, when local schools were in session and operating on a typical bell schedule (prior to closures related to the COVID-19 pandemic). Based on vehicle classification, vehicles 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. For the purposes of this analysis, the E+P analysis scenario has been evaluated for both Phase 1 and Project Buildout to understand the deficiencies that are specific to each phase of the development.

1.3.3 EXISTING PLUS AMBIENT GROWTH PLUS PROJECT PLUS CUMULATIVE (2023) CONDITIONS

To account for growth in traffic between Existing (2021) conditions and the Project Opening Year (2023, Phase 1), a traffic growth rate of 6.09% was assumed. The 3.0 percent annual growth rate (compounded annually, over two years) is intended to capture non-specific ambient traffic growth. Conservatively, the TA estimates of area traffic growth then add traffic generated by other known or probable related projects. These related projects are at least in part already accounted for in the assumed 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 2023 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 2023 conditions. Phase 1 traffic was added to evaluate EAPC (2023) traffic conditions.

1.3.4 EXISTING PLUS AMBIENT GROWTH PLUS PROJECT PLUS CUMULATIVE (2025) CONDITIONS

To account for growth in traffic between Existing (2021) conditions and the Project Opening Year (2025, Project Buildout), a traffic growth rate of 12.55% was assumed. The 3.0 percent annual growth rate (compounded annually, over 4 years) is intended to capture non-specific ambient traffic growth. Conservatively, the TA estimates of area traffic growth then add traffic generated by other known or probable related projects. These related projects are at least in part already accounted for in the assumed 12.55% total ambient growth in traffic noted above; and in some instances, these related projects would likely not be implemented and operational within the 2025 Opening Year time frame assumed for the Project. The resulting traffic growth rate utilized in the TA (12.55% ambient growth + traffic generated by related projects) would therefore tend to overstate rather than understate background cumulative traffic deficiencies under 2025 conditions. Project Buildout traffic was added to evaluate EAPC (2025) traffic conditions.

The EAPC (2025) conditions analyses will be utilized to determine if improvements funded through regional transportation mitigation fee programs, such as the Western Riverside Council of Governments (WRCOG) Transportation Uniform Mitigation Fee (TUMF) and Development

Impact Fee (DIF) programs, can accommodate the long-range cumulative traffic at the target level of service (LOS) identified in the 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 8 study area intersections shown on Exhibit 1-3 and listed in Table 1-1 were selected for this TA based on the City's Traffic Study Guidelines and in consultation with City of Perris staff. The City requires analysis of intersections where the Project would contribute 50 or more peak hour trips. Based on the location of the Project site and the trip distribution patterns, the Project is anticipated to contribute 50 peak hour trips to all major 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 & Harley Knox Bl.	City of Perris	No
2	I-215 NB Ramps & Harley Knox Bl.	City of Perris	No
3	Natwar Ln./Driveway 3 & Driveway 1	City of Perris	No
4	Natwar Ln. & Driveway 2	City of Perris	No
5	Natwar Ln. & Nandina Av.	City of Perris	No
6	Western Wy. & Driveway 4	City of Perris	No
7	Western Wy. & Nandina Av.	City of Perris	No
8	Western Wy. & Harvey Knox Bl.	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 1-3: STUDY AREA

1.5 DEFICIENCIES

This section provides a summary of deficiencies by analysis scenario. Section 2 *Methodologies* provides information on the methodologies used in the analysis and Section 6 *EAC and EAPC (2023) Traffic Conditions* and Section 7 *EAC and EAPC (2025) Traffic Conditions* includes the detailed analysis. A summary of LOS results for all analysis scenarios is presented on Table 1-2.

1.5.1 EXISTING AND E+P CONDITIONS

Although not needed to address any LOS deficiency, restriping has been recommended at the I-215 Southbound Ramps at Harley Knox Boulevard in order to address existing queuing issues. Field observations of the I-215 Freeway interchange at Harley Knox Boulevard indicate that there are queues during the peak hours. The interchange is included in both the TUMF and NPRBBD fee programs and the Project will participate in contributing towards the I-215/Harley Knox Boulevard interchange improvements through payment of TUMF/NPRBBD fees.

1.5.3 EAPC (2023) CONDITIONS

The following study area intersection is anticipated to operate at a deficient LOS (i.e., LOS E or worse) for Background (2023) traffic conditions:

- I-215 SB Ramps & Harley Knox Bl. (#1) – LOS F PM peak hour only
- I-215 NB Ramps & Harley Knox Bl. (#2) – LOS F AM and PM peak hours

1.5.4 EAPC (2025) CONDITIONS

The following study area intersection is anticipated to operate at a deficient LOS (i.e., LOS E or worse) for Background (2025) traffic conditions:

- I-215 SB Ramps & Harley Knox Bl. (#1) – LOS F AM and PM peak hours
- I-215 NB Ramps & Harley Knox Bl. (#2) – LOS F AM and PM peak hours

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 Conditions*, Section 6 *EAC and EAPC (2023) Traffic Conditions,* and Section 7 *EAC and EAPC (2025) Traffic Conditions* include the detailed analyses. The same study area intersection deficiencies occur without and with Project traffic for all analysis scenarios (see Table 1-2). As such, there are no project-related deficiencies, however, the Project would cumulatively contribute to each of the deficiencies identified on Table 1-2. Each project implementing the PVCC SP is required to incorporate applicable mitigation from the PVCC Specific Plan EIR. The relevant traffic mitigation measures from the PVCC Specific Plan EIR are identified in Section 1.5.1.

1.6.1 PVCC SPECIFIC PLAN EIR TRAFFIC MITIGATION MEASURES

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.

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

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.

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 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.

TABLE 1-2: SUMMARY OF LOS BY ANALYSIS SCENARIO

#	Intersection	Existing		E+P (Phase 1)		E+P (Phase 2)		EAC (2023)		EAPC (2023)		EAC (2025)		EAPC (2025)	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1	I-215 SB Ramps & Harley Knox Bl.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
2	I-215 NB Ramps & Harley Knox Bl.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
3	Natwar Ln./Driveway 3 & Driveway 1	N/A	N/A	●	●	●	●	N/A	N/A	●	●	N/A	N/A	●	●
4	Natwar Ln. & Driveway 2	N/A	N/A	●	●	●	●	N/A	N/A	●	●	N/A	N/A	●	●
5	Natwar Ln. & Nandina Av.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
6	Western Wy. & Driveway 4	N/A	N/A	N/A	N/A	●	●	N/A	N/A	N/A	N/A	N/A	N/A	●	●
7	Western Wy. & Nandina Av.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
8	Western Wy. & Harley Knox Bl.	●	●	●	●	●	●	●	●	●	●	●	●	●	●

● = A - D ● = E ● = F

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 (2023) Traffic Conditions*, and Section 7 *EAC and EAPC (2025) 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 1-3. These recommended improvements are consistent with or less than the geometrics assumed in the City of Perris and County of Riverside General Plan Circulation Elements. Improvements found to be included in the Western Riverside Council of Governments (WRCOG) Transportation Uniform Mitigation Fee (TUMF) program, 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.

TABLE 1-3: SUMMARY OF IMPROVEMENTS BY ANALYSIS SCENARIO

#	Intersection Location	Jurisdiction	Recommended Improvements					Improvements in DIF, TUMF, NPRBBD, etc.[1,2]	Project Responsibility	Project Fair Share[3]
			Existing (2021)	E+P (Ph. 1)	E+P (Ph. 1 & 2)	EAPC (2023)	EAPC (2025)			
1	I-215 SB Ramps & Harley Knox Bl.	Caltrans, County of Riverside	- Restripe to accommodate 2 WB left turn lanes and 1 WB through lane	- Same	- Same	- Same	- Same	Yes (TUMF, NPRBBD)	Fees	--
2	I-215 NB Ramps & Harley Knox Bl.	Caltrans, County of Riverside	- None	- None	- None	- WB free-right turn lane - 2nd EB left turn lane	- Same - Same	Yes (TUMF, NPRBBD) Yes (TUMF, NPRBBD)	Fees 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] Total project fair share contribution consists of 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. Exhibit 1-4 illustrates the site access recommendations.

Natwar Lane – Natwar Lane is a north-south oriented roadway located along the Project's eastern boundary. Construct Natwar Lane at its ultimate half-section pavement width as a Collector (64-foot right-of-way) between the Project's northern and southern boundaries consistent with the PVCC SP and the City of Perris General Plan Circulation Element. The Project shall install a 34-foot-wide asphalt paving (using a traffic index of 8.0 and performance grade of 64-10), 6-inch curb and gutter 22-feet west of the centerline, sidewalk and streetlights per the City of Perris, County of Riverside, and Caltrans standards. If the existing pavement is in good condition, the Project Applicant may use grind and overlay technique as determined by the City Engineer. A conceptual striping plan for Natwar Lane is shown on Exhibit 1-5. Note that the centerline along Natwar Lane is purposefully offset in order to accommodate the turning radius of heavy trucks off of and onto Natwar Lane.

Western Way is planned to be extended northerly and connect to a future extension of Van Buren Boulevard at the northerly City boundary. As such, the Project should improve Western Way accordingly to accommodate the future extension through its pan-handle section.

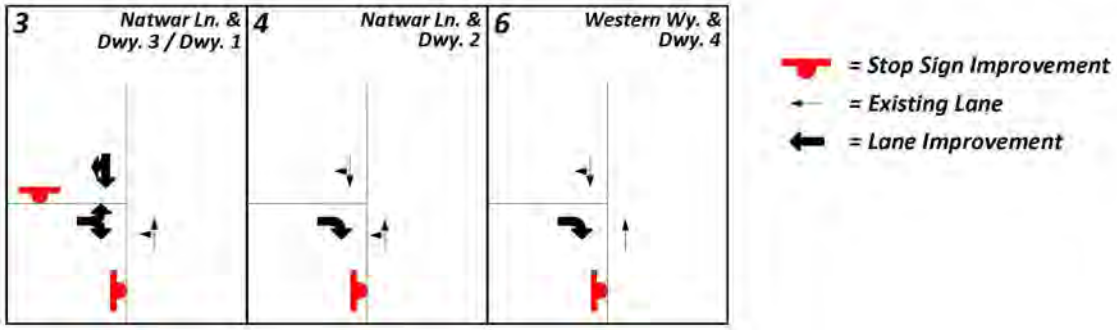
Western Way – Western Way is a north-south oriented roadway that will traverse along the eastern boundary of the project. Western Way is constructed at the ultimate full-section pavement width as a Secondary Arterial (94-foot right-of-way) between the Project's northern and southern boundaries consistent with the PVCC SP and the City of Perris General Plan Circulation Element.

It is recommended that the Project Applicant coordinate with the March Joint Powers Authority with respect to the future proposed section of Van Burn Boulevard along the Project's northern boundary. This future extension of Van Buren Boulevard is proposed to intersect with the future extension of Western Way and would provide access to the proposed Veteran's Industrial Park 215 development with the March Joint Powers Authority.

1.8 SITE ACCESS IMPROVEMENTS

The recommended site access driveway improvements for the Project are described below. Exhibit 1-4 also illustrates the site access improvements. Construction of on-site and site adjacent improvements shall occur in conjunction with adjacent Project development activity or as needed for Project access purposes.

EXHIBIT 1-4: SITE ACCESS RECOMMENDATIONS



Natwar Lane/Driveway 3 & Driveway 1 – Install a stop control on the eastbound and southbound approach, and construct the intersection with the following geometrics:

- Northbound Approach: One shared left-through lane.
- Southbound Approach (Project Driveway 3): One shared through-right turn lane.
- Eastbound Approach (Project Driveway 1): One shared left-right turn lane.
- Westbound Approach: N/A

Natwar Lane & Driveway 2 – Install a stop control on the eastbound approach and construct the intersection with the following geometrics:

- Northbound Approach: One through lane.
- Southbound Approach: One shared through-right turn lane.
- Eastbound Approach (Project Driveway 2): One right turn lane.
- Westbound Approach: N/A

Western Way & Driveway 4 – Install a stop control on the eastbound approach and construct the intersection with the following geometrics:

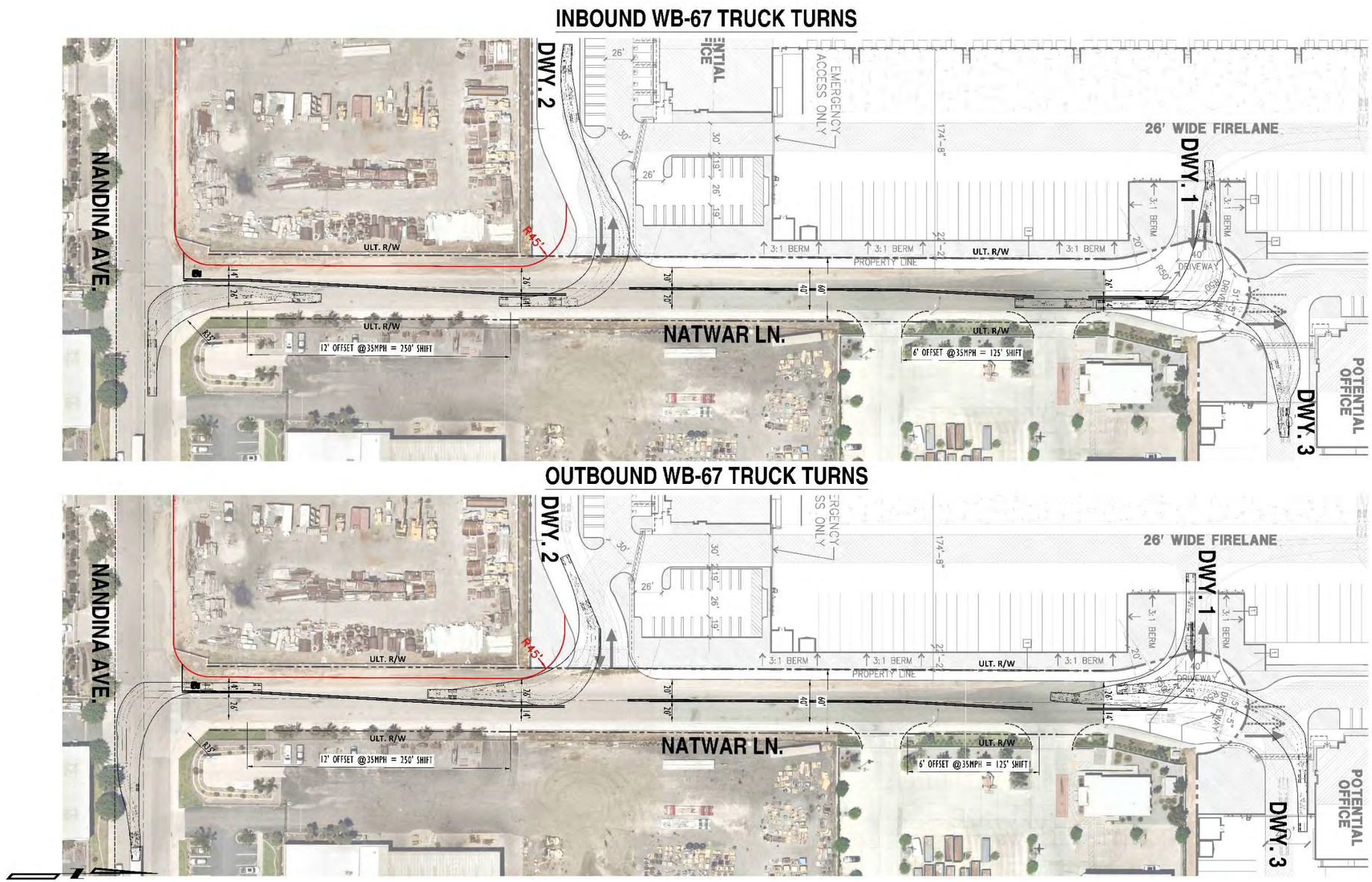
- Northbound Approach: One through lane.
- Southbound Approach: One shared through-right turn lane.
- Eastbound Approach (Project Driveway 4): One right turn lane.
- Westbound Approach: N/A

Wherever necessary, roadways adjacent to the Project, site access points and site-adjacent intersections will be constructed to be consistent with the identified roadway classifications and respective cross-sections in the PVCC Specific Plan 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/County of Riverside sight distance standards at the time of preparation of final grading, landscape and street improvement plans.

EXHIBIT 1-5: NATWAR LANE CONCEPT STRIPING WITH TRUCK TEMPLATES



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1.9 QUEUING ANALYSIS AT THE PROJECT DRIVEWAYS

A queuing analysis was conducted along the site adjacent roadways of Natwar Lane and Western Way for EAPC (2025) traffic conditions to determine the 95th percentile queues. The analysis was conducted for the weekday AM and weekday PM peak hours. The traffic modeling and signal timing optimization software package Synchro/SimTraffic (Version 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 30-minute periods with 60-minute recording intervals. Queuing results are provided in Appendix 1.2. Based on the 95th percentile queues under EAPC (2025) traffic conditions, no driveway blockages are anticipated along Natwar Lane and Western Way during the peak hours.

