Sumner Place

TRAFFIC ANALYSIS
CITY OF EASTVALE

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TABLE OF CONTENTS

APPENDICES

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LIST OF EXHIBITS

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LIST OF TABLES

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LIST OF ABBREVIATED TERMS

(1)	Reference
ADT	Average Daily Traffic
CA MUTCD	California Manual on Uniform Traffic Control Devices
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CMP	Congestion Management Program
DIF	Development Impact Fee
E+P	Existing Plus Project
HCM	Highway Capacity Manual
ITE	Institute of Transportation Engineers
LOS	Level of Service
NCHRP	National Cooperative Highway Research Program
OPR	Office of Planning and Research
PHF	Peak Hour Factor
Project	Sumner Place
RCTC	Riverside County Transportation Commission
RivTAM	Riverside Transportation Analysis Model
RTA	Riverside Transport Authority
RTP	Regional Transportation Plan
SB	Senate Bill
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCS	Sustainable Communities Strategy
TA	Traffic Analysis
TUMF	Transportation Uniform Mitigation Fee
v/c	Volume to Capacity
vphgpl	Vehicles per Hour Green per Lane
VMT	Vehicle Miles Traveled
WRCOG	Western Riverside Council of Governments

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1 SUMMARY OF FINDINGS

This report presents the results of the traffic analysis (TA) for the proposed Sumner Place development ("Project"), which is located on the southeast corner of Sumner Avenue and Schleisman Road in the City of Eastvale. The Project's location relative the surrounding area is shown on Exhibit 1-1.

The purpose of this TA is to evaluate the potential circulation system deficiencies that may result from the development of the proposed Project, and to recommend improvements to achieve acceptable circulation system operational conditions. As directed by City of Eastvale staff, this traffic study has been prepared in accordance with the County of Riverside Transportation Analysis Guidelines for Level of Service Vehicle Miles Traveled, and consultation with City staff during the scoping process. (1) The approved Project Traffic Study Scoping agreement is provided in Appendix 1.1 of this TA.

1.1 SUMMARY OF FINDINGS

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

- Project to install stop sign for egress traffic from the proposed Project at all driveways. Driveway 1 on Sumner Avenue is proposed for full access. Driveway 2 on Schleisman Road is proposed for right-in/right-out/left-in access only.
- The Project will construct Sumner Avenue from Schleisman Road to the southern Project boundary at its ultimate half-section width as a 2-lane Major Collector (ultimate 118-foot right-of-way) in compliance with the circulation recommendations found in the City of Eastvale's General Plan.
- The Project will construct Schleisman Road from Sumner Avenue to the eastern Project boundary at its ultimate half-section width as a 4-lane Urban Arterial Highway (ultimate 128-foot right-of-way) in compliance with the circulation recommendations found in the City of Eastvale's General Plan.

Additional details and intersection lane geometrics are provided in Section 1.7 *Recommendations* of this report. The addition of Project traffic is not anticipated to result in any operational deficiencies at the study area intersections under any of the future traffic conditions.

1.2 PROJECT OVERVIEW

Exhibit 1-2 illustrates the preliminary site plan. As indicated on Exhibit 1-2, the Project is proposed to consist of the following uses:

- 22 multifamily (low-rise) residential dwelling units (2-floors)
- 194 multifamily (mid-rise) residential dwelling units (3-~~10~~ floors)
- 2,500 square feet of commercial retail use
- 2,500 square feet of ~~fast-food restaurant~~ without drive-through window use

convenience food service

EXHIBIT 1-1: LOCATION MAP

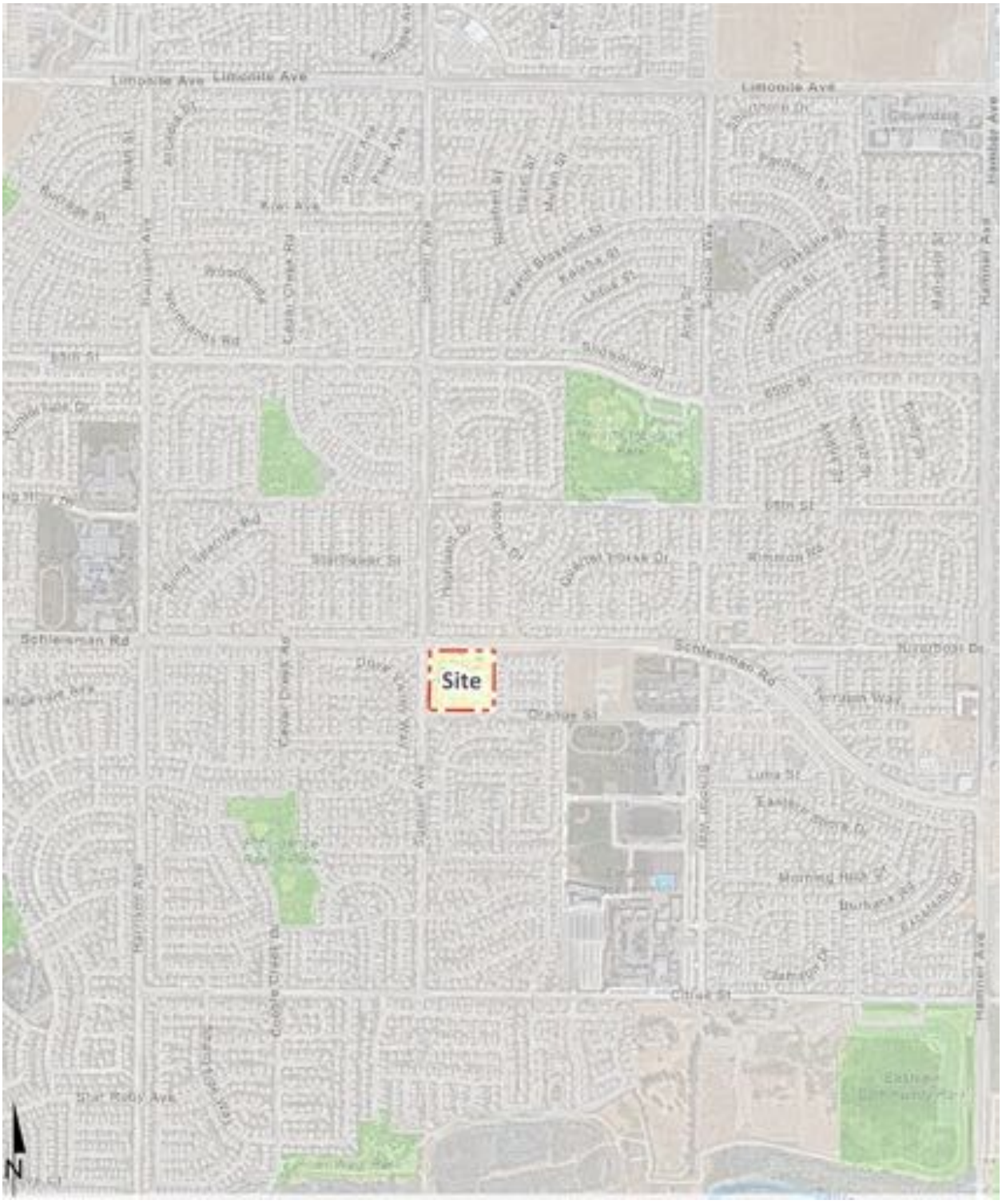


EXHIBIT 1-2: PRELIMINARY SITE PLAN

Regional access to the Project site is available via the I-15 Freeway at Limonite Avenue interchange. Vehicular traffic access will be provided via the following driveways:

- Driveway 1 via Sumner Avenue – Full access
- Driveway 2 via Schleisman Road– Right-in/right-out/left-in access

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 proposed Project is anticipated to generate a total of 1,406 vehicle trip-ends per day with 228 AM peak hour trips and 92 PM peak hour trips. The assumptions and methods used to estimate the Project's trip generation characteristics are discussed in greater detail in Section 4.1 *Project Trip Generation* of this report.

1.3 ANALYSIS SCENARIOS

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

- Existing (2021) Conditions
- Existing plus Project (E+P) Conditions
- Opening Year Cumulative (2022) Without Project Conditions
- Opening Year Cumulative (2022) With Project Conditions
- Horizon Year (2040) Without Project Conditions
- Horizon Year (2040) With Project Conditions

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. Due to the currently ongoing COVID-19 pandemic, the traffic counts utilized for the purposes of this analysis relied on both historic data and adjusted 2021 count data. Details on adjustments to the existing traffic counts are discussed in Section 3.5 *Existing (2021) Traffic Counts* of this TA.

1.3.2 EXISTING PLUS PROJECT CONDITIONS

The Existing Plus Project (E+P) analysis determines circulation system deficiencies that would occur on the existing roadway system in the scenario of the Project being placed upon Existing conditions. The E+P analysis is intended to identify the project-specific traffic deficiencies associated solely with the development of the proposed Project based on a comparison of the E+P traffic conditions to Existing (2021) conditions.

1.3.3 OPENING YEAR CUMULATIVE CONDITIONS

The Opening Year Cumulative traffic conditions analysis determines the potential near-term cumulative circulation system deficiencies. To account for background traffic growth, traffic associated with other known cumulative development projects in conjunction with an ambient growth factor from Existing conditions of 1.6% (for 2022 conditions – 1.6 percent per year

compounded over 1 year) are included for Opening Year Cumulative traffic conditions. This list was compiled from information provided by the City of Eastvale.

1.3.5 HORIZON YEAR (2040) CONDITIONS

Traffic projections for Horizon Year Without Project conditions were derived from the Riverside Transportation Analysis Model (RivTAM) for study area intersections located in Riverside County. The Horizon Year conditions analysis will be utilized to determine if improvements funded through regional transportation mitigation fee programs, such as the Western Riverside Council of Governments Transportation Uniform Mitigation Fee (TUMF), City of Eastvale Development Impact Fee (DIF) programs, or other approved funding mechanism (e.g., Mira Loma Road and Bridge Benefit District (RBBD), etc.) can accommodate the long-range cumulative traffic at the target Level of Service (LOS) identified in the City of Eastvale (lead agency) General Plan. (3) Other improvements needed beyond the "funded" improvements (such as localized improvements to non-TUMF, non-DIF, or non-RBBD facilities) are identified as such.

1.4 STUDY AREA

To ensure that this TA satisfies the City of Eastvale's traffic study requirements, Urban Crossroads, Inc. prepared a project traffic study scoping package for review by City staff prior to the preparation of this report. The Agreement provides an outline of the Project study area, trip generation, trip distribution, and analysis methodology (se Appendix 1.1).

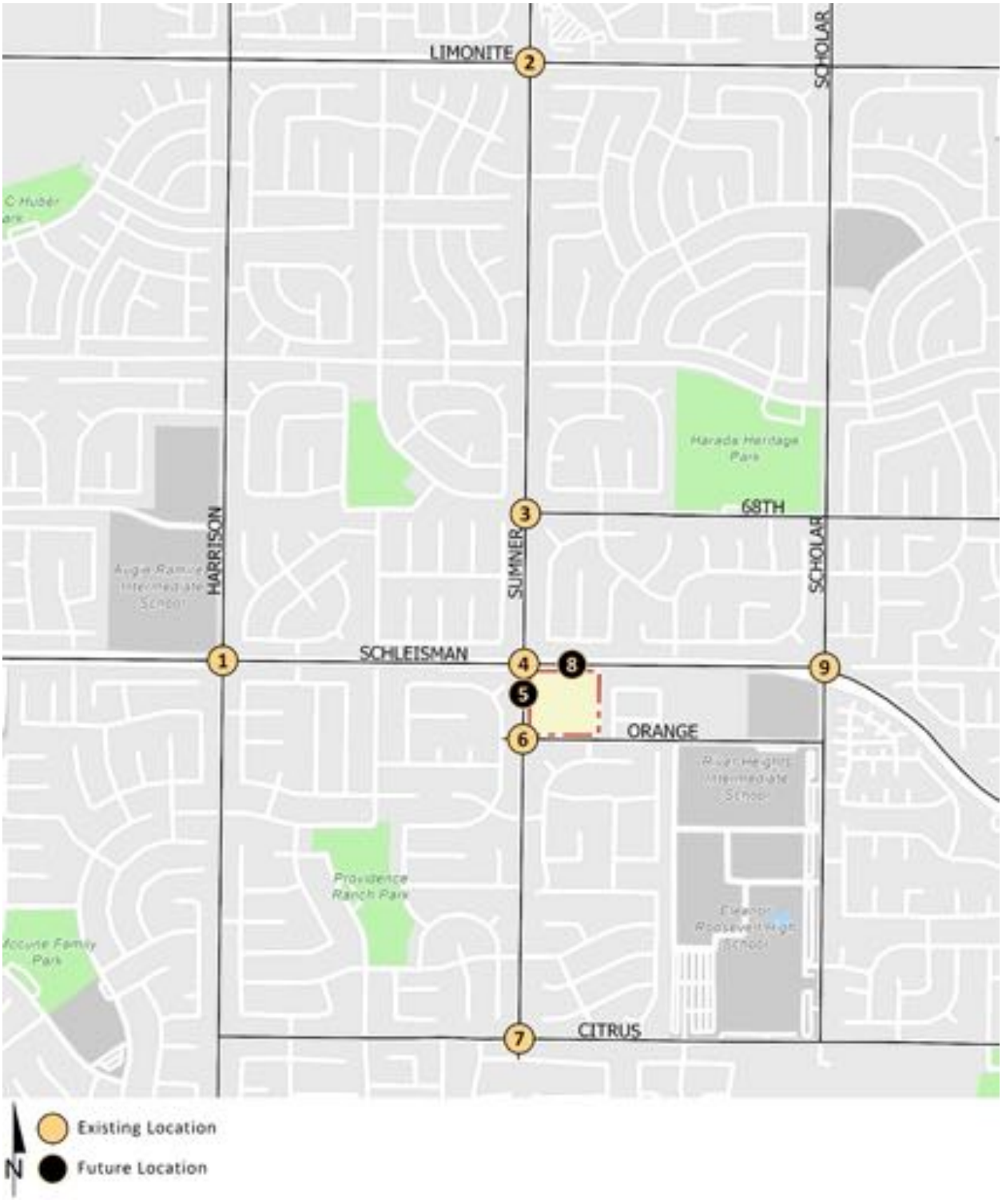
1.4.1 INTERSECTIONS

The following 9 study area intersections shown on Exhibit 1-3 and listed in Table 1-1 were selected for this TA based on consultation with City of Eastvale staff. The "50 peak hour trip" criterion utilized by the City of Eastvale is consistent with the methodology employed by the County of Riverside, and generally represents a minimum number of trips at which a typical intersection would have the potential to be substantively deficient by a given development proposal. Although each intersection may have unique operating characteristics, this traffic engineering rule of thumb is a widely utilized tool for estimating a potential area of analysis (i.e., study area).

TABLE 1-1: INTERSECTION ANALYSIS LOCATIONS

ID	Intersection Location	Jurisdiction	CMP?
1	Harrison Av. & Schleisman Rd.	Eastvale	No
2	Sumner Av. & Limonite Av.	Eastvale	No
3	Sumner Av. & 68th St.	Eastvale	No
4	Sumner Av. & Schleisman Rd.	Eastvale	No
5	Sumner Av. & Driveway 1 – Future Intersection	Eastvale	No
6	Sumner Av. & Orange St.	Eastvale	No
7	Sumner Av. & Citrus Av.	Eastvale	No
8	Driveway 2 & Schleisman Rd. – Future Intersection	Eastvale	No
9	Scholar Wy. & Schleisman Rd.	Eastvale	No

EXHIBIT 1-3: STUDY AREA



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. The County of Riverside CMP became effective with the passage of Proposition 111 in 1990 and updated most recently updated in 2011. The Riverside County Transportation Commission (RCTC) adopted the 2011 CMP for the County of Riverside in December 2011. (4) No study area intersections are CMP intersections.

1.5 SENATE BILL 743 – VEHICLE MILES TRAVELED (VMT)

Senate Bill 743 (SB 743), approved in 2013, endeavors to change the way transportation impacts will be determined according to the California Environmental Quality Act (CEQA). The Office of Planning and Research (OPR) has recommended the use of vehicle miles traveled (VMT) as the replacement for automobile delay-based LOS. In December 2018, the Natural Resources Agency finalized updates to CEQA Guidelines to incorporate SB 743 (i.e., VMT). The VMT thresholds and methodology outlined in the City's TA guidelines will be utilized to conduct the VMT analysis for the Project. The VMT analysis has been prepared and submitted under separate cover.

