Appendix I

Lafayette Street Logistics Facility

Traffic Analysis

Prepared for

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November 15, 2022

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LAFAYETTE STREET LOGISTICS FACILITY

TRAFFIC ANALYSIS

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PREPARED FOR
TERRA NOVA PLANNING & RESEARCH, INC.

Reference Number	Agency	Date
14495-04 TA Report.docx	Town of Apple Valley	November 15, 2022

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LIST OF ABBREVIATED TERMS

(1)	Reference
ADT	Average Daily Traffic
CAMUTCD	California Manual on Uniform Traffic Control Devices
Caltrans	California Department of Transportation
CMP	Congestion Management Program
DIF	Development Impact Fee
HCM	Highway Capacity Manual
ITE	Institute of Transportation Engineers
LOS	Level of Service
NCHRP	National Cooperative Highway Research Program
PHF	Peak Hour Factor
Project	Lafayette Street Logistics Facility
SBCTA	San Bernardino County Transportation Authority
SBTAM	San Bernardino Transportation Analysis Model
SCAG	Southern California Association of Governments
sf	Square Feet
TA	Traffic Analysis
v/c	Volume to Capacity
vphgpl	Vehicles per Hour Green per Lane
WP	With Project

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1 INTRODUCTION

This report presents the results of the Traffic Analysis (TA) for Lafayette Street Logistics Facility ("Project"), which is located south of Lafayette Street and east of Dale Evans Parkway in the Town of Apple Valley, as 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 where necessary recommend improvements to achieve acceptable operations consistent with General Plan level of service goals and policies. This traffic study has been prepared in accordance with the San Bernardino County Transportation Impact Study Guideline (July 9, 2019) as the Town of Apple Valley utilizes the County Guidelines, and consultation with Town staff during the traffic study scoping process. (1) (2) The Town approved Project Traffic Study Scoping agreement is provided in Appendix 1.1 of this TA.

1.1 SUMMARY OF FINDINGS

Study area intersections are currently operating at an acceptable LOS under Existing traffic conditions.

For cumulative conditions without the Project, the following intersections are anticipated to operate at an unacceptable LOS:

- Dale Evans/Johnson Rd. (#1) - LOS F PM peak hour
- I-15 NB Ramps/Stoddard Wells (#5) – LOS F PM peak hour

There are no additional study area intersections anticipated to operate at an unacceptable with the addition of Project traffic.

For opening year cumulative conditions without the Project, the following intersections are anticipated to meet peak hour volume warrants for traffic signal control:

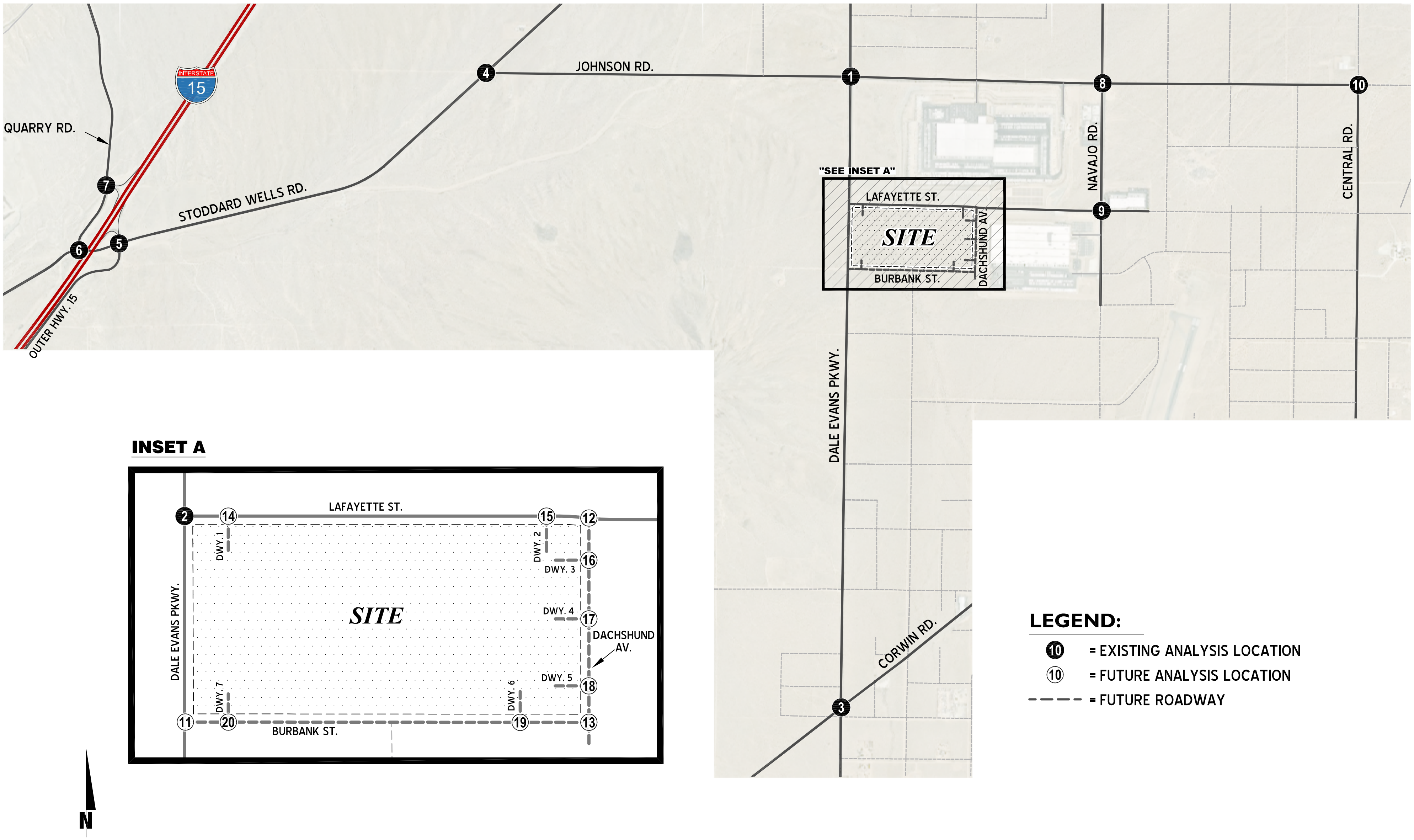
- Dale Evans Parkway/Johnson Road (#1)
- Stoddard Wells Road/Johnson Road (#4)
- I-15 NB Ramps/Stoddard Wells (#5)

Additional traffic signals are warranted for long range future conditions, with or without the Project, as documented in Section 6. The addition of Project traffic does not cause a change in traffic control at off-site study area intersections.

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

- Project to construct Project-adjacent roadways at their ultimate half-section widths in accordance with Town of Apple Valley standards, and including sidewalk, curb-and-gutter, landscaping, etc.:
    - o widen Dale Evans from Lafayette Street to Burbank Street (easterly half section)
    - o Widen Lafayette Street along the Project frontage (southerly half section)
    - o Construct Burbank Street from Lafayette Street to Dachshund Avenue (northerly half-section plus one lane)

EXHIBIT 1-1: TRAFFIC ANALYSIS STUDY AREA



  - Construct Dachshund Avenue from Lafayette Street to the southerly Project boundary (westerly half-section plus one lane)
- Project to implement stop control for egress at Project driveways and construct the necessary ingress and egress lanes at each driveway needed to facilitate site access, including an easterly realignment of Driveway 1 to provide additional distance from Dale Evans Parkway intersection.
- Project Driveways 1, 2, 4, 6, and 7 to be restricted to passenger cars only (no large trucks).

The Project Applicant's responsibility for the Project's contributions towards deficient off-site intersections is fulfilled through payment into pre-existing fee programs (if applicable), and payment of fair share contributions to intersection improvements that are not already addressed in existing fee programs. The Project Applicant would be required to pay requisite fees consistent with the Town's requirements (see Section 7 *Local and Regional Funding Mechanisms*).

1.2 PROJECT OVERVIEW

A preliminary site plan for the proposed Project is shown on Exhibit 1-2. The Project is proposed to consist of 1,207,544 square feet (sf) of high cube warehouse/distribution. The Project has been evaluated in a single phase. For the purposes of the traffic analysis, trips associated with the Project are determined assuming 1,026,412 square of high cube warehouse floor area (85% of total), and 181,132 square feet of cold storage (15% of total). As indicated on Exhibit 1-2, vehicular access will be provided via two full access points along Lafayette Street, three full access points along the future Dachshund Avenue, and two full access points along the future Burbank Avenue.

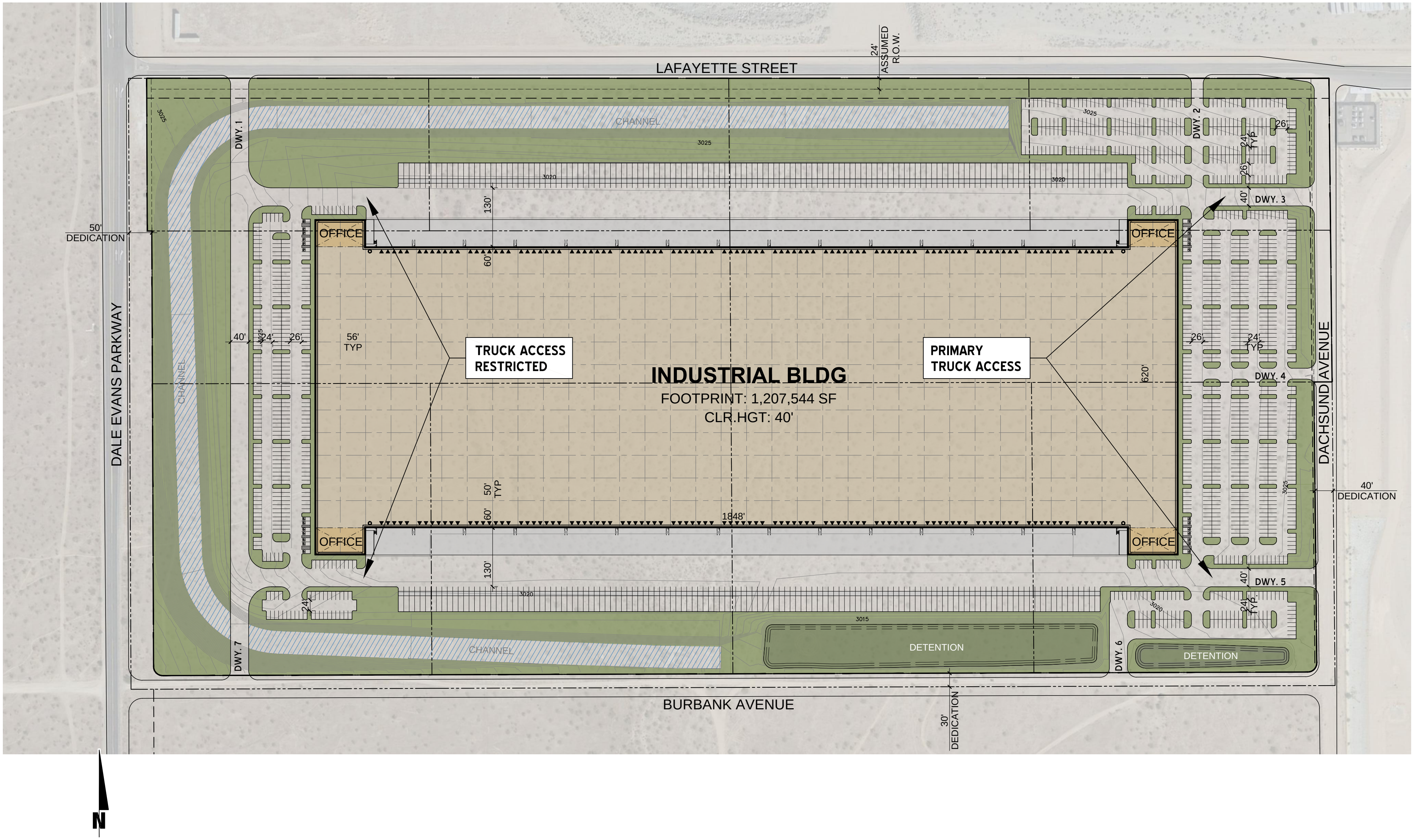
Regional access to the Project site is available from the I-15 Freeway via Stoddard Wells Road interchanges. Exhibit 1-1 depicts the location of the proposed Project in relation to the existing roadway network and the study area intersections.

In order to develop the traffic characteristics of the high-cube warehouse land use for the Proposed Project, trip-generation statistics published in the TUMF High-Cube Warehouse Trip Generation Study (WSP, January 29, 2019) are used. The purpose of WSP 2019 study was to gather enough data to develop reliable trip generation rates for centers for use in traffic impact studies in the Inland Empire.

In addition, the South Coast Air Quality Management District (SCAQMD) recommends the use of 0.64 truck trips per 1,000 square feet, which would account for variations in the future users.

For the remaining high-cube cold storage portion of the Proposed Project, the trip generation rates published by the Institute of Transportation Engineers (ITE) as provided in their Trip Generation Manual, 11th Edition (2021) have been utilized. ITE land use code 157 (High-Cube Cold Storage Warehouse) has been used to derive site specific trip generation estimates for 181,132 square feet (15% of the overall building square footage). High-cube cold storage warehouses include warehouses characterized by the storage and/or consolidation of manufactured goods (and to a lesser extent, raw materials) prior to their distribution to retail locations or other warehouses. High-cube cold storage warehouses are facilities typified by temperature-controlled environments for frozen food or other perishable products. The High-Cube Cold Storage Warehouse vehicle mix (passenger cars versus trucks) has been obtained from the ITE Trip Generation Manual (2021). The truck percentages were further broken down by axle type per the following SCAQMD recommended truck mix: 2-Axle = 34.7%; 3-Axle = 11.0%; 4+-Axle = 54.3%.).

EXHIBIT 1-2: SITE PLAN



The Project is anticipated to generate a total of 2,569 actual vehicle trip-ends per day with 148 AM peak hour trips and 192 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 (2022) Conditions
- Existing Plus Ambient Plus Cumulative Projects EAC (2024)
- Existing Plus Ambient Plus Cumulative Projects Plus Project EAPC (2024)
- Horizon Year (2040) Without Project
- Horizon Year (2040) With Project

1.3.1 EXISTING (2022) CONDITIONS

Information for Existing (2022) conditions is disclosed to represent the baseline traffic conditions as they existed at the time this report was prepared.

1.3.2 OPENING YEAR CUMULATIVE (2024) CONDITIONS

The Opening Year Cumulative (2024) traffic conditions analysis determines the potential near-term cumulative circulation system deficiencies. The roadway network is similar to Existing conditions except for new connections to be constructed by the Project. To account for background traffic growth, an ambient growth factor from Existing (2022) conditions of 4.04% (2 percent per year over 2 year) is included for Opening Year Cumulative (2024) traffic conditions. Conservatively, this TA estimates the area ambient traffic growth and then adds traffic generated by other known or probable related projects. These related projects are at least in part already accounted for in the assumed ambient growth rates; and some of these related projects may not be implemented and operational within the 2024 Opening Year time frame assumed for the Project. The resulting traffic growth utilized in the TA (ambient growth factor plus traffic generated by related projects) would therefore tend to overstate rather than understate background cumulative traffic deficiencies under 2024 traffic conditions.

1.3.4 HORIZON YEAR (2040) CONDITIONS

Traffic projections for Horizon Year (2040) conditions were derived from the San Bernardino County Transportation Analysis Model (SBTAM) using accepted procedures for model forecast refinement and smoothing. The Horizon Year conditions analysis is utilized to determine if General Plan roadway configurations adequately serve projected long range future traffic volumes at the target Level of Service (LOS) identified in the Town of Apple Valley (lead agency) General Plan.

1.4 STUDY AREA

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

The 8 study area intersections shown on Exhibit 1-1 and listed in Table 1-1 were selected for evaluation in this TA based on consultation with Town of Apple Valley staff. At a minimum, the study area includes intersections where the Project is anticipated to contribute 50 or more peak hour trips per the Town's traffic study guidelines. (1) The "50 peak hour trip" criterion represents a minimum number of trips at which a typical intersection would have the potential to be affected by a given development proposal. The 50 peak hour trip criterion is a traffic engineering rule of thumb that is accepted and widely used within San Bernardino County for estimating a potential area of influence (i.e., study area).

TABLE 1-1: INTERSECTION ANALYSIS LOCATIONS

#	Intersection	#	Intersection
1	Dale Evans Pkwy. / Johnson Rd.	11	Dale Evans Pkwy. / Burbank St.
2	Dale Evans Pkwy. / Lafayette St.	12	Dachshund Av. / Lafayette St.
3	Dale Evans Pkwy. / Corwin Rd.	13	Dachshund Av. / Burbank St.
4	Stoddard Wells Rd. / Johnson Rd.	14	Dwy. 1 / Lafayette St.
5	I-15 NB Ramps / Stoddard Wells Rd.	15	Dwy. 2 / Lafayette St.
6	Quarry Rd. / Stoddard Wells Rd.	16	Dachshund Av. / Dwy. 3
7	Quarry Rd. / I-15 SB Ramps	17	Dachshund Av. / Dwy. 4
8	Navajo Rd. / Johnson Rd.	18	Dachshund Av. / Dwy. 5
9	Navajo Rd. / Lafayette St.	19	Dwy. 6 / Burbank St.
10	Central Rd. / Johnson Rd.	20	Dwy. 7 / Burbank St.

Section 2 *Methodologies* provides information on the methodologies used in the analysis and Section 5 *Opening Year Cumulative (2024) Traffic Conditions,* and Section 6 *Horizon Year (2040) Traffic Conditions* includes the detailed analysis. A summary of LOS results for all analysis scenarios is presented on Table 1-2.

1.6 RECOMMENDATIONS

1.6.1 SITE ADJACENT AND SITE ACCESS RECOMMENDATIONS

The following recommendations are based on the minimum improvements needed to accommodate site access and maintain acceptable peak hour operations for the proposed Project. On-site and site-adjacent recommendations are shown on Exhibit 1-3.