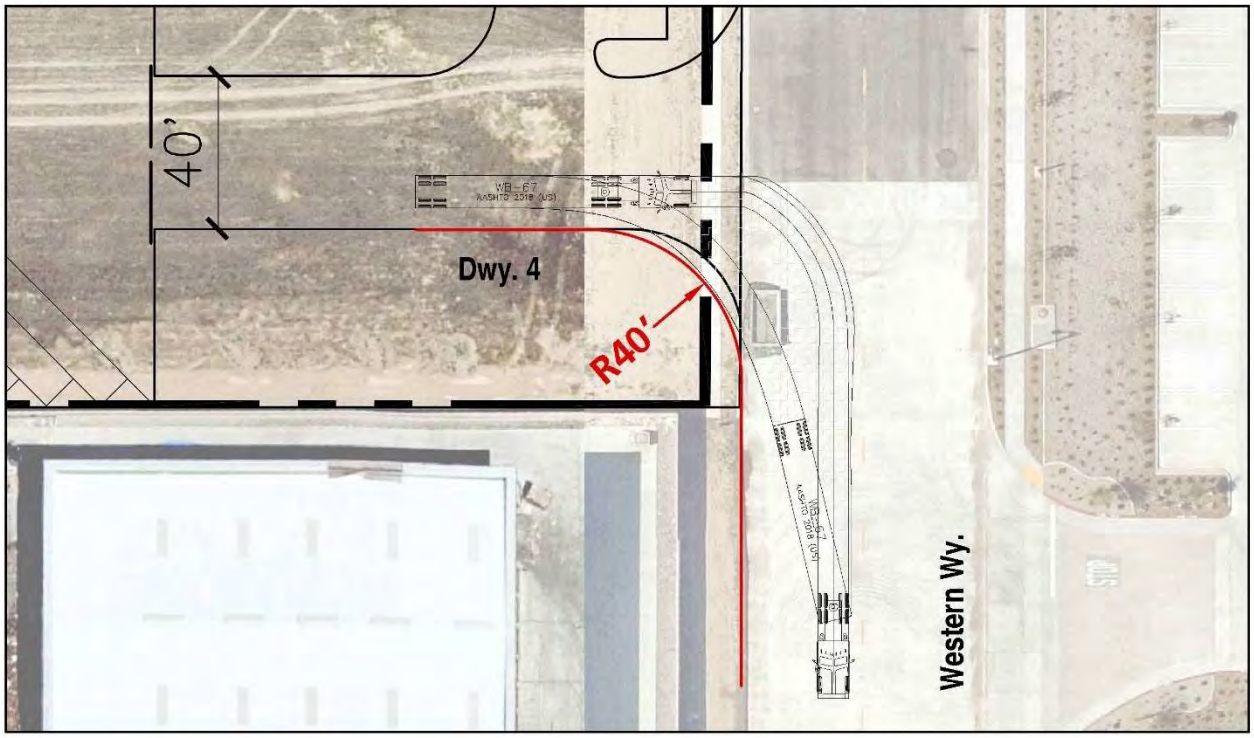
1.10 TRUCK ACCESS

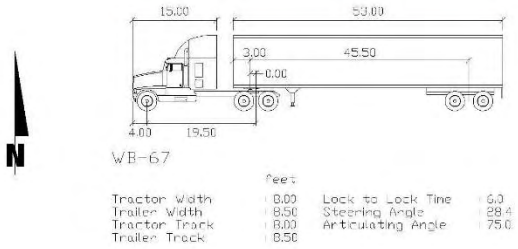
Due to the typical wide turning radius of large trucks, a truck turning template has been overlaid on the site plan at the Project driveways in order to determine appropriate curb radii and to verify that trucks will have sufficient space to execute turning maneuvers (see Exhibit 1-5 for Natwar Lane driveways and Exhibit 1-6 for Western Way driveway). Only driveways that are to be utilized by heavy trucks have been evaluated. As shown on Exhibits 1-5 and 1-6, it is recommended that the following curb radii be modified in order to accommodate the wide turning radius of heavy trucks (WB-67, which has a 53-foot trailer):

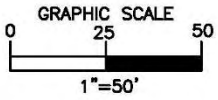
- Natwar Ln./Driveway 2: the southwest corner should accommodate a 45-foot curb radius.
- Western Wy. & Driveway 4: the southwest corner should accommodate a 40-foot curb radius.

The intersection of Natwar Ln./Driveway 3 & Driveway 1 can accommodate the wide turning radius of heavy trucks as currently designed.

EXHIBIT 1-6: TRUCK TEMPLATES FOR WESTERN WAY







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. (7) 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 = [Hourly Volume] / [4 x Peak 15-minute Flow Rate]). The use of a 15-minute PHF produces a more detailed analysis as compared to analyzing vehicles per hour. Existing PHFs have been used for Existing (2021) baseline, E+P, EAC (2023), EAPC (2023), EAC (2025), and EAPC (2025) 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).

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.

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

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. (8)

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. (8) 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	Natwar Ln./Driveway 3 & Driveway 1 - Future Intersection	City of Perris
4	Natwar Ln. & Driveway 2 - Future Intersection	City of Perris
5	Natwar Ln. & Nandina Av.	City of Perris
6	Western Wy. & Driveway 4 - Future Intersection	City of Perris
7	Western Wy. & Nandina Av.	City of Perris

Traffic signal warrant analyses were performed for all of the full access unsignalized study area intersections. The Existing conditions traffic signal warrant analysis is presented in the subsequent section, Section 3 *Area Conditions* of this report. The traffic signal warrant analyses for future conditions are presented in Section 5 *E+P Traffic Conditions,* Section 6 *EAC and EAPC (2023) Traffic Conditions, and* Section 7 *EAC and EAPC (2025) Traffic Conditions* of this report.

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

2.4 FREEWAY OFF-RAMP 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 Harley Knox Boulevard interchange. Specifically, the 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.

Although only the 95th percentile queue has been reported in the tables, the 50th percentile queue can be found in the appendix alongside the 95th percentile queue for each ramp location. The queue length reported is for the lane with the highest queue in the lane group. The 50th percentile or average queue represents the typical queue length for peak hour traffic conditions, while 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. (9)

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.

2.6 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 mitigate the Project's share of deficiencies in lieu of construction. It should be noted that fair share calculations are for informational purposes only and the City Engineer will determine the appropriate improvements to be implemented by a project (to be identified in the conditions of approval).

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

2025 Project Fair Share % = Project Traffic / (EAPC (2025) Total Traffic – 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 off-ramp 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 8 existing and future intersections as shown previously on Exhibit 1-2. Exhibit 3-1 illustrates the study area intersections located near the proposed Project and identifies the number of through traffic lanes for existing roadways and intersection traffic controls.

3.2 GENERAL PLAN CIRCULATION ELEMENTS

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.

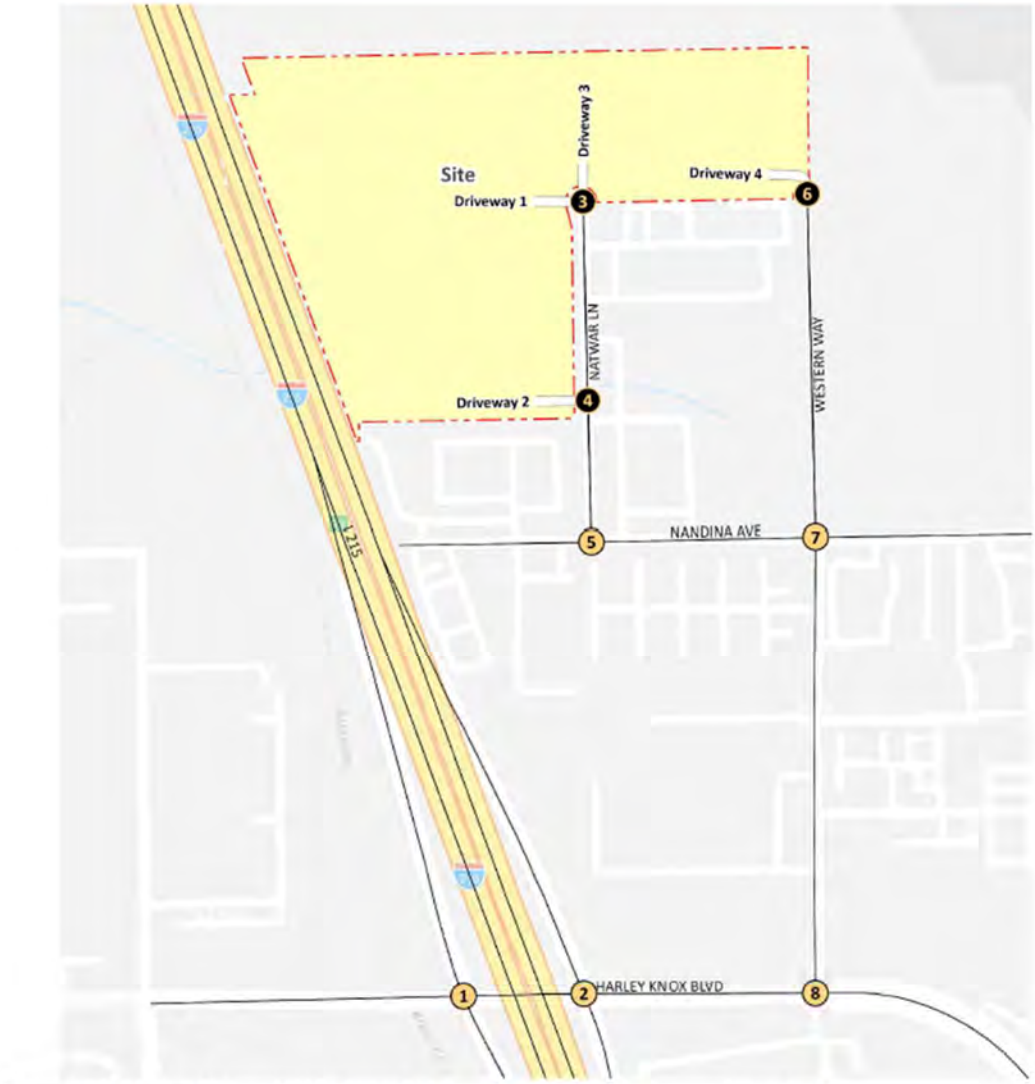
3.3 TRUCK ROUTES

The City of Perris designated truck route map is shown on Exhibit 3-6. Harley Knox Boulevard is identified as 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 have been utilized to route truck traffic from the Project and future cumulative development projects throughout the study area.

3.4 TRANSIT SERVICE

Mass transit routes within the PVCC SP are shown on Exhibit 3-8. The study area is currently served by the Riverside Transit Authority (RTA), a public transit agency serving the Riverside County region. Transit service is reviewed and updated by RTA periodically to address ridership, budget and community demand needs. Changes in land use can affect these periodic adjustments which may lead to either enhanced or reduced service where appropriate.

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



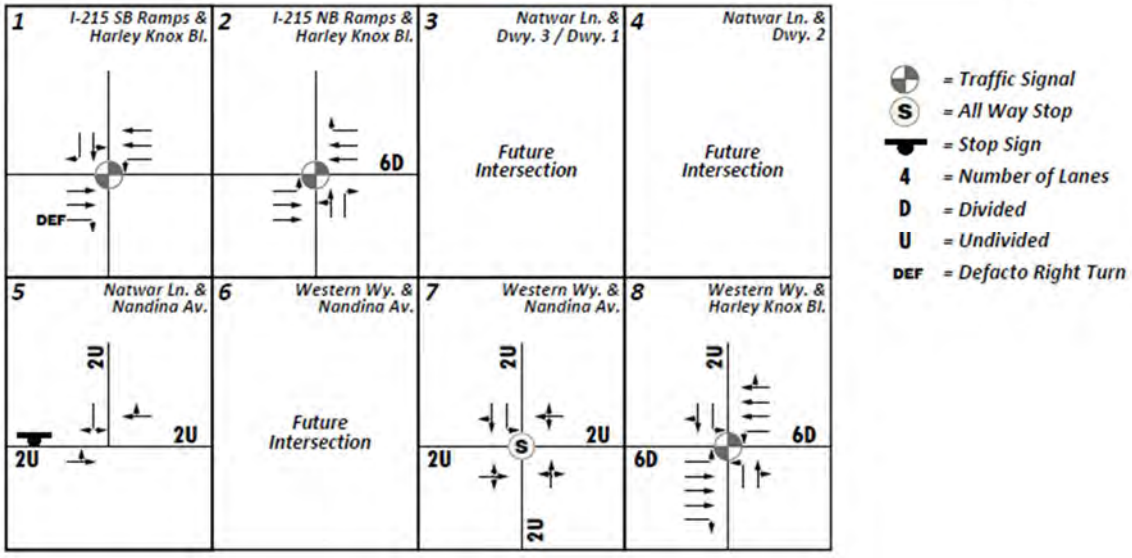
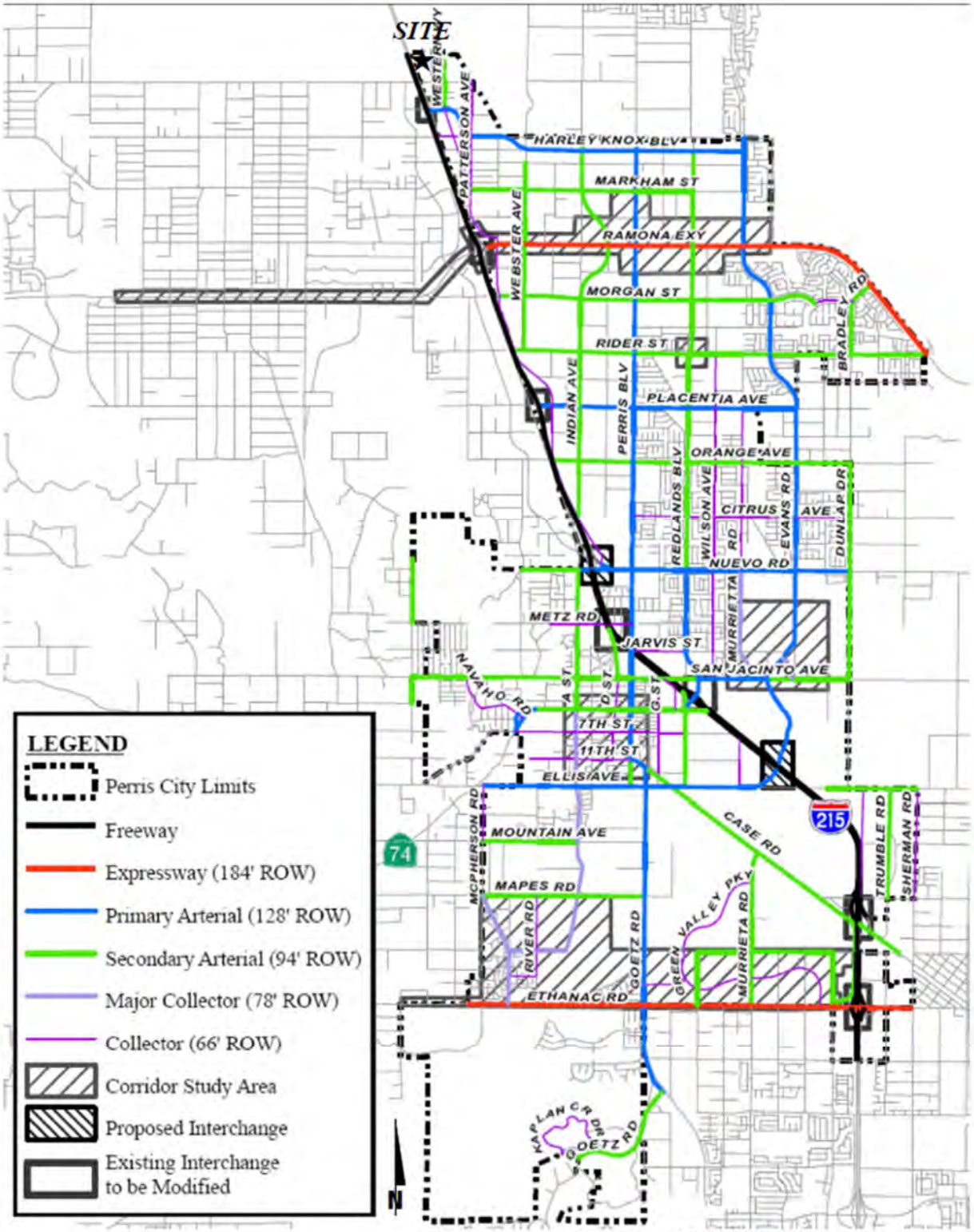