1.6 DEFICIENCIES

This section provides a summary of deficiencies by analysis scenario. Section 2 *Methodologies* provides information on the methodologies used in the analysis and Section 5 *E+P Traffic Conditions*, Section 6 *Opening Year Cumulative (2022) Traffic Conditions*, and Section 7 *Horizon Year (2040) Traffic Conditions* includes the detailed analysis. A summary of LOS results for all analysis scenarios is presented on Table 1-2.

TABLE 1-2: SUMMARY OF DEFICIENT INTERSECTIONS BY ANALYSIS SCENARIO

#	Intersection	Existing		E+P		2022 Without Project		2022 With Project		2040 Without Project		2040 With Project	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1	Harrison Av. & Schleisman Rd.	●	●	●	●	●	●	●	●	●	●	●	●
2	Sumner Av. & Limonite Av.	●	●	●	●	●	●	●	●	●	●	●	●
3	Sumner Av. & 68th St.	●	●	●	●	●	●	●	●	●	●	●	●
4	Sumner Av. & Schleisman Rd.	●	●	●	●	●	●	●	●	●	●	●	●
5	Sumner Av. & Driveway 1	N/A	N/A	●	●	N/A	N/A	●	●	N/A	N/A	●	●
6	Sumner Av. & Orange St.	●	●	●	●	●	●	●	●	●	●	●	●
7	Sumner Av. & Citrus Av.	●	●	●	●	●	●	●	●	●	●	●	●
8	Driveway 2 & Schleisman Rd.	N/A	N/A	●	●	N/A	N/A	●	●	N/A	N/A	●	●
9	Scholar Wy. & Schleisman Rd.	●	●	●	●	●	●	●	●	●	●	●	●

● = A - D ● = E ● = F

1.6.1 E+P CONDITIONS

All study area intersections are anticipated to operate at an acceptable LOS during the peak hours under E+P traffic conditions. It should be noted that the Project will make improvements to the intersection of Sumner Avenue and Schleisman Road that would improve the peak hour intersection operations in comparison to Existing traffic conditions.

1.6.2 OPENING YEAR CUMULATIVE (2022) CONDITIONS

The following study area intersection is anticipated to operate at a deficient LOS during one or both peak hours for Opening Year Cumulative (2022) Without Project traffic conditions:

- Sumner Av. & Schleisman Rd. (#4) – LOS F AM peak hour; LOS E PM peak hour

All study area intersections are anticipated to operate at an acceptable LOS during the peak hours under Opening Year Cumulative (2022) With Project traffic conditions with the addition of Project traffic and Project ultimate half-section roadway improvements. Additional details and intersection lane geometrics are provided in Section 1.7 *Recommendations* of this report.

1.6.3 HORIZON YEAR (2040) CONDITIONS

The following study area intersections are anticipated to operate at a deficient LOS during one or both peak hours under Horizon Year Without Project traffic conditions:

- Sumner Av. & Schleisman Rd. (#4) – LOS F AM and PM peak hours

All study area intersections are anticipated to operate at an acceptable LOS during the peak hours under Horizon Year (2040) With Project traffic conditions with the addition of Project traffic and Project ultimate half-section roadway improvements. Additional details and intersection lane geometrics are provided in Section 1.7 *Recommendations* of this report.

1.7 RECOMMENDATIONS

1.7.1 SITE ADJACENT AND SITE ACCESS RECOMMENDATIONS

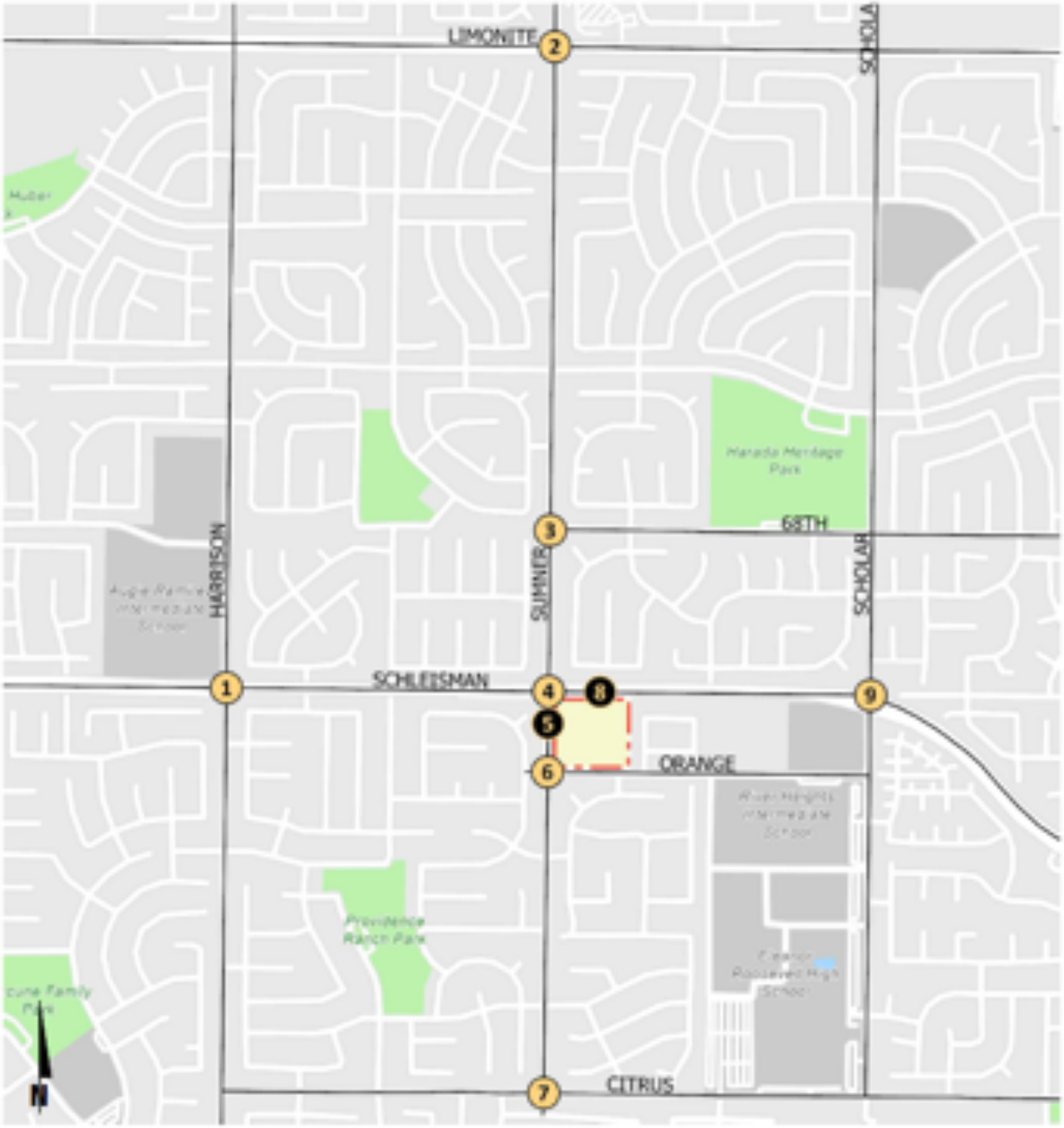
The following recommendations are based on the improvements needed to accommodate site access. The site adjacent recommendations are shown on Exhibit 1-4.

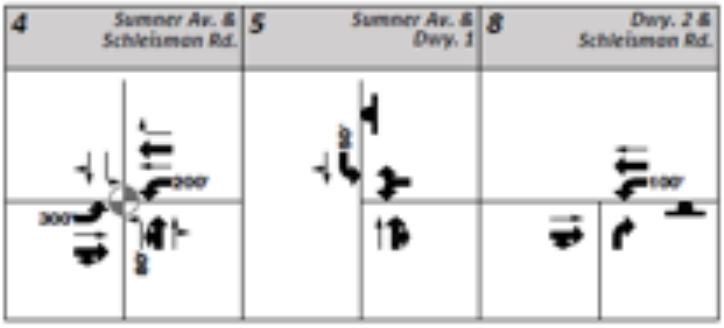
Recommendation 1 – ***Sumner Avenue & Schleisman Road (#4)*** – The following improvements are necessary to accommodate site access:

- Project to modify the traffic signal to provide split phasing on the northbound and southbound approaches and a 130 second cycle length in the PM peak hour.
- Project to construct a northbound left turn lane with a minimum of 80-feet of storage, a northbound shared left-through lane, and a northbound shared through-right turn lane.
- The eastbound approach should accommodate a left turn lane, through lane, and shared through-right turn lane.

Project to construct a westbound left turn lane with a minimum of 200-feet of storage and a 2nd westbound through lane.

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





= TRAFFIC SIGNAL
= Stop Sign Improvement
= Existing Lane
= Lane Improvement
150' = Minimum Turn Pocket Length

Recommendation 2 – ***Sumner Avenue & Driveway 1 (#5)*** – The following improvements are necessary to accommodate site access:

- Project to install a stop control for the westbound exiting Project traffic with a shared left-right turn lane.
- Project to construct a southbound left turn lane with a minimum of 50-feet of storage.
- Project to construct a northbound shared through-right turn lane.

Recommendation 3 – ***Driveway 2 & Schleisman Road (#8)*** – The following improvement is necessary to accommodate site access:

- The intersection should be constructed to prohibit left turns out of this driveway (via a raised median). Provide signage to prevent left turns ~~into~~ out of Driveway 2 (see Exhibit 1-5).
- Project to install a stop control on the northbound approach with a right turn lane.
- Project to construct an eastbound shared through-right turn lane.

Recommendation 4 – ***Sumner Avenue*** – Sumner Avenue is a north-south oriented roadway located along the western boundary of the Project. Project to construct Sumner Avenue from Schleisman Road to the southern Project boundary at its ultimate half-section width as a 2-lane Major Collector (ultimate 118-foot right-of-way) in compliance with the circulation recommendations found in the City of Eastvale's General Plan.

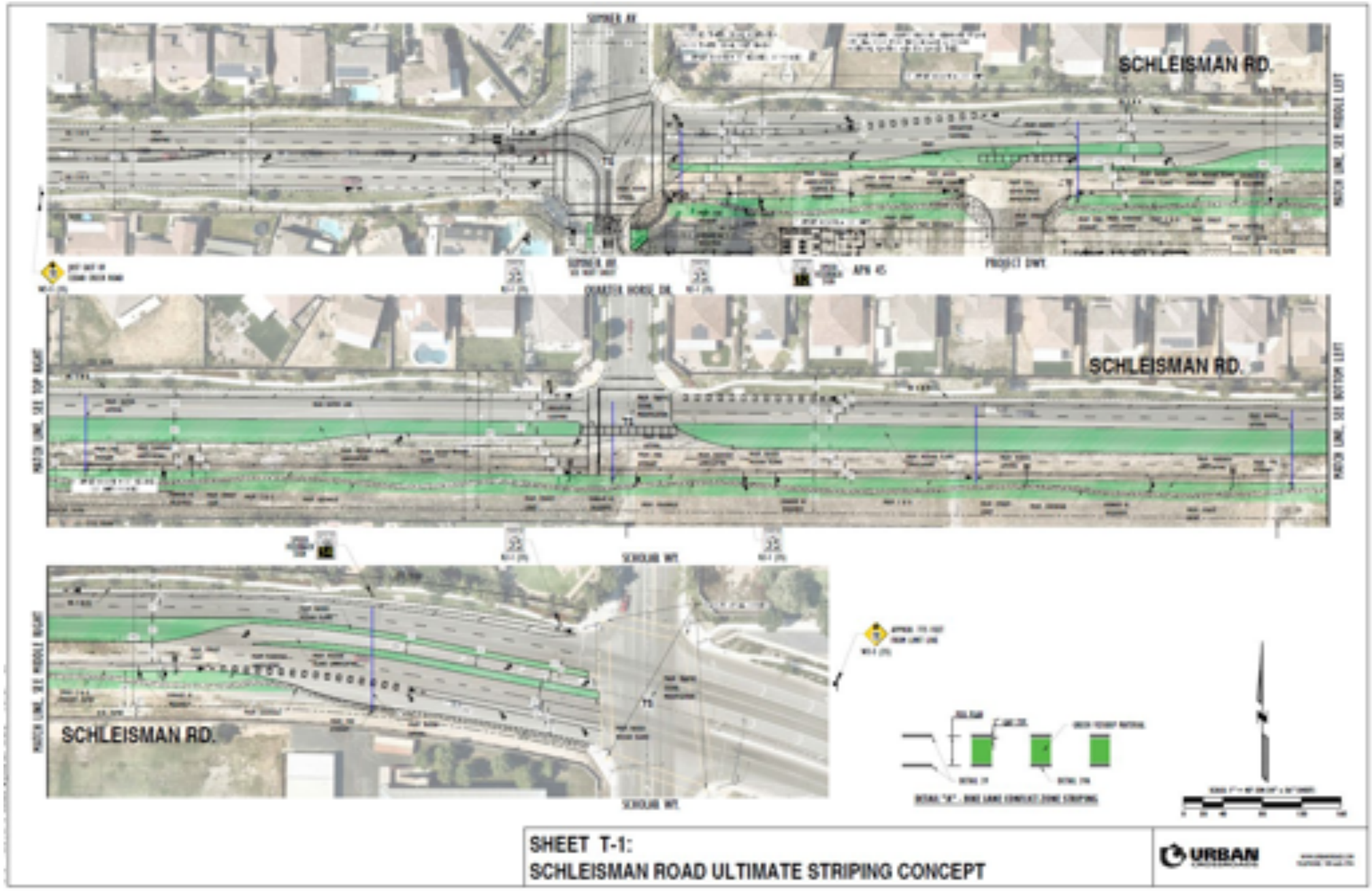
Recommendation 5 – ***Schleisman Road*** – Schleisman Road is an east-west oriented roadway located along the northern boundary of the Project. Project to construct Schleisman Road from Sumner Avenue to the eastern Project boundary at its ultimate half-section width as a 4-lane Urban Arterial Highway (ultimate 128-foot right-of-way) in compliance with the circulation recommendations found in the City of Eastvale's General Plan. Improvements along Schleisman Road include a 10-foot multi-use (Class I) path.

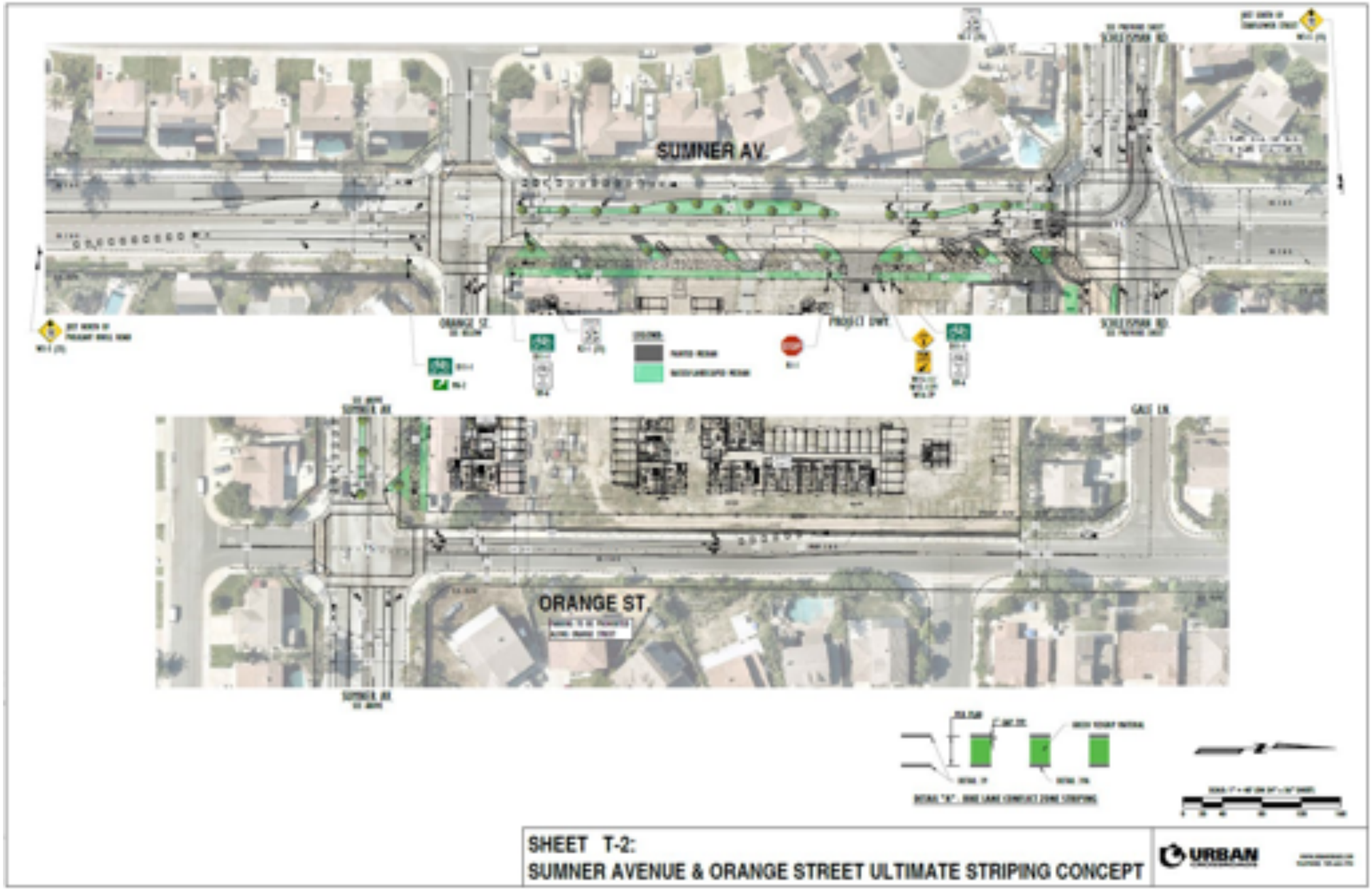
Wherever necessary, roadways adjacent to the Project, site access points and site-adjacent intersections will be constructed to be consistent with the identified roadway classifications and respective cross-sections in the City of Eastvale General Plan Circulation Element. At the City's request, conceptual striping plans for Sumner Avenue and Schleisman Road are shown on Exhibit 1-5.