TABLE 1-2: LEVEL OF SERVICE (LOS) SUMMARY

#	Intersection	Existing (2022) AM	Existing (2022) PM	2024 w/o Project AM	2024 w/o Project PM	2024 w/ Project AM	2024 w/ Project PM	HY (2040) w/o Project AM	HY (2040) w/o Project PM	HY (2040) w/ Project AM	HY (2040) w/ Project PM
1	Dale Evans Pkwy. / Johnson Rd.										
	- Without Improvements	A - D	A - D	A - D	F	A - D	F	F	F	F	F
	- With Improvements	N/A	N/A	A - D	A - D	A - D	A - D	A - D	A - D	A - D	A - D
2	Dale Evans Pkwy. / Lafayette St.										
	- Without Improvements	A - D	A - D	A - D	A - D	A - D	A - D	F	F	F	F
	- With Improvements	N/A	N/A	N/A	N/A	N/A	N/A	A - D	A - D	A - D	A - D
3	Dale Evans Pkwy. / Corwin Rd.										
	- Without Improvements	A - D	A - D	A - D	A - D	A - D	A - D	F	F	F	F
	- With Improvements	N/A	N/A	N/A	N/A	N/A	N/A	A - D	A - D	A - D	A - D
4	Stoddard Wells Rd. / Johnson Rd.										
	- Without Improvements	A - D	A - D	A - D	A - D	A - D	A - D	A - D	F	A - D	F
	- With Improvements	N/A	N/A	N/A	N/A	N/A	N/A	A - D	A - D	A - D	A - D
5	I-15 NB Ramps / Stoddard Wells Rd.										
	- Without Improvements	A - D	A - D	A - D	F	A - D	F	F	F	F	F
	- With Improvements	N/A	N/A	A - D	A - D	A - D	A - D	A - D	A - D	A - D	A - D
6	Quarry Rd. / Stoddard Wells Rd.	A - D	A - D	A - D	A - D	A - D	A - D	A - D	A - D	A - D	A - D
7	Quarry Rd. / I-15 SB Ramps	A - D	A - D	A - D	A - D	A - D	A - D	A - D	A - D	A - D	A - D
8	Navajo Rd. / Johnson Rd.										
	- Without Improvements	A - D	A - D	A - D	A - D	A - D	A - D	F	F	F	F
	- With Improvements	N/A	N/A	N/A	N/A	N/A	N/A	A - D	A - D	A - D	A - D
9	Navajo Rd. / Lafayette St.										
	- Without Improvements	A - D	A - D	A - D	A - D	A - D	A - D	F	F	F	F
	- With Improvements	N/A	N/A	N/A	N/A	N/A	N/A	A - D	A - D	A - D	A - D
10	Central Rd. / Johnson Rd.										
	- Without Improvements	A - D	A - D	A - D	A - D	A - D	A - D	F	F	F	F
	- With Improvements	N/A	N/A	N/A	N/A	N/A	N/A	A - D	A - D	A - D	A - D
11	Dale Evans Pkwy. / Burbank St.	N/A	N/A	N/A	N/A	A - D	A - D	A - D	A - D	A - D	A - D
12	Dachshund Av. / Lafayette St.	N/A	N/A	N/A	N/A	A - D	A - D	A - D	A - D	A - D	A - D
13	Dachshund Av. / Burbank St.	N/A	N/A	N/A	N/A	A - D	A - D	A - D	A - D	A - D	A - D
14	Dwy. 1 / Lafayette St.	N/A	N/A	N/A	N/A	A - D	A - D	N/A	N/A	A - D	A - D
15	Dwy. 2 / Lafayette St.	N/A	N/A	N/A	N/A	A - D	A - D	N/A	N/A	A - D	A - D
16	Dachshund Av. / Dwy. 3	N/A	N/A	N/A	N/A	A - D	A - D	N/A	N/A	A - D	A - D
17	Dachshund Av. / Dwy. 4	N/A	N/A	N/A	N/A	A - D	A - D	N/A	N/A	A - D	A - D
18	Dachshund Av. / Dwy. 5	N/A	N/A	N/A	N/A	A - D	A - D	N/A	N/A	A - D	A - D
19	Dwy. 6 / Burbank St.	N/A	N/A	N/A	N/A	A - D	A - D	N/A	N/A	A - D	A - D
20	Dwy. 7 / Burbank St.	N/A	N/A	N/A	N/A	A - D	A - D	N/A	N/A	A - D	A - D

Legend:

● = A - D ● = E ● = F

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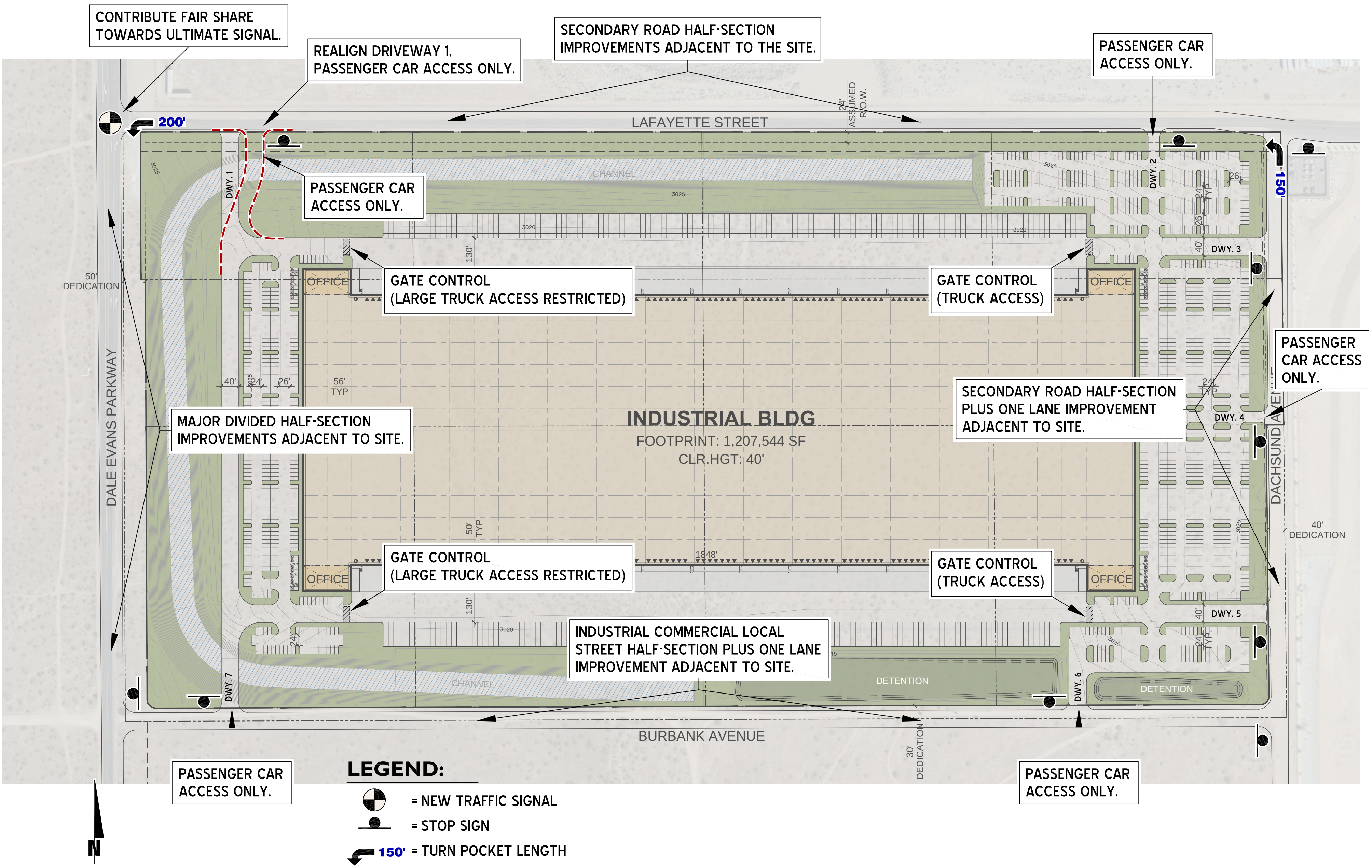
EXHIBIT 1-3: SITE ACCESS RECOMMENDATIONS



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Due to the typical wide turning radius of large trucks, a truck turning template has been overlaid on the site plan at each applicable Project driveway anticipated to be utilized by heavy trucks in order to determine appropriate curb radii and to verify that trucks will have sufficient space to execute turning maneuvers (see Exhibit 1-4). A WB-67 truck (53-foot trailer) has been utilized for the purposes of this analysis. As shown on Exhibit 1-4, the curb radius should be updated to 50 feet, in order to accommodate the ingress and egress of heavy trucks.

Traffic control recommendations regarding Opening Year Cumulative conditions are shown on Exhibit 1-5. Exhibit 1-6 shows the intersection lane recommendations for horizon year conditions.

Recommendation 1 – Project to widen Dale Evans at its ultimate easterly half-section width as a Major Divided Parkway (142-foot right-of-way) with the Town's standard, from Lafayette Street to Burbank Street.

Recommendation 2 – Project to construct Lafayette Street at its ultimate southerly half-section width as a Secondary Road (88-foot right-of-way) with the Town's standard, from Dale Evans Parkway to Dachshund Avenue.

Recommendation 3 – Project to construct Burbank Street at its ultimate northerly half-section plus one lane as an Industrial & Commercial Local Street (66-foot right-of-way) with the Town's standard, from Dale Evans Parkway to Dachshund Avenue.

Recommendation 4 – Project to construct Dachshund Avenue at its ultimate westerly half-section plus one lane as a Secondary Road (88-foot right-of-way) with the Town's standard, from Lafayette Street to Burbank Street.

Recommendation 5 – Dale Evans Parkway & Lafayette Street (#2) – In order to serve opening year cumulative conditions, provide a 200' westbound left turn pocket on Lafayette Street approaching Dale Evans Parkway. Cross-street stop sign control will adequately serve this intersection for opening year cumulative conditions; however, horizon year (2040) projections indicate the need for a traffic signal at this location. Project fair share contribution (see Section 7.3) towards the future traffic signal is recommended.

Recommendation 6 – Dale Evans Parkway & Burbank Street (#11) – Cross-street stop sign control will adequately serve future traffic conditions with the Project at this local street intersection.

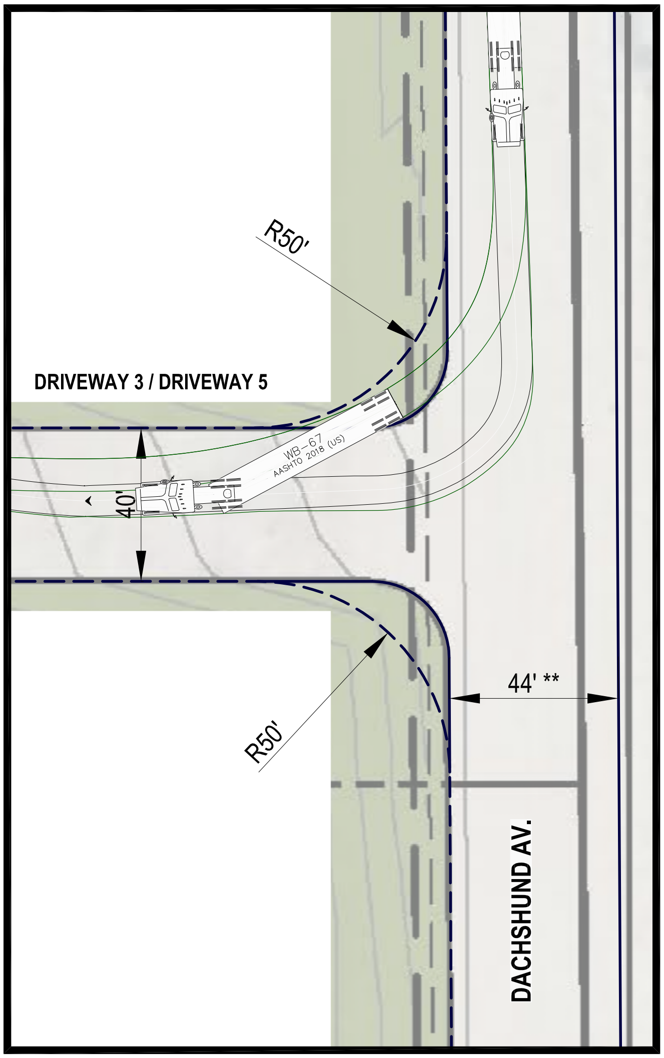
Recommendation 7 – Dachshund Avenue & Lafayette Street (#12) – Provide a 150' northbound left turn lane on Dachshund Avenue approaching Lafayette Street. Cross-street stop sign control will adequately serve this intersection for opening year cumulative and long range future conditions.

Recommendation 8 – Driveway 1 & Lafayette Street (#14) – Realign Driveway 1 to a location 350' east of Dale Evans Parkway, centerline-to-centerline. Project Driveway 1 is to be restricted to passenger cars only (no large trucks). Cross-street stop sign control will adequately serve future traffic conditions at this driveway location.

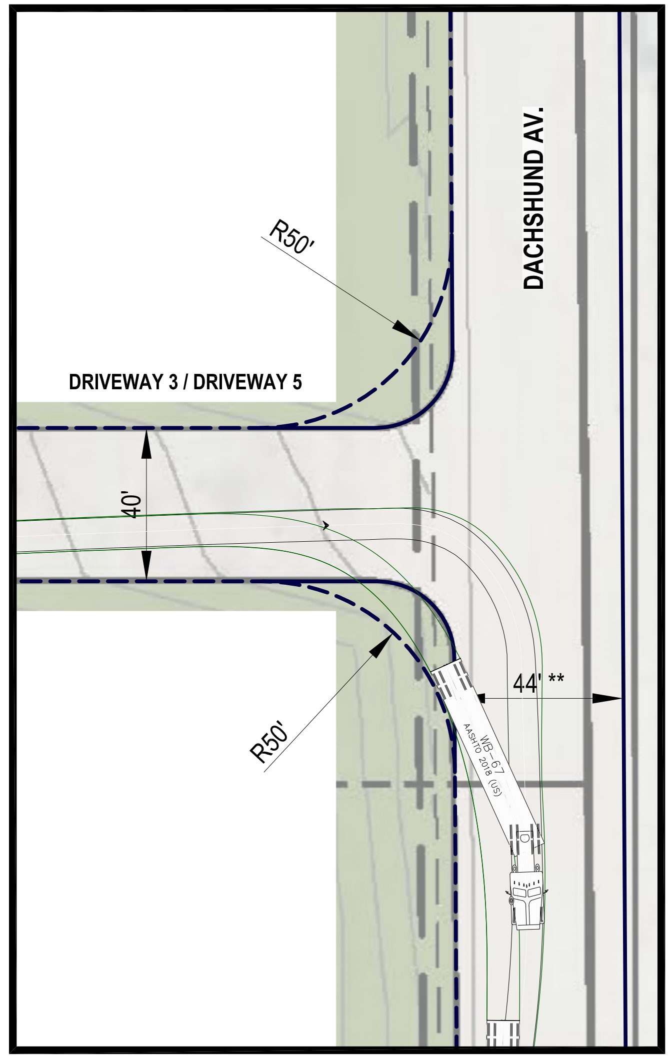
Recommendation 9 – Driveway 2 & Lafayette Street (#15) – Cross-street stop sign control will adequately serve future traffic conditions at this driveway location. Project Driveway 2 is to be restricted to passenger cars only (no large trucks).

EXHIBIT 1-4: TRUCK ACCESS, DRIVEWAY 3 AND DRIVEWAY 5

INBOUND



OUTBOUND



** 44 FEET OUTSIDE CURB TO EASTERLY EDGE OF PAVEMENT IS EQUIVALENT TO THE HALF-SECTION PLUS ONE LANE IMPROVEMENT ON DACHSHUND AVENUE, ADJACENT TO THE SITE