EXHIBIT 3-2: CITY OF PERRIS GENERAL PLAN CIRCULATION ELEMENT



Source: City of Perris General Plan, 2005, As Amended Riverside Co. 2008

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

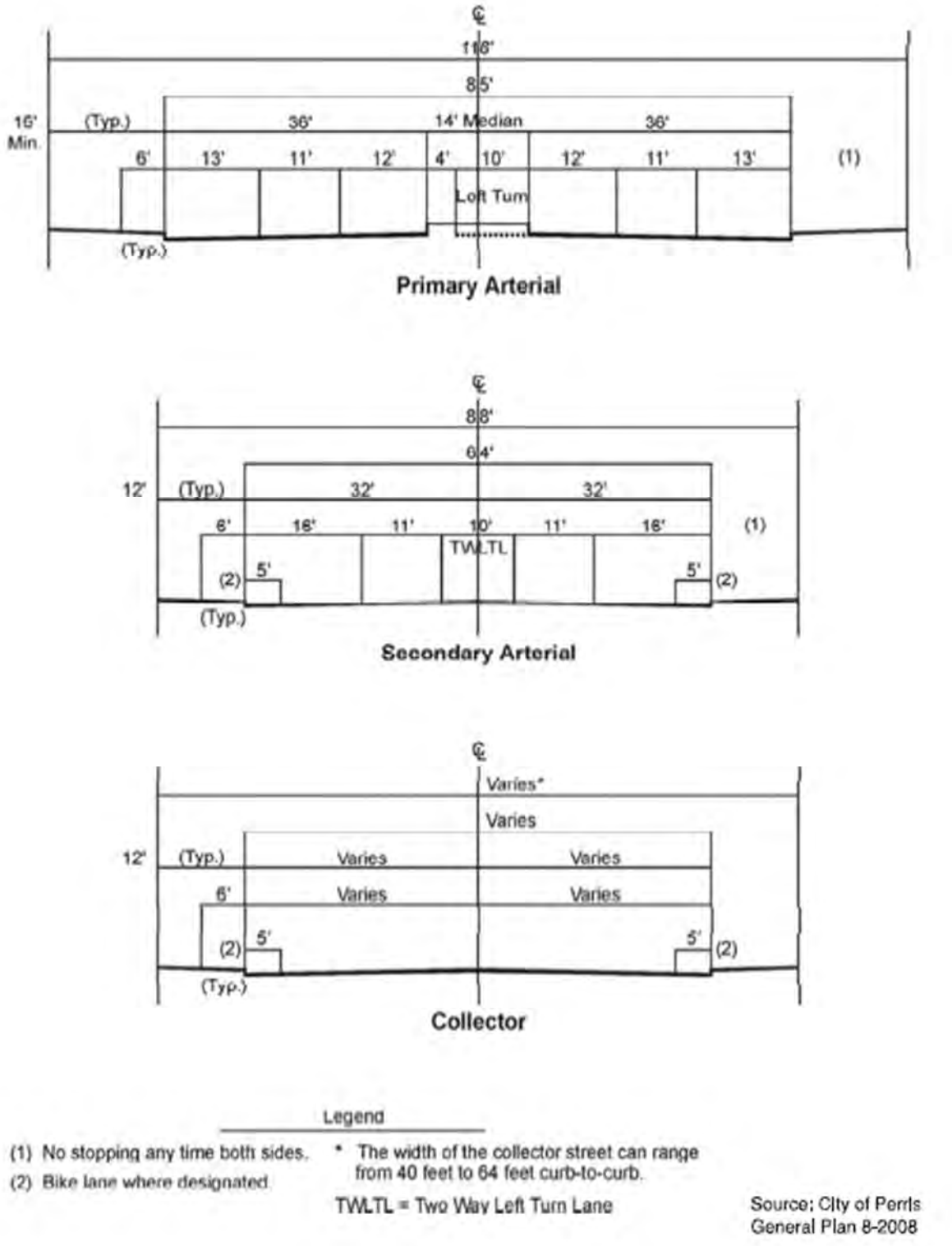
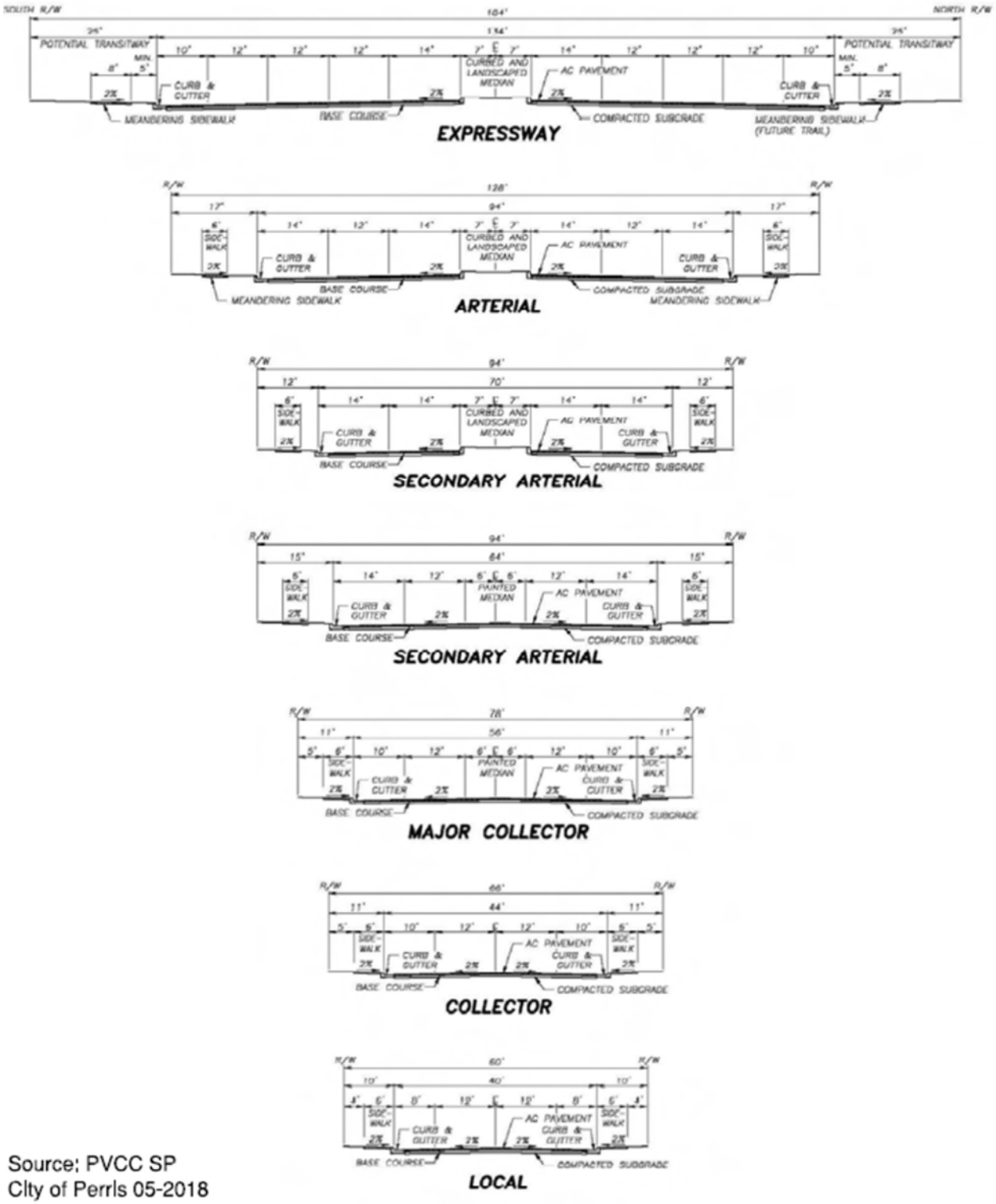


EXHIBIT 3-4: PERRIS VALLEY COMMERCE CENTER SPECIFIC PLAN CIRCULATION PLAN

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



Source: PVCC SP
Clty of Perrls 05-2018

EXHIBIT 3-6: CITY OF PERRIS TRUCK ROUTES

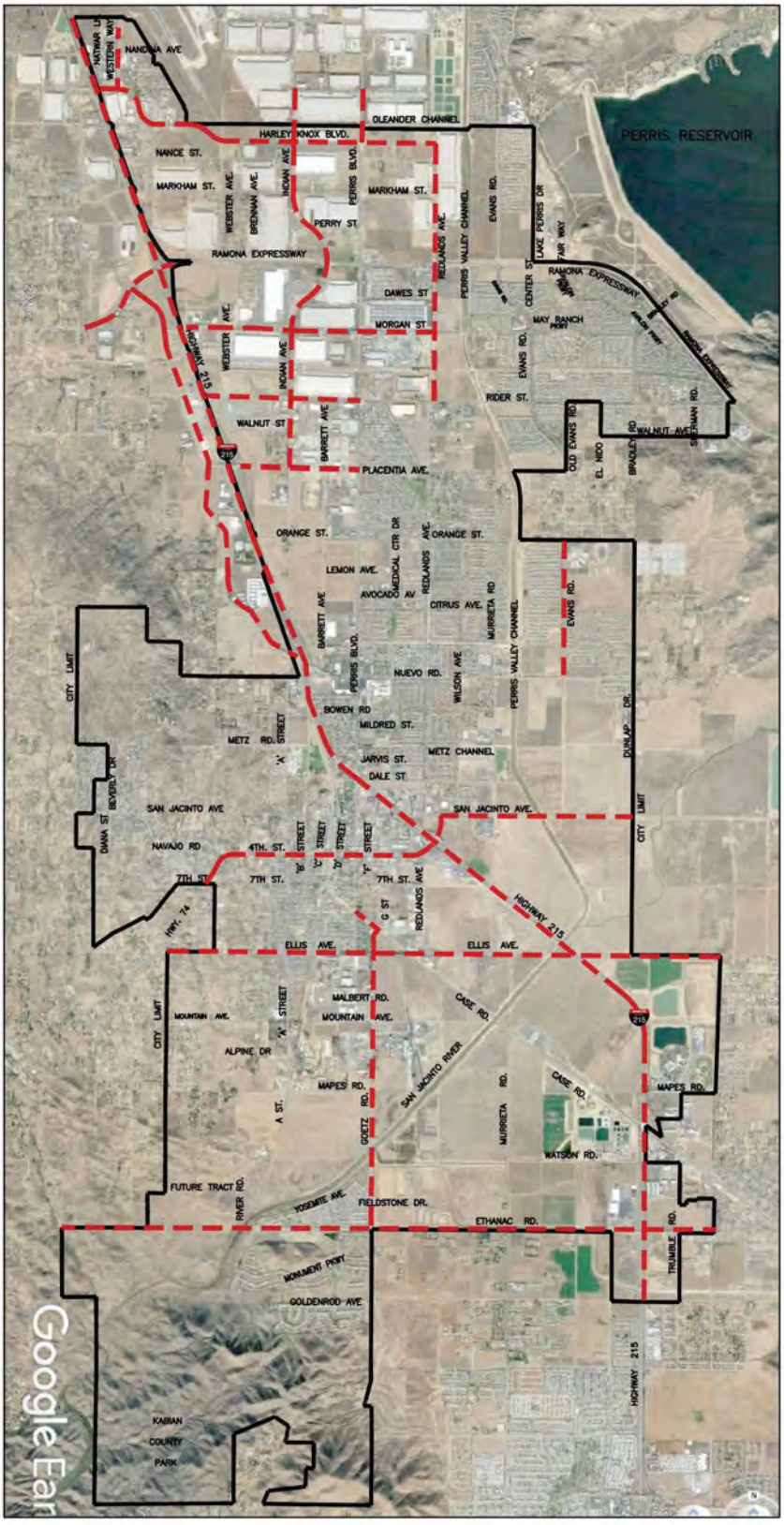


EXHIBIT 3-7: PERRIS VALLEY COMMERCE CENTER SPECIFIC PLAN TRUCK ROUTE PLAN

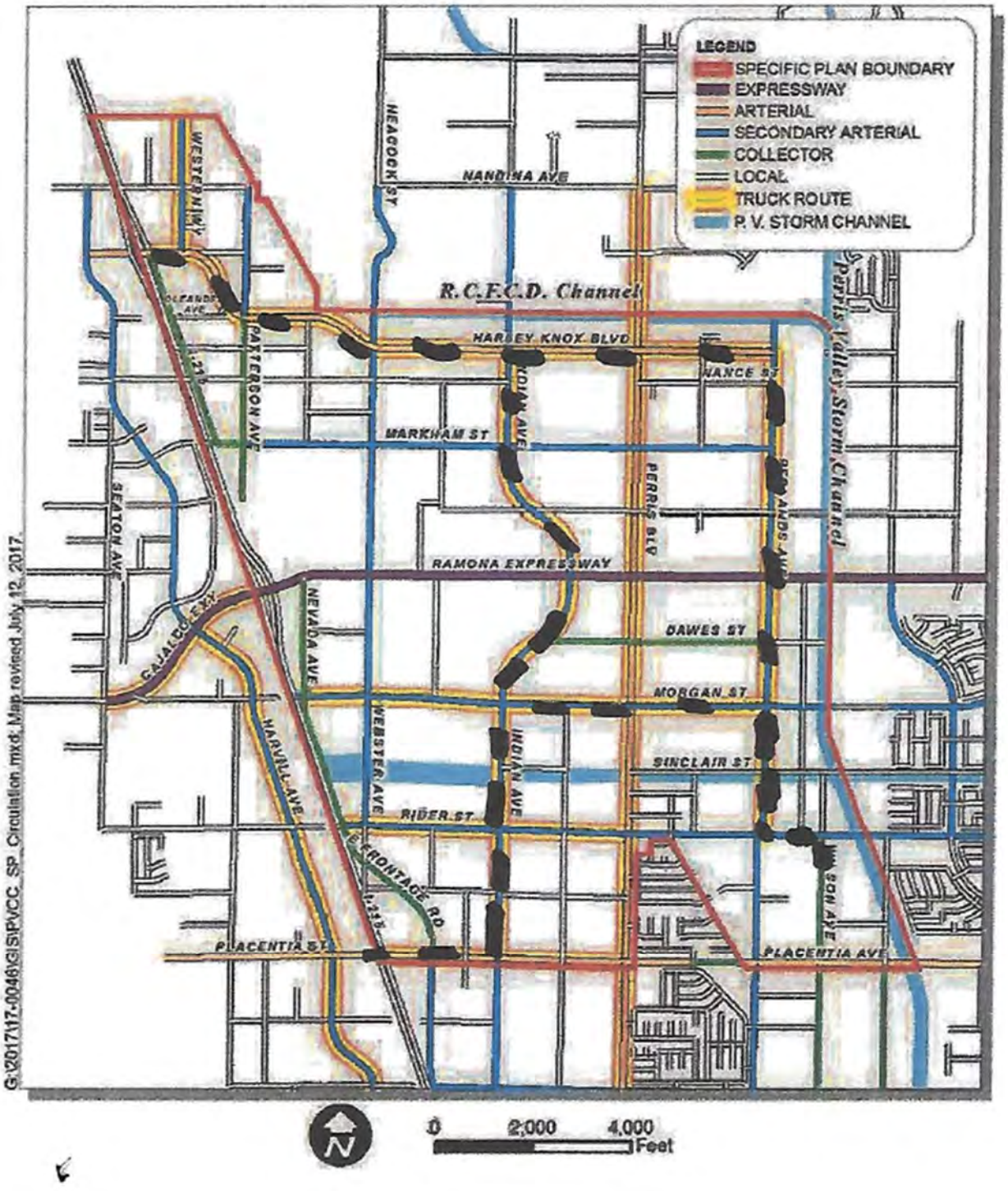
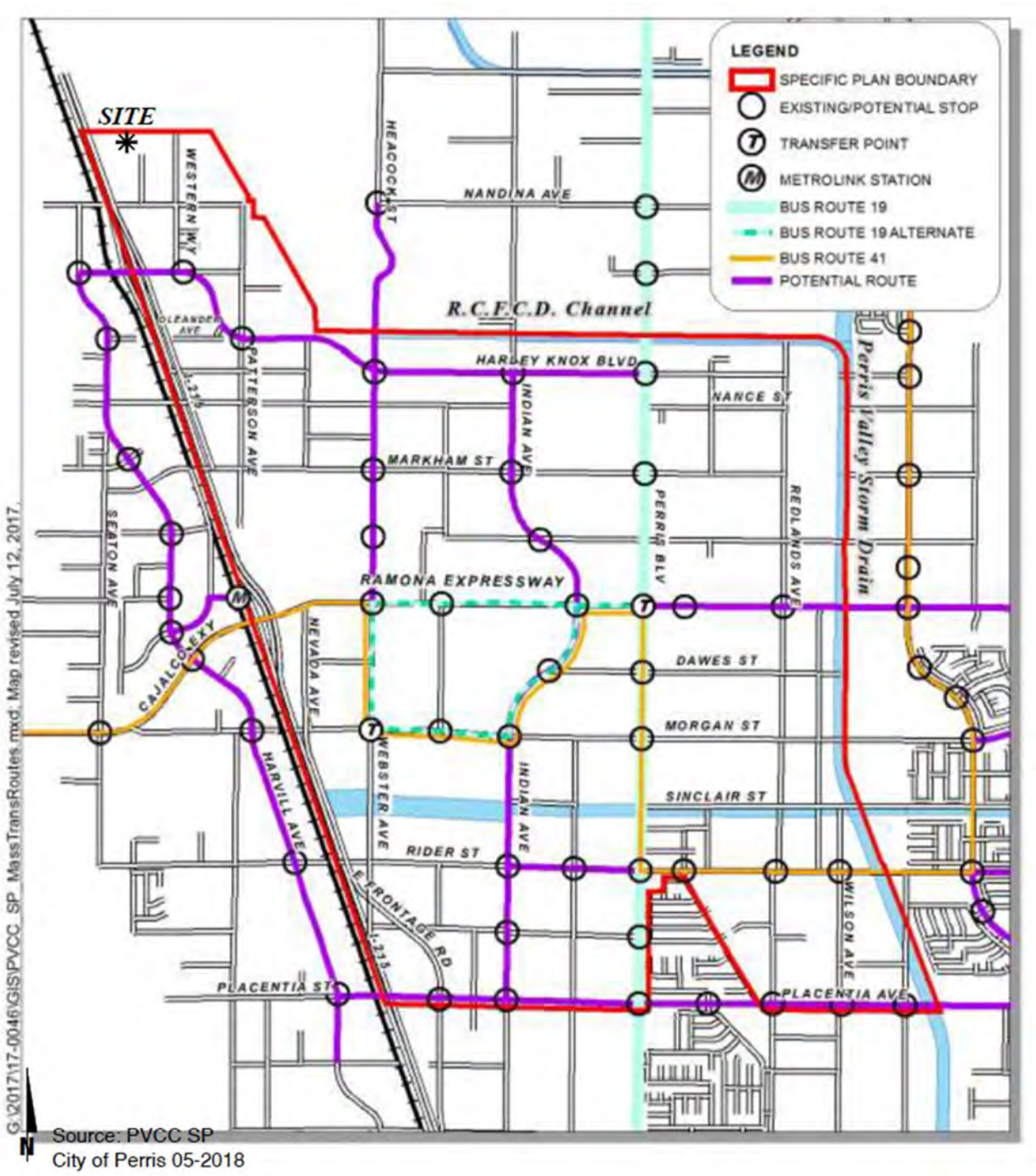


EXHIBIT 3-8: PERRIS VALLEY COMMERCE CENTER SPECIFIC PLAN MASS TRANSIT ROUTES



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 and trail system is shown on Exhibit 3-9. Harley Knox Boulevard currently has Class II bike lanes. PVCC SP Trail System is shown on Exhibit 3-10. Field observations conducted in March 2019 (pre-COVID) indicate nominal pedestrian and bicycle activity within the study area and is not anticipated to be much different from current activity based on the development that has occurred in the immediate vicinity since March 2019. Exhibit 3-11 illustrates the existing bicycle and pedestrian facilities, including bike lanes, sidewalks and crosswalk locations.