On-site traffic signing and striping should be implemented agreeable with the provisions of the California Department of Transportation (Caltrans) 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 Caltrans and City of Eastvale sight distance standards at the time of preparation of final grading, landscape, and street improvement plans.

EXHIBIT 1-5: CONCEPTUAL STRIPING PLAN





SHEET T-2:
SUMNER AVENUE & ORANGE STREET ULTIMATE STRIPING CONCEPT

URBAN

1.8 ON-STREET ANGLED PARKING

A vehicle turning template has been overlaid on the site plan at the on-street angled parking on Sumner Avenue. The anticipated turning maneuvers are shown in Exhibit 1-6. Vehicles will utilize the 8-foot wide storage area to reverse out of the parking space without encroaching onto the northbound through lane. As such, northbound through traffic along Sumner Avenue would be unobstructed from vehicles backing out of the parking spaces. As shown on Exhibit 1-6, the on-street angled parking and the storage area are anticipated to accommodate the turning movements of vehicles as currently designed.

1.9 QUEUING ANALYSIS

A queuing analysis was conducted along the site adjacent roadways of Sumner Avenue and Schleisman Road at the Project driveways for Horizon Year (2040) traffic conditions to determine the turn pocket storage length recommendations necessary to accommodate long-term 95th percentile queues and recommend storage lengths for the turning movements shown previously on Exhibit 1-4 and reflected on Exhibit 1-5. The analysis was conducted for the weekday AM and weekday PM peak hours using the SimTraffic modeling software. The Horizon Year (2040) queuing results and additional details are provided in Section 7.6 *Queuing Analysis* of this report.

EXHIBIT 1-6: ON-STREET ANGLED PARKING

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 Eastvale traffic study guidelines.

2.1 LEVEL OF SERVICE

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

2.2 INTERSECTION CAPACITY ANALYSIS

The definitions of LOS for interrupted traffic flow (flow restrained by the existence of traffic signals and other traffic control devices) differ slightly depending on the type of traffic control. The LOS is typically dependent on the quality of traffic flow at the intersections along a roadway. The Highway Capacity Manual (HCM) methodology expresses the LOS at an intersection in terms of delay time for the various intersection approaches. (5) The HCM uses different procedures depending on the type of intersection control.

2.2.1 SIGNALIZED INTERSECTIONS

The City of Eastvale requires signalized intersection operations analysis based on the methodology described in the HCM. (5) 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.

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)

A saturation flow rate of 1900 has been utilized for all study area intersections located within the County of Riverside. The traffic modeling and signal timing optimization software package Synchro (Version 10) has been utilized to analyze signalized intersections within the City of Eastvale.

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 all analysis scenarios. New intersections utilize a PHF of 0.92. Per the HCM, PHF values over 0.95 often are indicative of high traffic volumes with capacity constraints on peak hour flows while lower PHF values are indicative of greater variability of flow during the peak hour. (5)

2.2.2 UNSIGNALIZED INTERSECTIONS

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

TABLE 2-2: UNSIGNALIZED INTERSECTION LOS THRESHOLDS

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

Source: HCM (6th Edition)

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

2.3 TRAFFIC SIGNAL WARRANT ANALYSIS METHODOLOGY

The term "signal warrants" refers to the list of established criteria used by Caltrans and other public agencies to quantitatively justify or ascertain the potential need for installation of a traffic signal at an otherwise unsignalized intersection. This TA update uses the signal warrant criteria presented in the latest edition of the Caltrans' California Manual on Uniform Traffic Control Devices (CA MUTCD), for all applicable study area intersections. (6)

As shown in Table 2-3, traffic signal warrant analyses were performed for the following unsignalized study area intersection based on the peak hour (Figure 4C-3(CA) of the CA MUTCD) and planning level ADT volume-based traffic signal warrants (Figure 4C-103 (CA) of the CA MUTCD): (6)

TABLE 2-3: TRAFFIC SIGNAL WARRANT ANALYSIS LOCATIONS

ID	Intersection Location	Jurisdiction
3	Sumner Av. & 68th St.	Eastvale
5	Sumner Av. & Driveway 1 – Future Intersection	Eastvale

The traffic signal warrant analyses are presented in Section 3 *Area Conditions*, Section 5 *E+P Traffic Conditions,* Section 6 *Opening Year Cumulative (2022) Traffic Conditions,* and Section 7 *Horizon Year (2040) Traffic Conditions* of this report. A traffic signal warrant analysis has not been conducted for Driveway 2 on Schleisman Road as the intersection is proposed to be restricted to right-in/right-out access only. Although a traffic signal warrant analysis has been conducted for Driveway 1 on Sumner Avenue, it is unlikely a traffic signal would be installed at

this location due to the proximity of its location to the intersection of Sumner Avenue and Schleisman Road.

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

2.4 MINIMUM ACCEPTABLE LEVELS OF SERVICE (LOS) AND INTERSECTION DEFICIENCY CRITERIA

The City of Eastvale General Plan Policy C-10 sets a standard of LOS C with LOS D as acceptable in commercial and employment areas and at intersections of any combination of major highways, urban arterials, secondary highways, or freeway ramps. Based on this criterion, where feasible, LOS D is the minimum acceptable LOS at each of the study intersections within the City of Eastvale with the exception of LOS C at the intersection of Sumner Avenue and 68th Street.

2.5 DEFICIENCY THRESHOLDS

This section outlines the methodology used in this analysis related to identifying circulation system deficiencies.

For the study area intersections that lie within the City of Eastvale, Project related deficiencies will be identified by comparing the "Without Project" condition to the "With Project" condition based on the following criteria:

- If the LOS deteriorates from acceptable LOS (LOS D or better) to unacceptable LOS (LOS E or F); or
- If the intersection is already operating at an unacceptable LOS (LOS E or F) in Without Project conditions and the addition of Project traffic increases the delay by more than 2.5 seconds.

Based on discussions with City staff, when the pre-Project condition is already below LOS D (i.e., unacceptable LOS), the Project will be responsible for improving its deficiencies to a level of service equal to or better than it was under pre-project traffic conditions for intersections that receive 50 or more project-related peak hour trips. This is a standard protocol in many urban jurisdictions in order to meet the circulation policies outline in the respective General Plans. Thus, for intersections currently operating at unacceptable LOS during either the AM and/or PM peak hour under Without Project traffic conditions, improvements have been identified to bring the project's effect to a deficient intersection LOS that is equal to or better than pre-Project conditions.

Cumulative traffic deficiencies are created as a result of a combination of the proposed Project together with other future developments contributing to the overall traffic deficiencies requiring additional improvements to maintain acceptable level of service operations with or without the Project. A project's contribution to a cumulative deficiency can be improved if the project is required to implement or fund its fair share of improvements designed to alleviate its

contribution to the deficiency. A deficiency has been deemed cumulatively considerable if the project contributes 50 or more peak hour trips.

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3 AREA CONDITIONS

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

3.1 EXISTING CIRCULATION NETWORK

Pursuant to the agreement with City of Eastvale staff (Appendix 1.1), the study area includes a total of 9 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 CITY OF EASTVALE GENERAL PLAN CIRCULATION ELEMENT

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

The study area roadways that are classified as 6-lane Urban Arterials are identified as having three lanes of travel in each direction. The following study area roadways within the City of Eastvale are classified as 6-lane Urban Arterials:

- Limonite Avenue
- Schleisman Road

The study area roadway that is classified as a 2-lane Major Collector is identified as having one lane of travel in each direction. The following study area roadway is classified as a 2-lane Major Collector:

- Sumner Avenue

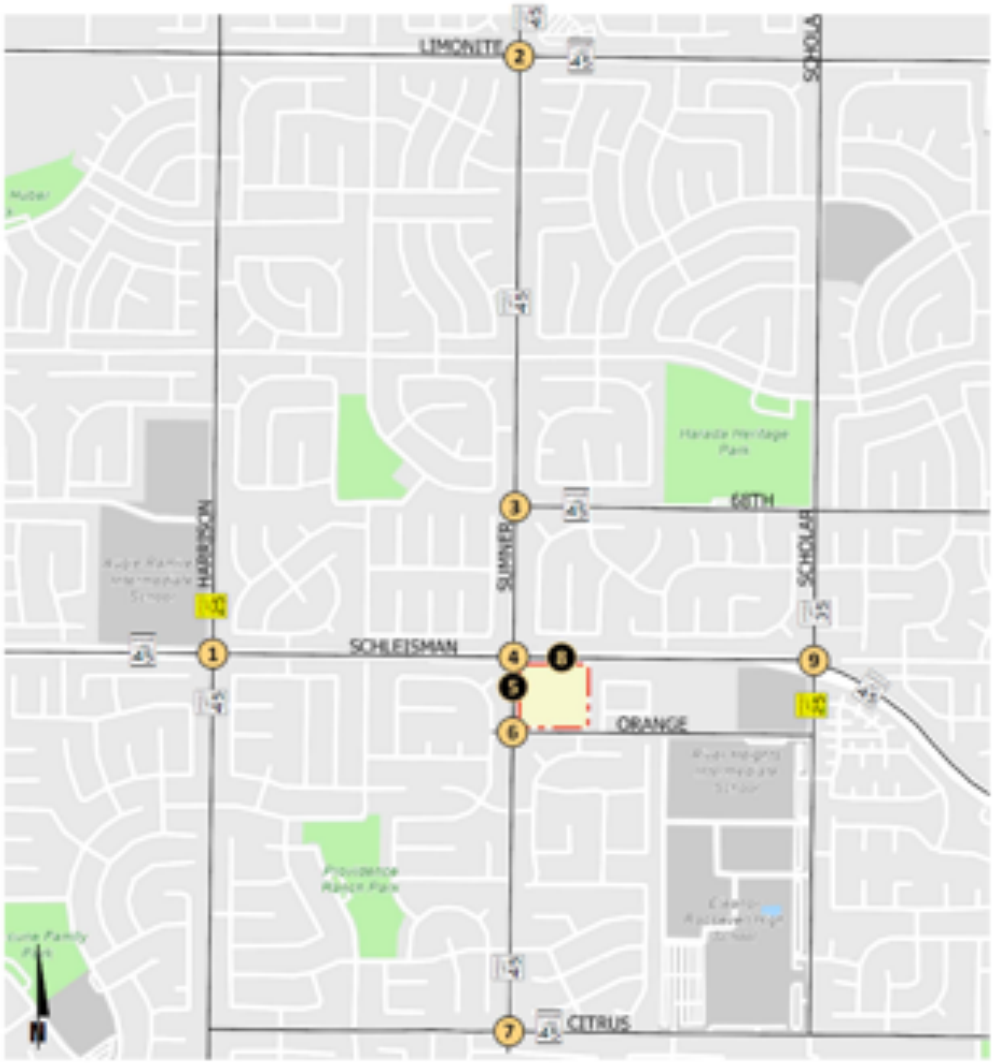
The study area roadways that are classified as 2-lane Secondary Collectors are identified as having one lane of travel in each direction. The following study area roadways are classified as Secondary Collectors:

- Harrison Avenue
- Scholar Way
- Citrus Street

The study area roadway that are classified as a 2-lane Local Road is identified as having one lane of travel in each direction. The following study area roadways are classified as Local Roads:

- 68th Street
- Orange Street

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



1 Harrison Av. & Schleisman Rd.	2 Sumner Av. & Limonite Av.	3 Sumner Av. & 68th St.	4 Sumner Av. & Schleisman Rd.	5 Sumner Av. & Dwy. 1
4D / 6D / 4D / 4D	4D / 6D / 6D / 4D	4D / S / 2U / 4D	4D / 2D / 4D / 2U	Future Intersection

6 Sumner Av. & Orange St.	7 Sumner Av. & Citrus St.	8 Dwy. 2 & Schleisman Rd.	9 Scholar Wy. & Schleisman Rd.
2U / 2U / 2U / 4D	4D / 4D / 4D / 4D	Future Intersection	4D / 5D / 2D / RTO / 4D

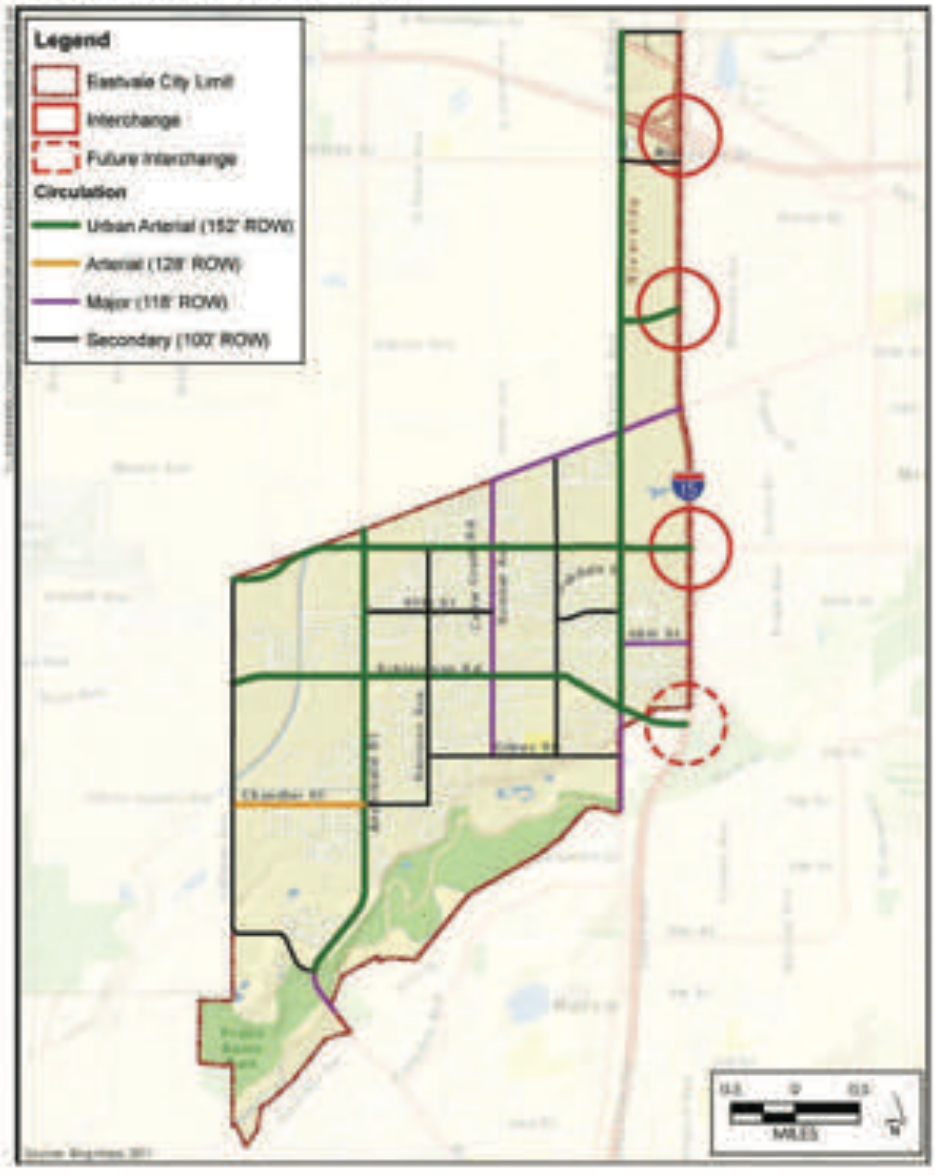
- = Traffic Signal
- S = All Way Stop
- 4 = Number of Lanes
- D = Divided
- U = Undivided
- RTO = Right Turn Overlap
- 25 = Speed Limit (MPH)
- 25 = School Speed Limit (MPH)