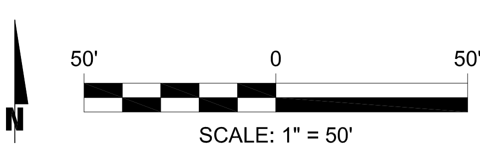


EXHIBIT 1-5: CUMULATIVE PLUS PROJECT (2024) TRAFFIC CONTROLS AND INTERSECTION LANE CONFIGURATIONS

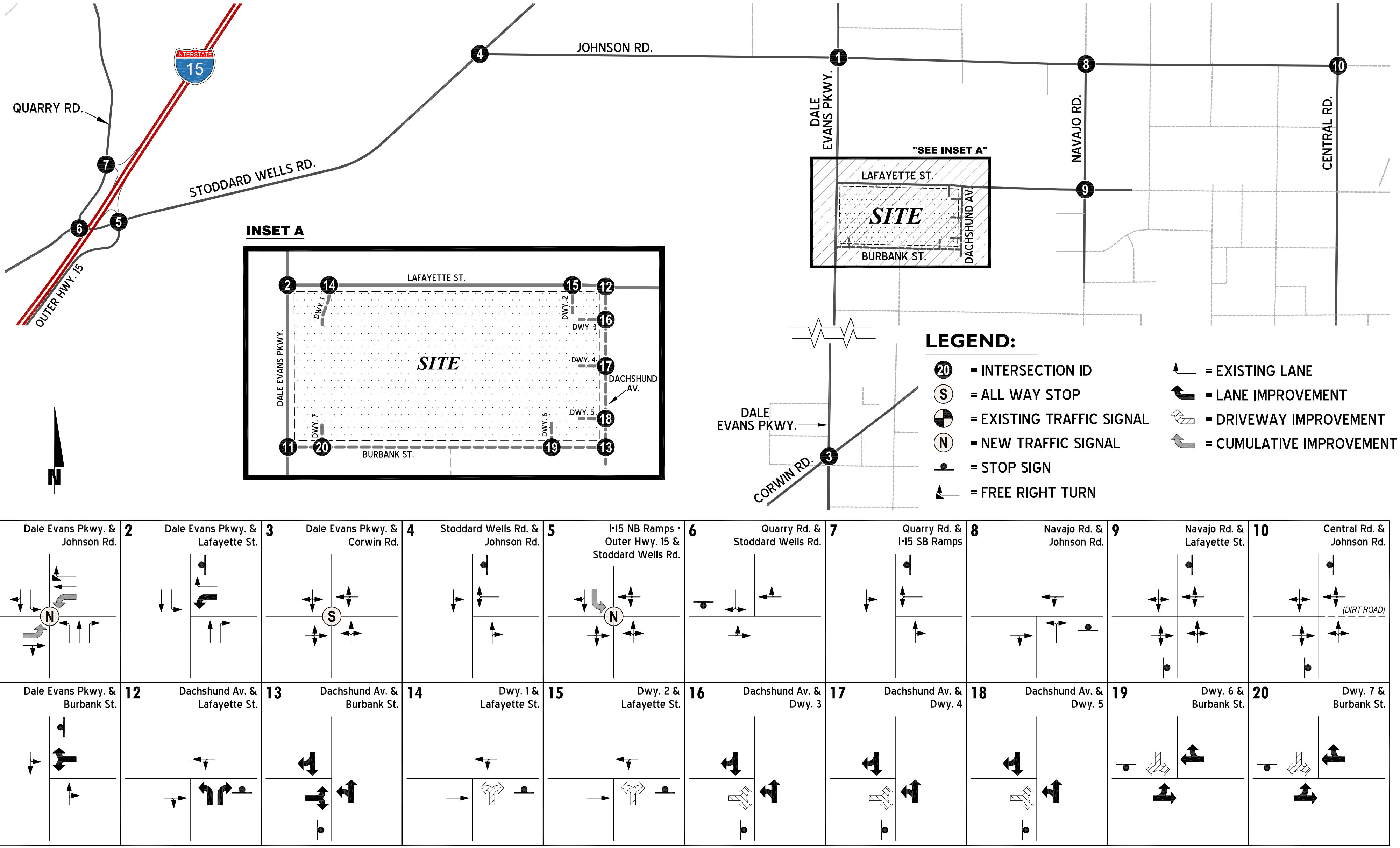
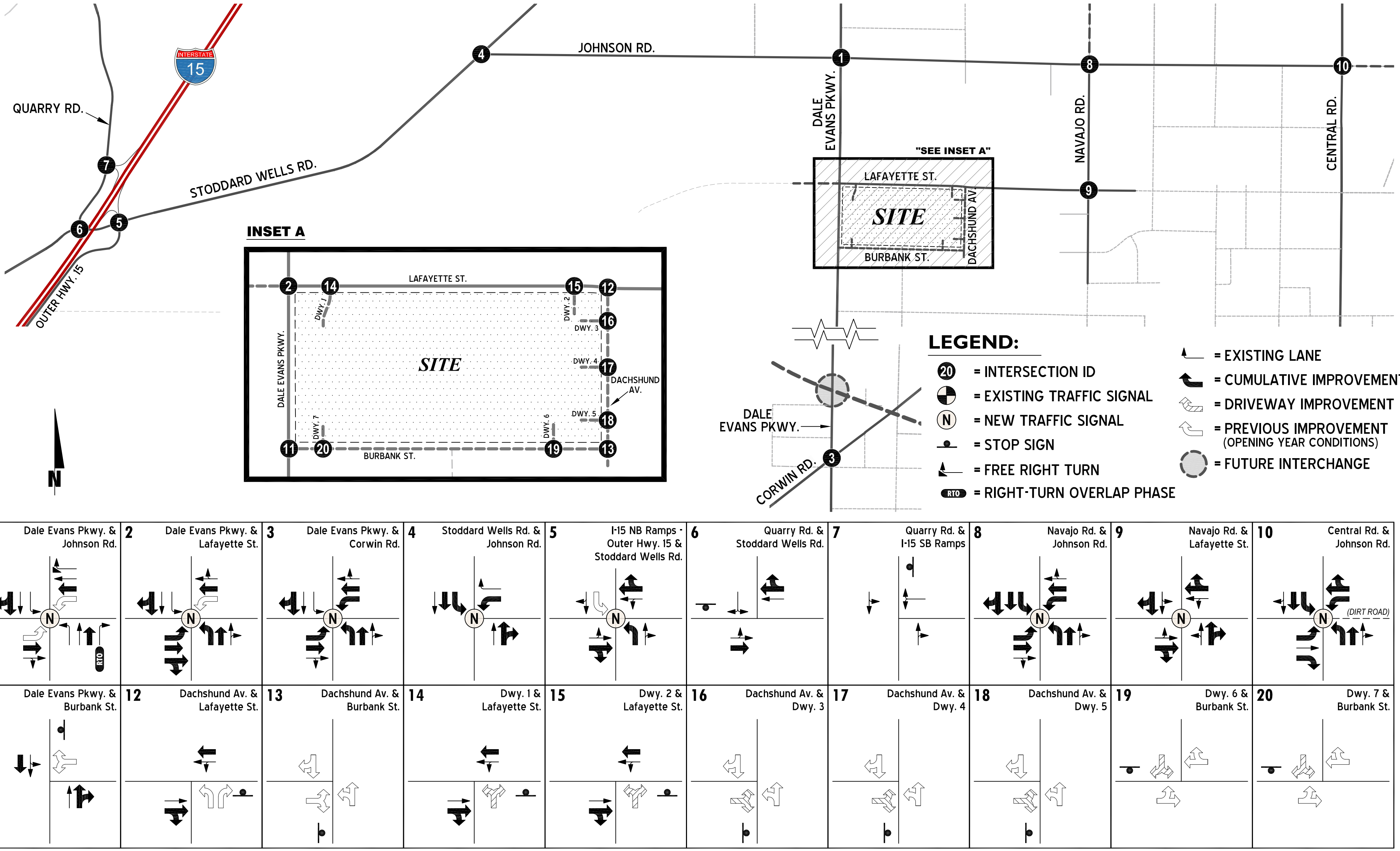


EXHIBIT 1-6: LONG RANGE (2040) TRAFFIC CONTROLS AND INTERSECTION LANE CONFIGURATIONS



Recommendation 10 – Dachshund Avenue & Driveway 3 (#16) – Driveway 3 will function as a large truck access to the Project from Lafayette Street via Dachshund Avenue. Cross-street stop sign control will adequately serve future traffic conditions at this driveway location. To accommodate large trucks, adjust the Driveway 3 / Dachshund Avenue on-site curb returns to 50' radii as indicated on Exhibit 1-4.

Recommendation 11 – Dachshund Avenue & Driveway 4 (#17) – Cross-street stop sign control will adequately serve future traffic conditions at this driveway location. Project Driveway 4 is to be restricted to passenger cars only (no large trucks).

Recommendation 12 – Dachshund Avenue & Driveway 5 (#18) – Driveway 18 will function as a large truck access to the Project from Lafayette Street or Burbank Street via Dachshund Avenue. Cross-street stop sign control will adequately serve future traffic conditions at this driveway location. To accommodate large trucks, adjust the Driveway 5 / Dachshund Avenue on-site curb returns to 50' radii as indicated on Exhibit 1-4.

Recommendation 13 – Driveway 6 & Burbank Street (#19) – Cross-street stop sign control will adequately serve future traffic conditions at this driveway location. Project Driveway 6 is to be restricted to passenger cars only (no large trucks).

Recommendation 14 – Driveway 7 & Burbank Street (#20) – Cross-street stop sign control will adequately serve future traffic conditions at this driveway location. Project Driveway 7 is to be restricted to passenger cars only (no large trucks).

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 Caltrans and Town of Apple Valley sight distance standards at the time of preparation of final grading, landscape, and street improvement plans.

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2 METHODOLOGIES

This section of the report presents the methodologies used to perform the traffic analyses summarized in this report. The methodologies described are consistent with Town of Apple Valley's 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 6th Edition Highway Capacity Manual (HCM) methodology expresses the LOS at an intersection in terms of delay time for the various intersection approaches. (4) The HCM uses different procedures depending on the type of intersection control.

2.2.1 SIGNALIZED INTERSECTIONS

The Town of Apple Valley requires signalized intersection operations analysis based on the methodology described in the HCM. (4) 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 related to the average control delay per vehicle and is correlated to a LOS designation as described on 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[1]
Operations with very low delay occurring with favorable progression and/or short cycle length.	0 to 10.00	A
Operations with low delay occurring with good progression and/or short cycle lengths.	10.01 to 20.00	B
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
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
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
Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths.	80.01 and up	F

Source: HCM, 6th Edition

[1] If V/C is greater than 1.0 then LOS is F per HCM.

Consistent with Appendix B of the San Bernardino County CMP, the following saturation flow rates, in vehicles per hour green per lane (vphgpl), will be utilized in the traffic analysis for signalized intersections:

Existing and Opening Year Cumulative Traffic Conditions:

- Exclusive through: 1800 vphgpl
- Exclusive left: 1700 vphgpl
- Exclusive right: 1800 vphgpl
- Exclusive dual left: 1600 vphgpl
- Exclusive triple left: 1500 vphgpl

Horizon Year (2040) Traffic Conditions:

- Exclusive through: 1900 vphgpl
- Exclusive left: 1800 vphgpl
- Exclusive dual left: 1700 vphgpl
- Exclusive right: 1900 vphgpl
- Exclusive dual right: 1800 vphgpl
- Exclusive triple left: 1600 vphgpl or less

The traffic modeling and signal timing optimization software package Synchro (Version 11) has been utilized to analyze signalized intersections. 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.

The peak hour traffic volumes have been adjusted using a peak hour factor (PHF) to reflect peak 15-minute volumes. Customary 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. 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. (4)

2.2.2 UNSIGNALIZED INTERSECTIONS

The Town of Apple Valley requires the operations of unsignalized intersections be evaluated using the methodology described in the HCM. (4) 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. Delay for the intersection is reported for the worst individual movement at a two-way stop-controlled intersection. For all-way stop controlled intersections, LOS is computed for the intersection as a whole (average delay).

TABLE 2-2: UNSIGNALIZED INTERSECTION LOS THRESHOLDS

Description	Average Control Delay (Seconds), V/C ≤ 1.0	Level of Service, V/C ≤ 1.0[1]
Little or no delays.	0 to 10.00	A
Short traffic delays.	10.01 to 15.00	B
Average traffic delays.	15.01 to 25.00	C
Long traffic delays.	25.01 to 35.00	D
Very long traffic delays.	35.01 to 50.00	E
Extreme traffic delays with intersection capacity exceeded.	> 50.00	F

Source: HCM, 6th Edition

[1] If V/C is greater than 1.0 then LOS is F per HCM.

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 determine 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 Caltrans California Manual on Uniform Traffic Control Devices (CA MUTCD). (5)

The signal warrant criteria for Existing study area intersections are based upon several factors, including volume of vehicular and pedestrian traffic, frequency of accidents, and location of school areas. The CA MUTCD indicates that the installation of a traffic signal should be considered if one or more of the signal warrants are met. (5) Specifically, this TA utilizes the Peak Hour Volume-based Warrant 3 as the appropriate representative traffic signal warrant analysis for existing traffic conditions and for all future analysis scenarios for existing unsignalized intersections. Warrant 3 is appropriate to use for this TA because it provides specialized warrant criteria for intersections with rural characteristics. 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. Posted speed limits on the major roadways with unsignalized intersections are 40 miles per hour or below, which coincides with using the rural warrants.

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. Similarly, the speed limit has been used as the basis for determining the use of Urban and Rural warrants. Traffic signal warrant analyses were performed for all 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 *Opening Year Cumulative (2024) Traffic Conditions, and* Section 6 *Horizon Year (2040) Traffic Conditions* of this report. It is important to note that a signal warrant defines the minimum condition under which the installation of a traffic signal might be warranted. Meeting this threshold condition does not require that a traffic control signal be installed at a particular location, but rather, that other traffic factors and conditions be evaluated in order to determine whether the signal is truly justified. It should also be noted that signal warrants do not necessarily correlate with LOS. An intersection may satisfy a signal warrant condition and operate at or above acceptable LOS or operate below acceptable LOS and not meet a signal warrant.

2.4 MINIMUM ACCEPTABLE LEVELS OF SERVICE (LOS)

Minimum Acceptable LOS and associated definitions of intersection deficiencies have been obtained from each of the applicable jurisdictions.

2.4.1 TOWN OF APPLE VALLEY

According to the Town of Apple Valley's General Plan, LOS C or better is preferable, but LOS D is the minimum acceptable condition that should be maintained during the peak commute hours, where feasible.

2.4.2 CMP

The CMP definition of deficiency is based on maintaining a level of service standard of LOS E or better, where feasible, except where an existing LOS F condition is identified in the CMP document. However, in an effort to overstate as opposed to understate potential deficiencies, LOS D has been utilized for the CMP intersections for the purposes of this analysis. (2)

2.5 DEFICIENCY CRITERIA

This section outlines the methodology used in this analysis related to identifying circulation system deficiencies. Per the Town's Traffic Study Guidelines: In accordance with the Town's General Plan Circulation Element, at intersections where the LOS falls below, or is expected to fall below an acceptable threshold with or without the addition of the project, feasible measures shall be identified to mitigate the project's impacts for all project scenario conditions. The TA calculates the project's fair share towards each improvement required to serve cumulative conditions with or without the Project.

2.6 PROJECT FAIR SHARE CALCULATION METHODOLOGY

In cases where this TA identifies that the Project would contribute additional traffic volumes to traffic deficiencies, Project fair share costs of improvements necessary to address deficiencies have been identified. The Project's fair share cost of improvements is determined based on the following equation, which is the ratio of Project traffic to new traffic, and new traffic is total future (Horizon Year) traffic less existing baseline traffic:

Project Fair Share % = Project (2040) AM/PM Traffic / (2040 With Project AM/PM Total Traffic – Existing AM/PM Traffic)

The project fair share percentage has been calculated for both the AM peak hour and PM peak hour and the highest of the two has been selected. The Project fair share contribution calculations are presented in Section 7 *Local and Regional Funding Mechanisms* of this TA.

3 AREA CONDITIONS

This section provides a summary of the existing circulation network, the Town of Apple Valley 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 Town of Apple Valley staff (Appendix 1.1), the study area includes a total of 20 existing and future intersections as shown previously on Exhibit 1-3. 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 TOWN OF APPLE VALLEY GENERAL PLAN CIRCULATION ELEMENT

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

Dale Evans Parkway is classified as a Major Divided Parkway on the Town of Apple Valley General Plan Street System. The Major Divided Parkway classification has a 142-foot right-of-way and 112-foot curb-to-curb measurement. Bike lanes or parking are included adjacent to the curb.

Major Divided Arterials have a 128-foot right-of-way and 104-foot curb-to-curb measurement. Bike lanes or parking are included adjacent to the curb. Stoddard Wells Road southwest of Johnson Road and Central Road south of Johnson Road are classified as Major Divided Arterials.

The Major Road classification is identified as having 104-foot right-of-way and 80-foot curb-to-curb measurement. The following study area roadways are classified as a Major Road:

- Stoddard Wells Road northeast of Johnson Road
- Johnson Road
- Corwin Road, which has a modified road section southwest of Dale Evans Parkway

The Secondary Arterial designation is identified as having an 88-foot right-of-way and 44-foot curb-to-curb measurement. Bike lanes or parking are included adjacent to the curb. The following study area roadways are classified as a Secondary Arterial:

- Dachshund Avenue
- Navajo Road
- Lafayette Street

EXHIBIT 3-1: EXISTING TRAFFIC CONTROLS AND INTERSECTION LANE CONFIGURATIONS

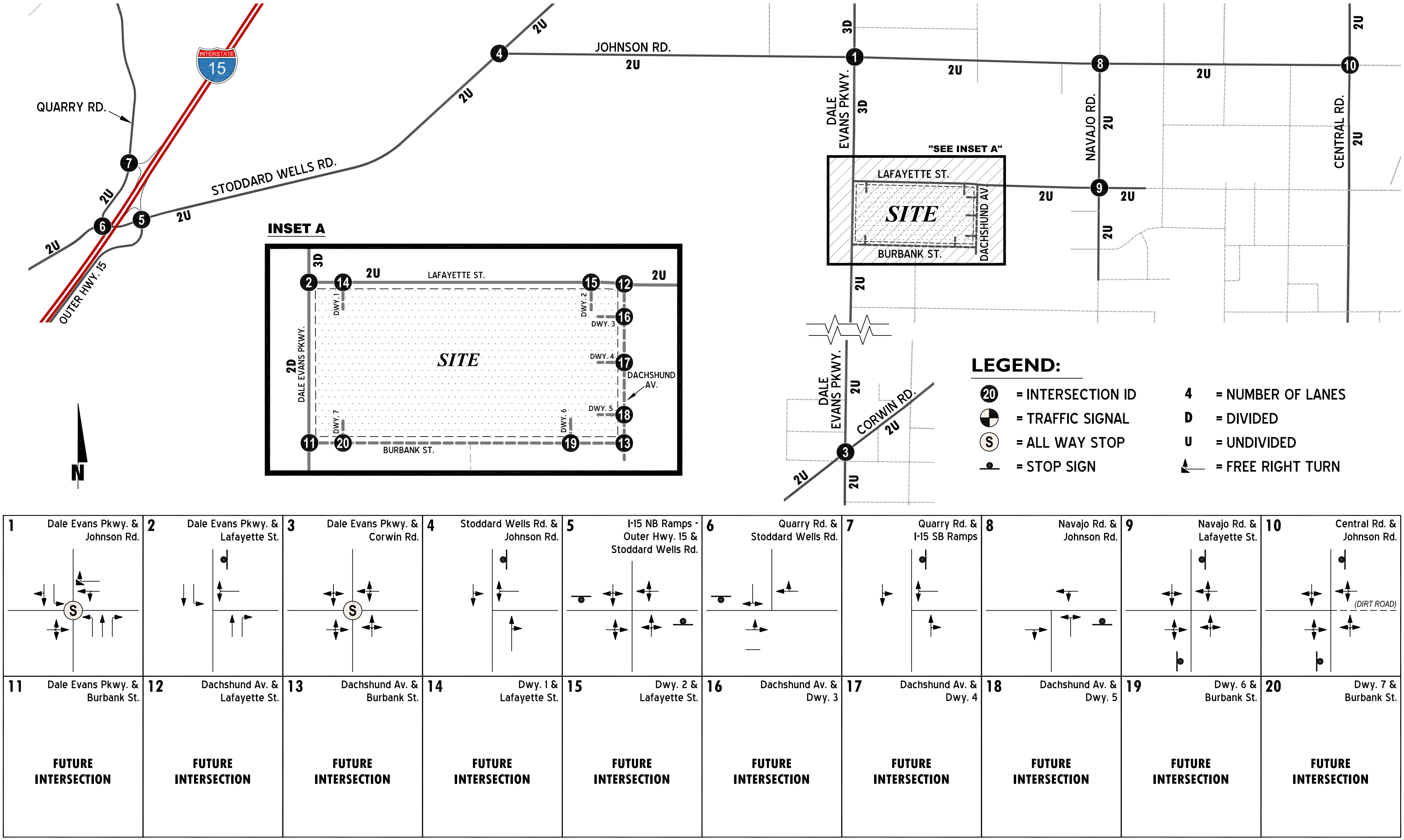


EXHIBIT 3-2: TOWN OF APPLE VALLEY GENERAL PLAN STREET SYSTEM

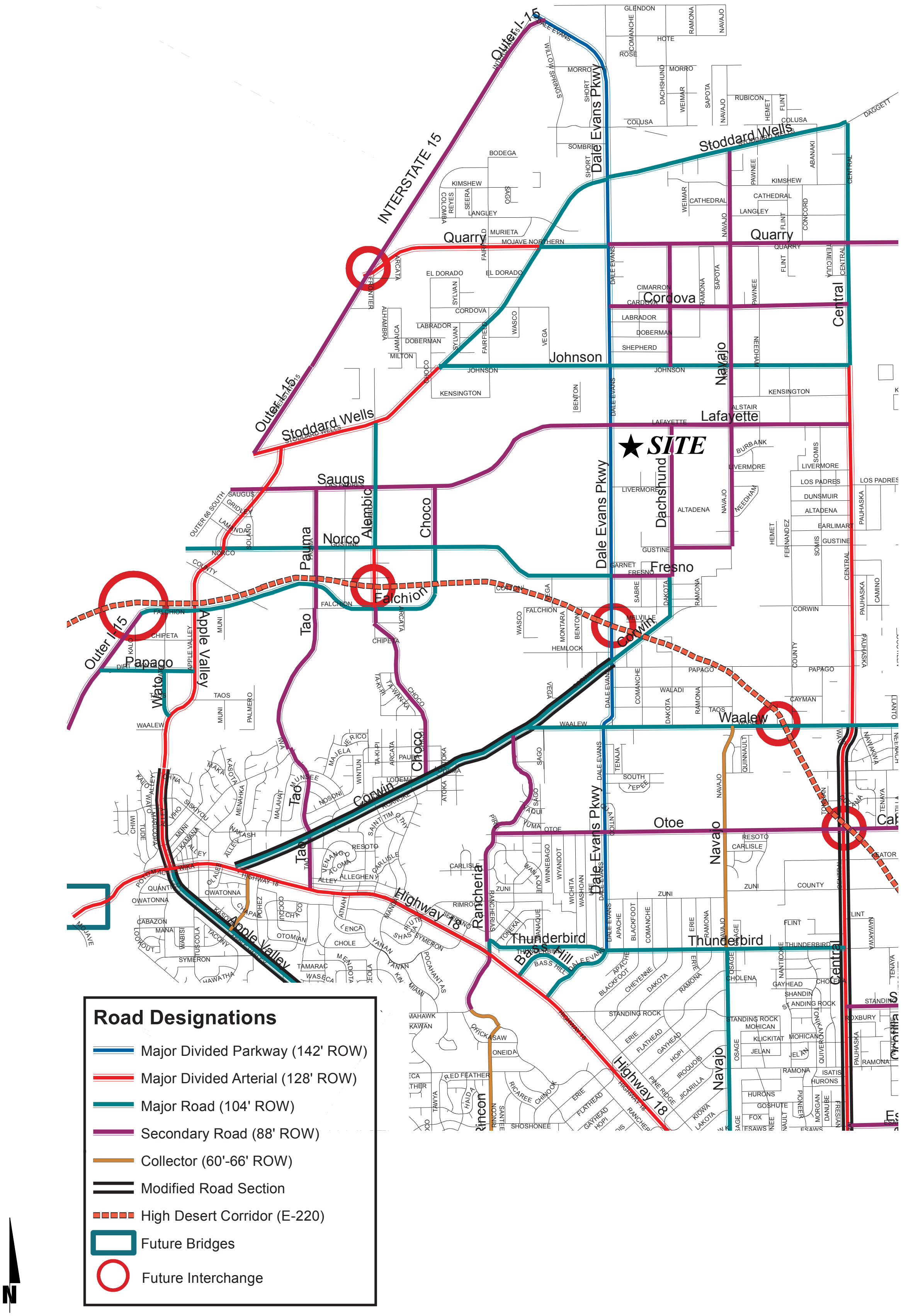
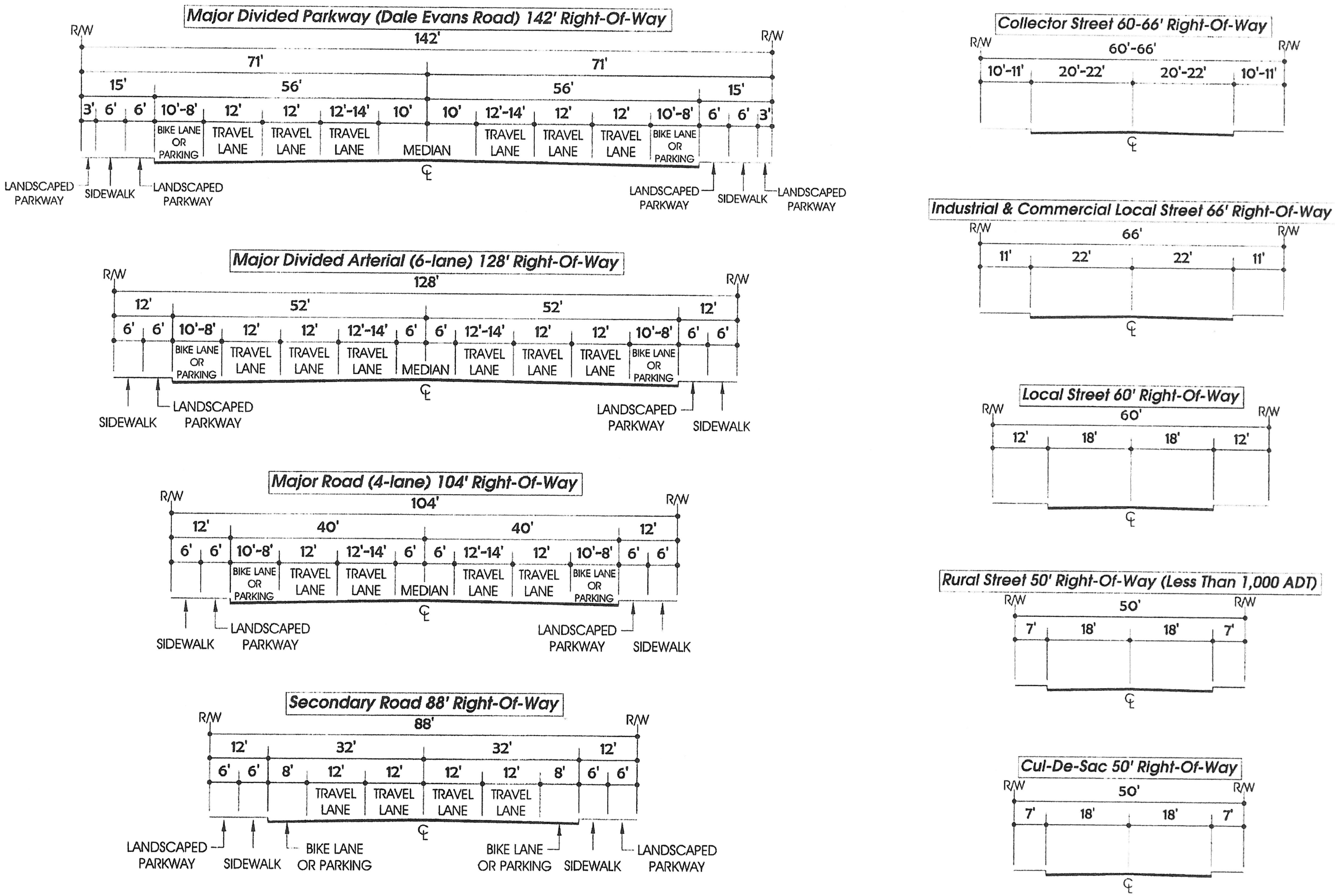


EXHIBIT 3-3: TOWN OF APPLE VALLEY GENERAL PLAN ROADWAY CROSS-SECTIONS



3.3 EXISTING AND PROPOSED PEDESTRIAN FACILITIES

Exhibit 3-4 illustrates the study area existing and proposed pedestrian facilities. Existing pedestrian facilities within the study area are provided along the south side of Lafayette Street from Dachshund Avenue to Navajo Road and along Navajo Road from Lafayette Street to the neighboring southerly Project boundary south of Burbank Street. A sidewalk should be provided by the Project along the south side of Lafayette Street adjacent to the Project (from Dale Evans Parkway to Dachshund Avenue), and along the west side of Dachshund Avenue from Lafayette Street to the southern Project boundary.

3.4 TRANSIT SERVICE

The study area is currently served by Victor Valley Transit Authority (VVTA), a public transit agency serving various jurisdictions within San Bernardino County. Based on a review of the existing transit routes within the vicinity of the proposed Project, Route 42 currently runs along Dale Evans Parkway, Johnson Road, and Corwin Road. The terminus is located at Victor Valley College Regional Training Center on Navajo Road south of Johnson Road.

Transit service is reviewed and updated by VVTA periodically to address ridership, budget and community demand needs. Changes in land use can affect these periodic adjustments which may lead to either enhanced or reduced service where appropriate. As such, it is recommended that the applicant work in conjunction with VVTA to potentially provide bus service to the site.

3.5 TRUCK ROUTES

The Town of Apple Valley and Caltrans' designated truck routes is shown on Exhibit 3-5. Through truck routes are included on Dale Evans Parkway, Johnson Road, and Central Road in the study area. Local Truck Routes are also shown on Stoddard Wells Road, Navajo, Lafayette Street, and Corwin Road. These designated truck routes have been utilized for both the proposed Project and future cumulative development projects for the purposes of this TA.

3.6 EXISTING (2022) TRAFFIC COUNTS

The intersection LOS analysis is based on the traffic volumes observed during the peak hour conditions using traffic count data collected in February 2022. 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 2022 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. As such, no additional adjustments were made to the traffic counts to establish the baseline condition. The raw manual peak hour turning movement traffic count data sheets are included in Appendix 3.1.

EXHIBIT 3-4: EXISTING AND PROPOSED PEDESTRIAN FACILITIES

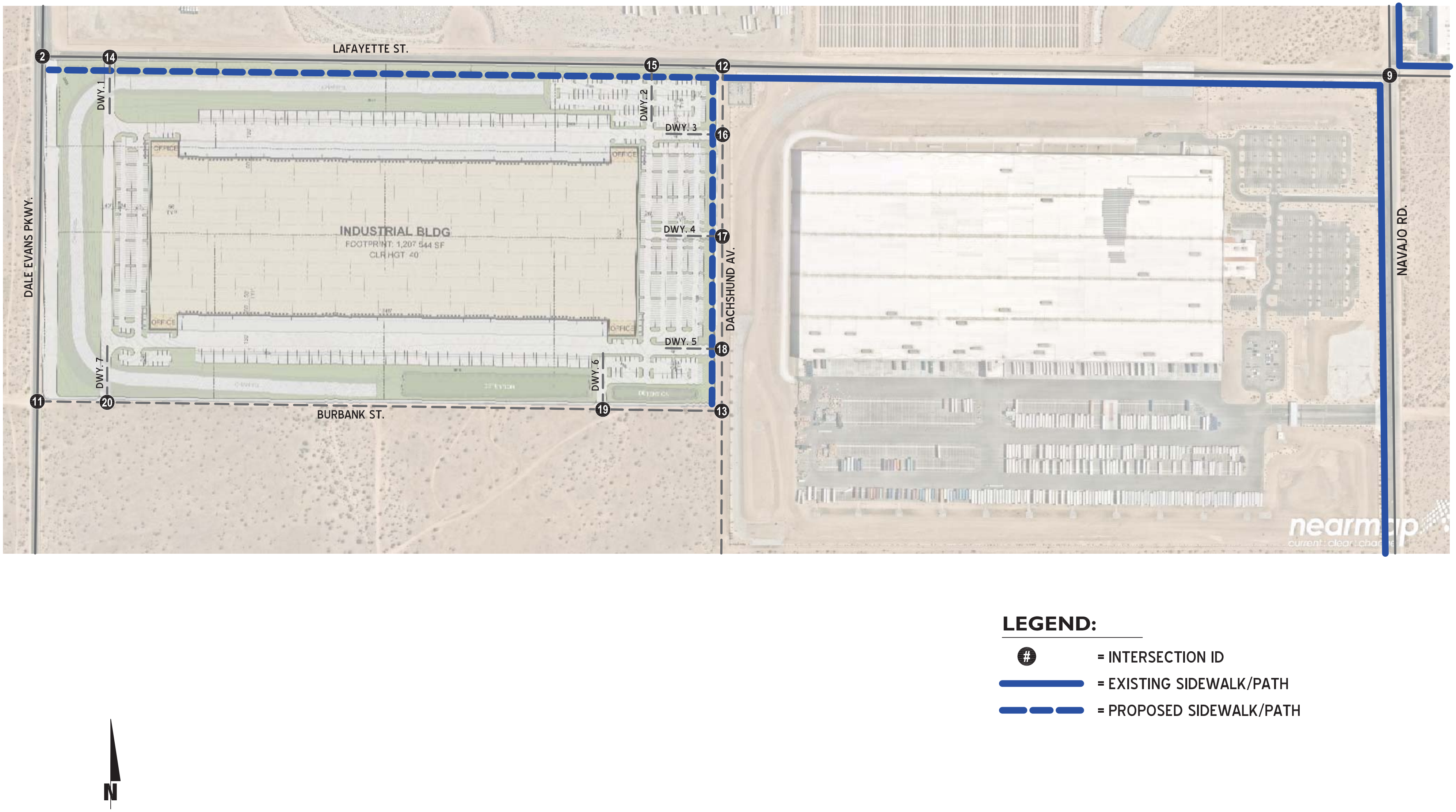
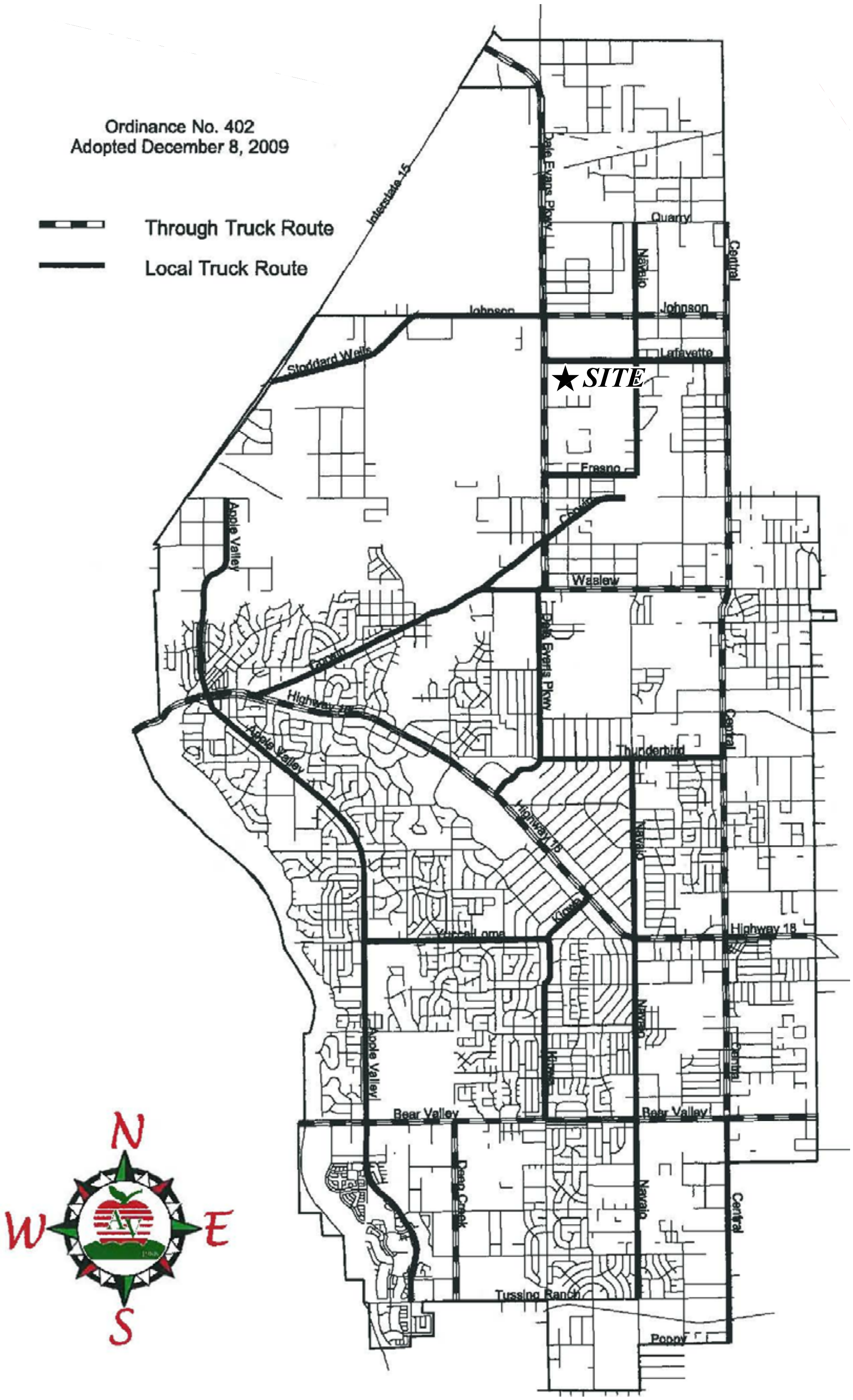


EXHIBIT 3-5: TOWN OF APPLE VALLEY TRUCK ROUTES



To represent the effect large trucks, buses, and recreational vehicles have on traffic flow, all trucks were converted into passenger car equivalent (PCE). By their size alone, these vehicles occupy the same space as two or more passenger cars. In addition, the time it takes for them to accelerate and slow-down is also much longer than for passenger cars and varies depending on the type of vehicle and number of axles. For this analysis, the following PCE factors have been used to estimate each turning movement: 1.5 for 2-axle trucks, 2.0 for 3-axle trucks, and 3.0 for 4+-axle trucks. These factors are consistent with the values recommended for use in the Town's Guidelines.