3.6 EXISTING TRAFFIC COUNTS

The intersection LOS analysis is based on the traffic volumes observed during the peak hour conditions using traffic count data collected in March 2019, when local schools were in session and operating on a typical bell schedule (prior to closures related to the COVID-19 pandemic). The following peak hours were selected for analysis:

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

The weekday AM and weekday PM peak hour count data are representative of typical weekday peak hour traffic conditions in the study area. There were no observations made in the field that would indicate atypical traffic conditions on the count dates, such as construction activity or detour routes and near-by schools were in session and operating on normal schedules. In order to reflect 2021 conditions, a growth rate of 3 percent per year, compounded annually, has been applied to the 2019 traffic counts.

The raw manual peak hour turning movement traffic count data sheets are included in Appendix 3.1. These raw turning volumes have been flow conserved between intersections with limited access, no access, and where there are currently no uses generating traffic. The traffic counts collected in March 2019 include the vehicle classifications as shown below:

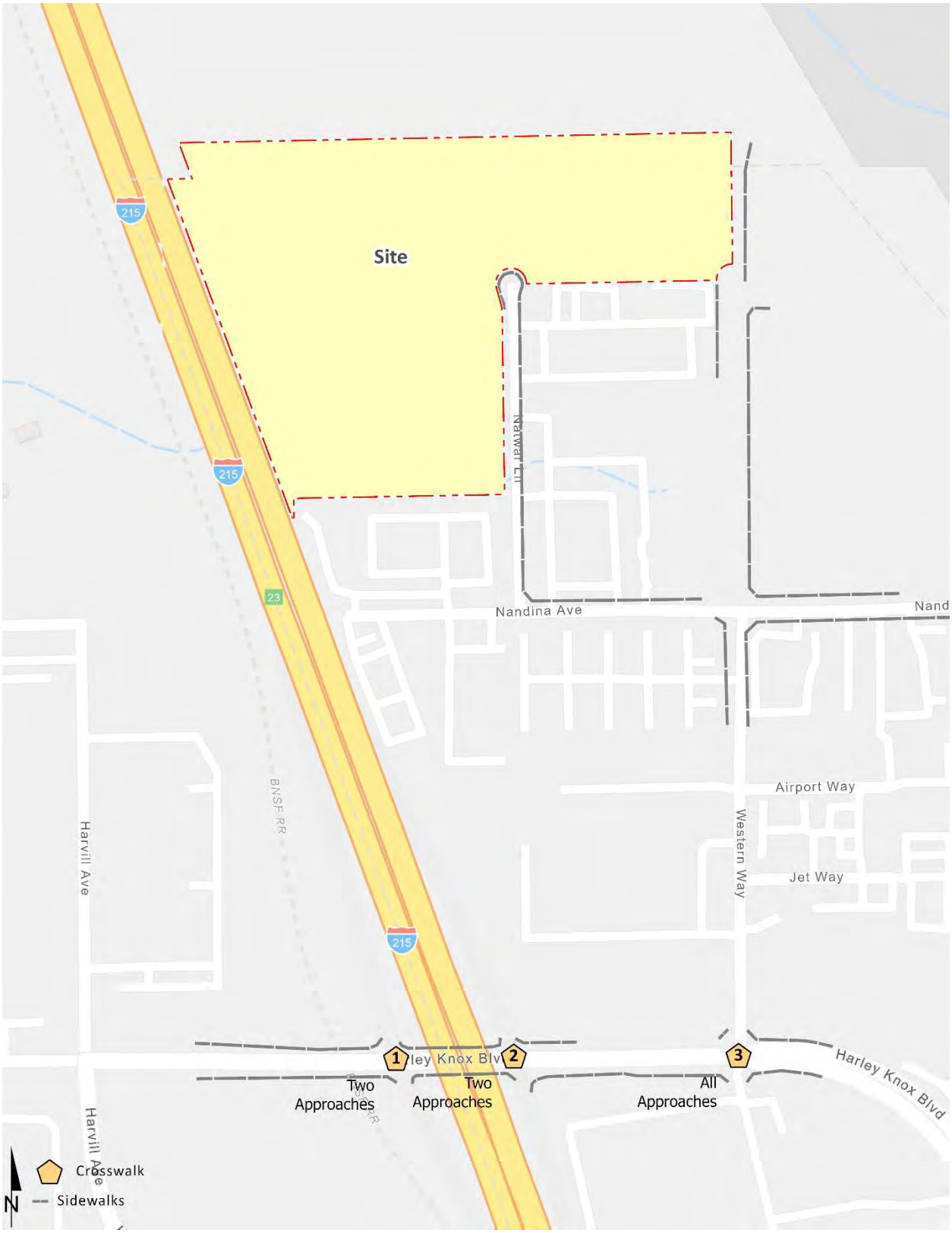
- Passenger Cars
- 2-Axle Trucks
- 3-Axle Trucks
- 4 or More Axle Trucks

To represent the impact large trucks, buses, and recreational vehicles have on traffic flow, all trucks were converted into 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. (10)

EXHIBIT 3-9: CITY OF PERRIS PROPOSED BIKEWAYS AND TRAIL IMPROVEMENTS

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

EXHIBIT 3-11: EXISTING PEDESTRIAN FACILITIES



Existing weekday 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:

Weekday PM Peak Hour (Approach Volume + Exit Volume) x 21.39 = 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 4.68 percent. As such, the above equation utilizing a factor of 21.39 estimates the ADT volumes on the study area roadway segments assuming a peak-to-daily relationship of approximately 4.68 percent (i.e., 1/0.0468 = 21.39) and was assumed to sufficiently estimate average daily traffic (ADT) volumes for planning-level analyses. Existing weekday AM and weekday PM peak hour intersection volumes (in actual vehicles) are also shown on Exhibit 3-12.

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.

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

#	Intersection	Traffic Control[1]	Delay[2] (secs.)		Level of Service	
			AM	PM	AM	PM
1	I-215 SB Ramps & Harley Knox Bl.	TS	18.9	24.9	B	C
2	I-215 NB Ramps & Harley Knox Bl.	TS	49.5	12.3	D	B
3	Natwar Ln./Driveway 3 & Driveway 1		Future Intersection			
4	Natwar Ln. & Driveway 2		Future Intersection			
5	Natwar Ln. & Nandina Av.	CSS	8.7	8.7	A	A
6	Western Wy. & Driveway 4		Future Intersection			
7	Western Wy. & Nandina Av.	AWS	7.4	6.8	A	A
8	Western Wy. & Harvey Knox Bl.	TS	11.2	6.8	B	A

[1] AWS = All-way Stop; CSS = Cross-street 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.

EXHIBIT 3-12: EXISTING (2021) TRAFFIC VOLUMES (IN ACTUAL VEHICLES)

1 I-215 SB Ramps & Harley Knox Bl.	2 I-215 NB Ramps & Harley Knox Bl.	3 Natwar Ln./Driveway 3 & Driveway 1	4 Natwar Ln. & Driveway 2	5 Natwar Ln. & Nandina Av.
7,950 / 23,900	14,950 / 33,950			0 / 950
147(129) 1(0) 310(243) ← 196(194) ↰ 109(318)	↱ 843(482) ← 300(493)	*Future Intersection*	*Future Intersection*	↳ 0(0) ↰ 14(11) ↱ 7(0) ← 8(5)
690(362) → 4(31) ↴	412(213) ↳ 588(391) → ↰ 5(19) ↑ 3(3) ↱ 33(222)			0(0) ↳ 6(38) →
15,300 / 7,450	23,850 / 5,200			900

6 Western Wy. & Driveway 4	7 Western Wy. & Nandina Av.	8 Western Wy. & Harvey Knox Bl.
Future Intersection	0 / 450	2,950 / 32,450
	↳ 0(0) ↓ 0(0) ↴ 0(0) ↱ 0(0) ← 12(4) ↰ 5(10)	↳ 39(88) ↓ 0(0) ↴ 192(24) ↱ 54(13) ← 1103(883) ↰ 0(0)
	0(0) ↳ 10(4) → 36(53) ↴ ↰ 37(4) ↑ 0(0) ↱ 8(4)	95(13) ↳ 523(596) → 2(4) ↴ ↰ 1(4) ↑ 0(0) ↱ 0(0)
	1,400 / 1,500	33,950 / 150

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

Average Daily Trips

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 currently warrant a traffic signal for Existing (2021) traffic conditions. Existing conditions traffic signal warrant analysis worksheets are provided in Appendix 3.3.

3.9 OFF-RAMP QUEUING ANALYSIS

A queuing analysis was performed for the off-ramps at the I-215 Freeway at Harley Knox Boulevard 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 off-ramp movements that are currently experiencing queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows. However, field observations of the I-215 Freeway interchange at Harley Knox Boulevard indicate that there are queues during the peak hours, including at the I-215 Southbound Ramps on Harley Knox Boulevard. Worksheets for Existing (2021) traffic conditions off-ramp queuing analysis are provided in Appendix 3.4.

TABLE 3-2: PEAK HOUR FREEWAY OFF-RAMP QUEUING SUMMARY FOR EXISTING (2021) CONDITIONS

#	Intersection	Movement	Available Stacking Distance (Feet)	95th Percentile Queue (Feet) AM Peak Hour	95th Percentile Queue (Feet) PM Peak Hour	Acceptable?[1] AM	Acceptable?[1] PM
1	I-215 Southbound Ramps & Harley Knox Bl.	SBL/T	1,330	351	216	Yes	Yes
		SBR	270	41	35	Yes	Yes
2	I-215 Northbound Ramps & Harley Knox Bl.	NBL/T	1,120	23	29	Yes	Yes
		NBR	265	28	53	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.

4 PROJECTED FUTURE TRAFFIC

The Project is proposed to consist of a single 419,034 sf warehouse building (Building 1) and a second 139,971 sf warehouse building (Building 2). However, for the purposes of this traffic study, the building size evaluated for Building 1 will assume up to 450,000 sf. Building 1 is anticipated to be constructed by the year 2023 while Project Buildout is anticipated by year 2025. Vehicular and truck traffic access will be provided via the following driveways:

- Natwar Ln./Driveway 3 & Driveway 1 – full access at for trucks only at Driveway 1; right-in access only for trucks at Driveway 3; full access for passenger cars at Driveway 3
- Natwar Ln. & Driveway 2 – full access for both passenger cars and trucks
- Western Wy. & Driveway 4 – full access for passenger cars; right-out access only for trucks

Regional access to the Project site is provided via the I-215 Freeway and Harley Knox Boulevard.

4.1 PROJECT TRIP GENERATION

Trip generation represents the amount of traffic that is attracted and produced by a development and is based upon the specific land uses planned for a given project. Trip generation rates for the Project are shown in Table 4-1 together with the PCE trip generation summary illustrating daily and peak hour trip generation estimates based on the Institute of Transportation Engineers (ITE) Trip Generation Manual (10th Edition, 2017). (2) (11) 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 350,000 square feet of the proposed Project. The Institute of Transportation Engineers (ITE) Trip Generation Manual Supplement (February 2020) has trip generation rates for high-cube fulfillment center use for both non-sort and sort facilities (ITE land use code 155). While there is sufficient data to support use of the trip generation rates for non-sort facilities, the sort-facility rate appears to be unreliable because they are based on limited data (i.e., one to two surveyed sites). The proposed Project is speculative and whether a non-sort or sort facility end-user would occupy the Project is not known at this time. Lastly, the ITE Trip Generation Manual recommends the use of local data sources where available. As such, the best available source for high-cube fulfilment center use would be the trip-generation 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. 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 ITE Land Use Code 154 have been utilized.
- ITE land use code 140 (Manufacturing) has been used to derive site specific trip generation estimates for up to 100,000 sf. The vehicle mix has been obtained from the ITE's Trip Generation Manual Supplement (dated February 2020). This study provides the following vehicle mix: AM Peak Hour: 92.0% passenger cars and 8.0% trucks; PM Peak Hour: 93.0% passenger cars and 7.0%

trucks; Weekday Daily: 90.0% passenger cars and 10.0% trucks. The truck percentages were further broken down by axle type per the following South Coast Air Quality Management District (SCAQMD) recommended truck mix: 2-Axle = 16.7%; 3-Axle = 20.7%; 4+-Axle = 62.6%. The vehicle mix from the Trip Generation Manual Supplement is provided in Attachment A.

- ITE land use code 150 (Warehousing) has been used to derive site specific trip generation estimates for up to 139,971 sf. The vehicle mix has been obtained from the ITE's Trip Generation Manual Supplement (dated February 2020). This study provides the following vehicle mix: AM Peak Hour: 87.0% passenger cars and 13.0% trucks; PM Peak Hour: 85.0% passenger cars and 15.0% trucks; Weekday Daily: 73.0% passenger cars and 27.0% trucks. The truck percentages were further broken down by axle type per the following SCAQMD recommended truck mix: 2-Axle = 16.7%; 3-Axle = 20.7%; 4+-Axle = 62.6%.

TABLE 4-1: ITE TRIP GENERATION RATES

Land Use[1]	Units[2]	ITE LU Code	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Actual Vehicles:									
Manufacturing[3]	TSF	140	0.477	0.143	0.620	0.208	0.462	0.670	3.930
Passenger Cars			0.439	0.131	0.570	0.193	0.430	0.623	3.537
2-Axle Trucks			0.006	0.002	0.008	0.002	0.005	0.008	0.066
3-Axle Trucks			0.008	0.002	0.010	0.003	0.007	0.010	0.081
4+-Axle Trucks			0.024	0.007	0.031	0.009	0.020	0.029	0.246
Warehousing[3]	TSF	150	0.131	0.039	0.170	0.051	0.139	0.190	1.740
Passenger Cars			0.114	0.034	0.148	0.044	0.118	0.162	1.270
2-Axle Trucks			0.003	0.001	0.004	0.001	0.003	0.005	0.078
3-Axle Trucks			0.004	0.001	0.005	0.002	0.004	0.006	0.097
4+-Axle Trucks			0.011	0.003	0.014	0.005	0.013	0.018	0.294
High-Cube Fulfillment Center Warehouse[4]	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
Passenger Car Equivalent (PCE):[5]									
Manufacturing[3]	TSF	140	0.477	0.143	0.620	0.208	0.462	0.670	3.930
Passenger Cars			0.439	0.131	0.570	0.193	0.430	0.623	3.537
2-Axle Trucks (PCE = 1.5)			0.010	0.003	0.012	0.004	0.008	0.012	0.098
3-Axle Trucks (PCE = 2.0)			0.016	0.005	0.021	0.006	0.013	0.019	0.163
4+-Axle Trucks (PCE = 3.0)			0.072	0.021	0.093	0.027	0.061	0.088	0.738
Warehousing[3]	TSF	150	0.131	0.039	0.170	0.051	0.139	0.190	1.740
Passenger Cars			0.114	0.034	0.148	0.044	0.118	0.162	1.270
2-Axle Trucks (PCE = 1.5)			0.004	0.001	0.006	0.002	0.005	0.007	0.118
3-Axle Trucks (PCE = 2.0)			0.007	0.002	0.009	0.003	0.009	0.012	0.194
4+-Axle Trucks (PCE = 3.0)			0.032	0.010	0.042	0.014	0.039	0.054	0.882
High-Cube Fulfillment Center Warehouse[4]	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

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

[2] TSF = thousand square feet

[3] Vehicle Mix Source: ITE Trip Generation Handbook Supplement (2020), Appendix C.
Truck Mix: South Coast Air Quality Management District's (SCAQMD) recommended truck mix, by axle type.
Normalized % - Without Cold Storage: 16.7% 2-Axle trucks, 20.7% 3-Axle trucks, 62.6% 4-Axle trucks.

[4] Vehicle Mix Source: High Cube Warehouse Trip Generation Study, WSP, January 29, 2019.
Inbound and outbound split source: ITE Trip Generation Manual, Tenth Edition (2017) for ITE Land Use Code 154.

[5] PCE factors: 2-axle = 1.5; 3-axle = 2.0; 4+-axle = 3.0.

The aforementioned ITE land use codes and vehicle mixes were selected based on the building size and configuration of each proposed building and to allow flexibility of the future use, since the future tenants of the proposed buildings are currently unknown. The Project Applicant anticipates that a high-cube warehouse distribution operator would occupy Building 1 and a warehouse would occupy Building 2. Because the ITE manufacturing trip rate is one of the highest trip rates among the industrial land use categories, it was applied to a portion of the total square footage for Building 1 to provide a conservative analysis that would overestimate trips. While manufacturing is an unlikely use in Southern California due to labor costs, etc., it is common practice to apply a manufacturing rate to a portion of an industrial park in an effort to overestimate trips. Using a higher total trip generation provides a conservative analysis of (i.e., overestimates) environmental impacts relating to transportation, and associated air quality, greenhouse gas emissions, and noise.

As noted on Table 4-2, refinements to the raw trip generation estimates have been made to provide a more detailed breakdown of trips between passenger cars and trucks. Trip generation for heavy trucks was further broken down by truck type (or axle type). The total truck percentage is comprised of 3 different truck types: 2-axle, 3-axle, and 4+-axle trucks. PCE factors were applied to the trip generation rates for heavy trucks (large 2-axles, 3-axles, 4+-axles). 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 the County's traffic study guidelines. (10)

The proposed Project's trip generation, based on actual vehicles, is included in Table 4-2 for informational purposes only as the operations analysis has been based on the PCE trips per the City's requirements. However, the Project is anticipated to generate 1,390 two-way trips per day, with 127 AM peak hour trips and 152 PM peak hour trips (actual vehicles). The proposed Project is anticipated to generate 1,756 two-way PCE trips per day on a typical weekday with approximately 150 AM PCE peak hour trips and 175 PM PCE peak hour trips, as shown in Table 4-2. For the purposes of the operations analysis, the PCE values shown in Table 4-2 will be utilized.