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

CHAPTER 4:
CIRCULATION
AND INFRASTRUCTURE

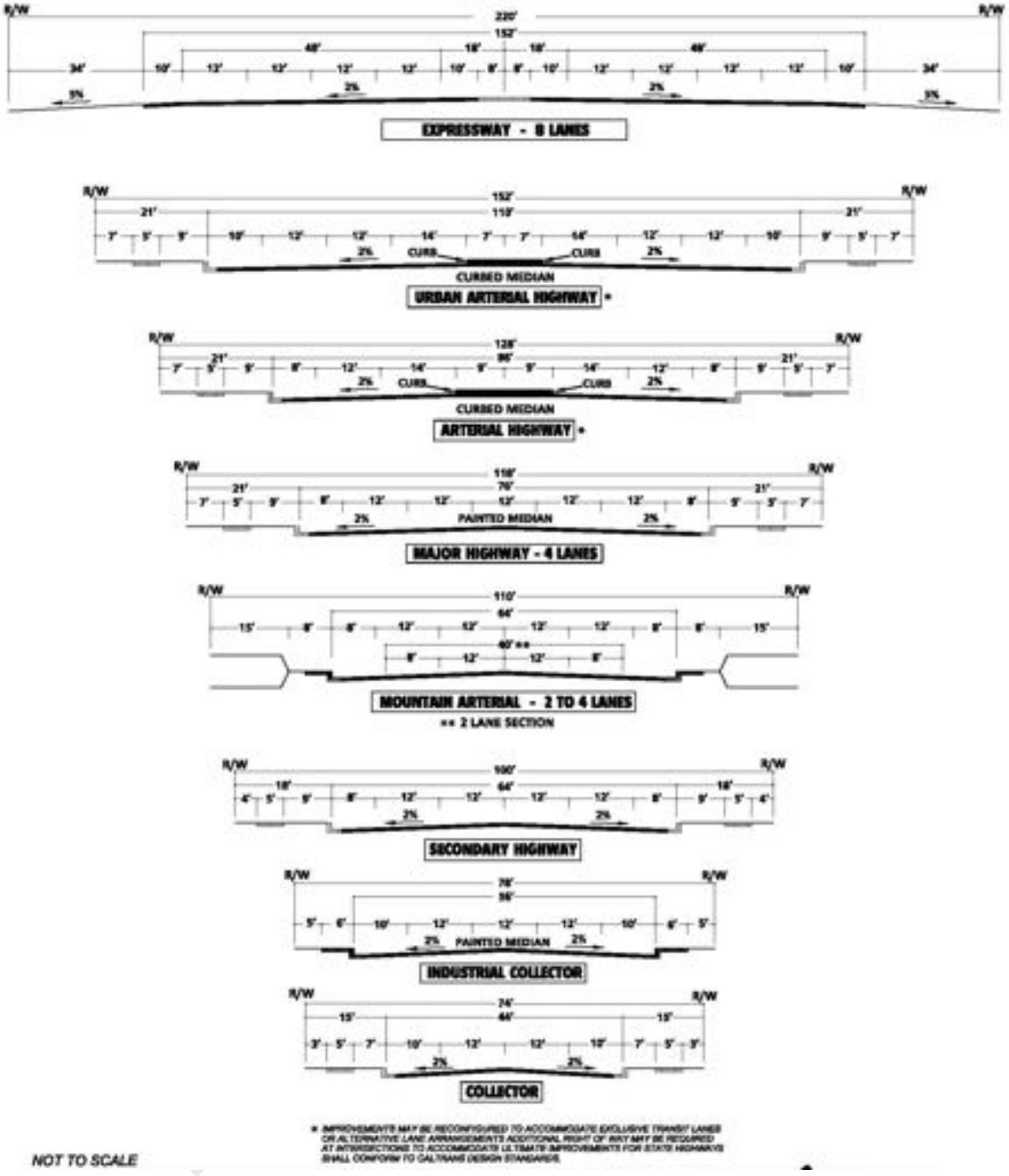
CITY OF EASTVALE

FIGURE C-1: CIRCULATION PLAN



4-4 GENERAL PLAN

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



3.3 BICYCLE, EQUESTRIAN, & PEDESTRIAN FACILITIES

Exhibit 3-4 illustrates the City of Eastvale current and future trails and bikeway systems which proposes off-street Class I multi-use trails along Schleisman Road. On-street Class II bike lanes are also proposed along Orange Street near the vicinity of the site. Existing pedestrian facilities within the study area are shown on Exhibit 3-5.

3.4 TRANSIT SERVICE

The Riverside Transit Authority (RTA) serves the City of Eastvale. Transit service is reviewed and updated by RTA periodically to address ridership, budget and community demand needs. Based on a review of the existing transit routes within the vicinity of the proposed Project, RTA Route 3 currently operates on 68th Street, Sumner Avenue, and Citrus Street. Existing transit routes in the vicinity of the study area are illustrated on Exhibit 3-6. Changes in land use can affect these periodic adjustments which may lead to either enhanced or reduced service where appropriate.

3.5 EXISTING (2021) TRAFFIC COUNTS

The intersection LOS analysis is based on the traffic volumes observed during the peak hour conditions using traffic count data collected in October 2016, February 2018, January 2019, and January 2021. 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)

Due to the currently ongoing COVID-19 pandemic, schools and businesses within the study area were closed or operating at less than full capacity at the time this study was prepared. As such, historic traffic counts were utilized in conjunction with a 1.6% compounded growth rate per year (compounded annually) to reflect 2021 conditions. The historical weekday AM and weekday PM peak hour count data is representative of typical weekday peak hour traffic conditions in the study area. There were no observations made in the field that would indicate atypical traffic conditions on the count dates, such as construction activity or detour routes and near-by schools were in session and operating on normal schedules.

Historic traffic counts were not available at 68th Street and Orange Street on Sumner Avenue. As such, new traffic counts were conducted in January 2021. January 2021 traffic counts were also conducted at the intersection of Sumner Avenue and Schleisman Road in order to determine an adjustment factor between the adjusted historic count data (to 2021) and the January 2021 traffic count. This adjustment factor was then applied to both Sumner Avenue at 68th Street and Sumner Avenue at Orange Street to determine the adjusted 2021 baseline to be used for the operations analysis. The raw manual peak hour turning movement traffic count data sheets are included in Appendix 3.1.

Existing weekday ADT volumes are shown on Exhibit 3-7. 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 13.23 = Leg Volume

EXHIBIT 3-4: EASTVALE AREA TRAILS AND BIKEWAY SYSTEM

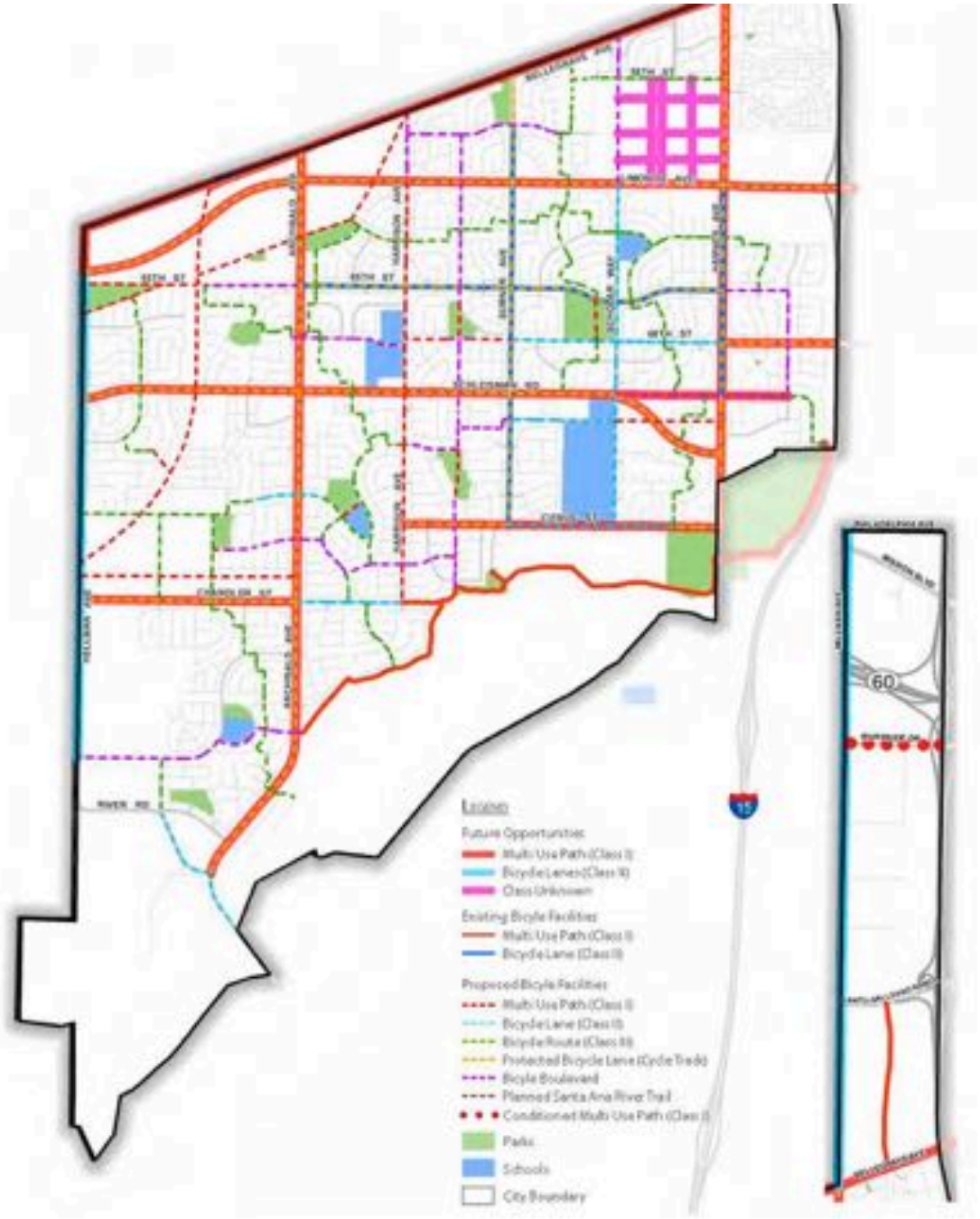


EXHIBIT 3-5: EXISTING PEDESTRIAN FACILITIES

EXHIBIT 3-6: EXISTING TRANSIT ROUTES

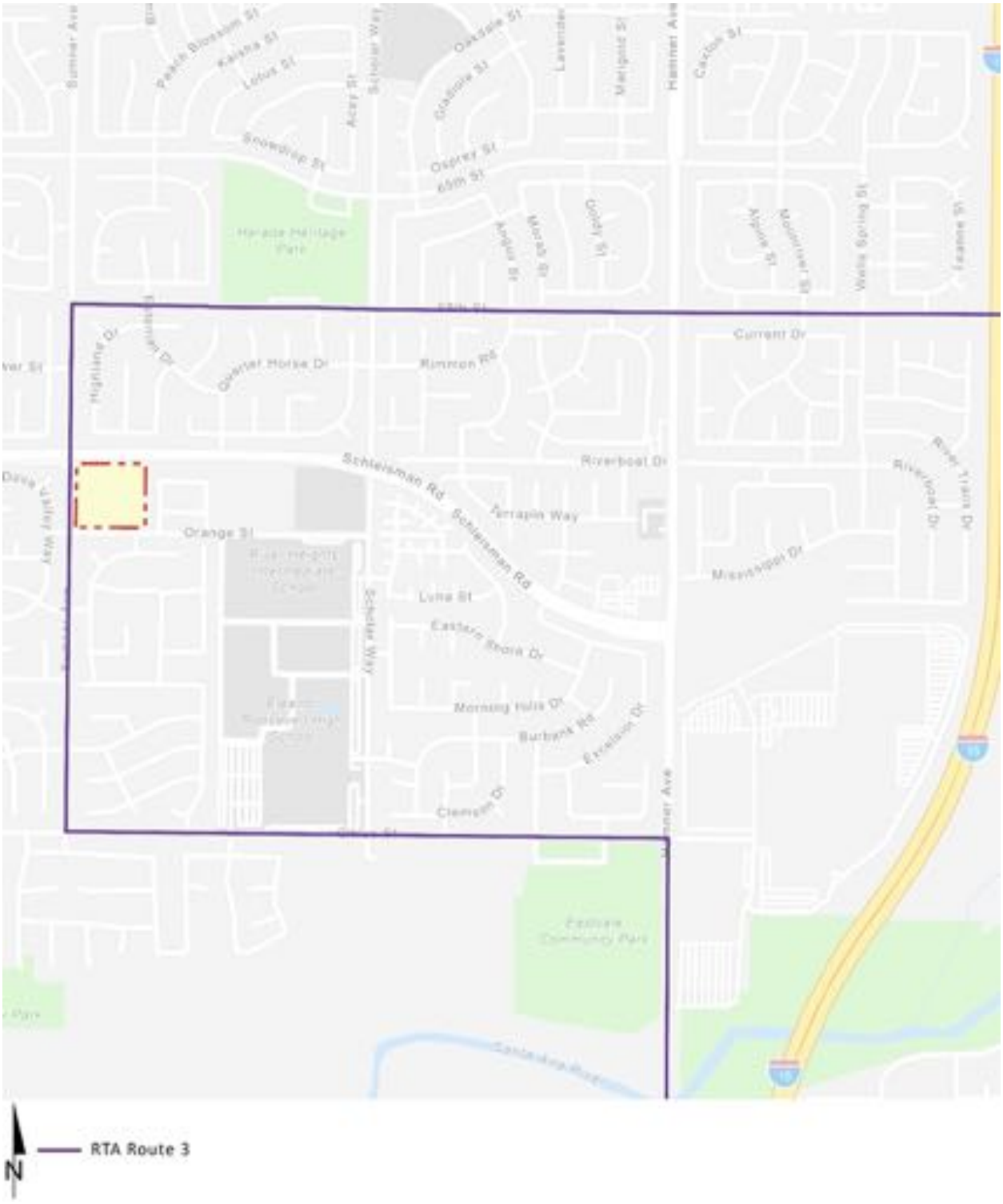


EXHIBIT 3-7: EXISTING (2021) TRAFFIC VOLUMES

A comparison of the PM peak hour and daily traffic volumes of various roadway segments within the study area indicated that the peak-to-daily relationship is approximately 7.56 percent. As such, the above equation utilizing a factor of 13.23 estimates the ADT volumes on the study area roadway segments assuming a peak-to-daily relationship of approximately 7.56 percent (i.e., 1/0.0756 = 13.23) and was assumed to sufficiently estimate average daily traffic (ADT) volumes for planning-level analyses. Existing weekday AM and weekday PM peak hour intersection volumes are also shown on Exhibit 3-7.

3.6 EXISTING (2021) CONDITIONS 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 following study area intersection is operating at an unacceptable LOS under Existing (2021) traffic conditions:

- Sumner Av. & Schleisman Rd. (#4) – LOS F AM peak hour; LOS E PM peak hour

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.) AM	Delay[2] (secs.) PM	Level of Service AM	Level of Service PM
1	Harrison Av. & Schleisman Rd.	TS	39.7	20.8	D	C
2	Sumner Av. & Limonite Av.	TS	20.9	20.5	C	C
3	Sumner Av. & 68th St.	AWS	17.8	13.1	C	B
4	Sumner Av. & Schleisman Rd.	TS	**110.6**	**59.0**	**F**	**E**
5	Sumner Av. & Driveway 1		Future Intersection			
6	Sumner Av. & Orange St.	TS	8.6	8.5	A	A
7	Sumner Av. & Citrus Av.	TS	17.1	12.5	B	B
8	Driveway 2 & Schleisman Rd.		Future Intersection			
9	Scholar Wy. & Schleisman Rd.	TS	30.4	17.6	C	B

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

[1] aws = All-way Stop; TS = Traffic Signal

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

3.7 EXISTING (2021) TRAFFIC SIGNAL WARRANTS ANALYSIS

There are currently no existing study area intersections that are unsignalized. As such, no traffic signal warrants have been evaluated for Existing (2021) traffic conditions.