Existing weekday intersection peak hour turning movement volumes and segment daily traffic volumes are shown on Exhibit 3-6. Where actual 24-hour tube count data was not available, Existing ADT volumes were based upon factored intersection peak hour counts collected by Urban Crossroads, Inc. using the following formula for each intersection leg:

Weekday PM Peak Hour (Approach Volume + Exit Volume) x 11.24 = Leg Volume

A comparison of the PM peak hour and daily traffic volumes of various roadway segments within the study area indicated that the peak-to-daily relationship is approximately 8.90 percent. As such, the above equation utilizing a factor of 11.24 estimates the ADT volumes on the study area roadway segments assuming a peak-to-daily relationship of approximately 8.90 percent (i.e., 1/0.0890 = 11.24) and was assumed to sufficiently estimate average daily traffic (ADT) volumes for planning-level analyses. Existing weekday and weekend peak hour intersection volumes, in actual vehicles, are also shown on Exhibit 3-7.

3.7 INTERSECTION OPERATIONS ANALYSIS

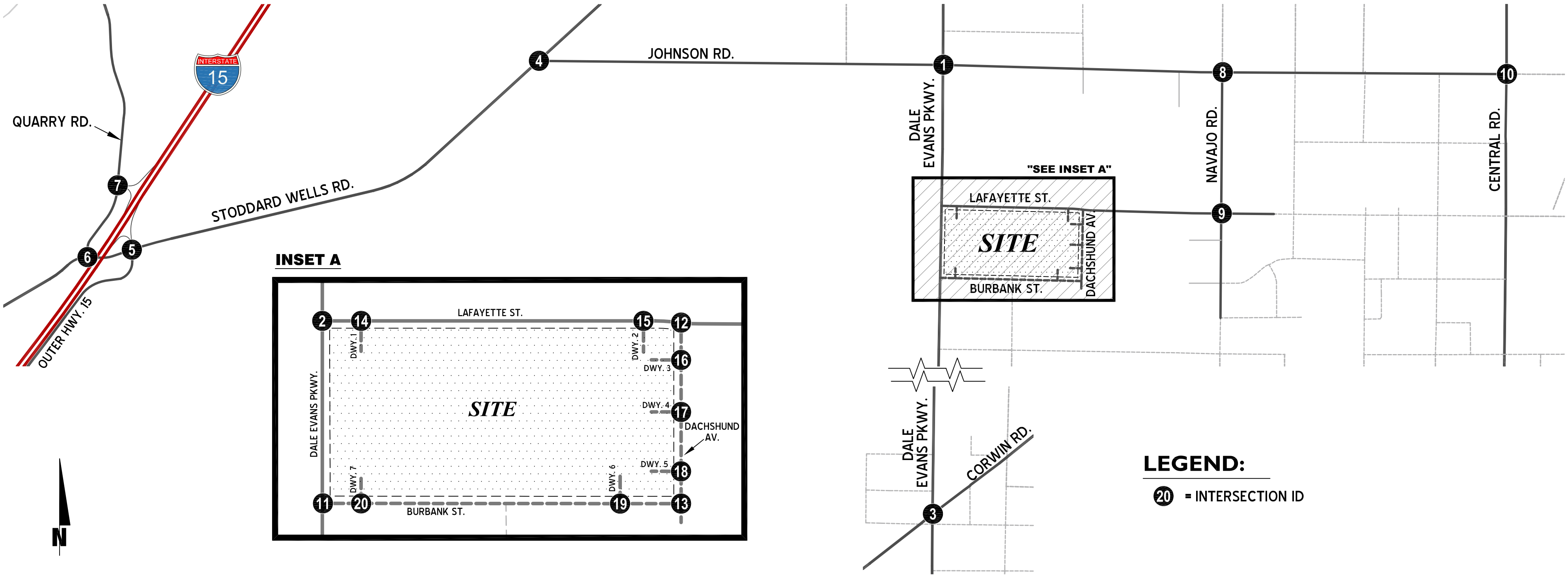
Existing peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2.2 *Intersection Capacity Analysis* of this report. The intersection operations analysis results are summarized on Table 3-1, which indicates that study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

The intersection operations analysis worksheets are included in Appendix 3.2 of this TA.

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 unsignalized study area intersections that currently warrant a traffic signal for Existing traffic conditions. Existing conditions traffic signal warrant analysis worksheets are provided in Appendix 3.3.

EXHIBIT 3-6 (PAGE 1 OF 3): EXISTING (2022) AM PEAK HOUR INTERSECTION PASSENGER CAR EQUIVALENT VOLUMES



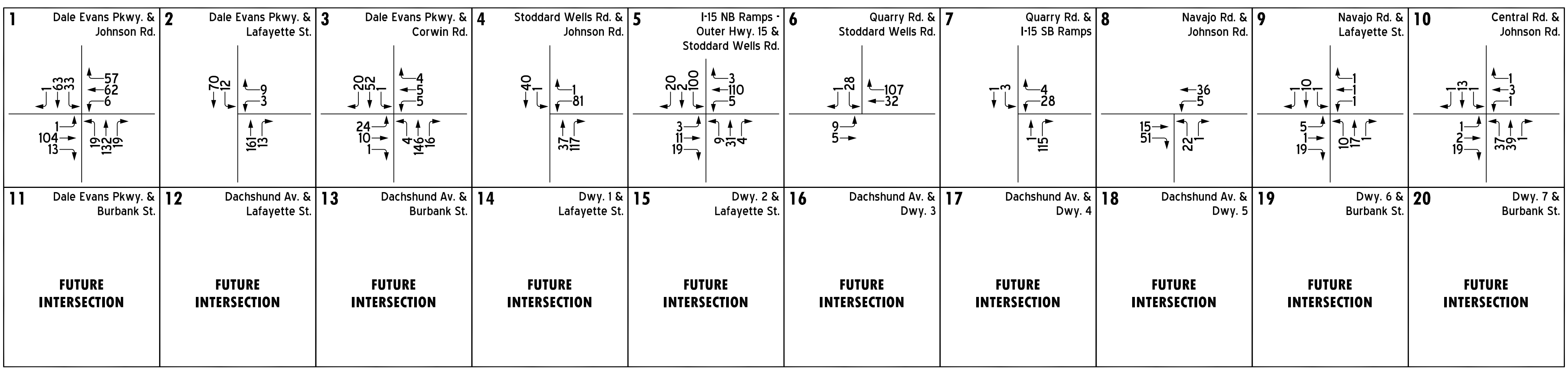
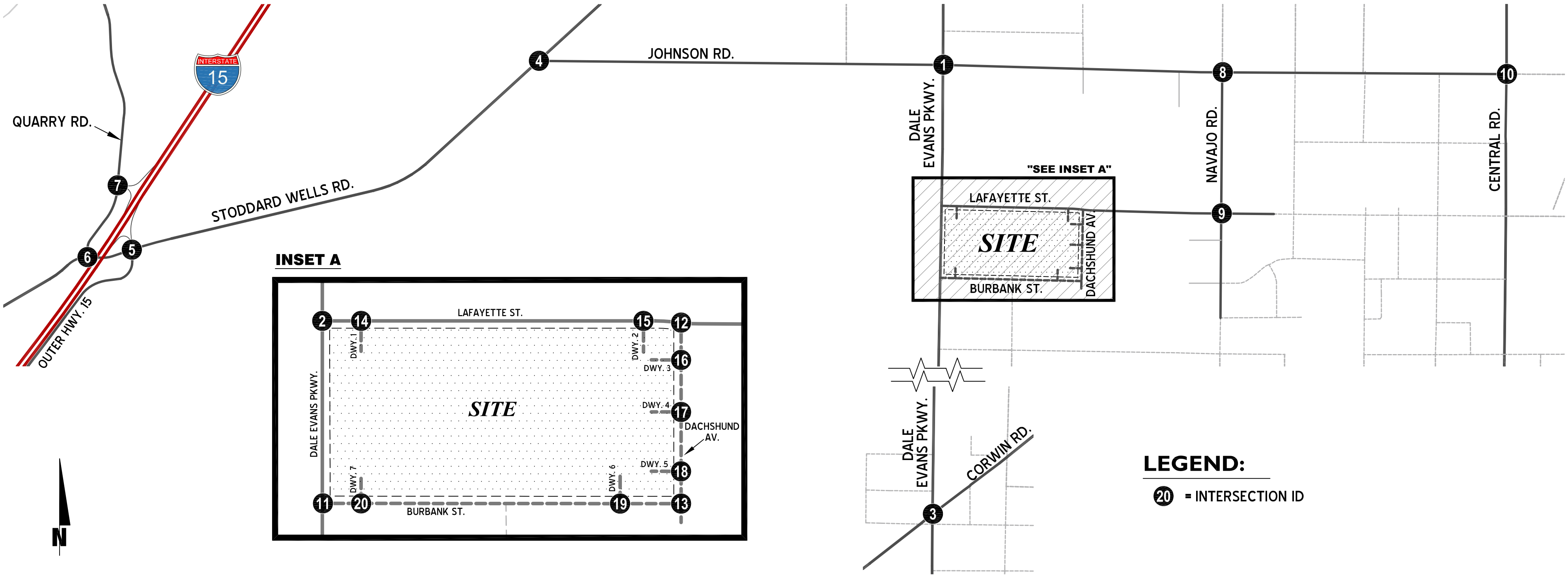


EXHIBIT 3-6 (PAGE 2 OF 3): EXISTING (2022) PM PEAK HOUR INTERSECTION PASSENGER CAR EQUIVALENT VOLUMES



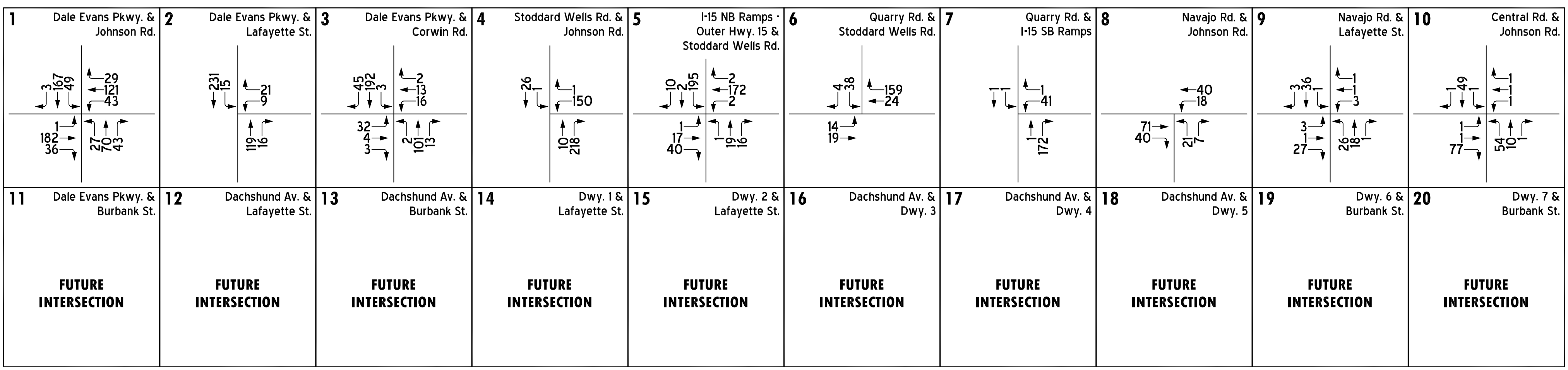


EXHIBIT 3-6 (PAGE 3 OF 3): EXISTING (2022) AVERAGE DAILY TRAFFIC (ADT) VOLUMES

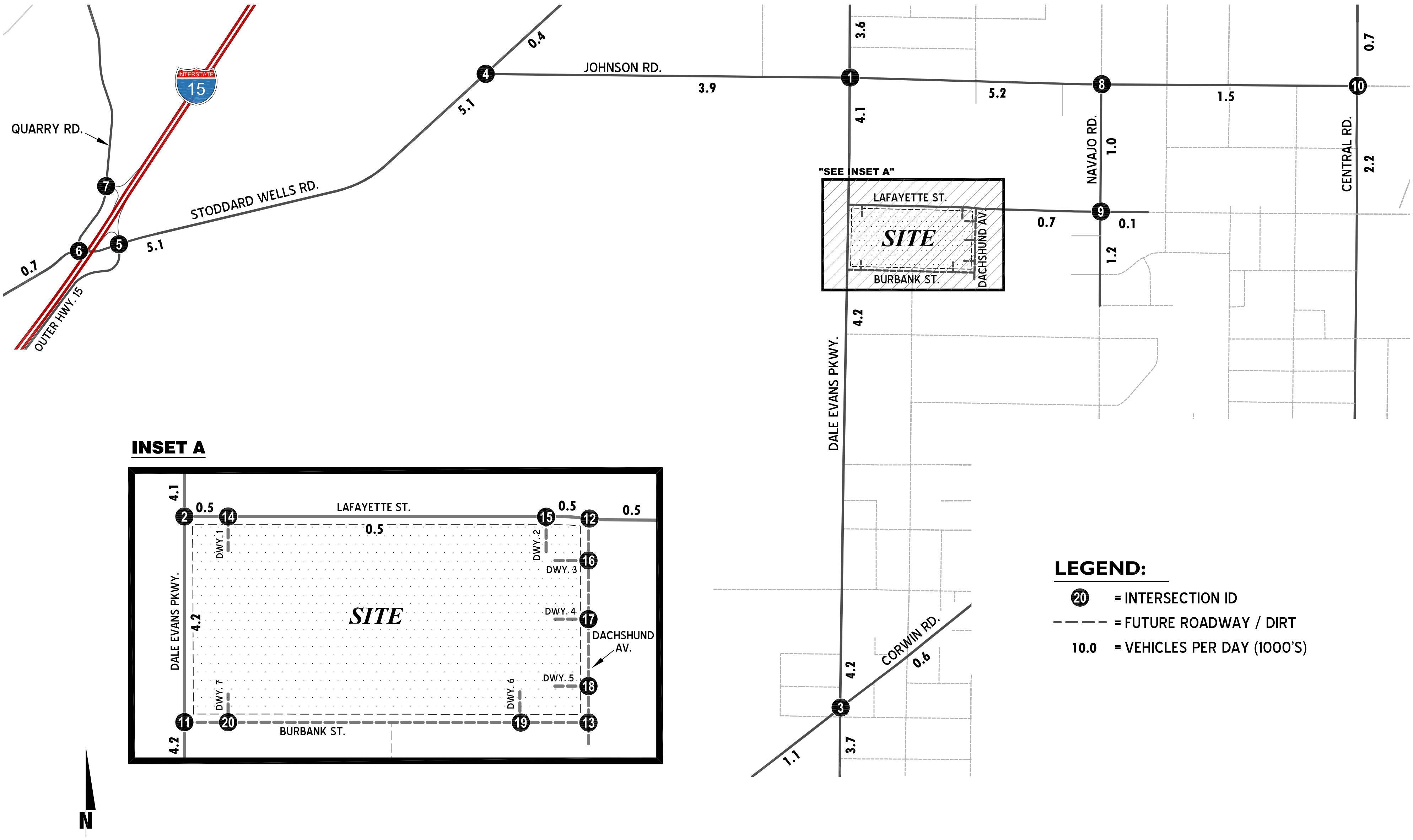


TABLE 3-1: INTERSECTION ANALYSIS FOR EXISTING (2022) CONDITIONS

#	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	Dale Evans Pkwy. / Johnson Rd.	AWS	1	1	1	1	1	0	0	1!	0	0.5	0.5	1>>	9.4	18.3	A	C
2	Dale Evans Pkwy. / Lafayette St.	CSS	0	1	1	1	1	0	0	0	0	0	1!	0	9.6	10.1	A	B
3	Dale Evans Pkwy. / Corwin Rd.	AWS	0	1!	0	0	1!	0	0	1!	0	0	1!	0	8.1	9.0	A	A
4	Stoddard Wells Rd. / Johnson Rd.	CSS	0	1	0	0.5	0.5	0	0	0	0	0	1!	0	9.9	12.6	A	B
5	I-15 NB Ramps / Stoddard Wells Rd.	CSS	0	1!	0	0	1!	0	0	1!	0	0	1!	0	10.7	18.8	B	C
6	Quarry Rd. / Stoddard Wells Rd.	CSS	0	0	0	0	1!	0	0.5	0.5	0	0	1	0	9.4	10.3	A	B
7	Quarry Rd. / I-15 SB Ramps	CSS	0	1	0	0.5	0.5	0	0	0	0	0	1!	0	9.1	9.7	A	A
8	Navajo Rd. / Johnson Rd.	CSS	0	1!	0	0	0	0	0	1	0	0.5	0.5	0	9.1	9.9	A	A
9	Navajo Rd. / Lafayette St.	CSS	0	1!	0	0	1!	0	0	1!	0	0	1!	0	9.0	9.9	A	A
10	Central Rd. / Johnson Rd.	CSS	0	1!	0	0	1!	0	0	1!	0	0	1!	0	9.6	9.8	A	A
11	Dale Evans Pkwy. / Burbank St.		Future Intersection															
12	Dachshund Av. / Lafayette St.		Future Intersection															
13	Dachshund Av. / Burbank St.		Future Intersection															
14	Dwy. 1 / Lafayette St.		Future Intersection															
15	Dwy. 2 / Lafayette St.		Future Intersection															
16	Dachshund Av. / Dwy. 3		Future Intersection															
17	Dachshund Av. / Dwy. 4		Future Intersection															
18	Dachshund Av. / Dwy. 5		Future Intersection															
19	Dwy. 6 / Burbank St.		Future Intersection															
20	Dwy. 7 / Burbank St.		Future Intersection															

[1] CSS = Cross-Street Stop; AWS = All Way Stop

[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; 0.5 = Shared Lane; 1! = Shared Left/Through/Right lane;
>> = Free-Right Turn

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

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4 PROJECTED FUTURE TRAFFIC

This section presents the traffic volumes estimated to be generated by the Project, as well as the Project's trip assignment onto the study area roadway network. The Project is proposed to consist of 1,207,544 square feet (sf) of high cube warehouse/distribution use. The Project is evaluated in a single phase. For the purposes of the traffic analysis, trips associated with the Project are determined assuming 1,026,412 square of high cube warehouse floor area (85% of total), and 181,132 square feet of cold storage (15% of total). Vehicular access will be provided via two full access points along Lafayette Street, three full access points along the future Dachshund Avenue, and two full access points along the future Burbank Avenue. Regional access to the Project site is available from the I-15 Freeway via Stoddard Wells Road interchange.