TABLE 4-2: PROJECT TRIP GENERATION SUMMARY

Land Use	Quantity Units[1]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Actual Vehicles:								
Building 1: Manufacturing	100.000 TSF							
Passenger Cars:		44	13	57	19	43	62	354
2-axle Trucks:		1	0	1	0	1	1	8
3-axle Trucks:		1	0	1	0	1	1	8
4+-axle Trucks:		2	1	3	1	2	3	26
Total Truck Trips (Actual Vehicles):		4	1	5	1	4	5	42
Subtotal (Actual Vehicles)		**48**	**14**	**62**	**20**	**47**	**67**	**396**
Building 1: High-Cube Fulfillment Center	350.000 TSF							
Passenger Cars:		28	8	36	14	36	50	614
2-4axle Trucks:		2	1	3	1	3	4	58
5+-axle Trucks:		3	1	4	1	3	4	76
Total Truck Trips (Actual Vehicles):		5	2	7	2	6	8	134
Subtotal (Actual Vehicles)		**33**	**10**	**43**	**16**	**42**	**58**	**748**
Building 2: Warehousing	139.971 TSF							
Passenger Cars:		16	5	21	6	17	23	178
2-axle Trucks:		0	0	0	0	0	0	12
3-axle Trucks:		0	0	0	0	1	1	14
4+-axle Trucks:		1	0	1	1	2	3	42
Total Truck Trips (Actual Vehicles):		1	0	1	1	3	4	68
Subtotal (Actual Vehicles)		**17**	**5**	**22**	**7**	**20**	**27**	**246**
Total Passenger Cars:		88	26	114	39	96	135	1,146
Total Trucks (Actual Vehicles):		10	3	13	4	13	17	244
Total Trips (Actual Vehicles)[2]		**98**	**29**	**127**	**43**	**109**	**152**	**1,390**
Passenger Car Equivalent (PCE):								
Building 1: Manufacturing	100.000 TSF							
Passenger Cars:		44	13	57	19	43	62	354
2-axle Trucks:		1	0	1	0	1	1	10
3-axle Trucks:		2	0	2	1	1	2	16
4+-axle Trucks:		7	2	9	3	6	9	74
Total Truck Trips (PCE):		10	2	12	4	8	12	100
Subtotal (PCE)		**54**	**15**	**69**	**23**	**51**	**74**	**454**
Building 1: High-Cube Fulfillment Center	350.000 TSF							
Passenger Cars:		28	8	36	14	36	50	614
2-4axle Trucks:		4	1	5	2	6	8	114
5+-axle Trucks:		9	3	12	3	8	11	228
Total Truck Trips (PCE):		13	4	17	5	14	19	342
Subtotal (PCE)		**41**	**12**	**53**	**19**	**50**	**69**	**956**
Building 2: Warehousing	139.971 TSF							
Passenger Cars:		16	5	21	6	17	23	178
2-axle Trucks:		1	0	1	0	1	1	16
3-axle Trucks:		1	0	1	0	1	1	28
4+-axle Trucks:		4	1	5	2	5	7	124
Total Truck Trips (PCE):		6	1	7	2	7	9	168
Subtotal (PCE)		**22**	**6**	**28**	**8**	**24**	**32**	**346**
Total Passenger Cars:		88	26	114	39	96	135	1,146
Total Trucks (PCE):		29	7	36	11	29	40	610
Total Trips (PCE)[2]		**117**	**33**	**150**	**50**	**125**	**175**	**1,756**

[1] TSF = thousand square feet

[2] Total Trips = Passenger Cars + Truck Trips.

4.2 PROJECT TRIP DISTRIBUTION

Trip distribution is the process of identifying the probable destinations, directions, or traffic routes that will be utilized by Project traffic. The potential interaction between the planned land uses and surrounding regional access routes are considered to identify the route where the Project traffic would distribute.

The Project trip distribution was developed based on anticipated travel patterns to and from the Project site for both passenger cars and truck traffic and are consistent with other similar projects that have been reviewed and approved by City of Perris staff. 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.

The Project passenger car trip distribution pattern is graphically depicted on Exhibit 4-1. The Project truck trip distribution pattern is graphically depicted on Exhibit 4-2. 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 (employee trips only).

4.4 PROJECT TRIP ASSIGNMENT

The assignment of traffic from the Project area to the adjoining roadway system is based upon the Project trip generation, trip distribution, and the arterial highway and local street system improvements that would be in place by the time of initial occupancy of the Project. Based on the identified Project traffic generation and trip distribution patterns, Project (Phase 1) ADT and peak hour intersection turning movement volumes are shown on Exhibit 4-3 in actual vehicles and Project Buildout (Phase 1 & 2) ADT and peak hour intersection turning movement volumes are shown on Exhibit 4-4 in actual vehicles.

4.5 BACKGROUND TRAFFIC

Phase 1 future year traffic forecasts have been based upon two years of background (ambient) growth at 3% per year over 2 years, for 2023 traffic conditions. The total ambient growth is 6.09% for 2023 traffic conditions. Phase 1 and 2 future year traffic forecasts have been based upon four years of background (ambient) growth at 3% per year over 4 years, for 2025 traffic conditions. The total ambient growth is 12.55% for 2025 traffic conditions. This ambient growth rate is added to existing traffic volumes to account for area-wide growth not reflected by cumulative development projects.

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

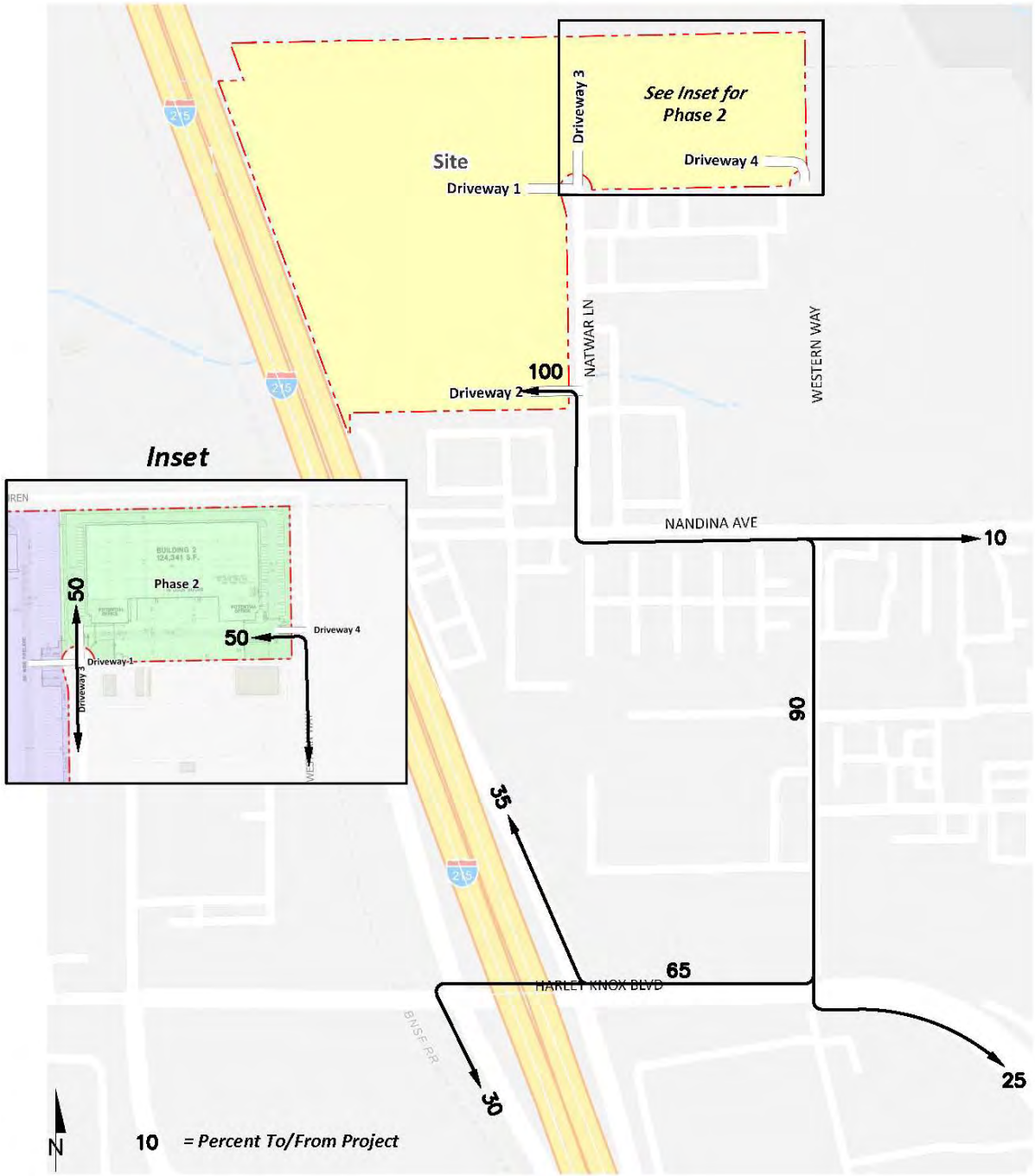


EXHIBIT 4-2: PROJECT (TRUCK) TRIP DISTRIBUTION

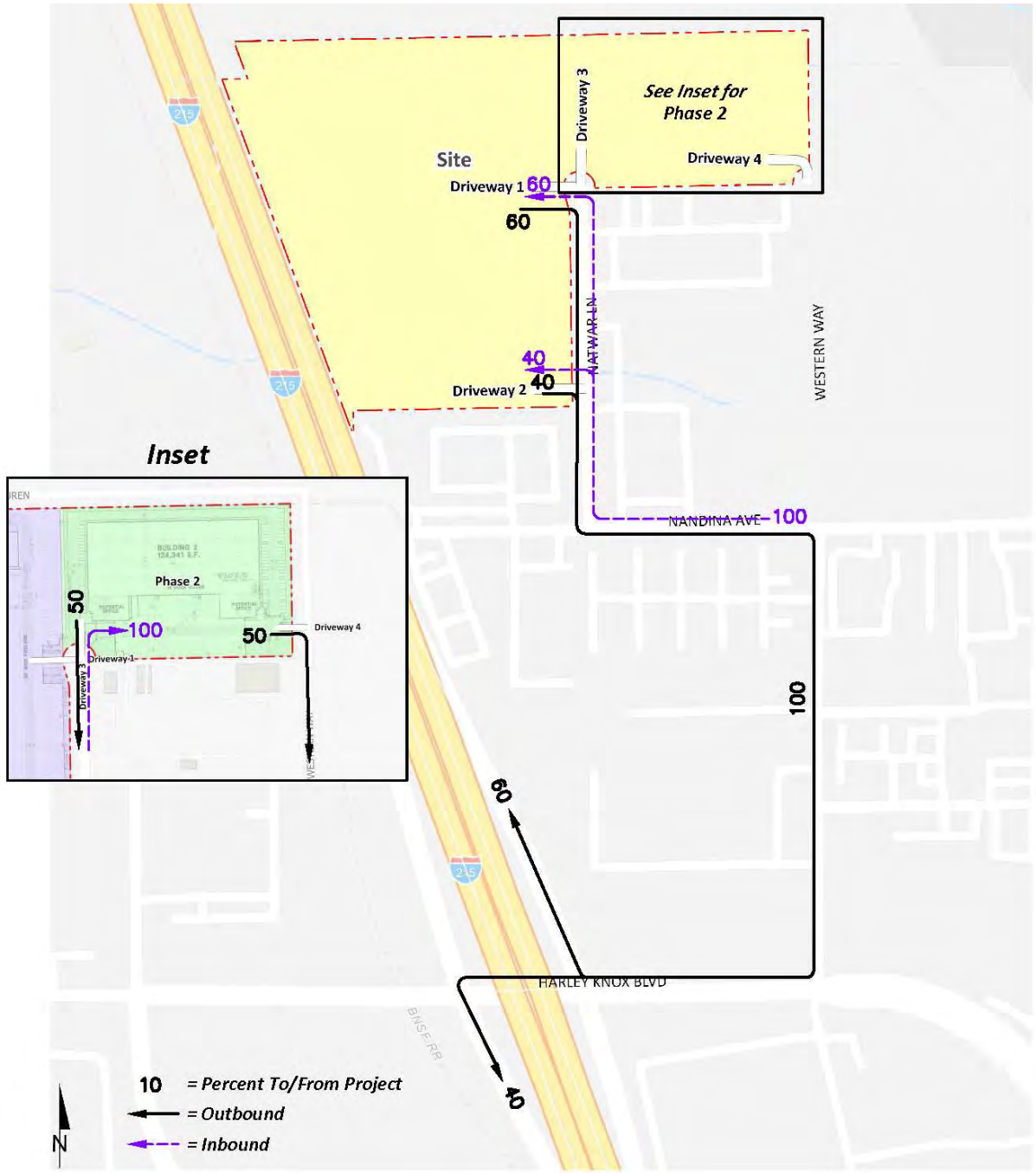


EXHIBIT 4-3: PROJECT (PHASE 1) ONLY TRAFFIC VOLUMES (IN ACTUAL VEHICLES)

1 I-215 SB Ramps & Harley Knox Bl.

200 / 400

0(0) 0(0) 31(13) ← 0(0) ← 8(28)

0(0) → 0(0) →

200 / 400

2 I-215 NB Ramps & Harley Knox Bl.

200 / 800

↱ 9(34) ← 8(28)

0(0) → 31(13) →

↰ ↑ ↱ 0(0) 0(0) 25(11)

400 / 200

3 Natwar Ln./Driveway 3 & Driveway 1

0(0) 0(0) ↓

0(0) → 2(6) ↵

↰ ↑ 5(2) 0(0)

100 / 100

4 Natwar Ln. & Driveway 2

100

0(0) 2(6) ↓

0(0) → 22(83) ↵

↰ ↑ 76(34) 5(2)

1,050 / 1,150

5 Natwar Ln. & Nandina Av.

1,150 / 1,150

0(0) ↓ 24(89) ← 81(36) ← 0(0)

0(0) → 0(0) →

0 / 0

6 Western Wy. & Driveway 4

Future Intersection

7 Western Wy. & Nandina Av.

0 / 100

0(0) 0(0) 0(0) ← 0(0) ← 7(3) ← 0(0)

0(0) → 2(8) → 22(81) ↵

↰ ↑ ↱ 74(33) 0(0) 0(0)

1,150 / 1,050

8 Western Wy. & Harvey Knox Bl.

1,050 / 250

17(61) 0(0) 5(20) ← 18(8) ← 0(0) ← 0(0)

56(24) → 0(0) → 0(0) ↵

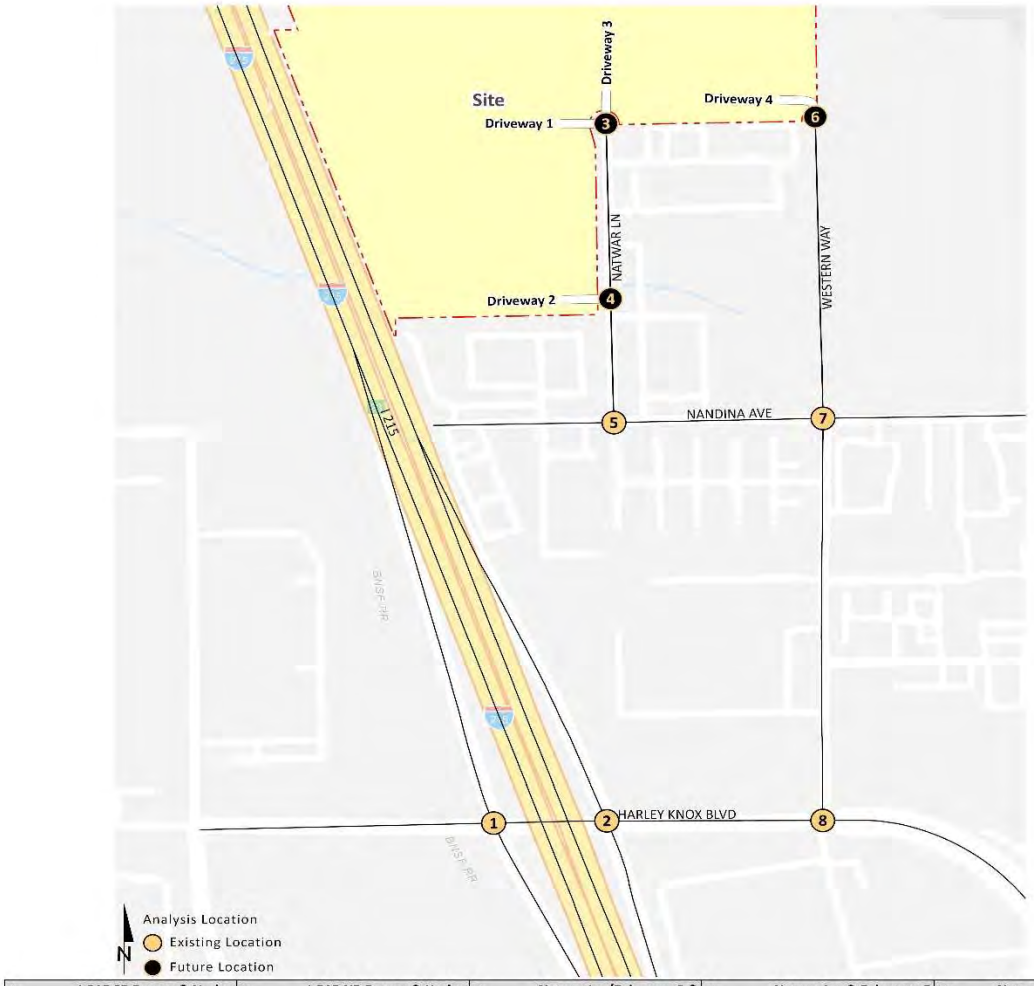
↰ ↑ ↱ 0(0) 0(0) 0(0)