4 PROJECTED FUTURE TRAFFIC

This section presents the traffic volumes estimated to be generated by the Project's trip assignment onto the study area roadway network. The Project is proposed to consist of the following uses:

- 22 multifamily (low-rise) residential dwelling units (2-floors)
- 194 multifamily (mid-rise) residential dwelling units (3-~~10~~ floors)
- 2,500 square feet of commercial retail use
- 2,500 square feet of fast-food restaurant without drive-through window use

Regional access to the Project site is available from the I-15 Freeway at Limonite Avenue interchange. The Project is located on the southeast corner of Sumner Avenue and Schleisman Road in the City of Eastvale. Vehicular traffic access will be provided via the following driveways:

- Driveway 1 via Sumner Avenue – Full access
- Driveway 2 via Schleisman Road– Right-in/right-out/left-in access

4.1 PROJECT TRIP GENERATION

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

Trip generation 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. The following trip generation rates used for this analysis are based upon information collected by the Institute of Transportation Engineers (ITE) as provided in their Trip Generation Manual (10^{th} Edition, 2017): (2)

- Multifamily (low-rise) residential (ITE Land Use Code 220)
- Multifamily (mid-rise) residential (ITE Land Use Code 221)
- Shopping Center (Retail) use (ITE Land Use Code 820, based on the regression equation)
- Fast-food restaurant without drive-through window use (ITE Land Use Code 933)
- Note the fitness center is available to residents only and is therefore not included in the trip generation calculations for the Project.

Trip generation rates used to estimate Project traffic are shown in Table 4-1.

TABLE 4-1: PROJECT TRIP GENERATION SUMMARY

Land Use	ITE LU Code	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
Trip Generation Rates:[2]									
Multifamily Housing (Low-Rise)	220	DU	0.11	0.35	0.46	0.35	0.21	0.56	7.32
Multifamily Housing (Mid-Rise)	221	DU	0.09	0.27	0.36	0.27	0.17	0.44	5.44
Retail (Regression Equation)	820	TSF	37.95	23.26	61.21	6.81	7.37	14.18	195.74
Fast-Food Without Drive-Through	933	TSF	15.06	10.04	25.10	14.17	14.17	28.34	346.23

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
Trip Generation Summary:									
Multifamily Housing (Low-Rise)	22	DU	2	8	10	8	4	12	162
Multifamily Housing (Mid-Rise)	194	DU	18	52	70	52	33	85	1,056
Internal Capture Reduction[3]			-1	-9	-10	-11	-7	-18	-190
Residential Subtotal			**19**	**51**	**70**	**49**	**30**	**79**	**1,028**
Retail	2.5	TSF	95	58	153	17	18	35	490
Internal Capture Reduction[3]			-5	-8	-13	-11	-10	-21	-158
Pass-by Trip Reduction(PM & Daily)[4] (34%)			0	0	0	-6	-6	-12	-168
Fast-Food Without Drive-Through	2.5	TSF	38	25	63	35	36	71	866
Internal Capture Reduction[3]			-16	-5	-21	-10	-15	-25	-358
Pass-by Trip Reduction(AM/PM & Daily)[4] (49/50%)			-12	-12	-24	-18	-18	-36	-294
Retail & Restaurant Subtotal			**100**	**58**	**158**	**7**	**5**	**13**	**378**
Project Total			**119**	**109**	**228**	**56**	**36**	**92**	**1,406**

[1] DU = Dwelling Units TSF = Thousand Square Feet

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

[3] Internal capture based on the NCHRP 684 Internal Trip Capture Estimation Tool.

[4] Pass-by reduction consistent with ITE Trip Generation Handbook, 3rd Edition (2014).

Internal capture is a percentage reduction that can be applied to the trip generation estimates for individual land uses to account for trips internal to the site. In other words, trips may be made between individual retail uses on-site and can be made either by walking or using internal roadways without using external streets. Internal capture reductions between the proposed land uses have been considered based on the National Cooperative Highway Research Program (NCHRP) 684 Internal Trip Capture Estimation Tool.

Pass-by trip reductions have been applied to the proposed Project uses based on percentages have been obtained from the ITE Trip Generation Handbook (3rd Edition, 2017). (7) These percentages represent traffic that is already on the roadway today that would make an intermediate stop at the site before continuing on to their ultimate destination. The pass-by trip reductions will be applied to off-site study area intersections only while the Project driveways will evaluate 100% of the Project traffic (pass-by trip reductions to be added back).

The resulting trip generation for the proposed Project is shown in Table 4-1. As shown in Table 4-1, the proposed Project is anticipated to generate a total of 1,406 vehicle trip-ends per day with 228 AM peak hour trips and 92 PM peak hour trips.

4.2 PROJECT TRIP DISTRIBUTION

The Project trip distribution and assignment process represents the directional orientation of traffic to and from the Project site. The trip distribution pattern of passenger cars is heavily influenced by the geographical location of the site, the location of surrounding uses, and the proximity to the regional freeway system.

Exhibit 4-1 illustrates the residential passenger car trip distribution patterns and Exhibit 4-2 illustrates the retail passenger car trip distribution patterns.

4.3 MODAL SPLIT

The potential for Project trips to be reduced by the use of public transit, walking or bicycling have not been included as part of the Project's estimated trip generation. Essentially, the Project's traffic projections are "conservative" in that these alternative travel modes would reduce the forecasted traffic volumes.

4.4 PROJECT TRIP ASSIGNMENT

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

4.5 BACKGROUND TRAFFIC

4.5.1 OPENING YEAR CUMULATIVE CONDITIONS

Future year traffic forecasts have been based upon background (ambient) growth at 1.6% per year for 2022 traffic conditions. The ambient growth factor is intended to approximate regional traffic growth. The total ambient growth is 1.6% for 2022 traffic conditions (growth of 1.6 percent per year over 1 year). This ambient growth rate is applied to existing traffic volumes to account for area-wide growth not reflected by cumulative development projects. Ambient growth traffic volumes have 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.

Opening Year Cumulative (2022) traffic volumes are provided in Section 6 of this report. The traffic generated by the proposed Project was then manually added to the base volume to determine Opening Year Cumulative "With Project" forecasts for 2022.

EXHIBIT 4-1: PROJECT (RESIDENTIAL) TRIP DISTRIBUTION

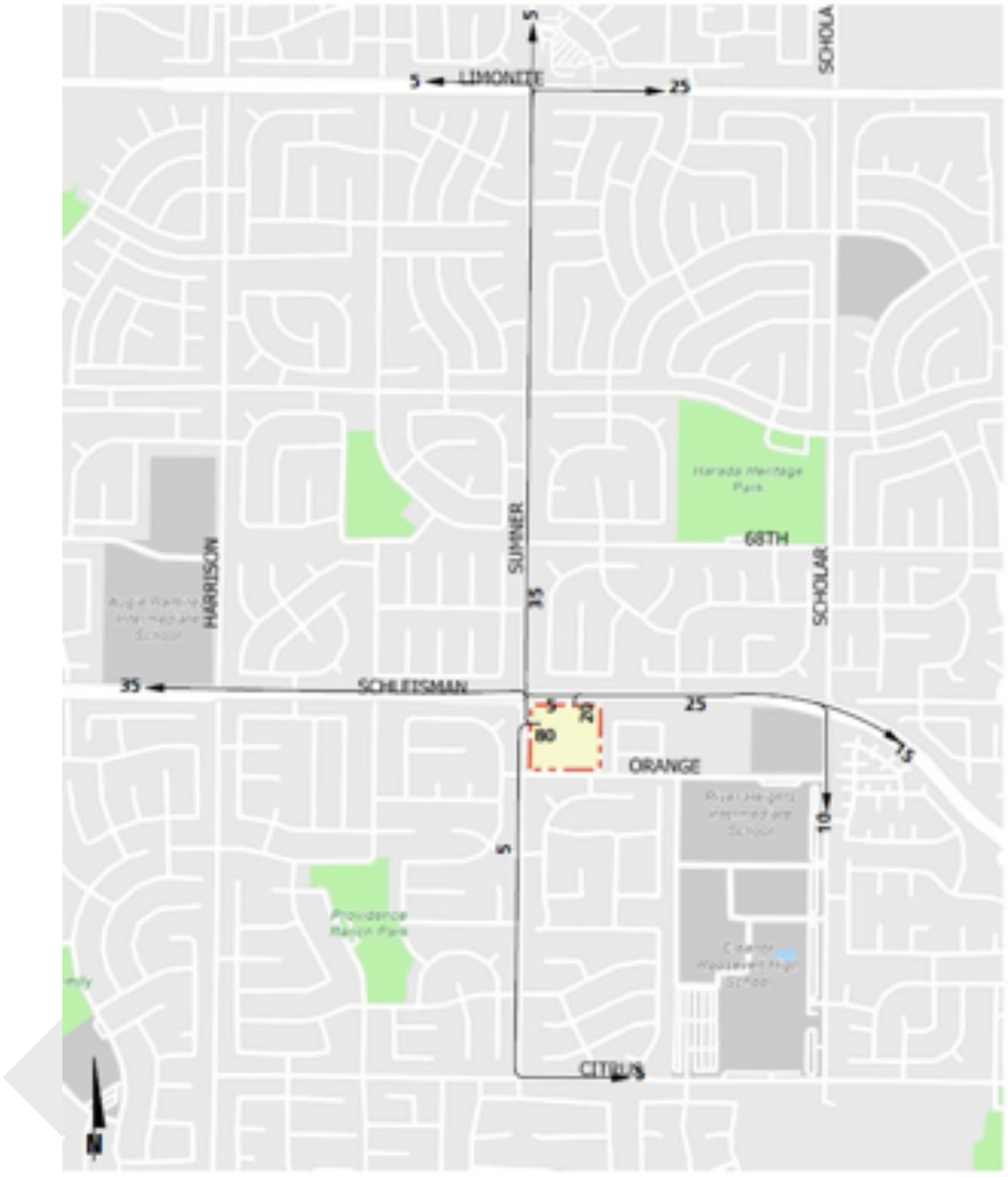


EXHIBIT 4-2: PROJECT (RETAIL) TRIP DISTRIBUTION

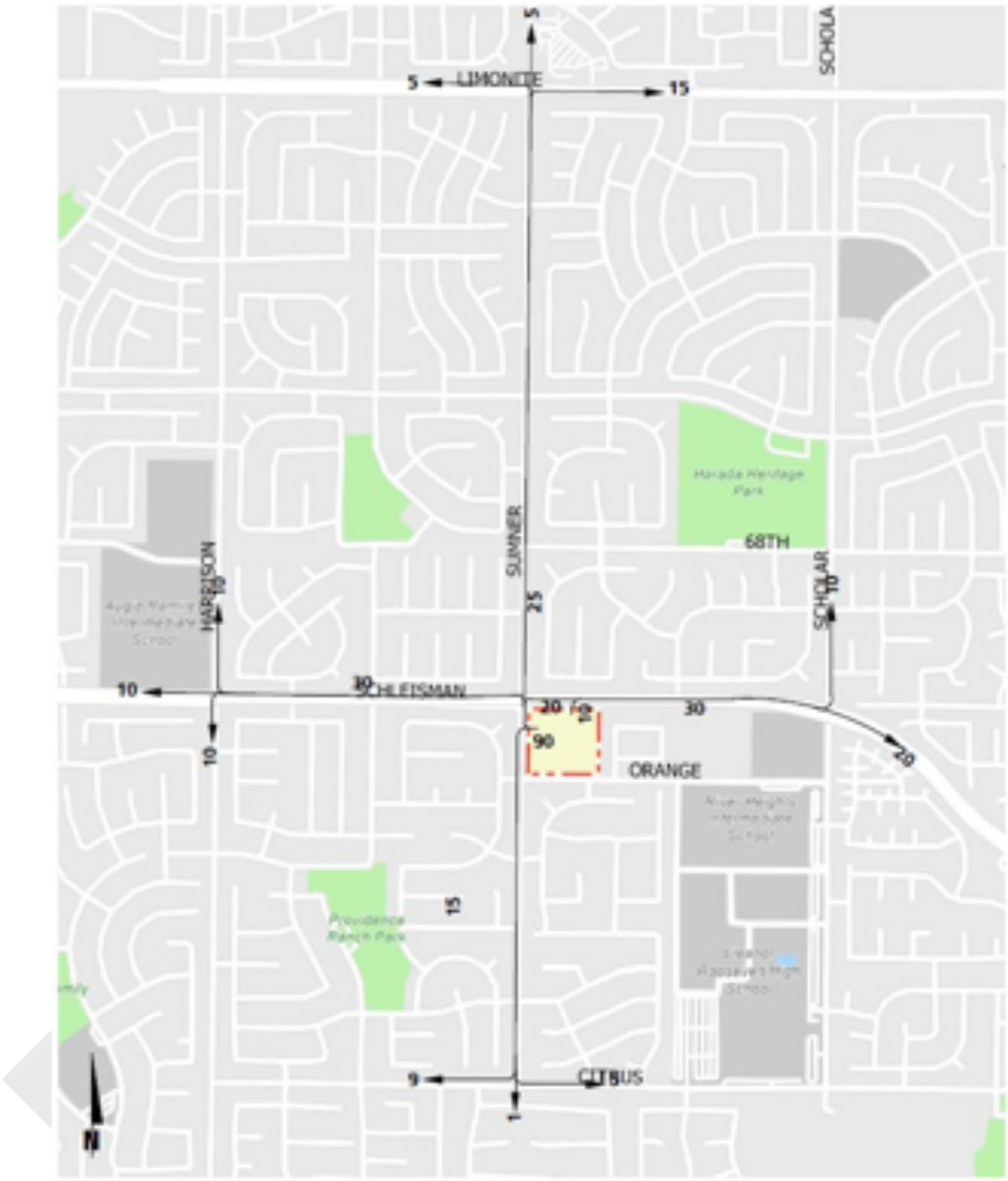
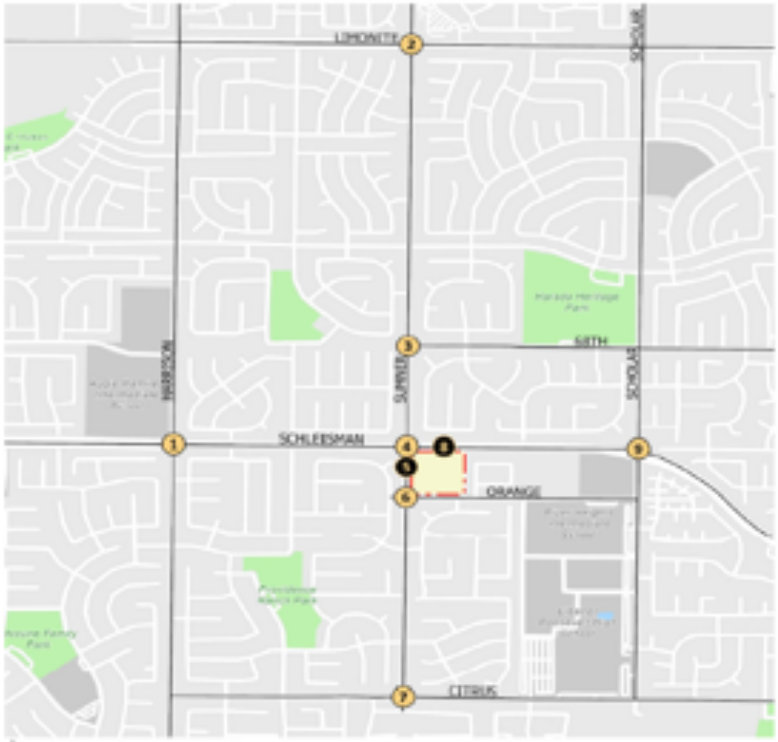


EXHIBIT 4-3: PROJECT ONLY TRAFFIC VOLUMES



1 Harrison Av. & Schleisman Rd.	2 Sumner Av. & Limonite Av.	3 Sumner Av. & 68th St.	4 Sumner Av. & Schleisman Rd.	5 Sumner Av. & Driveway 1
150 / 800 10(1) 6(1) 24(11) 6(1) 17(18) 10(1) 500 / 150	100 / 450 6(3) 20(13) 6(3) 5(2) 5(2) 2(10) 100 / 700	700 32(19) 32(12) 700	700 / 400 32(19) 10(1) 6(15) 31(5) 35(12) 32(12) 14(3) 800 / 1,600	1,600 / 2,300 -2(-5) 75(29) 92(45) 13(7) -10(-19) 26(23) 250

6 Sumner Av. & Orange St.	7 Sumner Av. & Citrus Av.	8 Driveway 2 & Schleisman Rd.	9 Scholar Wy. & Schleisman Rd.
250 11(2) 16(4) 250	250 / 100 6(3) 5(0) 1(0) 5(2) 9(1) 1(0) 150	700 10(1) 25(14) 14(3) 6(15) 16(7) 400 / 600	150 / 450 10(1) 23(9) 6(1) 19(6) 5(3) 2(5) 700 / 100

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

Average Daily Trips

4.5.2 HORIZON YEAR CONDITIONS

Horizon Year conditions represents the General Plan Buildout of the City of Eastvale and is based on the Riverside County Transportation Analysis Model (RivTAM) (see Section 4.7 *Horizon Year Volume Development* for additional discussion). The adopted Southern California Association of Governments (SCAG) 2020 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) (May 2020) growth forecasts for the City of Eastvale identifies projected growth in population of 63,900 in 2016 to 72,700 in 2045, or a 13.77% increase over the 29-year period. (8) The change in population equates to roughly a 0.45% growth rate, compounded annually. Similarly, growth over the same 29-year period in households is projected to increase by 13.50%, or a 0.44% annual growth rate. Finally, growth in employment over the same 29-year period is projected to increase by 191.89%, or a 3.76% annual growth rate.