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.

In order to develop the traffic characteristics of the high-cube warehouse land use for the Proposed Project, trip-generation statistics published in the TUMF High-Cube Warehouse Trip Generation Study (WSP, January 29, 2019) are used. The purpose of WSP 2019 study was to gather enough data to develop reliable trip generation rates for centers for use in traffic impact studies in the Inland Empire.

In addition, the South Coast Air Quality Management District (SCAQMD) recommends the use of 0.64 truck trips per 1,000 square feet, which would account for variations in the future users.

For the remaining high-cube cold storage portion of the Proposed Project, the trip generation rates published by the Institute of Transportation Engineers (ITE) as provided in their Trip Generation Manual, 11th Edition (2021) have been utilized. ITE land use code 157 (High-Cube Cold Storage Warehouse) has been used to derive site specific trip generation estimates for 181,132 square feet (15% of the overall building square footage). High-cube cold storage warehouses include warehouses characterized by the storage and/or consolidation of manufactured goods (and to a lesser extent, raw materials) prior to their distribution to retail locations or other warehouses. High-cube cold storage warehouses are facilities typified by temperature-controlled environments for frozen food or other perishable products. The High-Cube Cold Storage Warehouse vehicle mix (passenger cars versus trucks) has been obtained from the ITE Trip Generation Manual (2021). The truck percentages were further broken down by axle type per the following SCAQMD recommended truck mix: 2-Axle = 34.7%; 3-Axle = 11.0%; 4+-Axle = 54.3%.).

The Project is anticipated to generate a total of 2,569 actual vehicle trip-ends per day with 148 AM peak hour trips and 192 PM peak hour trips as shown on Table 4-1.

Table 4-2 presents the Project PCE trip generation. The Project is anticipated to generate a total of 4,052 PCE trip-ends per day with 229 AM peak vehicle hour trips and 301 PM peak hour vehicle trips.

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TABLE 4-1: PROJECT TRIP GENERATION SUMMARY ACTUAL VEHICLES

Proposed Project Trip Generation Rates[1]

Land Use	ITE LU Code	Quantity[2]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
High-Cube Warehouse[3]	-	1,026.412 TSF	0.094	0.028	0.122	0.046	0.119	0.165	2.129
Passenger Cars			0.066	0.020	0.086	0.033	0.082	0.115	1.489
2 to 4-Axle+ Trucks			0.028	0.008	0.036	0.014	0.036	0.050	0.640
High-Cube Cold Storage Warehouse[4,5,6]	157	181.132 TSF	0.085	0.025	0.110	0.034	0.086	0.120	2.12
Passenger Cars (69.2% AM, 78.3% PM, 67.8% Daily)			0.059	0.017	0.076	0.026	0.068	0.094	1.437
2-Axle Trucks (10.69% AM, 7.53% PM, 11.17% Daily)			0.009	0.003	0.012	0.003	0.006	0.009	0.237
3-Axle Trucks (3.39% AM, 2.39% PM, 3.54% Daily)			0.003	0.001	0.004	0.001	0.002	0.003	0.075
4-Axle+ Trucks (16.72% AM, 11.78% PM, 17.49% Daily)			0.014	0.004	0.018	0.004	0.010	0.014	0.371

Proposed Project Trip Generation Results

Land Use	ITE LU Code	Quantity[2]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
High-Cube Warehouse	-	1026.412 TSF							
- Passenger Cars			67	21	88	34	85	119	1,528
- Truck Trips (Actual)			29	9	38	14	37	51	657
High Cube Warehouse Subtotal			96	30	126	48	122	170	2,185
High-Cube Cold Storage Warehouse	157	181.132 TSF							
- Passenger Cars			11	3	14	5	12	17	260
- Truck Trips									
2-axle:			*2*	*1*	*3*	*1*	*1*	*2*	*43*
3-axle:			*1*	*0*	*1*	*0*	*0*	*0*	*14*
4+-axle:			*3*	*1*	*4*	*1*	*2*	*3*	*67*
- Net Truck Trips (Actual Vehicles)			6	2	8	2	3	5	124
High Cube Cold Storage Warehouse Subtotal			17	5	22	7	15	22	384
Passenger Cars Subtotal			78	24	102	39	97	136	1,788
Truck Trips Subtotal			35	11	46	16	40	56	781
PROJECT TOTAL TRIPS (ACTUAL VEHICLES)[7]			113	35	148	55	137	192	2,569

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, 11th Edition (2021).

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

[3] Source: *TUMF High-Cube Warehouse Trip Generation Study* . Prepared by WSP, January 2019.
Passenger and Truck AM/PM peak hour (in/out) splits are estimated from based on ITE peak-to-daily relationship
Truck Daily Rate Source: *Notice of Preparation of a Draft Environmental Impact Report for the Proposed Potrero Logistics Center* .
Prepared by South Coast Air Quality Management District (SCAQMD), June 2020.

[4] Vehicle Mix Source: Institute of Transportation Engineers (ITE), Trip Generation Handbook, Third Edition (September 2017).

[5] Vehicle Mix Source: Institute of Transportation Engineers (ITE), High-Cube Warehouse Vehicle Trip Generation Analysis (October 2016).

[6] Truck Mix Source: SCAQMD Warehouse Truck Trip Study Data Results and Usage (2014).
With Cold Storage: 34.7% 2-Axle trucks, 11.0% 3-Axle trucks, 54.3% 4-Axle trucks

[7] Total Net Trips (Actual Vehicles) = Passenger Cars + Net Truck Trips (Actual Trucks).

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TABLE 4-2: PROJECT TRIP GENERATION SUMMARY
PASSENGER CAR EQUIVALENT (PCE)

Project Trip Generation Rates[1]

Land Use	ITE LU Code	Quantity[2]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
High-Cube Warehouse[3]	-	1,026.412 TSF	0.150	0.045	0.195	0.075	0.190	0.265	3.409
		Passenger Cars	0.066	0.020	0.086	0.033	0.082	0.115	1.489
		2 to 4-Axle+ Trucks (PCE = 3.0)	0.084	0.025	0.109	0.042	0.108	0.150	1.920
High-Cube Cold Storage Warehouse[4,5,6]	157	181.132 TSF	0.121	0.036	0.157	0.045	0.111	0.156	3.06
		Passenger Cars	0.059	0.017	0.076	0.026	0.068	0.094	1.437
		2-Axle Trucks (PCE = 1.5)	0.014	0.005	0.019	0.005	0.009	0.014	0.356
		3-Axle Trucks (PCE = 2.0)	0.006	0.002	0.008	0.002	0.004	0.006	0.150
		4-Axle+ Trucks (PCE = 3.0)	0.042	0.012	0.054	0.012	0.030	0.042	1.113

Project Trip Generation Results

Land Use	ITE LU Code	Quantity[2]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
High-Cube Warehouse	-	1,026.412 TSF							
- Passenger Cars			67	21	88	34	85	119	1,528
- Truck Trips (PCE = 3.0)			86	26	112	43	111	154	1,971
High Cube Warehouse Subtotal			153	47	200	77	196	273	3,499
High-Cube Cold Storage Warehouse	157	181.132 TSF							
- Passenger Cars			11	3	14	5	12	17	260
- Truck Trips									
		2-axle (PCE = 1.5):	*3*	*1*	*4*	*1*	*2*	*3*	*64*
		3-axle (PCE = 2.0):	*1*	*0*	*1*	*0*	*1*	*1*	*27*
		4+-axle (3.0):	*8*	*2*	*10*	*2*	*5*	*7*	*202*
- Net Truck Trips (PCE)			12	3	15	3	8	11	293
High Cube Cold Storage Warehouse Subtotal			23	6	29	8	20	28	553
Passenger Cars Subtotal			78	24	102	39	97	136	1,788
Truck Trips Subtotal			98	29	127	46	119	165	2,264
PROJECT TOTAL EXTERNAL TRIPS (PCE)[7]			176	53	229	85	216	301	4,052

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, 11th Edition (2021).

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

[3] Source: *TUMF High-Cube Warehouse Trip Generation Study*. Prepared by WSP, January 2019.
Passenger and Truck AM/PM peak hour (in/out) splits are estimated from based on ITE peak-to-daily relationship
Truck Daily Rate Source: *Notice of Preparation of a Draft Environmental Impact Report for the Proposed Potrero Logistics Center*.
Prepared by South Coast Air Quality Management District (SCAQMD), June 2020.

[4] Vehicle Mix Source: Institute of Transportation Engineers (ITE), Trip Generation Handbook, Third Edition (September 2017).

[5] Vehicle Mix Source: Institute of Transportation Engineers (ITE), High-Cube Warehouse Vehicle Trip Generation Analysis (October 2016).

[6] Truck Mix Source: SCAQMD Warehouse Truck Trip Study Data Results and Usage (2014).
With Cold Storage: 34.7% 2-Axle trucks, 11.0% 3-Axle trucks, 54.3% 4-Axle trucks

[7] Total Net Trips (PCE) = Passenger Cars + Net Truck Trips (Passenger Car Equivalent).

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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 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 distribution patterns for the Project passenger cars and Exhibit 4-2 illustrates the distribution patterns for the Project trucks.

4.3 MODAL SPLIT

The potential for Project trips (non-truck) 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 weekday ADT and weekday 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 2% per year for 2024 traffic conditions. The total ambient growth is 4.04% for 2024 traffic conditions. The ambient growth factor is intended to approximate regional traffic growth. This ambient growth rate is added to existing traffic volumes to account for area-wide growth not reflected by cumulative development projects. Ambient growth has been added to daily and peak hour traffic volumes on surrounding roadways, in conjunction with 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 (2024) 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 each applicable phase.

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

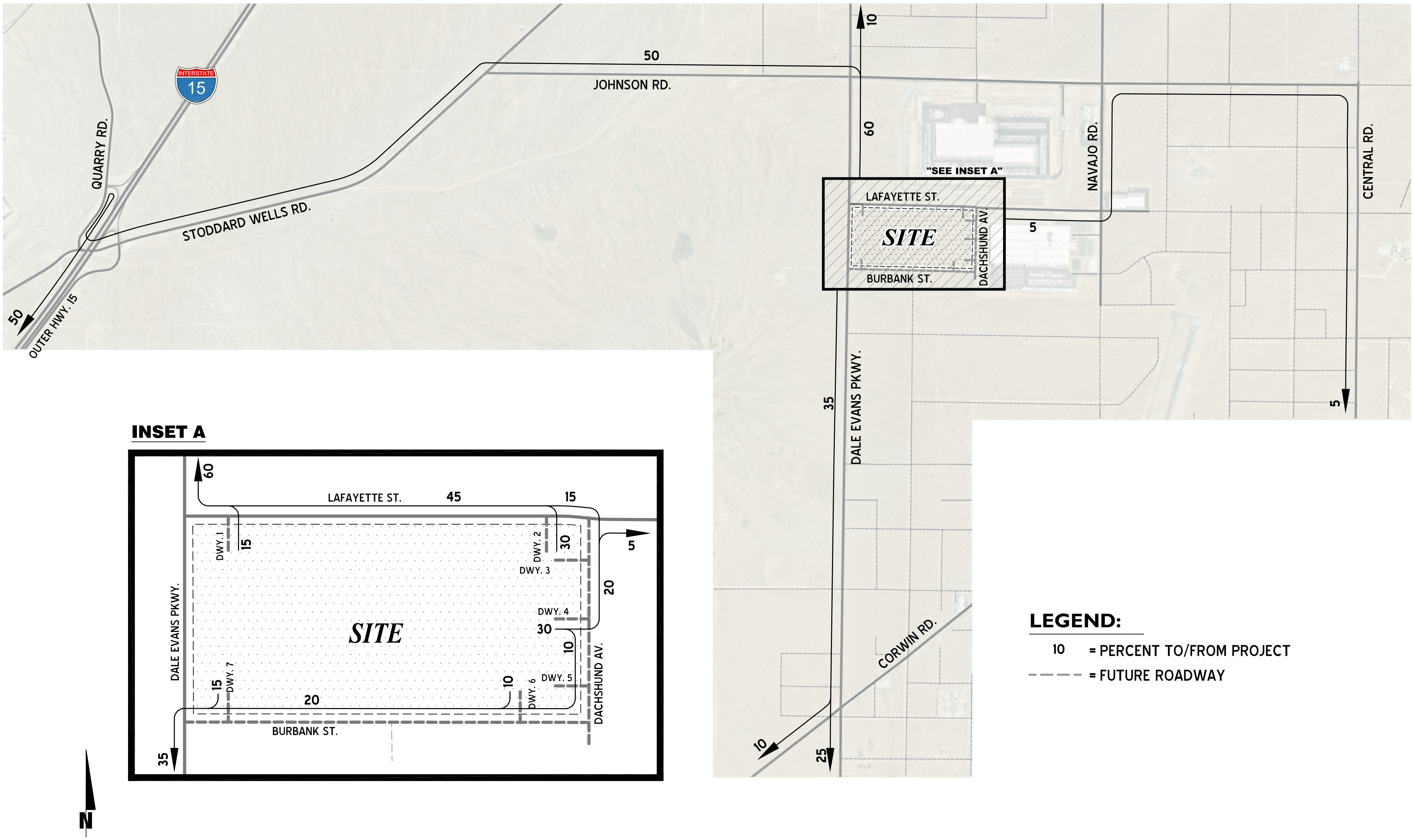


EXHIBIT 4-2: PROJECT (TRUCK) TRIP DISTRIBUTION

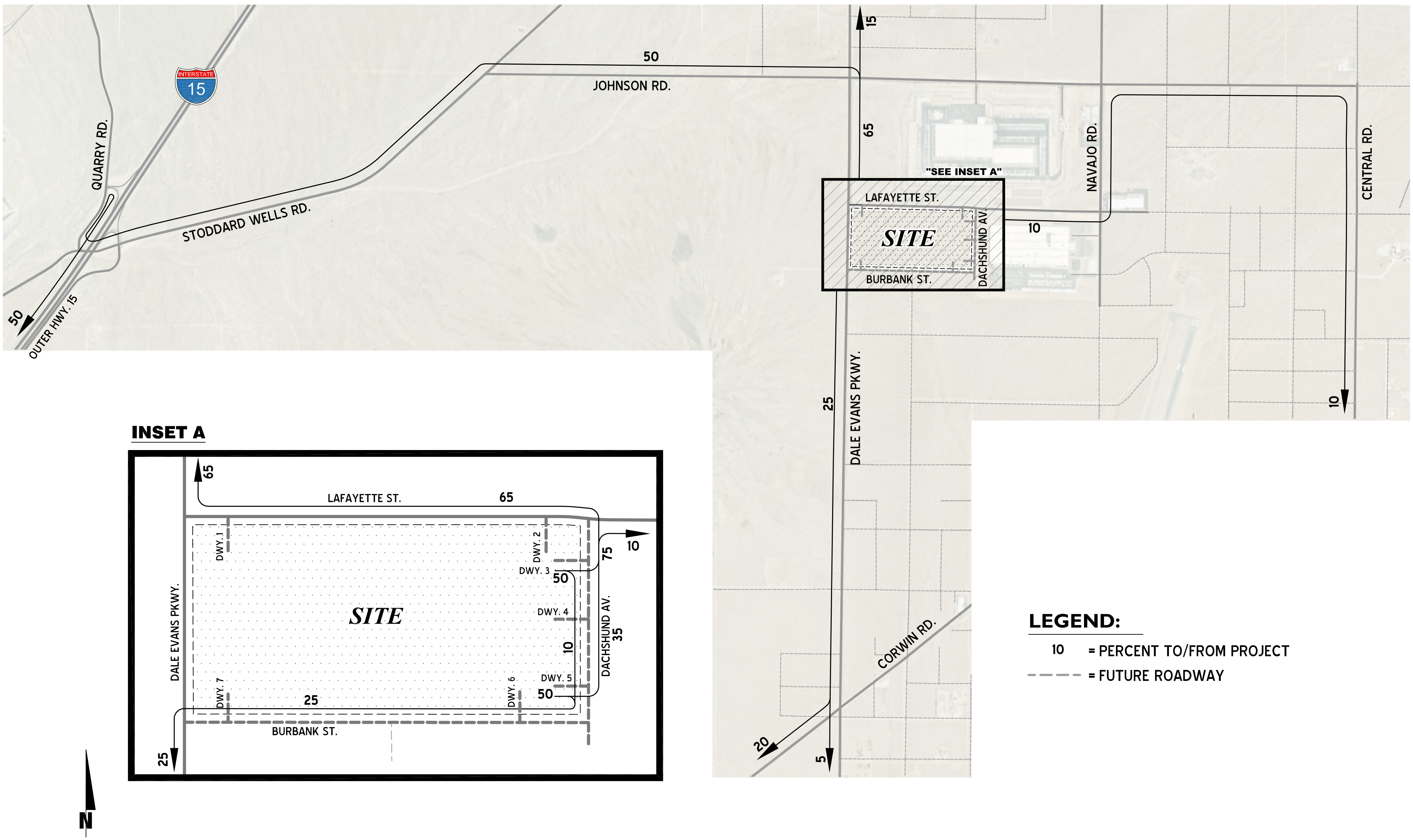
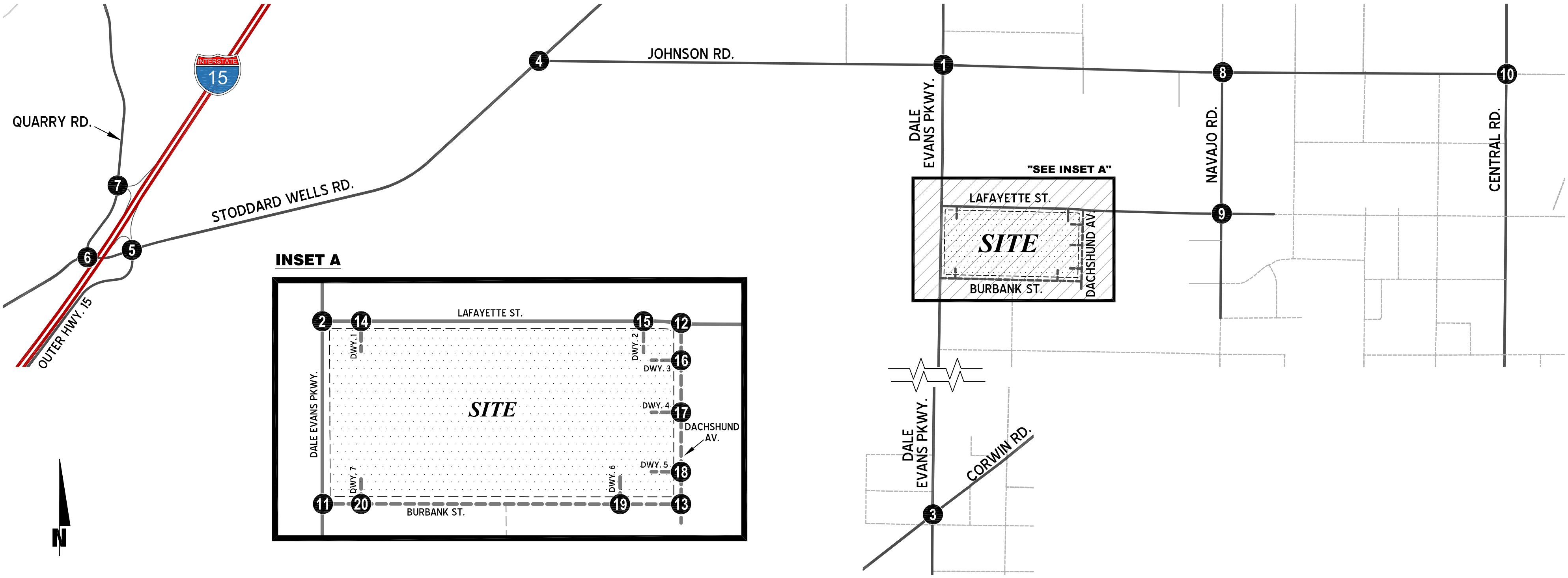