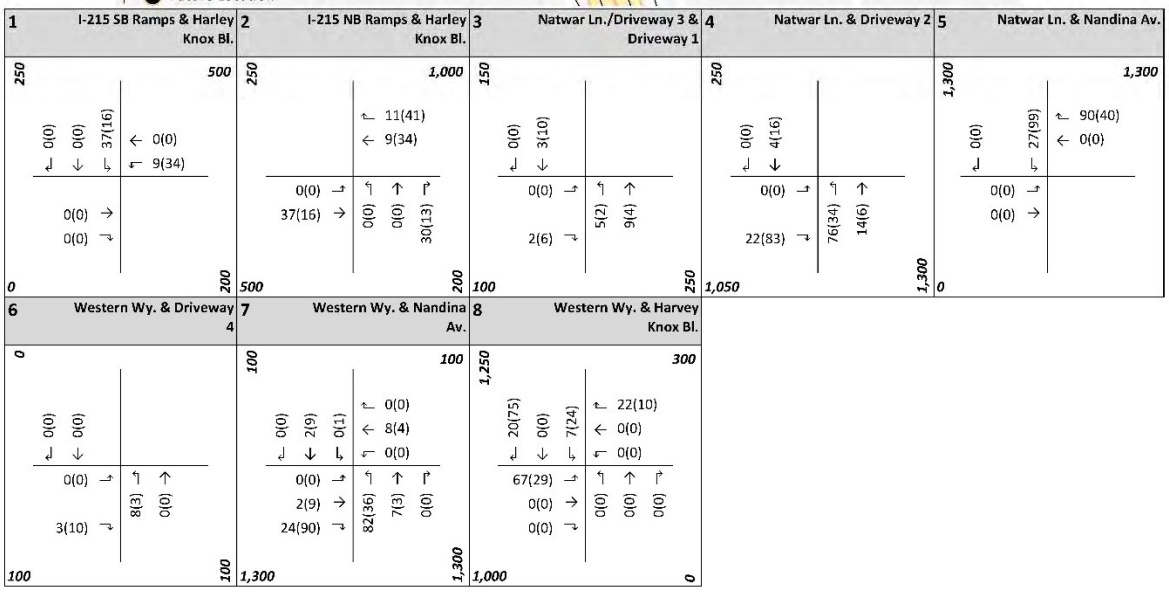
800 / 0

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

Average Daily Trips

EXHIBIT 4-3: PROJECT BUILDOUT (PHASE 1 & 2) ONLY TRAFFIC VOLUMES (IN ACTUAL VEHICLES)





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

Average Daily Trips

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 from their respective jurisdictions.

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

EXHIBIT 4-5: CUMULATIVE DEVELOPMENT LOCATION MAP

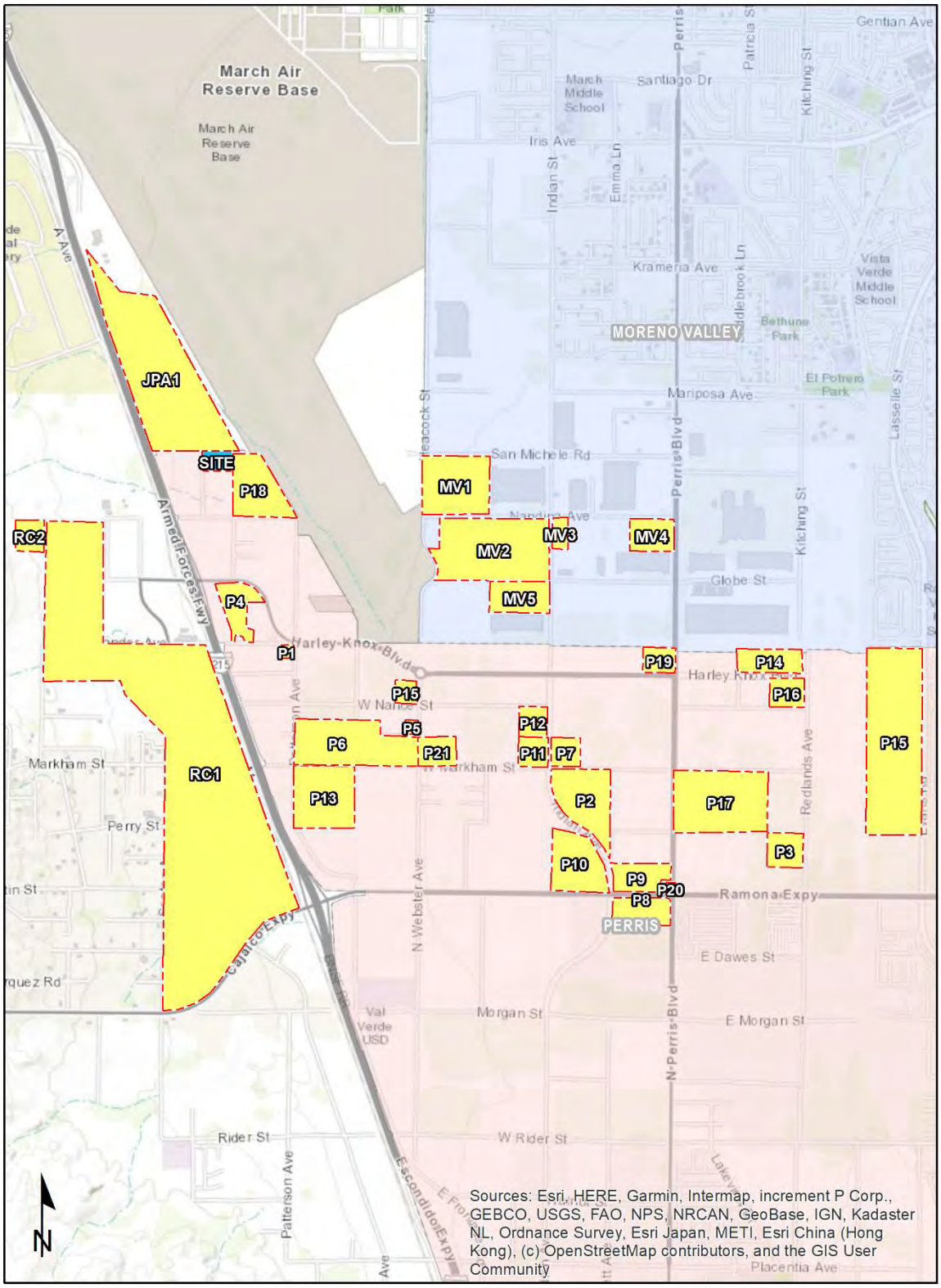


TABLE 4-3: CUMULATIVE DEVELOPMENT LAND USE SUMMARY

No.	Project Name / Case Number	Jurisdiction	Land Use[1]	Quantity	Units[2]	Location
P1	Canyon Steel (CS)	Perris	Industrial	25.000	TSF	NWC OF PATTERSON AVE. & CALFORNIA AVE.
P2	Duke 2 / DPR 16-00008	Perris	High-Cube Warehouse	669.000	TSF	NEC OF INDIAN AVE. & MARKHAM ST.
P3	First Perry / DPR 16-00013	Perris	High-Cube Warehouse	240.000	TSF	SWC OF REDLANDS AVE. & PERRY ST.
P4	Gateway / DPR 16-00003	Perris	High-Cube Warehouse	400.000	TSF	SOUTH OF HARLEY KNOX BLVD. EAST OF HWY. 215
P5	Marijuana Manufacturing (MM)	Perris	Industrial	1.000	TSF	NW CORNER OF WEBSTER AVE. & WASHINGTON ST.
P6	OLC2 / DPR 14-01-0015	Perris	High-Cube Warehouse	1,037.000	TSF	WEST OF WEBSTER AVE. NORTH OF MARKHAM ST.
P7	Markham Industrial / DPR 16-00015	Perris	Warehousing	170.000	TSF	NEC OF INDIAN AVE. & MARKHAM ST.
P8	Perris and Ramona Warehouse	Perris	Industrial	347.938	TSF	S SIDE OF RAMONA EXWY. BTW INDIAN AVE. & PERRIS BLVD.
P9	JM Realty	Perris	High-Cube Fulfillment	232.575	TSF	NEC INDIAN AVE. & RAMONA EXWY.
			Hotel	125	RM	
P10	Indian/Ramona Warehouse / DPR 18-00002	Perris	High-Cube Warehouse	428.730	TSF	NORTH OF RAMONA EXWY. WEST OF INDIAN AVE.
P11	Phelan Indus	Perris	Industrial	81.000	TSF	N SIDE OF MARKHAM BTW WEBSTER AVE. & PERRIS BLVD.
P12	Westcoast Textile / DPR 16-00001	Perris	Warehousing	180.000	TSF	SWC OF INDIAN ST. & NANCE ST.
P13	Duke at Patterson / DPR 17-00001	Perris	High-Cube Warehouse	811.000	TSF	SEC OF PATTERSON AVE. & MARKHAM ST.
P14	Harley Knox Commerce Park / DPR 16-004	Perris	High-Cube Warehouse	386.278	TSF	NWC OF HARLEY KNOX BLVD. & REDLANDS AVE.
P15	AAA	Perris	Industrial	2.000	TSF	SE CORNER OF HARLEY KNOX BL. & WEBSTER AVE.
P16	Circle Industrial III	Perris	Warehousing	211.000	TSF	NWC OF REDLANDS AVE. AND NANCE AVE.
P17	Duke @ Perris Blvd.	Perris	High-Cube Warehouse	1,070.000	TSF	SEC OF PERRIS BL. AND MARKHAM ST.
P18	Western Industrial / DRP 19-00003	Perris	High-Cube Warehouse	250.000	TSF	NEC OF WESTERN WY. AND NANDINA 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	Integra Expansion / MMOD 17-05075	Perris	High-Cube Warehouse	273.000	TSF	NCE OF MARKHAM ST. AND WEBSTER AVE.
MV1	IDS	Moreno Valley	High-Cube Warehouse	701.000	TSF	SEC OF HEACOCK ST. & SAN MICHELE RD.
MV2	First Industrial	Moreno Valley	High-Cube Warehouse	1,380.000	TSF	SWC OF INDIAN AVE. & NANDINA AVE.
MV3	Phelan Development	Moreno Valley	High-Cube Warehouse	98.210	TSF	SEC OF INDIAN ST. & NANDINA AVE.
MV4	Nandina Industrial Center	Moreno Valley	High-Cube Warehouse	335.970	TSF	SOUTH OF NANDINA AVE. WEST OF PERRIS BLVD.
MV5	Indian Street Commerce Center	Moreno Valley	High-Cube Warehouse	433.920	TSF	SWC OF INDIAN ST. & GROVEVIEW RD.
JPA1	VIP 215	March JPA	High-Cube Warehouse	2,219.850	TSF	NORTH OF NANDINA AVE. EAST OF HWY. 215
RC1	Majestic Freeway Business Center SP	Riverside County	General Light Industrial	6,200.000	TSF	NORTH OF RAMONA EXWY. SOUTH OF NANDINA AVE.
RC2	Oleander Business Park	Riverside County	High-Cube Warehouse	728.650	TSF	NWC OF DECKER RD. & OLEANDER AVE.

[1] SFDR = Single Family Detached Residential
[2] DU = Dwelling Units; TSF = Thousand Square Feet

Although it is unlikely that these cumulative projects would be fully built and occupied by Year 2023 or 2025, 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.

EXHIBIT 4-6: CUMULATIVE ONLY TRAFFIC VOLUMES (IN ACTUAL VEHICLES)

1 I-215 SB Ramps & Harley Knox Bl.	2 I-215 NB Ramps & Harley Knox Bl.	3 Natwar Ln./Driveway 3 & Driveway 1	4 Natwar Ln. & Driveway 2	5 Natwar Ln. & Nandina Av.
6,600 / 10,450 136(73) 0(0) 370(222) 74(47) 77(288) 81(193) 21(56) 5,400 / 3,150	6,450 / 15,250 163(523) 103(310) 61(163) 390(252) 48(25) 0(0) 261(97) 10,450 / 3,050	Future Intersection	Future Intersection	0 / 0 0(0) 0(0) 0(0) 0(0) 0(0) 0(0) 0

6 Western Wy. & Driveway 4	7 Western Wy. & Nandina Av.	8 Western Wy. & Harvey Knox Bl.
Future Intersection	2,200 / 400 0(0) 25(85) 0(1) 1(0) 0(0) 5(14) 0(0) 0(0) 0(0) 0(0) 78(35) 15(6) 0 / 2,550	2,500 / 13,600 22(83) 0(0) 6(23) 18(10) 243(747) 12(2) 74(36) 569(312) 9(1) 1(3) 0(0) 2(4) 15,250 / 100

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

Average Daily Trips

4.7 NEAR-TERM TRAFFIC CONDITIONS

The "buildup" approach combines existing traffic counts with a background ambient growth factor to forecast EAC (2023), EAPC (2023), EAC (2025), and EAPC (2025) 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 2023 from the year 2021 (3.0 percent per year, compounded annually). Furthermore, an ambient growth factor of 12.55% to account for background (area-wide) traffic increases that occur over time up to the year 2025 from the year 2021 (3.0 percent per year, compounded annually). Traffic volumes generated by the Project are then added to assess the near-term traffic conditions. The 2023 and 2025 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 (2023)**
    - Adjusted Existing 2021
    - Ambient growth traffic (6.09%)
    - Cumulative Development traffic
- **Existing Plus Ambient Growth Plus Cumulative Plus Project (2023)**
    - Adjusted Existing 2021
    - Ambient growth traffic (6.09%)
    - Cumulative Development traffic
    - Project Phase 1 traffic
- **Existing Plus Ambient Growth Plus Cumulative (2025)**
    - Adjusted Existing 2021
    - Ambient growth traffic (12.55%)
    - Cumulative Development traffic
- **Existing Plus Ambient Growth Plus Cumulative Plus Project (2025)**
    - Adjusted Existing 2021
    - Ambient growth traffic (12.55%)
    - Cumulative Development traffic
    - Project Phase 1 and 2 traffic

The EAPC (2025) 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.

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 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).

5.2 E+P (PHASE 1) TRAFFIC VOLUME FORECASTS

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

5.3 E+P (PHASE 1 & 2) TRAFFIC VOLUME FORECASTS

This scenario includes Existing traffic volumes plus Project Buildout (Phase 1 & 2) traffic. The ADT and peak hour intersection turning movement volumes (in actual vehicles), which can be expected for E+P (Phase 1 & 2) traffic conditions are shown on Exhibit 5-2.

5.4 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 (2021) traffic conditions. The E+P (Phase 1) and E+P (Phase 1 & 2) intersection operations analysis worksheets are included in Appendices 5.1 and 5.2 of this TA, respectively.

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

#	Intersection	Traffic Control[1]	Existing Delay[2] (secs.) AM	Existing Delay[2] (secs.) PM	Existing Level of Service AM	Existing Level of Service PM	E+P (Ph. 1) Delay[2] (secs.) AM	E+P (Ph. 1) Delay[2] (secs.) PM	E+P (Ph. 1) Level of Service AM	E+P (Ph. 1) Level of Service PM	E+P (Ph. 1 & 2) Delay[2] (secs.) AM	E+P (Ph. 1 & 2) Delay[2] (secs.) PM	E+P (Ph. 1 & 2) Level of Service AM	E+P (Ph. 1 & 2) Level of Service PM
1	I-215 SB Ramps & Harley Knox Bl.	TS	18.9	24.9	B	C	21.1	34.5	C	C	21.6	36.9	C	D
2	I-215 NB Ramps & Harley Knox Bl.	TS	49.5	12.3	D	B	52.7	13.7	D	B	53.2	14.0	D	B
3	Natwar Ln./Driveway 3 & Driveway 1	**CSS**	Does Not Exist				8.3	8.3	A	A	8.3	8.4	A	A
4	Natwar Ln. & Driveway 2	**CSS**	Does Not Exist				8.5	8.7	A	A	8.5	8.8	A	A
5	Natwar Ln. & Nandina Av.	CSS	8.7	8.7	A	A	9.2	9.4	A	A	9.2	9.5	A	A
6	Western Wy. & Driveway 4	**CSS**	Does Not Exist				Does Not Exist				8.3	8.3	A	A
7	Western Wy. & Nandina Av.	AWS	7.4	6.8	A	A	8.3	7.3	A	A	8.5	7.5	A	A
8	Western Wy. & Harvey Knox Bl.	TS	11.2	6.8	B	A	13.2	9.3	B	A	14.0	9.6	B	A

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

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

5.5 TRAFFIC SIGNAL WARRANTS ANALYSIS

There are no study area intersections anticipated to meet peak hour volume-based or planning level (ADT) traffic signal warrants under E+P (Phase 1) and E+P (Phase 1 & 2) traffic conditions (see Appendices 5.3 & 5.4, respectively).

5.6 OFF-RAMP QUEUING ANALYSIS

E+P peak hour off-ramp queuing has been evaluated for the study area intersections based on the analysis methodologies presented in Section 2 *Methodologies* of this TA. As shown in Table 5-2, there are no off-ramp movements that are anticipated to experience queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows. Worksheets for E+P (Phase 1) and E+P (Phase 1 & 2) traffic conditions off-ramp queuing analysis are provided in Appendices 5.5 and 5.6, respectively.