Based on a comparison of Existing (2021) traffic volumes to the Horizon Year forecasts, the average growth rate is estimated at approximately 2.46%, compounded annually between Existing (2021) and 2040 traffic conditions. The annual growth rate at each individual intersection is not lower than 0.62% compounded annually to as high as 6.55% compounded annually over the same time period.

Therefore, the annual growth rate utilized for the purposes of this analysis would appear to conservatively approximate the anticipated regional growth in traffic volumes in the City of Eastvale for Opening Year Cumulative and Horizon Year traffic conditions, especially when considered along with the addition of project-related traffic. 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 also be included as part of a cumulative analysis scenario. A cumulative project list was developed for the purposes of this analysis through consultation with planning and engineering staff from the City of Eastvale.

Exhibit 4-4 illustrates the cumulative development location map. A summary of cumulative development projects and their proposed land uses are shown in Table 4-2. If applicable, the traffic generated by individual cumulative projects was manually added to the Opening Year Cumulative forecasts to ensure that traffic generated by the listed cumulative development projects in Table 4-2 are reflected as part of the background traffic. Cumulative ADT and peak hour intersection turning movement volumes are shown on Exhibit 4-5.

EXHIBIT 4-4: CUMULATIVE DEVELOPMENT LOCATION MAP

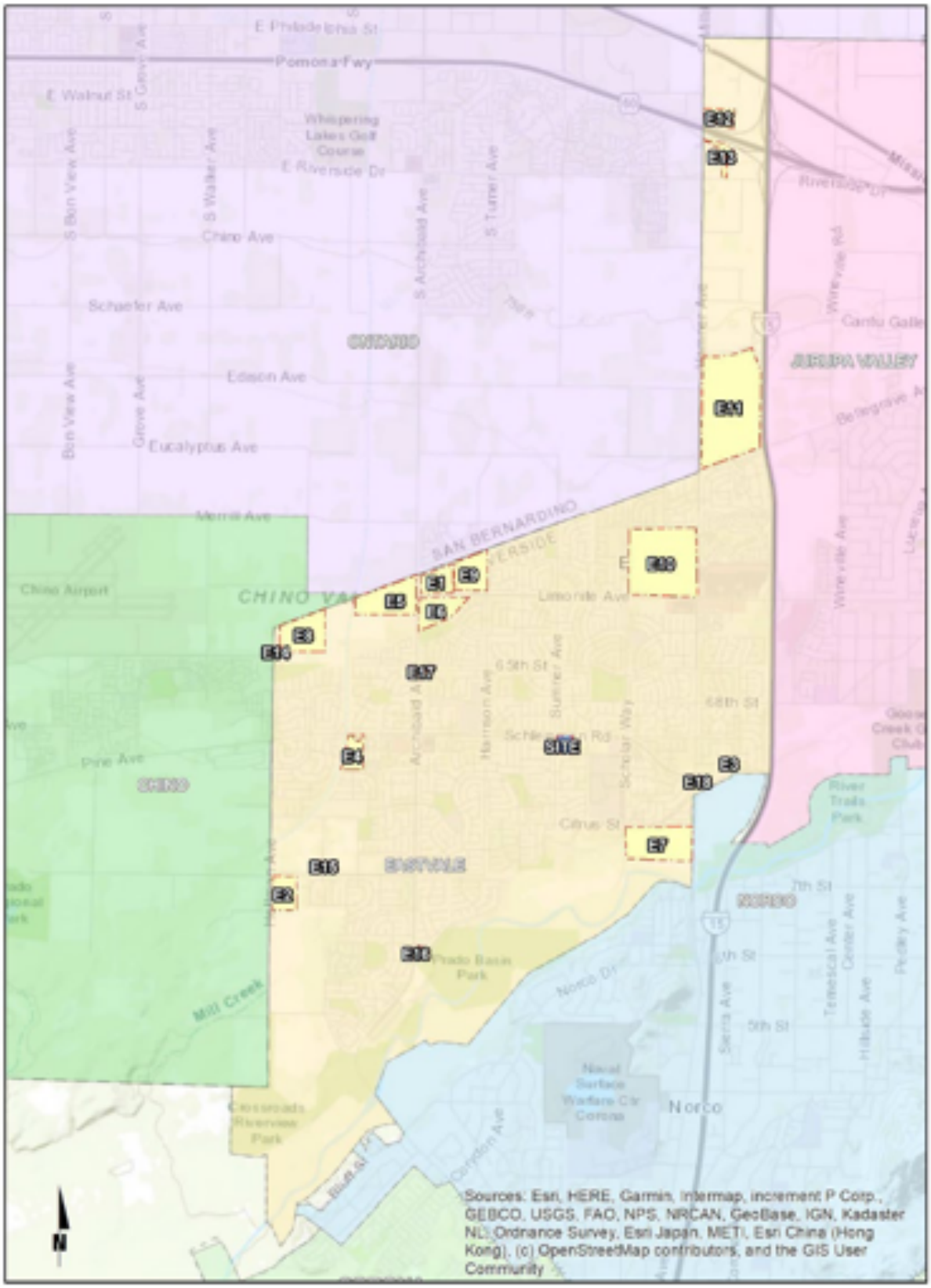
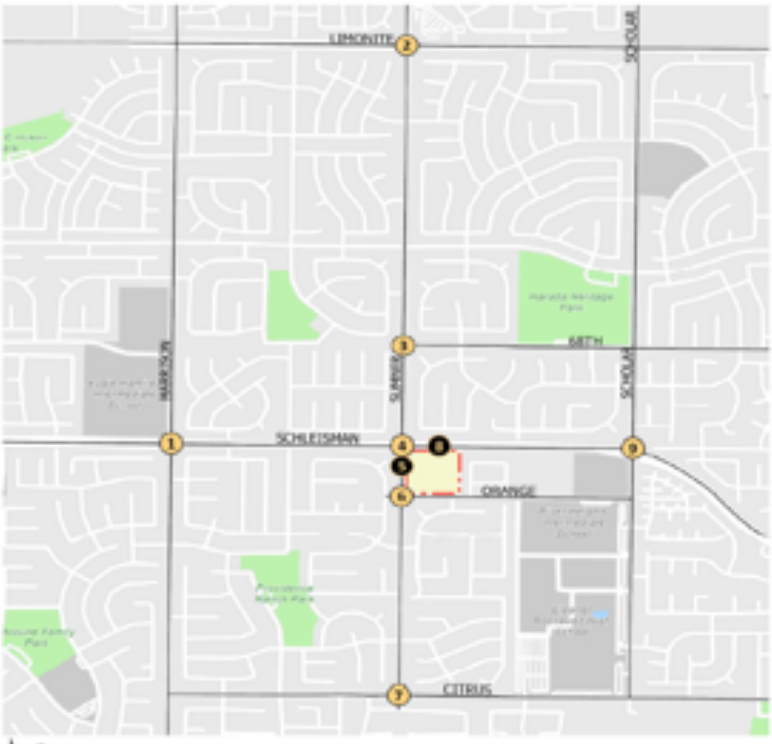


EXHIBIT 4-5: CUMULATIVE ONLY TRAFFIC VOLUMES



1 Harrison Av. & Schleisman Rd.	2 Sumner Av. & Limonite Av.	3 Sumner Av. & 68th St.	4 Sumner Av. & Schleisman Rd.	5 Sumner Av. & Driveway 1
300 · 1,800 · 200 · 1,550 · 200	300 · 6,700 · 150 · 6,850 · 150	400 · 400 · 1,800 · 400	400 · 2,200 · 350 · 1,800 · 350	350 · 350

6 Sumner Av. & Orange St.	7 Sumner Av. & Citrus Av.	8 Driveway 2 & Schleisman Rd.	9 Scholar Wy. & Schleisman Rd.
350 · 350	150 · Nominal · Nominal	2,200 · 2,200	600 · 2,450 · 350

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

Average Daily Trips

TABLE 4-2: CUMULATIVE DEVELOPMENT LAND USE SUMMARY

#	Project/Location	Land Use[1]	Quantity Units[2]
City of Eastvale:			
		Warehousing	336.501 TSF
		Shopping Center	4.750 TSF
		Supermarket	30.000 TSF
		Gas Station w/ convenience store	16 VFP
E1	The Merge	Pharmacy/Drugstore with Drive-Thru	14.600 TSF
		Fast-Food with Drive-Thru	6.000 TSF
		Automated Car Wash	4.000 TSF
		Fast-Food Without Drive-Thru	7.750 TSF
		Coffee/Donut Shop With Drive-Thru	2.500 TSF
E2	TR29997	SFDR	122 DU
		Hotel	120 RM
E3	Hamner Place	Civic Center	50.000 TSF
		Shopping Center	33 TSF
E4	TR35751	Condo/Townhouse	243 DU
E5	PP23219 (PM35865) (50% complete)	General Light Industrial	738.430 TSF
		Free-Standing Discount Superstore	192.000 TSF
		Specialty Retail	9.200 TSF
E6	Eastvale Shopping Center	Fast-Food Without Drive-Thru	7.200 TSF
		Coffee/Donut Shop w/ Drive Thru	2.000 TSF
		Fast-Food with Drive-Thru	3.500 TSF
		Gas Station w/ convenience store and car wash	16 VFP
E7	Van Leeuwen	Senior Housing	224 DU
		Shopping Center	267.200 TSF
E8	SP00358 - The Ranch at Eastvale	General Light Industrial	801.500 TSF
		Business Park	801.500 TSF
E9	SC Limonite, LLC	SFDR	330 TSF
		Lifestyle Center (Commercial)	1,900.000 TSF
		General Commercial	225.000 TSF
E10	Leal Master Plan	Office	920.000 TSF
		Hotel	450 RM
		High Density Residential	500-660 DU
		Shopping Center	677.000 TSF
E11	Eastvale Goodman Center	Supermarket	35.000 TSF
		Food Hall	16.500 TSF
E12	S. Milliken Warehouse	High-Cube Warehouse	280.000 TSF
E13	15-1508 - Industrial Warehouse	Warehousing	155.000 TSF
E14	Beyond Mart Development	Gas Station w/ convenience store and car wash	20 VFP
E15	PLN19-20047	Self-Storage	158.000 TSF
E16	Vantage Point Church	Church	10.0 AC
E17	Campus at Eastvale	Warehousing	733.688 TSF
E18	PLN18-20037	Shopping Center	19.104 TSF

[1] SFDR = Single Family Detached Residential

[2] TSF = Thousand Square Feet; DU = Dwelling Unit; VFP = Vehicle Fueling Position ; AC = Acres; RM = Rooms

4.7 HORIZON YEAR VOLUME DEVELOPMENT

Traffic projections for Horizon Year without Project conditions were derived from the RivTAM using accepted procedures for model forecast refinement and smoothing for study area intersections located within the County of Riverside. It should be noted that RivTAM forecasts have been adjusted to account for the no future interchange at the I-15 Freeway and Schleisman Road. These adjustments are similar to other studies that have been prepared by Urban Crossroads in the vicinity of this Project.

The traffic forecasts reflect the area-wide growth anticipated between Existing (2021) conditions and Horizon Year traffic conditions. In most instances the traffic model zone structure is not designed to provide accurate turning movements along arterial roadways unless refinement and reasonableness checking is performed. Therefore, the Horizon Year peak hour forecasts were refined using the model derived long range forecasts, base (validation) year model forecasts, along with existing peak hour traffic count data collected at each analysis location. The Riverside Transportation Analysis Model (RivTAM) has a base (validation) year of 2012 and a horizon (future forecast) year of 2040. The RivTAM 2040 model utilized for the purposes of this analysis assumes buildout of the City of Eastvale.

The refined future peak hour approach and departure volumes obtained from the model output data are then entered into a spreadsheet program consistent with the National Cooperative Highway Research Program (NCHRP Report 255), along with initial estimates of turning movement proportions. A linear programming algorithm is used to calculate individual turning movements which match the known directional roadway segment forecast volumes computed in the previous step. This program computes a likely set of intersection turning movements from intersection approach counts and the initial turning proportions from each approach leg.

The model data from RivTAM represents peak hour data and therefore did not require adjustments. Typically, the model growth is prorated and is subsequently added to the existing (base validation) traffic volumes to represent Horizon Year traffic conditions. In an effort to conduct a conservative analysis, reductions to traffic forecasts from either Existing or Opening Year Cumulative traffic conditions were not assumed as part of this analysis. As such, in conjunction with the addition of cumulative projects that are not consistent with the General Plan, additional growth has also been applied on a movement-by-movement basis, where applicable, to estimate reasonable Horizon Year forecasts. Horizon Year turning volumes were compared to Opening Year Cumulative (2022) volumes in order to ensure a minimum growth as a part of the refinement process. The minimum growth includes any additional growth between Opening Year Cumulative (2022) and Horizon Year traffic conditions that is not accounted for by the traffic generated by cumulative development projects and ambient growth rates assumed between Existing (2021) and Opening Year Cumulative (2022) conditions. Future estimated peak hour traffic data was used for new intersections and intersections with an anticipated change in travel patterns to further refine the Horizon Year peak hour forecasts.

The future Horizon Year Without Project peak hour turning movements were then reviewed by Urban Crossroads, Inc. for reasonableness, and in some cases, were adjusted to achieve flow conservation, reasonable growth, and reasonable diversion between parallel routes. Flow

conservation checks ensure that traffic flow between two closely spaced intersections, such as two adjacent driveway locations, is verified in order to make certain that vehicles leaving one intersection are entering the adjacent intersection and that there is no unexplained loss of vehicles. The result of this traffic forecasting procedure is a series of traffic volumes which are suitable for traffic operations analysis.

RivTAM does not include a truck component or has data that is unusually low. As such, in an effort to conduct a conservative analysis, the presence of trucks has been accounted for based on the manual volume adjustments made to demonstrate growth above Opening Year Cumulative (2022) traffic forecasts. Post-processing worksheets for Horizon Year Without Project traffic conditions are provided in Appendix 4.1.

5 E+P TRAFFIC CONDITIONS

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

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).
- The proposed Project will make improvements to the intersection of Sumner Avenue at Schleisman Road which include the following lane geometrics: 1 northbound left, 1 northbound through lane, 1 northbound shared through-right turn lane, 1 eastbound left turn lane, 1 eastbound through lane, 1 eastbound shared through-right turn lane, 1 westbound left turn lane, 1 westbound through lane, and 1 westbound shared through-right turn lane (no changes to the southbound lanes). In addition, no right turns on red are assumed for the northbound turning movement.

5.2 EXISTING PLUS PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes Existing traffic volumes plus Project traffic. The ADT volumes and weekday AM and PM peak hour intersection turning movement volumes which can be expected for E+P traffic conditions are shown on Exhibit 5-1.