EXHIBIT 4-3 (PAGE 1 OF 3): PROJECT ONLY AM PEAK HOUR INTERSECTION PASSENGER CAR EQUIVALENT VOLUMES



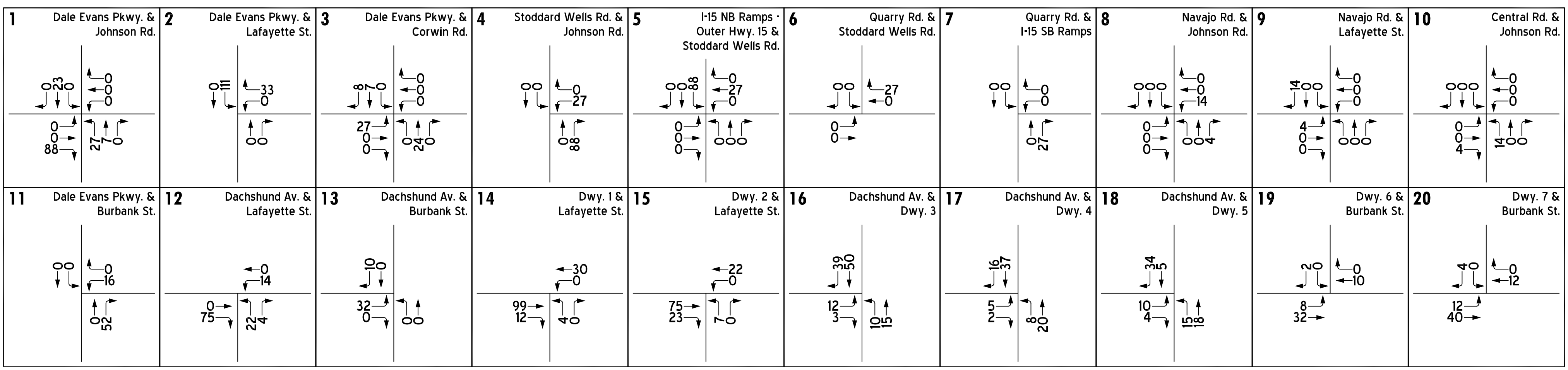
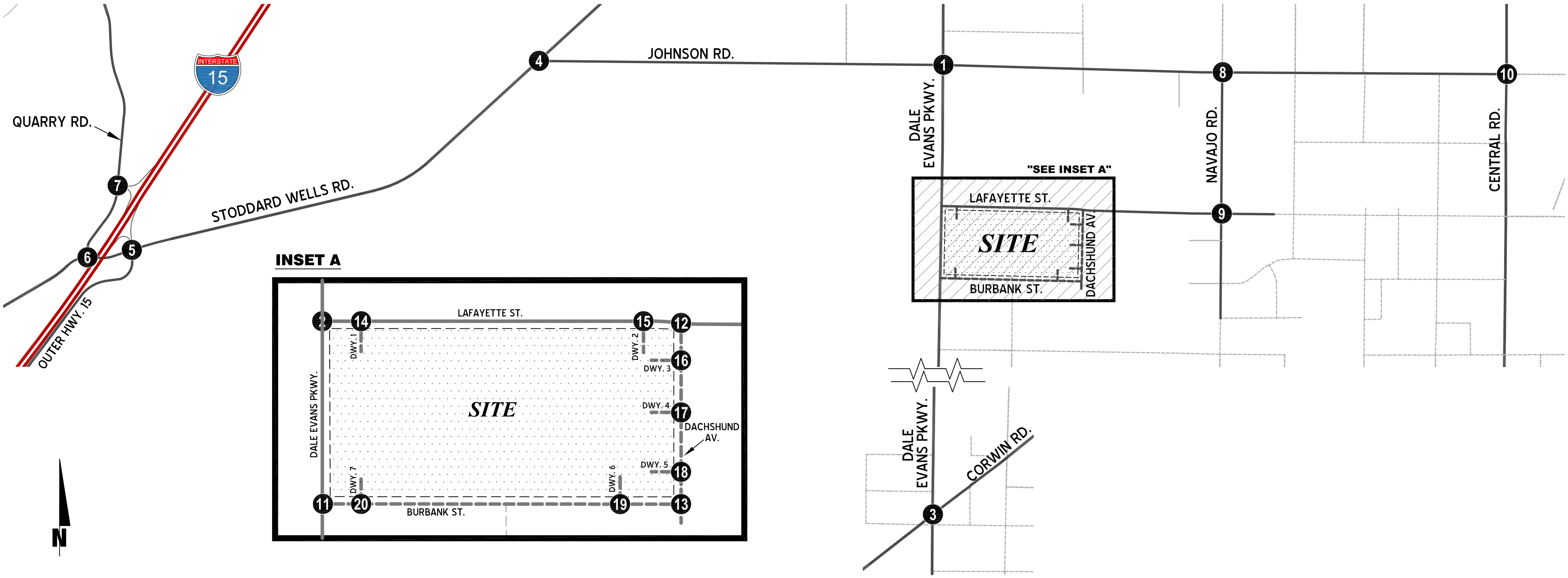


EXHIBIT 4-3 (PAGE 2 OF 3): PROJECT ONLY PM PEAK HOUR INTERSECTION PASSENGER CAR EQUIVALENT VOLUMES



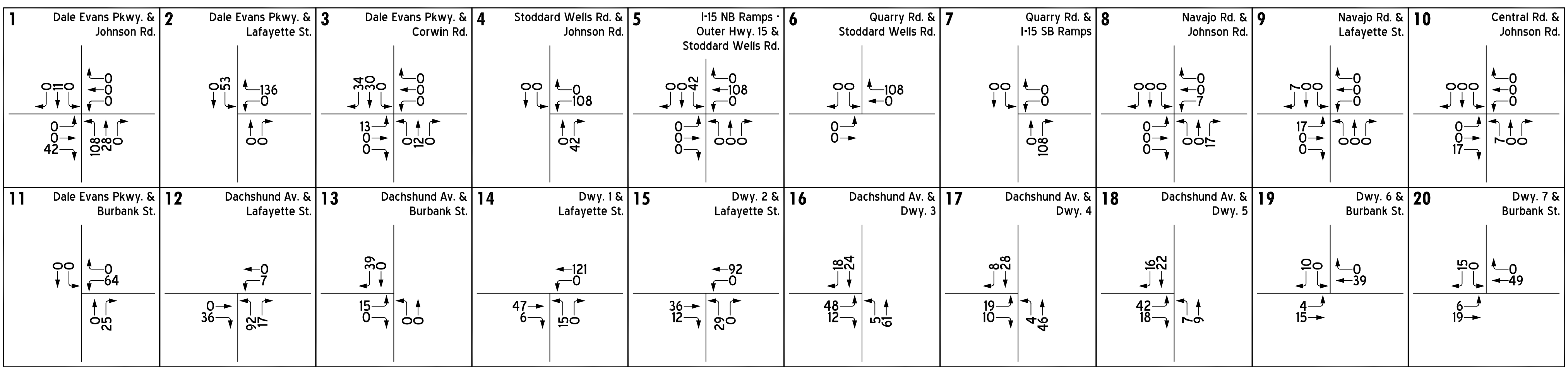
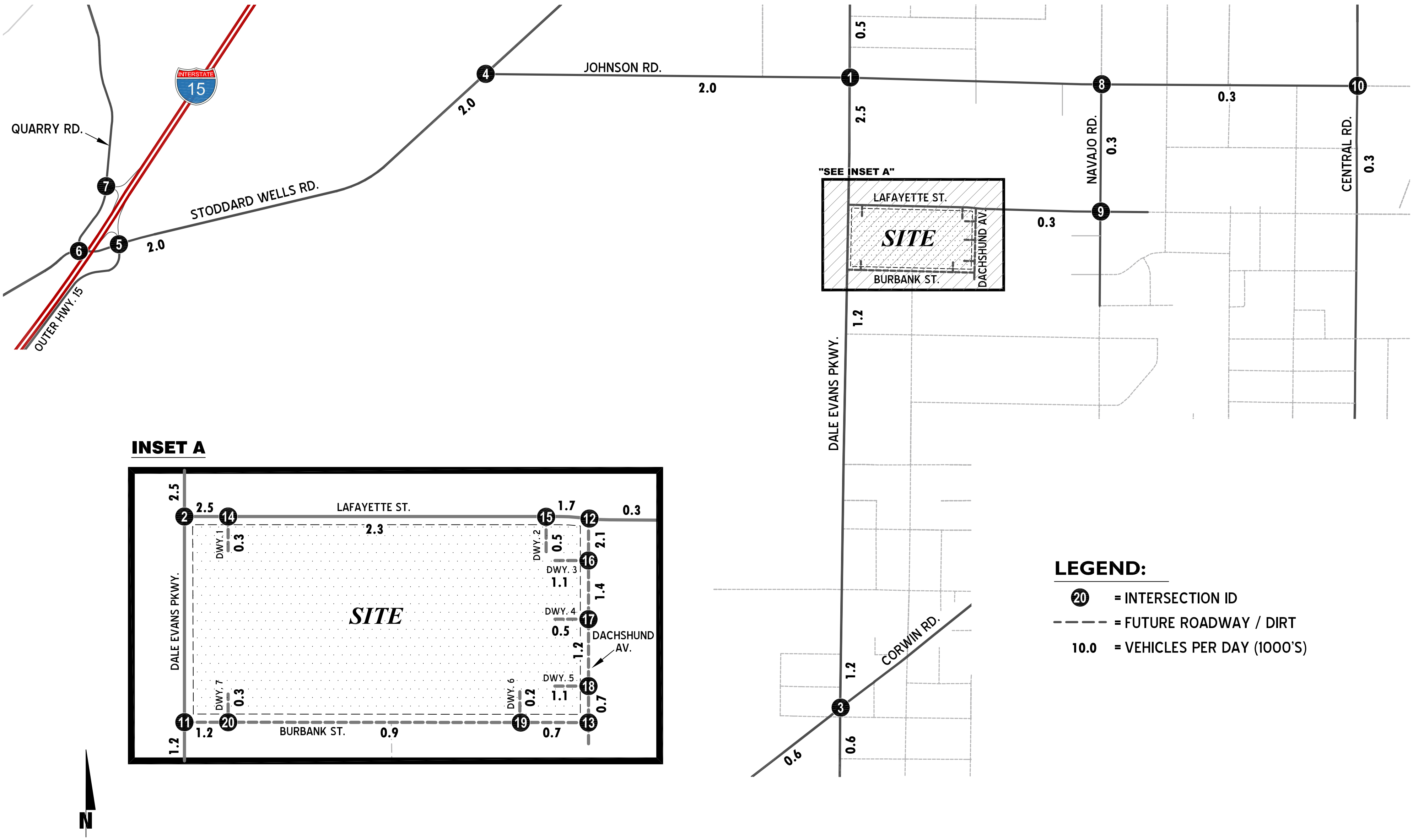


EXHIBIT 4-3 (PAGE 3 OF 3): PROJECT ONLY AVERAGE DAILY TRAFFIC (ADT) VOLUMES PASSENGER CAR EQUIVALENT VOLUMES



4.5.2 HORIZON YEAR (2040) CONDITIONS

The adopted Southern California Association of Governments (SCAG) Connect SoCal: Demographics and Growth Forecast (adopted September 3, 2020) growth forecasts for the Town of Apple Valley indicates population of 74,300 in 2016 and 101,400 in 2045, or a 36.5% increase over the 29-year period. The change in population is less than a 2.0% growth rate, compounded annually. Similarly, growth in employment over the same 29-year period is projected to increase by 67.8%.

4.6 CUMULATIVE DEVELOPMENT TRAFFIC

A cumulative project list was developed for the purposes of this analysis through consultation with planning and engineering staff from the Town of Apple Valley. The cumulative projects listed are those that would generate traffic and would contribute traffic to study area intersections.

Exhibit 4-4 illustrates the cumulative development location map. A summary of cumulative development projects and their proposed land uses are shown on Table 4-4. 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 on Table 4-3 are reflected as part of the background traffic. In an effort to conduct a conservative analysis, the cumulative projects are added in conjunction with the ambient growth identified in Section 4.5.1 *Background Traffic: Opening Year Cumulative Conditions*.

4.7 HORIZON YEAR (2040) VOLUME DEVELOPMENT

Traffic projections for Horizon Year (2040) without Project conditions were derived based on growth from interim year conditions, known cumulative projects, and from the San Bernardino Transportation Analysis Model (SBTAM). The traffic forecasts reflect the area-wide growth anticipated between Existing (2022) conditions and Horizon Year (2040) traffic conditions.

Horizon Year (2040) turning volumes were compared to Opening Year Cumulative (2024) 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 (2024) and Horizon Year (2040) traffic conditions that is not accounted for by the traffic generated by cumulative development projects and ambient growth rates assumed between Existing (2022) and Opening Year Cumulative (2024) 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 (2040) peak hour forecasts.

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EXHIBIT 4-4: CUMULATIVE DEVELOPMENT LOCATION MAP

TABLE 4-3: CUMULATIVE DEVELOPMENT LAND USE SUMMARY

TAZ	Project	Land Use	Quantity	Units[1]
1	Dara II Industrial	Warehouse	374.26	TSF
2	Apple Valley 143	Industrial/Warehouse	2,628.00	TSF
3	TTM 20306	Single Family Residential	160	DU

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

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The future Horizon Year (2040) Without Project peak hour turning movements were then reviewed by Urban Crossroads, Inc. for reasonableness, and in some cases, were adjusted (or “post-processed”) 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. Project traffic was then added for all With Project traffic conditions.

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5 OPENING YEAR CUMULATIVE (2024) TRAFFIC CONDITIONS

This section discusses the methods used to develop Opening Year Cumulative (2024) Without and With Project traffic forecasts, 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 Opening Year Cumulative (2024) 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).
- If applicable, 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.

For With Project conditions, Project-adjacent roadways at their ultimate half-section widths in accordance with Town of Apple Valley standards are assumed as follows to provide Project access:

- Widen Dale Evans from Lafayette Street to Burbank Street (easterly half section)
- Widen Lafayette Street along the Project frontage (southerly half section)
- Construct Burbank Street from Lafayette Street to Dachshund Avenue (northerly half-section plus one lane)
- Construct Dachshund Avenue from Lafayette Street to the southerly Project boundary (westerly half-section plus one lane)
- Project to implement stop control for egress at Project driveways and construct the necessary ingress and egress lanes at each driveway needed to facilitate site access, including an easterly realignment of Driveway 1 to provide additional distance from Dale Evans Parkway intersection.
- Project Driveways 1, 2, 4, 6, and 7 to be restricted to passenger cars only (no large trucks)

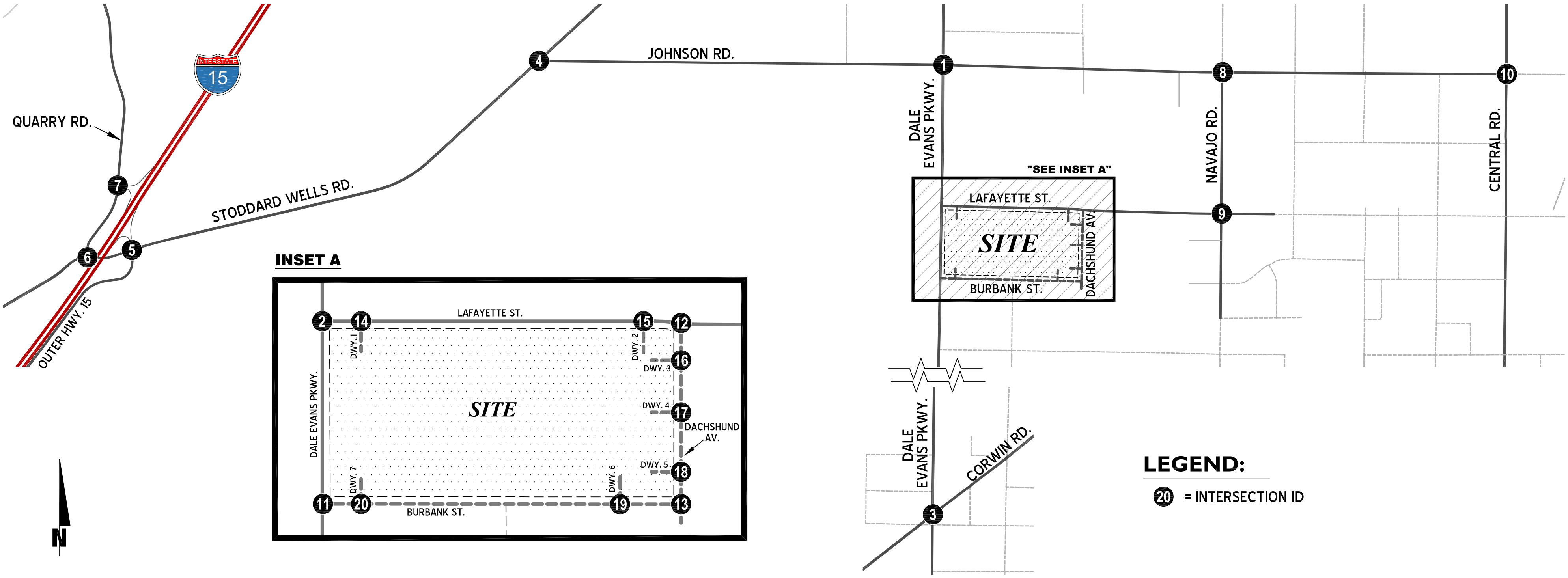
5.2 WITHOUT PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes Existing traffic volumes plus an ambient growth factor of 4.04% plus traffic from pending and approved but not yet constructed known development projects in the area. The weekday ADT and weekday peak hour volumes which can be expected for Opening Year Cumulative (2024) Without Project traffic conditions are shown on Exhibit 6-1.