TABLE 5-2: PEAK HOUR FREEWAY OFF-RAMP QUEUING SUMMARY FOR E+P CONDITIONS

#	Intersection	Movement	Available Stacking Distance (Feet)	Existing (2021) 95th Percentile Queue (Feet) AM Peak Hour	Existing (2021) 95th Percentile Queue (Feet) PM Peak Hour	Existing (2021) Acceptable?[1] AM	Existing (2021) Acceptable?[1] PM	E+P (Ph. 1) 95th Percentile Queue (Feet) AM Peak Hour	E+P (Ph. 1) 95th Percentile Queue (Feet) PM Peak Hour	E+P (Ph. 1) Acceptable?[1] AM	E+P (Ph. 1) Acceptable?[1] PM	E+P (Ph. 1 & 2) 95th Percentile Queue (Feet) AM Peak Hour	E+P (Ph. 1 & 2) 95th Percentile Queue (Feet) PM Peak Hour	E+P (Ph. 1 & 2) Acceptable?[1] AM	E+P (Ph. 1 & 2) Acceptable?[1] PM
1	I-215 Southbound Ramps & Harley Knox Bl.	SBL/T	1,330	351	216	Yes	Yes	392	229	Yes	Yes	409[2]	230	Yes	Yes
		SBR	270	41	35	Yes	Yes	41	35	Yes	Yes	41	35	Yes	Yes
2	I-215 Northbound Ramps & Harley Knox Bl.	NBL/T	1,120	23	29	Yes	Yes	22	31	Yes	Yes	23	32	Yes	Yes
		NBR	265	28	53	Yes	Yes	45	57	Yes	Yes	49	58	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.

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

1 I-215 SB Ramps & Harley Knox Bl.

8,200 — 24,300

147(129) ↓ 1(0) ↳ 341(256) ← 196(194) ↰ 117(346)

690(362) → 4(31) ↴

15,300 — 7,650

2 I-215 NB Ramps & Harley Knox Bl.

15,150 — 34,750

← 852(516) ← 308(521)

412(213) ↳ 619(404) →

↰ 5(19) ↑ 3(3) ↱ 58(233)

24,250 — 5,400

3 Natwar Ln./Driveway 3 & Driveway 1

0(0) ↓ 0(0) ↳

0(0) → ↰ 5(2) ↑ 0(0)

2(6) ↴

100 — 100

4 Natwar Ln. & Driveway 2

150

0(0) ↓ 16(7) ↳

0(0) → ↰ 76(34) ↑ 12(2)

22(83) ↴

1,050 — 1,150

5 Natwar Ln. & Nandina Av.

1,150 — 2,100

0(0) ↓ 38(90) ↳ ← 88(36) ← 8(5)

0(0) → 6(38) →

900

6 Western Wy. & Driveway 4

Future Intersection

7 Western Wy. & Nandina Av.

0 — 550

0(0) ↓ 0(0) ↓ 0(0) ↳ ← 0(0) ← 19(7) ↰ 5(10)

0(0) → 12(12) → 58(134) ↴

↰ 111(37) ↑ 0(0) ↱ 8(4)

2,550 — 2,550

8 Western Wy. & Harvey Knox Bl.

4,000 — 32,650

56(149) ↓ 0(0) ↓ 197(44) ↳ ← 72(21) ← 1103(883) ↰ 0(0)

151(37) → 523(596) → 2(4) ↴

↰ 1(4) ↑ 0(0) ↱ 0(0)

34,750 — 150

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

Average Daily Trips

EXHIBIT 5-2: E+P (PHASE 1 & 2) TRAFFIC VOLUMES (IN ACTUAL VEHICLES)

1 I-215 SB Ramps & Harley Knox Bl. — 24,400 — 8,250 — 15,300 — 7,700

147(129) ↲ | 1(0) ↓ | 347(259) ↳ | ← 196(194) | ← 118(352)
690(362) →
4(31) ↴

2 I-215 NB Ramps & Harley Knox Bl. — 34,950 — 15,200 — 24,350 — 5,450

↱ 854(523) | ← 309(527)
412(213) ↳ | 5(19) ↰ | 3(3) ↑ | 63(235) ↱
625(407) →

3 Natwar Ln./Driveway 3 & Driveway 1 — 150 — 100 — 250

0(0) ↲ | 3(10) ↓
0(0) ↳ | 5(2) ↰ | 9(4) ↑
2(6) ↴

4 Natwar Ln. & Driveway 2 — 250 — 1,050 — 1,300

0(0) ↲ | 18(17) ↓
0(0) ↳ | 76(34) ↰ | 21(6) ↑
22(83) ↴

5 Natwar Ln. & Nandina Av. — 2,250 — 1,300 — 900

0(0) ↲ | 41(100) ↳ | ↱ 97(40) | ← 8(5)
0(0) ↳
6(38) →

6 Western Wy. & Driveway 4 — 0 — 100 — 0

0(0) ↲ | 0(0) ↓
0(0) ↳ | 8(3) ↰ | 0(0) ↑
3(10) ↴

7 Western Wy. & Nandina Av. — 600 — 100 — 2,700 — 2,800

2(9) ↓ | 0(1) ↳ | ↱ 1(0) | ← 20(8) | ← 5(10)
12(13) → | 119(40) ↰ | 7(3) ↑ | 8(4) ↱
60(143) ↴

8 Western Wy. & Harvey Knox Bl. — 32,700 — 4,250 — 34,950 — 150

59(163) ↲ | 199(48) ↳ | ↱ 76(23) | ← 1103(883)
162(42) ↳ | 1(4) ↰
523(596) →
2(4) ↴

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

Average Daily Trips

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6 EAC AND EAPC (2023) TRAFFIC CONDITIONS

This section discusses the methods used to develop EAC and EAPC (2023) traffic forecasts and the resulting intersection operations, traffic signal warrant, and off-ramp queuing analyses.

6.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for EAC and EAPC (2023) 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 (Phase 1) 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 (2023) conditions only (e.g., intersection and roadway improvements along the cumulative development's frontages).

6.2 EAC (2023) 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 (2023) traffic conditions. The weekday ADT and weekday AM and PM peak hour volumes (in actual vehicles) which can be expected for EAC (2023) traffic conditions are shown on Exhibit 6-1.

6.3 EAPC (2023) 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 (2023) traffic conditions in conjunction with traffic associated with the proposed Project (Phase 1). The weekday ADT and weekday AM and PM peak hour volumes (in actual vehicles) which can be expected for EAPC (2023) traffic conditions are shown on Exhibit 6-2.

EXHIBIT 6-1: EAC (2023) TRAFFIC VOLUMES (IN ACTUAL VEHICLES)

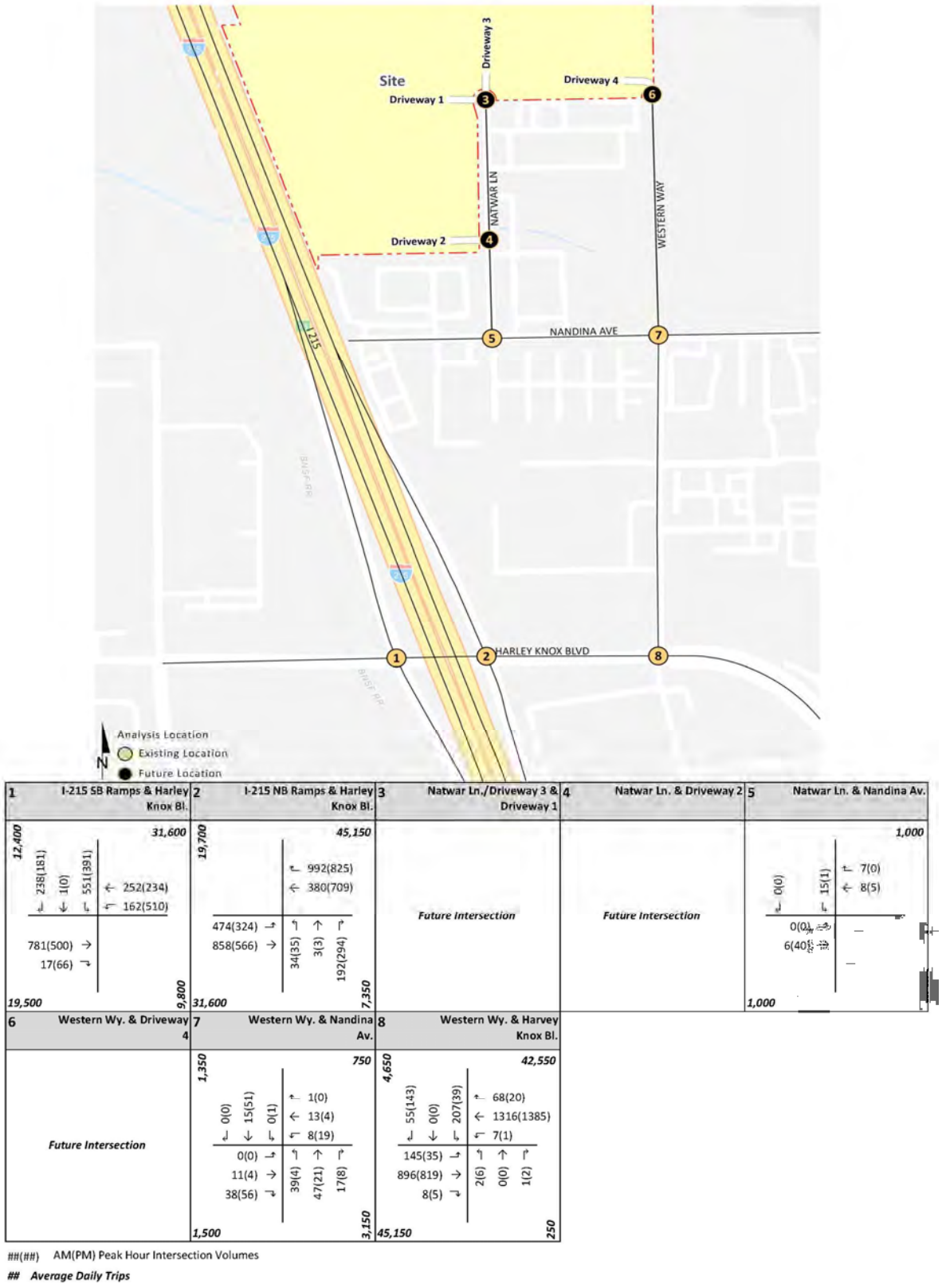


EXHIBIT 6-2: EAPC (2023) TRAFFIC VOLUMES (IN ACTUAL VEHICLES)

1 I-215 SB Ramps & Harley Knox Bl.

12,650 | 32,000

↳ 238(181)	↓ 1(0)	↳ 582(404)
		← 252(234)
		↰ 170(538)
781(500) →		
17(66) ↲		

19,500 | 10,000

2 I-215 NB Ramps & Harley Knox Bl.

19,950 | 46,000

		↰ 1001(859)
		← 388(737)
474(324) ↳	↰ 34(35)	↑ 3(3) ↱ 217(305)
889(579) →		

32,000 | 7,550

3 Natwar Ln./Driveway 3 & Driveway 1

0 | 0

↳ 0(0)	↓ 0(0)	
		↰ 5(2) ↑ 0(0)
0(0) ↳		
2(6) ↲		

100 | 100

4 Natwar Ln. & Driveway 2

150 | 150

↳ 0(0)	↓ 17(7)	
		↰ 76(34) ↑ 12(2)
0(0) ↳		
22(83) ↲		

1,050 | 1,150

5 Natwar Ln. & Nandina Av.

1,150 | 2,150

↳ 0(0)	↳ 39(90)	↰ 88(36)
		← 8(5)
0(0) ↳		
6(40) →		

1,000

6 Western Wy. & Driveway 4

Future Intersection

7 Western Wy. & Nandina Av.

1,350 | 850

↲ 0(0)	↓ 15(51)	↳ 0(1)
		↰ 1(0)
		← 20(7)
		↰ 8(19)
0(0) ↳		
13(12) →		
60(137) ↲		

	↰ 113(37)	↑ 47(21) ↱ 17(8)

2,600 | 4,200

8 Western Wy. & Harvey Knox Bl.

5,700 | 42,800

↲ 72(204)	↓ 0(0)	↳ 212(59)
		↰ 86(28)
		← 1316(1385)
		↰ 7(1)
201(59) ↳		
896(819) →		
8(5) ↲		

	↰ 2(6)	↑ 0(0) ↱ 1(2)

46,000 | 250

##(##) 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 (2023) 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 and EAPC (2023) traffic conditions, with the exception of the following intersections:

- I-215 SB Ramps & Harley Knox Bl. (#1) – LOS F PM peak hour only
- I-215 NB Ramps & Harley Knox Bl. (#2) – LOS F AM and PM peak hours

The intersection operations analysis worksheets for EAC and EAPC (2023) traffic conditions are included in Appendix 6.1 and Appendix 6.2 of this TA, respectively.

TABLE 6-1: INTERSECTION ANALYSIS FOR EAC & EAPC (2023) CONDITIONS

			EAC (2023)				EAPC (2023)			
			Delay[2] (secs.)		Level of Service		Delay[2] (secs.)		Level of Service	
#	Intersection	Traffic Control[1]	AM	PM	AM	PM	AM	PM	AM	PM
1	I-215 SB Ramps & Harley Knox Bl.	TS	47.2	**140.8**	D	**F**	54.1	**165.8**	D	**F**
2	I-215 NB Ramps & Harley Knox Bl.	TS	**132.7**	**87.7**	**F**	**F**	**138.9**	**97.1**	**F**	**F**
3	Natwar Ln./Driveway 3 & Driveway 1	**CSS**	Does Not Exist				8.3	8.3	A	A
4	Natwar Ln. & Driveway 2	**CSS**	Does Not Exist				8.5	8.7	A	A
5	Natwar Ln. & Nandina Av.	CSS	8.7	8.8	A	A	9.2	9.4	A	A
6	Western Wy. & Driveway 4	**CSS**	Does Not Exist				Does Not Exist			
7	Western Wy. & Nandina Av.	AWS	7.9	7.3	A	A	8.9	7.8	A	A
8	Western Wy. & Harvey Knox Bl.	TS	14.4	10.9	B	B	18.4	12.5	B	B

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

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

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

6.5 TRAFFIC SIGNAL WARRANTS ANALYSIS

Traffic signal warrants have been performed for EAC and EAPC (2023) traffic conditions based on peak hour volumes and daily traffic (ADT). No traffic signals are warranted at the study area intersections (see Appendices 6.3 and 6.4).

6.6 OFF-RAMP QUEUING ANALYSIS

EAC and EAPC (2023) peak hour off-ramp queuing has been evaluated for the study area intersections based on the analysis methodologies presented in Section 2 *Methodologies* of this TA. As shown in Table 6-2, there are no off-ramp movements that are anticipated to experience queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows. Worksheets for EAC and EAPC (2023) traffic conditions off-ramp queuing analysis are provided in Appendices 6.5 and 6.6, respectively.

6.7 RECOMMENDED IMPROVEMENTS

Improvement strategies have been recommended at intersections that have been identified as deficient under EAPC (2023) traffic conditions in an effort to achieve an acceptable LOS (i.e., LOS E or better).

The effectiveness of the recommended improvement strategies to address EAPC (2023) traffic deficiencies are presented in Table 6-3. Worksheets for EAPC (2023) conditions, with improvements, HCM calculation worksheets are provided in Appendix 6.7. The EAPC (2023) off-ramp queuing, with improvements, are presented in Table 6-4. Worksheets EAPC (2023) traffic conditions, with improvements, off-ramp queuing analysis are provided in Appendix 6.8.

TABLE 6-2: PEAK HOUR FREEWAY OFF-RAMP QUEUING SUMMARY FOR EAC AND EAPC (2023) CONDITIONS

#	Intersection	Movement	Available Stacking Distance (Feet)	EAC (2023) 95th Percentile Queue (Feet) AM Peak Hour	EAC (2023) 95th Percentile Queue (Feet) PM Peak Hour	EAC (2023) Acceptable? [1] AM	EAC (2023) Acceptable? [1] PM	EAPC (2023) 95th Percentile Queue (Feet) AM Peak Hour	EAPC (2023) 95th Percentile Queue (Feet) PM Peak Hour	EAPC (2023) Acceptable? [1] AM	EAPC (2023) Acceptable? [1] PM
1	I-215 Southbound Ramps & Harley Knox Bl.	SBL/T	1,330	762 [2]	342	Yes	Yes	829 [2]	359	Yes	Yes
		SBR	270	92	38	Yes	Yes	95	39	Yes	Yes
2	I-215 Northbound Ramps & Harley Knox Bl.	NBL/T	1,120	61	70	Yes	Yes	61	70	Yes	Yes
		NBR	265	130 [2]	175 [2]	Yes	Yes	203 [2]	214 [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.

TABLE 6-3: INTERSECTION ANALYSIS FOR EAC & EAPC (2023) CONDITIONS WITH IMPROVEMENTS

#	Intersection	Traffic Control[1]	Intersection Approach Lanes[2] Northbound L	T	R	Southbound L	T	R	Eastbound L	T	R	Westbound L	T	R	Delay[3] (secs.) AM	PM	Level of Service AM	PM
1	I-215 SB Ramps & Harley Knox Bl.																	
	-Without Improvements	TS	0	0	0	0	1	1	0	2	d	1	2	0	54.1	**165.8**	D	**F**
	- With Improvements[4]	TS	0	0	0	0	1	1	0	2	d	**2**	**1**	0	36.5	22.9	D	C
2	I-215 NB Ramps & Harley Knox Bl.																	
	-Without Improvements	TS	0	1	1	0	0	0	1	2	0	0	2	1	**138.9**	**97.1**	**F**	**F**
	- With Improvements[4]	TS	0	1	1	0	0	0	**2**	2	0	0	2	**1>>**	10.9	10.5	B	B

* **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 movements sharing a single lane) are

[4] Per the City of Perris General Plan, LOS E is permitted at intersections along the I-215 Ramps.