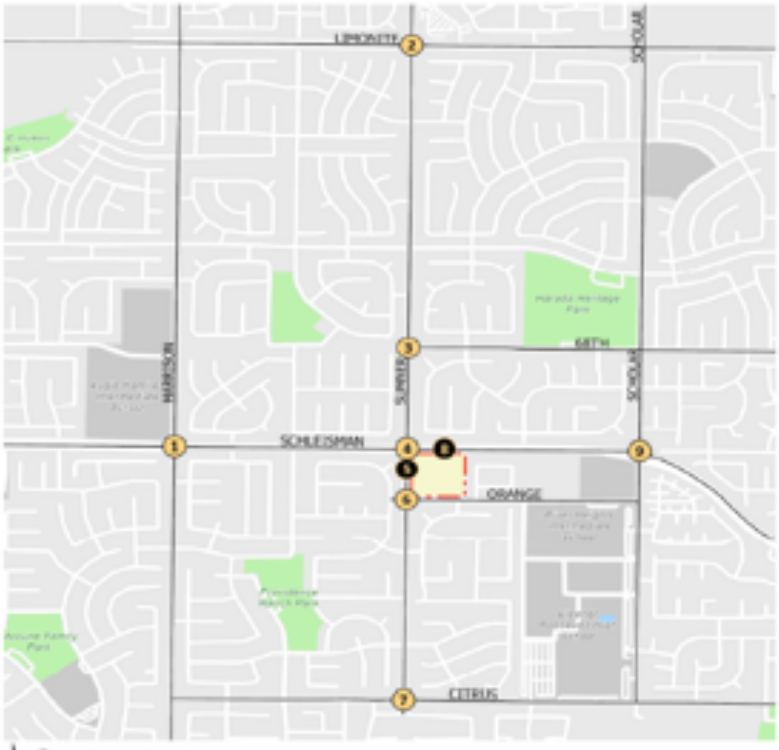
5.3 INTERSECTION OPERATIONS ANALYSIS

E+P peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2 *Methodologies* of this TA. The intersection analysis results are summarized in Table 5-1, which indicates that with the addition of Project traffic and Project ultimate half-section roadway improvements, all study area intersections are anticipated to operate at an acceptable LOS during the peak hours. The intersection operations analysis includes the improvements that would be implemented by the Project at the access points and the intersection of Sumner Avenue and Schleisman Road. The intersection operations analysis worksheets for E+P traffic conditions are included in Appendix 5.1 of this TA.

5.4 TRAFFIC SIGNAL WARRANTS ANALYSIS

There are no study area intersections anticipated to warrant a planning level (daily volume based) traffic signal under E+P traffic conditions (see Appendix 5.2).

EXHIBIT 5-1: E+P TRAFFIC VOLUMES



1 Harrison Av. & Schleisman Rd.	2 Sumner Av. & Limonite Av.	3 Sumner Av. & 68th St.	4 Sumner Av. & Schleisman Rd.	5 Sumner Av. & Driveway 1
7,650 / 21,000	16,650 / 20,950	10,950 / 5,750	11,650 / 10,000	11,150 / 2,300
170(79) 264(143) 211(37)	146(192) 189(188) 93(114)	357(356) 73(51)	162(177) 282(242) 104(81)	563(522) 75(29)
← 122(20)	← 29(44)	↱ 80(48)	← 66(39)	← 92(45)
← 654(483)	← 571(485)		← 378(288)	
↱ 48(42)	↱ 125(225)	↱ 227(161)	↱ 23(14)	↱ 13(7)
146(167) ↳	237(212) ↳		181(229) ↳	
562(943) →	420(558) →		262(362) →	508(179) →
143(278) ↴	31(80) ↴	508(351) →	333(296) ↴	26(23) ↴
230(127) 329(122) 61(37)	178(41) 383(208) 127(144)	132(173)	190(72) 381(141) 28(12)	
27,600 / 20,000	20,800 / 15,350	16,700 / 14,100	19,150 / 11,150	11,150 / 9,850

6 Sumner Av. & Orange St.	7 Sumner Av. & Citrus Av.	8 Driveway 2 & Schleisman Rd.	9 Scholar Wy. & Schleisman Rd.
9,850 / 1,100	7,150 / 17,400	10,300 / 10,300	7,600 / 9,000
15(24) 530(453) 31(52)	96(64) 43(35) 253(267)		33(35) 606(221) 25(16)
← 28(13)	← 213(96)	← 467(341)	← 22(41)
← 0(4)	← 576(370)		← 284(226)
↱ 6(1)	↱ 3(13)	↱ 25(14)	↱ 205(39)
46(14) ↳	102(67) ↳		37(95) ↳
6(3) →	710(553) →	388(390) →	253(302) →
0(1) ↴	52(9) ↴	6(15) ↴	141(31) ↴
0(1) 460(175) 6(9)	23(4) 15(18) 12(13)	16(7)	135(47) 450(157) 147(38)
600 / 8,650	14,250 / 950	10,000 / 600	10,100 / 7,050

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

Average Daily Trips

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

#	Intersection	Traffic Control[2]	Existing (2021) Delay[1] (secs.) AM	Existing (2021) Delay[1] (secs.) PM	Existing (2021) Level of Service AM	Existing (2021) Level of Service PM	E+P Delay[1] (secs.) AM	E+P Delay[1] (secs.) PM	E+P Level of Service AM	E+P Level of Service PM
1	Harrison Av. & Schleisman Rd.	TS	39.7	20.8	D	C	41.3	20.9	D	C
2	Sumner Av. & Limonite Av.	TS	20.9	20.5	C	C	21.1	20.7	C	C
3	Sumner Av. & 68th St.	AWS	17.8	13.1	C	B	19.4	13.4	C	B
4	Sumner Av. & Schleisman Rd.	TS[3]	**110.6**	**59.0**	**F**	**E**	28.8	23.5	C	C
5	Sumner Av. & Driveway 1	–/CSS	Future Intersection				12.5	9.9	B	A
6	Sumner Av. & Orange St.	TS	8.6	8.5	A	A	7.9	8.3	A	A
7	Sumner Av. & Citrus Av.	TS	17.1	12.5	B	B	17.4	12.5	B	B
8	Driveway 2 & Schleisman Rd.	–/CSS	Future Intersection				9.7	9.6	A	A
9	Scholar Wy. & Schleisman Rd.	TS	30.4	17.6	C	B	31.0	17.8	C	B

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

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

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

[3] Includes the Project ultimate half-section roadway improvements.

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6 OPENING YEAR CUMULATIVE (2022) TRAFFIC CONDITIONS

This section discusses the methods used to develop Opening Year Cumulative (2022) Without and With Project traffic forecasts, and the resulting intersection operations and traffic signal warrant, analyses.

6.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for Opening Year Cumulative (2022) 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 Opening Year Cumulative conditions only (e.g., intersection and roadway improvements along the Project's frontage and driveways).
- The proposed Project will make improvements to the intersection of Sumner Avenue at Schleisman Road which include the following lane geometrics: 1 northbound left, 1 northbound through lane, 1 northbound shared through-right turn lane, 1 eastbound left turn lane, 1 eastbound through lane, 1 eastbound shared through-right turn lane, 1 westbound left turn lane, 1 westbound through lane, and 1 westbound shared through-right turn lane (no changes to the southbound lanes). In addition, no right turns on red are assumed for the northbound turning movement.
- Driveways and those facilities assumed to be constructed by cumulative developments to provide site access are also assumed to be in place for Opening Year Cumulative conditions only (e.g., intersection and roadway improvements along the cumulative development's frontages).

6.2 OPENING YEAR CUMULATIVE (2022) WITHOUT PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes Existing traffic volumes plus an ambient growth factor of 1.6% plus traffic from pending and approved but not yet constructed known development projects in the area. The weekday ADT and weekday AM and PM peak hour volumes which can be expected for Opening Year Cumulative (2022) Without Project traffic conditions are shown on Exhibit 6-1.

6.3 OPENING YEAR CUMULATIVE (2022) WITH PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes Opening Year Cumulative (2022) Without Project traffic in conjunction with the addition of Project traffic. The weekday ADT and weekday AM and PM peak hour volumes which can be expected for Opening Year Cumulative (2022) With Project traffic conditions are shown on Exhibit 6-2.

EXHIBIT 6-1: OPENING YEAR CUMULATIVE (2022) WITHOUT PROJECT TRAFFIC VOLUMES

1 Harrison Av. & Schleisman Rd.	2 Sumner Av. & Limonite Av.	3 Sumner Av. & 68th St.	4 Sumner Av. & Schleisman Rd.	5 Sumner Av. & Driveway 1
21,100	22,850	5,800	10,450	
119(22)	29(45)	81(49)	69(43)	
655(509)	665(552)	231(164)	398(320)	
44(44)	107(215)		15(17)	
7,650 / 173(83) / 268(145) / 206(139)	16,700 / 149(195) / 186(442) / 94(116)	10,550 / 134(348) / 72(52)	11,750 / 165(180) / 255(226) / 108(135)	9,850 / 577(541)
149(170) / 570(960) / 146(283)	241(216) / 472(668) / 27(81)		184(233) / 279(377) / 307(296)	530(296)
234(130) / 334(134) / 53(39)	178(41) / 384(209) / 108(138)	488(350) / 134(176)	157(61) / 356(132) / 16(12)	
28,000	23,050	13,700	19,250	9,850
10,100	14,900		9,850	

6 Sumner Av. & Orange St.	7 Sumner Av. & Citrus Av.	8 Driveway 2 & Schleisman Rd.	9 Scholar Wy. & Schleisman Rd.
1,100	17,600	10,450	9,450
28(13)	211(95)	483(380)	24(45)
0(4)	585(376)		279(251)
6(1)	3(13)		210(43)
9,850 / 15(24) / 530(463) / 31(53)	7,050 / 92(66) / 42(15) / 253(270)		7,750 / 28(35) / 637(231) / 29(19)
47(14) / 6(3) / 0(1)	95(68) / 721(562) / 53(9)	403(425)	31(96) / 259(328) / 140(33)
0(1) / 45(178) / 6(9)	23(4) / 14(18) / 12(13)		139(46) / 463(163) / 153(41)
650	14,350	10,450	10,200
9,850	950		7,300

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

Average Daily Trips

EXHIBIT 6-2: OPENING YEAR CUMULATIVE (2022) WITH PROJECT TRAFFIC VOLUMES

1 Harrison Av. & Schleisman Rd.	2 Sumner Av. & Limonite Av.	3 Sumner Av. & 68th St.	4 Sumner Av. & Schleisman Rd.	5 Sumner Av. & Driveway 1
7,800 / 17(30) / 268(145) / 216(48) / 21,850	15,300 / 149(295) / 192(445) / 94(116) / 23,300	11,750 / 366(367) / 72(52) / 5,800	11,950 / 165(380) / 287(247) / 108(35) / 10,800	11,400 / 575(536) / 75(29) / 2,300
← 125(23)	← 29(45)	← 81(49)	← 69(43)	← 92(45)
← 679(520)	← 665(552)		← 398(320)	
← 50(45)	← 127(228)	← 231(164)	← 25(18)	← 13(7)
149(170) / 587(978) / 146(283)	241(216) / 472(668) / 33(84)	520(362) / 134(176)	184(233) / 285(392) / 338(301)	520(387) / 26(23)
234(130) / 304(324) / 63(48)	183(43) / 389(211) / 129(146)		191(173) / 388(344) / 30(15)	
28,500 / 10,250	23,300 / 15,600	14,400	20,000 / 11,400	28,100

6 Sumner Av. & Orange St.	7 Sumner Av. & Citrus Av.	8 Driveway 2 & Schleisman Rd.	9 Scholar Wy. & Schleisman Rd.
10,100 / 15(24) / 541(465) / 31(53) / 1,100	7,800 / 97(66) / 43(35) / 258(272) / 17,700	11,100	7,900 / 38(36) / 617(231) / 29(39) / 9,850
← 28(13)	← 217(98)	← 493(381)	← 24(45)
← 0(4)	← 585(376)		← 302(260)
← 6(1)	← 3(13)	← 25(14)	← 210(43)
47(14) / 6(3) / 0(1)	104(69) / 721(562) / 53(9)	417(428) / 6(15)	37(97) / 278(334) / 145(36)
0(1) / 471(382) / 6(9)	23(4) / 15(18) / 12(13)	16(7)	141(151) / 46(363) / 15(41)
650 / 8,900	14,500 / 2,800	10,800 / 600	10,900 / 7,400

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

***Average Daily Trips***

6.4 INTERSECTION OPERATIONS ANALYSIS

6.4.1 OPENING YEAR CUMULATIVE (2022) WITHOUT PROJECT TRAFFIC CONDITIONS

LOS calculations were conducted for the study intersections to evaluate their operations under Opening Year Cumulative (2022) Without Project conditions with roadway and intersection geometrics consistent with Section 6.1 *Roadway Improvements*. As shown on Table 6-1, the following study area intersection is anticipated to operate at an unacceptable LOS under Opening Year Cumulative (2022) Without Project traffic conditions:

- Sumner Av. & Schleisman Rd. (#4) – LOS F AM peak hour; LOS E PM peak hour

The intersection operations analysis worksheets for Opening Year Cumulative (2022) Without Project traffic conditions are included in Appendix 6.1 of this TA.

6.4.2 OPENING YEAR CUMULATIVE (2022) WITH PROJECT TRAFFIC CONDITIONS

As shown in Table 6-1, all area intersections anticipated to operate at an acceptable LOS during the peak hours with the addition of Project traffic and Project ultimate half-section roadway improvements. The intersection operations analysis includes the improvements that would be implemented by the Project at the access points and the intersection of Sumner Avenue and Schleisman Road. The intersection operations analysis worksheets for Opening Year Cumulative (2022) With Project traffic conditions are included in Appendix 6.2 of this TA.

TABLE 6-1: INTERSECTION ANALYSIS FOR OPENING YEAR CUMULATIVE (2022) CONDITIONS

#	Intersection	Traffic Control[2]	2022 Without Project Delay[1] (secs.) AM	2022 Without Project Delay[1] (secs.) PM	2022 Without Project Level of Service AM	2022 Without Project Level of Service PM	2022 With Project Delay[1] (secs.) AM	2022 With Project Delay[1] (secs.) PM	2022 With Project Level of Service AM	2022 With Project Level of Service PM
1	Harrison Av. & Schleisman Rd.	TS	41.9	21.2	D	C	43.7	21.3	D	C
2	Sumner Av. & Limonite Av.	TS	21.5	21.3	C	C	21.7	21.6	C	C
3	Sumner Av. & 68th St.	AWS	18.6	13.5	C	B	20.4	13.8	C	B
4	Sumner Av. & Schleisman Rd.	TS[3]	**124.2**	**70.8**	**F**	**E**	29.9	24.0	C	C
5	Sumner Av. & Driveway 1	–/CSS	Future Intersection				12.6	9.9	B	A
6	Sumner Av. & Orange St.	TS	8.7	8.5	A	A	8.0	8.3	A	A
7	Sumner Av. & Citrus Av.	TS	17.4	12.5	B	B	17.8	12.6	B	B
8	Driveway 2 & Schleisman Rd.	–/CSS	Future Intersection				9.8	9.8	A	A
9	Scholar Wy. & Schleisman Rd.	TS	31.7	17.9	C	B	32.3	18.0	C	B

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

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

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

[3] Includes the Project ultimate half-section roadway improvements.

6.5 TRAFFIC SIGNAL WARRANTS ANALYSIS

There are no unsignalized intersections for Opening Year Cumulative (2022) Without Project traffic conditions. As such, no traffic signal warrants have been evaluated for Opening Year

Cumulative (2022) Without Project traffic conditions. For Opening Year Cumulative (2022) With Project traffic conditions, there are no future intersections anticipated to meet planning level traffic signal warrants (see Appendix 6.3).

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7 HORIZON YEAR (2040) TRAFFIC CONDITIONS

This section discusses the methods used to develop Horizon Year (2040) Without and With Project traffic forecasts, and the resulting intersection operations and traffic signal warrant analyses.

7.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for Horizon Year (2040) conditions are consistent with those shown previously on Exhibit 3-1, with the exception of the following:

- Project driveways and those facilities assumed to be constructed by the Project to provide site access are also assumed to be in place for Horizon Year conditions only (e.g., intersection and roadway improvements along the Project's frontage and driveways).
- The proposed Project will make improvements to the intersection of Sumner Avenue at Schleisman Road which include the following lane geometrics: 1 northbound left, 1 northbound through lane, 1 northbound shared through-right turn lane, 1 eastbound left turn lane, 1 eastbound through lane, 1 eastbound shared through-right turn lane, 1 westbound left turn lane, 1 westbound through lane, and 1 westbound shared through-right turn lane (no changes to the southbound lanes). In addition, no right turns on red are assumed for the northbound turning movement.
- Driveways and those facilities assumed to be constructed by cumulative developments to provide site access are also assumed to be in place for Horizon Year conditions only (e.g., intersection and roadway improvements along the cumulative development's frontages).