TABLE 6-4: PEAK HOUR FREEWAY OFF-RAMP QUEUING SUMMARY FOR EAC & EAPC (2023) CONDITIONS WITH IMPROVEMENTS

#	Intersection	Movement	Available Stacking Distance (Feet)	Without Improvements				With Improvements			
				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
1	I-215 Southbound Ramps & Harley Knox Bl.	SBL/T	1,330	829 [2]	359	Yes	Yes	731 [2]	461	Yes	Yes
		SBR	270	95	39	Yes	Yes	43	43	Yes	Yes
2	I-215 Northbound Ramps & Harley Knox Bl.	NBL/T	1,120	61	70	Yes	Yes	38	40	Yes	Yes
		NBR	265	203 [2]	214 [2]	Yes	Yes	119 [2]	104 [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.

7 EAC AND EAPC (2025) TRAFFIC CONDITIONS

This section discusses the methods used to develop EAC and EAPC (2025) traffic forecasts and the resulting intersection operations, traffic signal warrant, and off-ramp queuing analyses.

7.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for EAC and EAPC (2025) 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 Buildout (Phase 1 & 2) 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 (2025) conditions only (e.g., intersection and roadway improvements along the cumulative development's frontages).

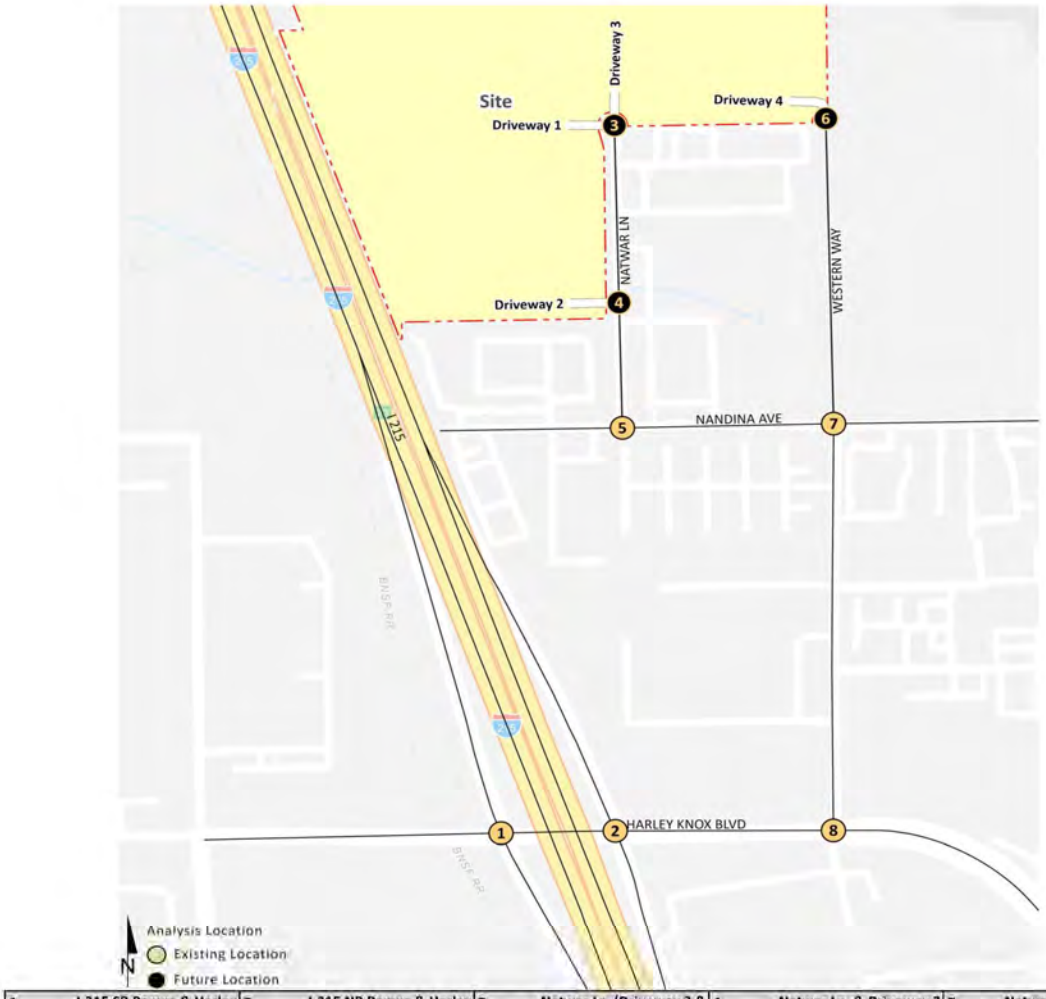
7.2 EAC (2025) TRAFFIC VOLUME FORECASTS

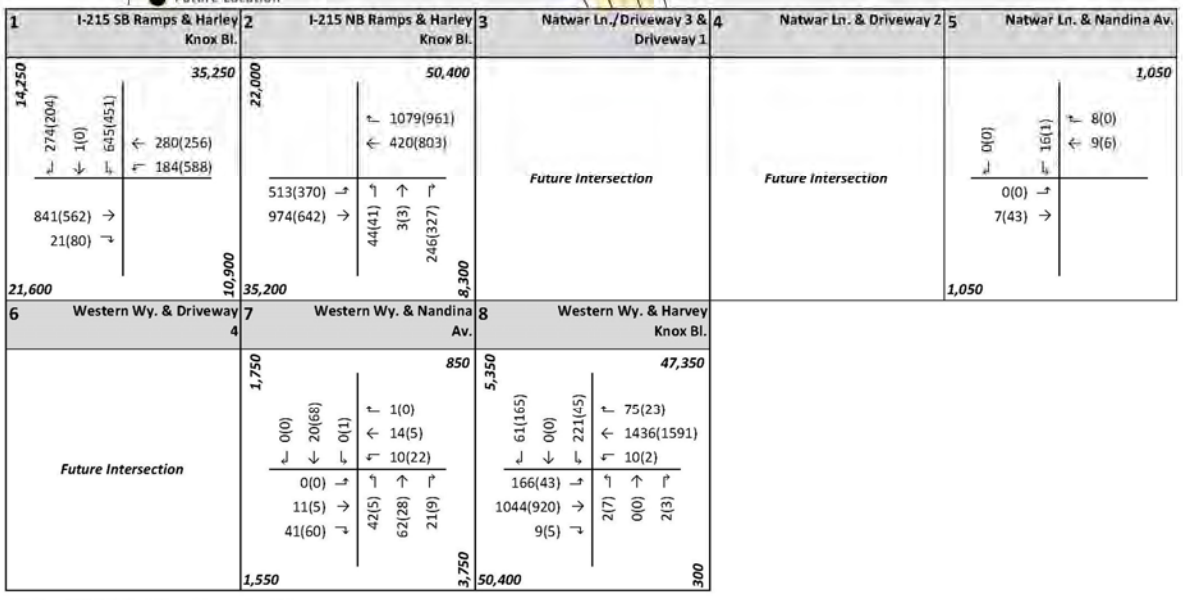
To account for background traffic, other known cumulative development projects in the study area were included in addition to 12.55% of ambient growth for EAC (2025) traffic conditions. The weekday ADT and weekday AM and PM peak hour volumes (in actual vehicles) which can be expected for EAC (2025) traffic conditions are shown on Exhibit 7-1.

7.3 EAPC (2025) TRAFFIC VOLUME FORECASTS

To account for background traffic, other known cumulative development projects in the study area were included in addition to 12.55% of ambient growth for EAPC (2025) traffic conditions in conjunction with traffic associated with the proposed Project Buildout (Phase 1 & 2). The weekday ADT and weekday AM and PM peak hour volumes (in actual vehicles) which can be expected for EAPC (2025) traffic conditions are shown on Exhibit 7-2.

EXHIBIT 7-1: EAC (2025) TRAFFIC VOLUMES (IN ACTUAL VEHICLES)





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

***Average Daily Trips***

EXHIBIT 7-2: EAPC (2025) TRAFFIC VOLUMES (IN ACTUAL VEHICLES)

1 I-215 SB Ramps & Harley Knox Bl.

14,500 | 35,750

274(204) ↲ | 1(0) ↓ | 682(467) ↳ | ← 280(256) | ← 193(622)

841(562) → | 21(80) ↲

21,600 | 11,150

2 I-215 NB Ramps & Harley Knox Bl.

22,250 | 51,400

↰ 1090(1002) | ← 429(837)

513(370) ↳ | 1011(658) → | ↰ ↑ ↱ | 44(41) | 3(3) | 276(340)

35,700 | 8,550

3 Natwar Ln./Driveway 3 & Driveway 1

150 | 250

0(0) ↲ | 3(10) ↓

0(0) ↳ | 2(6) ↲ | ↰ 5(2) | ↑ 9(4)

100 | 250

4 Natwar Ln. & Driveway 2

250

0(0) ↲ | 20(17) ↓

0(0) ↳ | 22(83) ↲ | ↰ 76(34) | ↑ 22(6)

1,050 | 1,300

5 Natwar Ln. & Nandina Av.

1,300 | 2,350

0(0) ↲ | ↳ 43(100)

↰ 98(40) | ← 9(6)

0(0) ↳ | 7(43) →

1,050

6 Western Wy. & Driveway 4

900

0(0) ↲ | 10(48) ↓

0(0) ↳ | 3(10) ↲ | ↰ 8(3) | ↑ 44(18)

100 | 1,000

7 Western Wy. & Nandina Av.

1,850 | 950

0(0) ↲ | 22(77) ↓ | 0(2) ↳

↰ 2(0) | ← 22(9) | ← 10(22)

0(0) ↳ | 13(14) → | 65(150) ↲ | ↰ 124(41) | ↑ 69(31) | ↱ 21(9)

2,850 | 5,050

8 Western Wy. & Harvey Knox Bl.

6,600 | 47,650

81(240) ↲ | 0(0) ↓ | 228(69) ↳

↰ 97(33) | ← 1436(1591) | ← 10(2)

233(72) ↳ | 1044(920) → | 9(5) ↲ | ↰ 2(7) | ↑ 0(0) | ↱ 2(3)

51,400 | 300

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

Average Daily Trips

7.4 INTERSECTION OPERATIONS ANALYSIS

LOS calculations were conducted for the study intersections to evaluate their operations under EAC (2025) 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 EAC and EAPC (2025) traffic conditions, with the exception of the following intersections:

- I-215 SB Ramps & Harley Knox Bl. (#1) – LOS F AM and PM peak hours
- I-215 NB Ramps & Harley Knox Bl. (#2) – LOS F AM and PM peak hours

The intersection operations analysis worksheets for EAC and EAPC (2025) traffic conditions are included in Appendix 7.1 and Appendix 7.2 of this TA, respectively.

TABLE 7-1: INTERSECTION ANALYSIS FOR EAC & EAPC (2025) CONDITIONS

			EAC (2025)				EAPC (2025)			
			Delay[2] (secs.)		Level of Service		Delay[2] (secs.)		Level of Service	
#	Intersection	Traffic Control[1]	AM	PM	AM	PM	AM	PM	AM	PM
1	I-215 SB Ramps & Harley Knox Bl.	TS	**80.4**	**>200.0**	**F**	**F**	**90.1**	**>200.0**	**F**	**F**
2	I-215 NB Ramps & Harley Knox Bl.	TS	**167.5**	**131.7**	**F**	**F**	**177.6**	**138.7**	**F**	**F**
3	Natwar Ln./Driveway 3 & Driveway 1	**CSS**	Does Not Exist				8.3	8.4	A	A
4	Natwar Ln. & Driveway 2	**CSS**	Does Not Exist				8.6	8.8	A	A
5	Natwar Ln. & Nandina Av.	CSS	8.8	8.8	A	A	9.3	9.5	A	A
6	Western Wy. & Driveway 4	**CSS**	Does Not Exist				8.4	8.7	A	A
7	Western Wy. & Nandina Av.	AWS	8.1	7.5	A	A	9.5	8.1	A	A
8	Western Wy. & Harvey Knox Bl.	TS	17.0	12.9	B	B	24.9	14.9	C	B

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

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

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

7.5 TRAFFIC SIGNAL WARRANTS ANALYSIS

Traffic signal warrants have been performed for EAC and EAPC (2025) traffic conditions based on peak hour volumes and daily traffic (ADT). No traffic signals are warranted at the study area intersections (see Appendices 7.3 and 7.4).

7.6 OFF-RAMP QUEUING ANALYSIS

EAC and EAPC (2025) peak hour off-ramp queuing has been evaluated for the study area intersections based on the analysis methodologies presented in Section 2 *Methodologies* of this TA. As shown in Table 7-2, there are no off-ramp movements that are anticipated to experience queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows. Worksheets for EAC and EAPC (2025) traffic conditions off-ramp queuing analysis are provided in Appendices 7.5 and 7.6, respectively.

7.7 RECOMMENDED IMPROVEMENTS

Improvement strategies have been recommended at intersections that have been identified as deficient under EAPC (2025) traffic conditions in an effort to achieve an acceptable LOS (i.e., LOS E or better).

The effectiveness of the recommended improvement strategies to address EAPC (2025) traffic deficiencies are presented in Table 7-3. Worksheets for EAPC (2025) conditions, with improvements, HCM calculation worksheets are provided in Appendix 7.7. The EAPC (2025) off-ramp queuing, with improvements, are presented in Table 7-4. Worksheets EAPC (2025) traffic conditions, with improvements, off-ramp queuing analysis are provided in Appendix 7.8.

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 NPRBBD fees (if the improvements are included in the NPRBBD fee program) or on a fair share basis (if the improvements are not included in the NPRBBD 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 7-2: PEAK HOUR FREEWAY OFF-RAMP QUEUING SUMMARY FOR EAC AND EAPC (2025) CONDITIONS

#	Intersection	Movement	Available Stacking Distance (Feet)	EAC (2025) 95th Percentile Queue (Feet) AM Peak Hour	EAC (2025) 95th Percentile Queue (Feet) PM Peak Hour	EAC (2025) Acceptable?[1] AM	EAC (2025) Acceptable?[1] PM	EAPC (2025) 95th Percentile Queue (Feet) AM Peak Hour	EAPC (2025) 95th Percentile Queue (Feet) PM Peak Hour	EAPC (2025) Acceptable?[1] AM	EAPC (2025) Acceptable?[1] PM
1	I-215 Southbound Ramps & Harley Knox Bl.	SBL/T	1,330	961 [2]	473 [2]	Yes	Yes	1,033 [2]	502 [2]	Yes	Yes
		SBR	270	128	51	Yes	Yes	136	55	Yes	Yes
2	I-215 Northbound Ramps & Harley Knox Bl.	NBL/T	1,120	72	76	Yes	Yes	72	76	Yes	Yes
		NBR	265	279 [2]	300 [2]	Yes[3]	Yes[3]	362 [2]	342 [2]	Yes[3]	Yes[3]

[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.

TABLE 7-3: INTERSECTION ANALYSIS FOR EAC & EAPC (2025) CONDITIONS WITH IMPROVEMENTS

#	Intersection	Traffic Control[1]	Intersection Approach Lanes[2] Northbound L	T	R	Southbound L	T	R	Eastbound L	T	R	Westbound L	T	R	Delay[3] (secs.) AM	PM	Level of Service AM	PM
1	I-215 SB Ramps & Harley Knox Bl.																	
	-Without Improvements	TS	0	0	0	0	1	1	0	2	d	1	2	0	**90.1**	**>200.0**	F	F
	- With Improvements[4]	TS	0	0	0	0	1	1	0	2	d	**2**	**1**	0	53.4	33.9	D	C
2	I-215 NB Ramps & Harley Knox Bl.																	
	-Without Improvements	TS	0	1	1	0	0	0	1	2	0	0	2	1	**177.6**	**138.7**	F	F
	- With Improvements[4]	TS	0	1	1	0	0	0	**2**	2	0	0	2	**1>>**	13.7	13.0	B	B

* **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 movements sharing a single lane) are

[4] Per the City of Perris General Plan, LOS E is permitted at intersections along the I-215 Ramps.

TABLE 7-4: PEAK HOUR FREEWAY OFF-RAMP QUEUING SUMMARY FOR EAC & EAPC (2025) CONDITIONS WITH IMPROVEMENTS

#	Intersection	Movement	Available Stacking Distance (Feet)	Without Improvements				With Improvements			
				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
1	I-215 Southbound Ramps & Harley Knox Bl.	SBL/T	1,330	1,033 [2]	502 [2]	Yes	Yes	956 [2]	596 [2]	Yes	Yes
		SBR	270	136	55	Yes	Yes	74	45	Yes	Yes
2	I-215 Northbound Ramps & Harley Knox Bl.	NBL/T	1,120	72	76	Yes	Yes	46	46	Yes	Yes
		NBR	265	362 [2]	342 [2]	Yes[3]	Yes[3]	217 [2]	197 [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.

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 County may grant to developers a credit against the specific components of fees for the dedication of land, or the construction of facilities identified in the list of improvements funded by each of these fee programs. Fees are based upon projected land uses and a related transportation need to address growth based upon a 2016 Nexus study.

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

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

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.

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9 REFERENCES

1. **City of Perris.** *Perris Valley Commerce Center Specific Plan.* 2012.
2. **Institute of Transportation Engineers.** *Trip Generation.* 10th Edition. 2017.
3. **Western Riverside Council of Governments.** *TUMF Nexus Study, 2016 Program Update.* July 2017.
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7. **Caltrans.** California Manual on Uniform Traffic Control Devices (MUTCD). [book auth.] California Department of Transportation. *California Manual on Uniform Traffic Control Devices (CAMUTCD).* 2017.
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11. **Southern California Association of Governments.** *Connect SoCal: 2020-20415 Regional Transportation Plan/Sustainable Communities Strategy of the SCAG.* SCAG Region : s.n., Adopted September 2020.

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