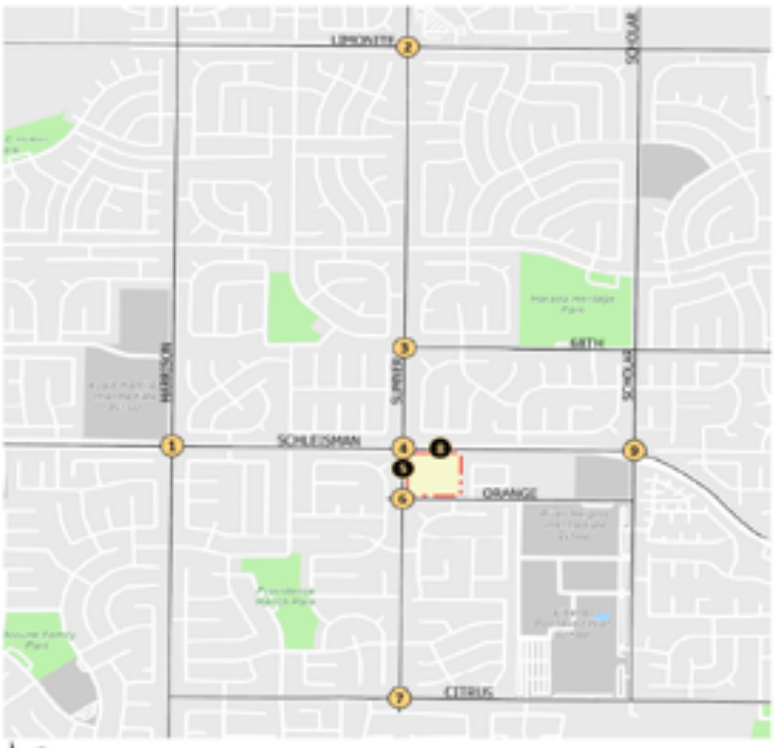
7.2 HORIZON YEAR (2040) WITHOUT PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes the refined post-processed volumes obtained from the RivTAM (see Section 4.7 *Horizon Year Volume Development* of this TA for a detailed discussion on the post-processing methodology) and represents the General Plan buildout of the City of Eastvale. The weekday ADT and weekday AM and PM peak hour volumes which can be expected for Horizon Year Without Project traffic conditions are shown on Exhibit 7-1.

7.3 HORIZON YEAR (2040) WITH PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes the refined post-processed volumes obtained from the RivTAM, plus the traffic generated by the proposed Project (see Section 4.7 *Horizon Year Volume Development* of this TA for a detailed discussion on the post-processing methodology). Horizon Year With Project traffic forecasts reflects buildout of the Project. The weekday ADT and weekday AM and PM peak hour volumes which can be expected for Horizon Year With Project traffic conditions are shown on Exhibit 7-2.

EXHIBIT 7-1: HORIZON YEAR (2040) WITHOUT PROJECT TRAFFIC VOLUMES



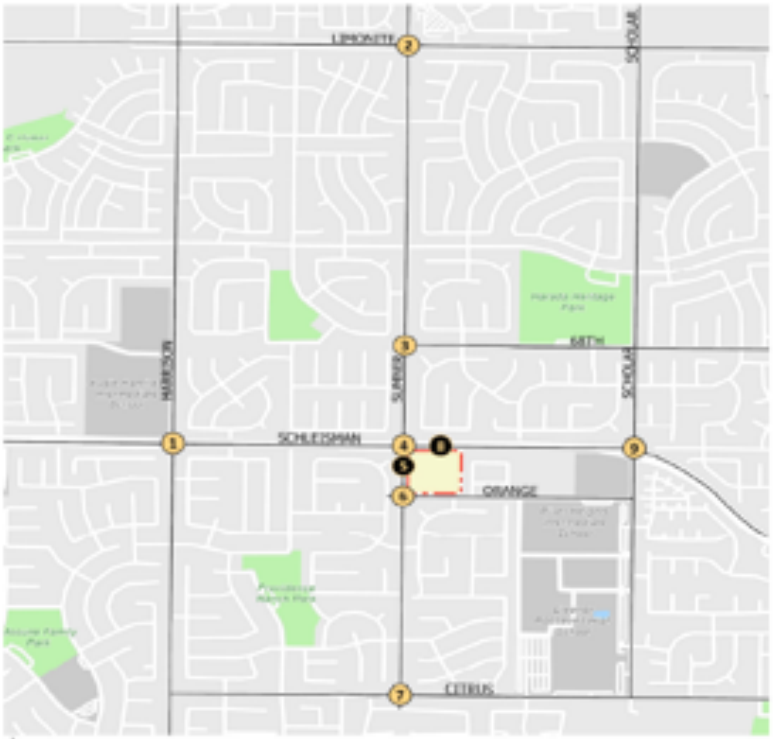
1 Harrison Av. & Schleisman Rd.	2 Sumner Av. & Limonite Av.	3 Sumner Av. & 68th St.	4 Sumner Av. & Schleisman Rd.	5 Sumner Av. & Driveway 1
8,050 / 190(89) / 295(140) / 227(43) / 22,050	17,600 / 163(215) / 205(486) / 104(127) / 55,550	11,100 / 370(385) / 79(57) / 6,100	11,850 / 181(198) / 284(253) / 133(59) / 27,900	11,850 / 643(597) / 0
← 132(24)	← 32(49)	← 89(54)	← 76(48)	
← 962(1450)	← 1621(1922)		← 934(1495)	
← 49(49)	← 120(238)	→ 254(180)	← 18(18)	→ 591(229)
164(187) → / 973(1671) → / 160(311) →	265(237) → / 1598(1832) → / 30(89) →	539(386) / 148(193)	203(256) → / 1040(1434) → / 341(326) →	
↱ 257(143) / ↑ 368(196) / ↱ 60(43)	↱ 196(45) / ↑ 423(230) / ↱ 121(153)	↑ / ↱	↱ 177(68) / ↑ 395(147) / ↱ 19(14)	
26,150 / 10,600	66,750 / 25,700	14,400	30,250 / 10,400	11,850

6 Sumner Av. & Orange St.	7 Sumner Av. & Citrus Av.	8 Driveway 2 & Schleisman Rd.	9 Scholar Wy. & Schleisman Rd.
10,350 / 17(27) / 584(510) / 35(58) / 1,150	7,400 / 101(72) / 46(17) / 278(298) / 18,500	27,900	8,150 / 27(38) / 678(255) / 32(21) / 25,950
← 31(15)	← 233(105)	← 1028(1561)	← 27(50)
← 0(4)	← 644(414)		← 1003(1718)
← 7(1)	← 3(15)		← 231(47)
51(16) → / 7(3) → / 0(1) →	106(75) → / 793(618) → / 58(10) →	1178(1487) →	35(105) → / 1187(1511) → / 154(37) →
↱ 0(1) / ↑ 502(196) / ↱ 7(10)	↱ 26(4) / ↑ 36(20) / ↱ 18(15)		↱ 153(51) / ↑ 510(180) / ↱ 168(45)
650 / 9,050	25,100 / 1,000	27,900	32,300 / 7,700

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

***Average Daily Trips***

EXHIBIT 7-2: HORIZON YEAR (2040) WITH PROJECT TRAFFIC VOLUMES



1 Harrison Av. & Schleisman Rd.	2 Sumner Av. & Limonite Av.	3 Sumner Av. & 68th St.	4 Sumner Av. & Schleisman Rd.	5 Sumner Av. & Driveway 1
8,200	17,100	11,800	12,550	13,400
190(89) ↳ 295(160) ↓ 237(44) ↲	163(215) ↳ 211(488) ↓ 104(127) ↲	403(404) ↓ 79(57) ↲	181(198) ↳ 316(272) ↓ 119(59) ↲	641(592) ↓ 75(29) ↲
← 138(25)	← 32(49)	← 89(54)	← 76(48)	← 92(45)
← 986(1461)	← 1621(1922)		← 934(1495)	
↰ 55(50)	↰ 140(251)	↰ 254(180)	↰ 28(19)	↰ 13(7)
164(187) ↳	265(237) ↳		203(256) ↳	
990(1689) →	1598(1832) →		1046(1449) →	
160(311) ↱	36(92) ↱		372(331) ↱	
↑ 257(143)	↑ 201(47)	↑ 571(398)	↑ 212(80)	↑ 581(218)
↱ 368(336)	↱ 428(232)	↱ 148(193)	↱ 427(159)	↱ 26(23)
70(44)	142(161)		33(17)	
26,650	66,900	15,100	31,000	12,100
18,750	16,400		12,000	

6 Sumner Av. & Orange St.	7 Sumner Av. & Citrus Av.	8 Driveway 2 & Schleisman Rd.	9 Scholar Wy. & Schleisman Rd.
10,600	7,650	28,600	8,300
17(27) ↓ 595(512) ↲ 35(58)	106(72) ↓ 47(17) ↲ 283(309)		37(39) ↓ 678(255) ↲ 32(21)
← 31(15)	← 239(108)	← 1038(1562)	← 27(50)
← 0(4)	← 644(414)		← 1026(1727)
↰ 7(1)	↰ 3(15)	↰ 25(14)	↰ 231(47)
51(16) ↳	115(76) ↳		41(106) ↳
7(3) →	793(618) →	1192(1490) →	1206(1517) →
0(1) ↱	58(10) ↱	6(15) ↱	159(40) ↱
↑ 0(1)	↑ 26(4)	↑	↑ 159(54)
↱ 518(200)	↱ 172(0)	↱ 16(7)	↱ 510(180)
7(10)	13(15)		168(45)
650	15,200	28,300	11,000
9,850	1,050	600	7,800

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

Average Daily Trips

7.4 INTERSECTION OPERATIONS ANALYSIS

7.4.1 HORIZON YEAR (2040) WITHOUT PROJECT CONDITIONS

LOS calculations were conducted for the study intersections to evaluate their operations under Horizon Year Without Project traffic conditions with roadway and intersection geometrics consistent with Section 7.1 *Roadway Improvements*. As shown in Table 7-1, the following study area intersection is anticipated to operate at an unacceptable LOS under Horizon Year Without Project traffic conditions:

- Sumner Av. & Schleisman Rd. (#4) – LOS F AM and PM peak hours

The intersection operations analysis worksheets for Horizon Year Without Project traffic conditions are included in Appendix 7.1 of this TA.

7.4.2 HORIZON YEAR (2040) WITH PROJECT TRAFFIC CONDITIONS

As shown in Table 7-1, all area intersections anticipated to operate at an acceptable LOS during the peak hours with the addition of Project traffic and Project ultimate half-section roadway improvements. The intersection operations analysis includes the improvements that would be implemented by the Project at the access points and the intersection of Sumner Avenue and Schleisman Road. The intersection operations analysis worksheets for Horizon Year With Project traffic conditions are included in Appendix 7.2 of this TA.

TABLE 7-1: INTERSECTION ANALYSIS FOR HORIZON YEAR (2040) CONDITIONS

			2040 Without Project				2040 With Project			
			Delay[1] (secs.)		Level of Service		Delay[1] (secs.)		Level of Service	
#	Intersection	Traffic Control[2]	AM	PM	AM	PM	AM	PM	AM	PM
1	Harrison Av. & Schleisman Rd.	TS	51.9	33.0	D	C	53.8	33.8	D	C
2	Sumner Av. & Limonite Av.	TS	29.9	34.7	C	D	30.3	36.9	C	D
3	Sumner Av. & 68th St.	AWS	23.5	15.4	C	C	24.8	15.9	C	C
4	Sumner Av. & Schleisman Rd.	TS[3]	**>200.0**	**>200.0**	**F**	**F**	45.3	50.2	D	D
5	Sumner Av. & Driveway 1	--/CSS	Future Intersection				13.3	10.1	B	B
6	Sumner Av. & Orange St.	TS	9.2	8.7	A	A	8.7	8.6	A	A
7	Sumner Av. & Citrus Av.	TS	18.1	13.0	B	B	18.3	13.1	B	B
8	Driveway 2 & Schleisman Rd.	--/CSS	Future Intersection				14.1	16.5	B	C
9	Scholar Wy. & Schleisman Rd.	TS	51.9	29.5	D	C	53.4	32.3	D	C

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

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

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

[3] Includes the Project ultimate half-section roadway improvements.

7.5 TRAFFIC SIGNAL WARRANTS ANALYSIS

There are currently no existing unsignalized intersections. As such, no traffic signal warrants have been evaluated for Horizon Year Without Project traffic conditions. For Horizon Year With Project

traffic conditions, there are no future intersections anticipated to warrant a traffic signal (see Appendix 7.3).

7.6 QUEUING ANALYSIS

A queuing analysis was conducted along the site adjacent roadways of Sumner Avenue and Schleisman Road at the Project driveways for Horizon Year (2040) traffic conditions to determine the turn pocket lengths and lane geometric necessary to accommodate long-term 95th percentile queues and recommend storage lengths for the turning movements shown on Exhibit 1-4. The analysis was conducted for the weekday AM and weekday PM peak hours using the SimTraffic modeling software. The Horizon Year (2040) queuing results are provided in Table 7-2 and Appendix 7.4 of this report.

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 (Version 10) 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). The random simulations generated by SimTraffic have been utilized to determine the 95th percentile queue lengths observed for each turn lane. A SimTraffic simulation has 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.

TABLE 7-2: QUEUING ANALYSIS FOR HORIZON YEAR (2040) CONDITIONS

#	Intersection	Movement	Available Stacking Distance (Feet)	Without Improvements 95th Percentile Queue (Feet)		Acceptable?[1]		With Improvements[2] 95th Percentile Queue (Feet)		Acceptable?[1]	
				AM Peak Hour	PM Peak Hour	AM	PM	AM Peak Hour	PM Peak Hour	AM	PM
4	Sumner Av. & Schleisman Rd.	NBL	80	190	115	No	No	192	80	Yes[3]	Yes
		WBL	200	109	104	Yes	Yes	168	154	Yes	Yes
5	Sumner Av. & Driveway 1	SBL	50	60	26	Yes[3]	Yes	50	33	Yes	Yes
8	Driveway 2 & Schleisman Rd.	WBL	200	36	33	Yes	Yes	32	25	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 in this table, where applicable.

[2] Improvements to the intersection of Sumner Av. & Schleisman Rd. include the following (see Table 7-3):
- Modifying the traffic signal to provide split phasing on the northbound and southbound approaches.
- Modifying the traffic signal to provide a 130 cycle length in the PM peak hour.
- Restriping the northbound through lane as a shared left-through lane.

[3] Split phasing allows vehicles to stack beyond the storage area without conflicts with the through movements.

As shown in Table 7-2, the available northbound left turn storage area would not be able to accommodate Horizon Year (2040) 95th percentile queues without spilling into the northbound through lane. Vehicles waiting to complete the left turn movement would block northbound vehicles on Sumner Avenue. As such, lane restriping on the northbound approach and split phasing for the northbound and southbound approaches is recommended to accommodate Horizon Year (2040) 95th percentile queues. Split phasing would allow vehicles to stack beyond the storage area without conflicting with the northbound through movements. As shown on Table 7-3, Sumner Avenue and Schleisman Road would also operate at an acceptable LOS with the recommended improvements. The Horizon Year (2040), with improvements, queuing and LOS results are provided in Appendices 7.5 and 7.6. respectively.

TABLE 7-3: INTERSECTION ANALYSIS FOR HORIZON YEAR (2040) CONDITIONS WITH IMPROVEMENTS

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1] Northbound L	T	R	Southbound L	T	R	Eastbound L	T	R	Westbound L	T	R	Delay[2] (secs.) AM	PM	Level of Service AM	PM
4	Sumner Av. & Schleisman Rd.																	
	-Without Improvements	TS	1	2	0	1	1	0	1	2	0	1	2	1	45.3	50.2	D	D
	-With Improvements	TS[4,5]	1	2[6]	0	1	1	0	1	2	0	1	2	1	53.5	54.0	D	D

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

L = Left; T = Through; R = Right; > = Right-turn Overlap Phasing; I = 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) is considered the delay and LOS for the intersection.

[3] AWS = All-way Stop; TS = Traffic Signal; TS = Improvement

[4] Improvements include modifying the traffic signal to provide split phasing on the northbound and southbound approaches.

[5] Improvements include modifying the traffic signal to provide a 130 cycle length in the PM peak hour.

[6] Improvements include restriping the northbound through lane as a shared left-through lane.

8 REFERENCES

1. **Riverside County Transportation Department.** *Guidelines Transportation Analysis Guidelines for Level of Service Vehicle Miles Traveled.* County of Riverside : s.n., December 2020.

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

5. **Transportation Research Board.** *Highway Capacity Manual (HCM).* 6th Edition. s.l. : National Academy of Sciences, 2016.

6. **Caltrans.** Manual on Uniform Traffic Control Devices (MUTCD). [book auth.] California Department of Transportation. *California Manual on Uniform Traffic Control Devices (CAMUTCD).* 2014.

7. **Institute of Transportation Engineers (ITE).** *Trip Generation Handbook.* 3rd Edition. 2017.

8. **Southern California Association of Governments.** *2020 Regional Transportation Plan/Sustainable Communities Strategy.* May 2020.

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