5.3 WITH PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes Opening Year Cumulative (2024) Without Project traffic in conjunction with the addition of Project traffic. The weekday ADT and weekday peak hour volumes which can be expected for Opening Year Cumulative (2024) With Project traffic conditions are shown on Exhibit 6-2.

EXHIBIT 5-1 (PAGE 1 OF 3): OPENING YEAR CUMULATIVE (2024) WITHOUT PROJECT AM PEAK HOUR INTERSECTION VOLUMES



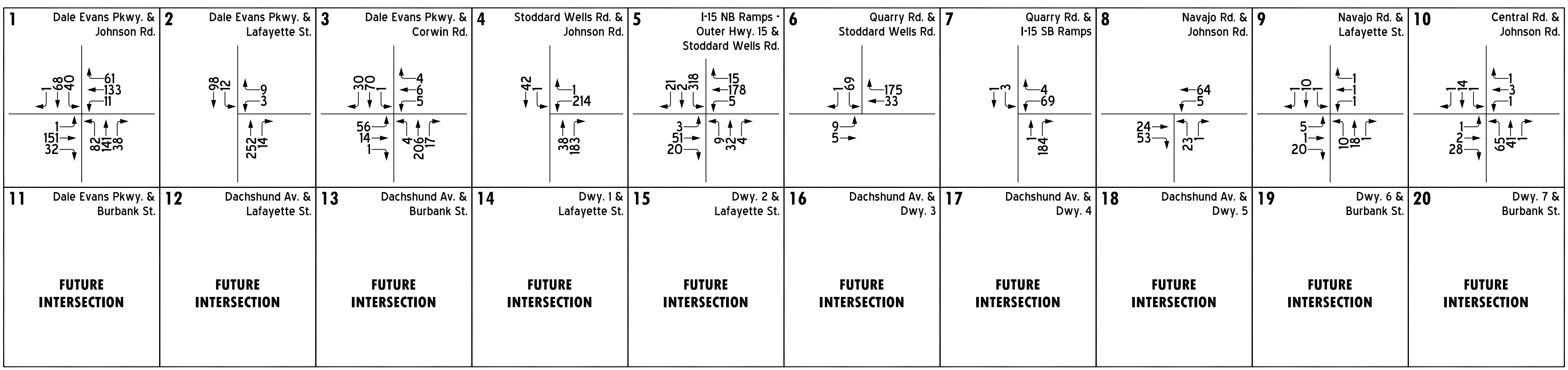
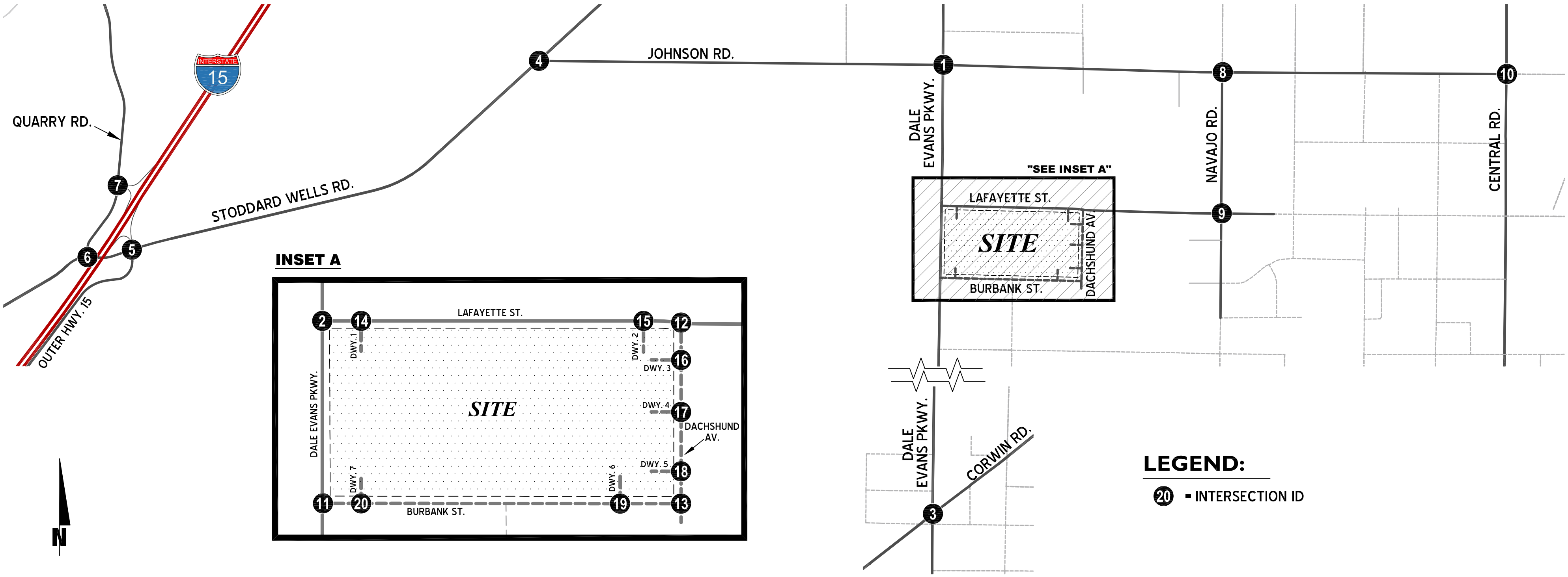


EXHIBIT 5-1 (PAGE 2 OF 3): OPENING YEAR CUMULATIVE (2024) WITHOUT PROJECT PM PEAK HOUR INTERSECTION VOLUMES



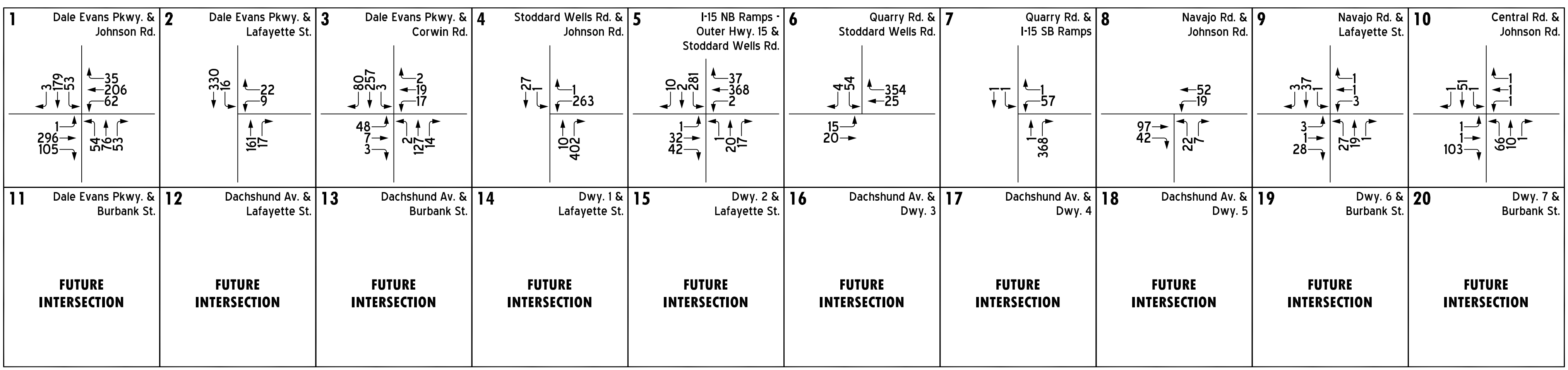


EXHIBIT 5-1 (PAGE 3 OF 3): OPENING YEAR CUMULATIVE (2024) WITHOUT PROJECT AVERAGE DAILY TRAFFIC (ADT) VOLUMES

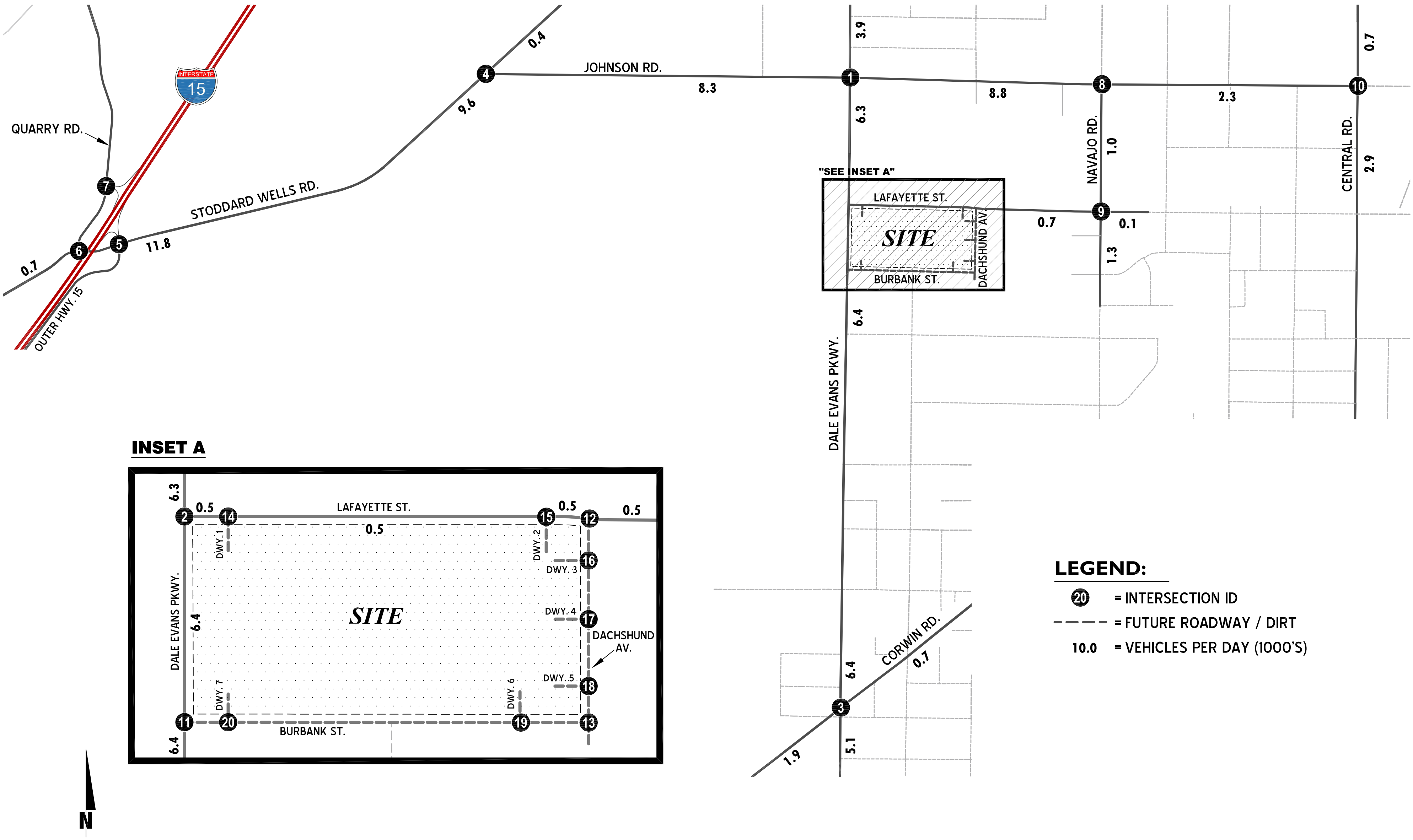
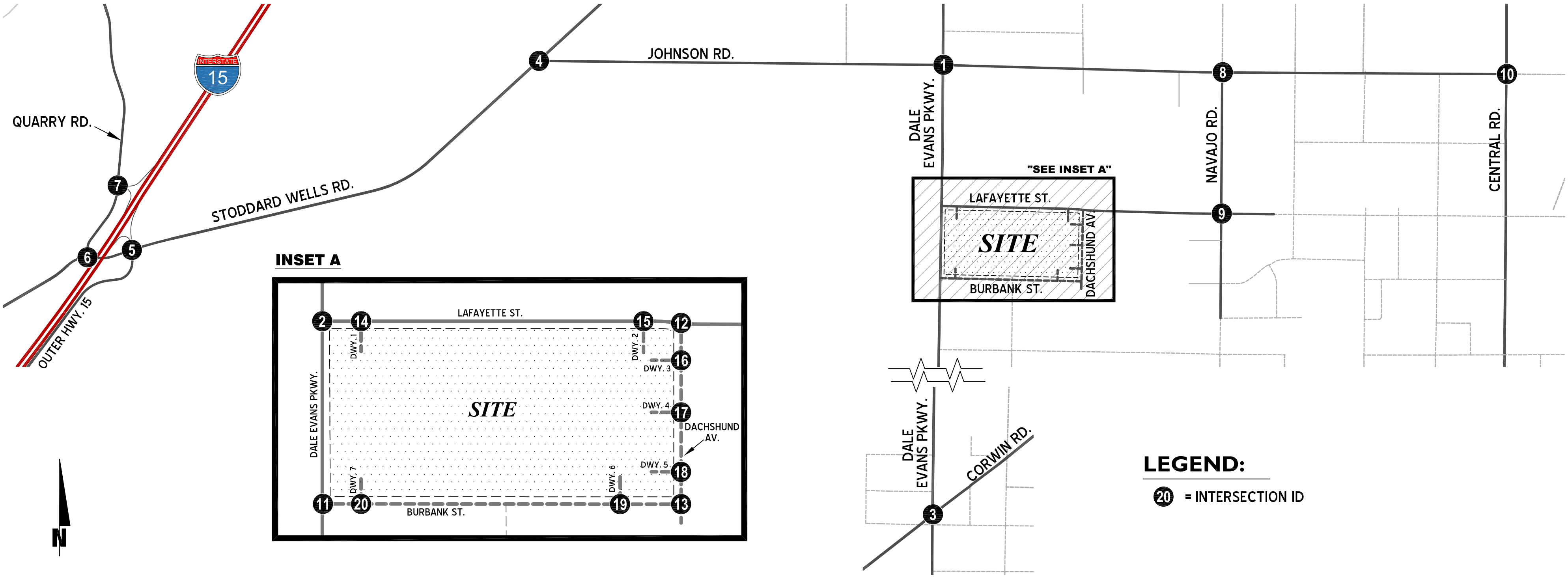


EXHIBIT 5-2 (PAGE 1 OF 3): OPENING YEAR CUMULATIVE (2024) WITH PROJECT AM PEAK HOUR INTERSECTION VOLUMES



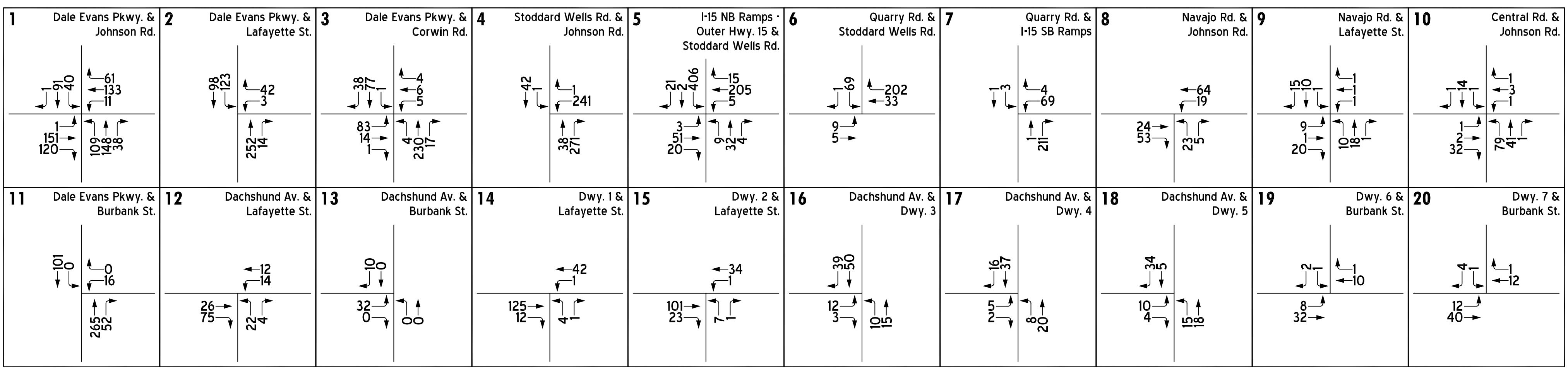
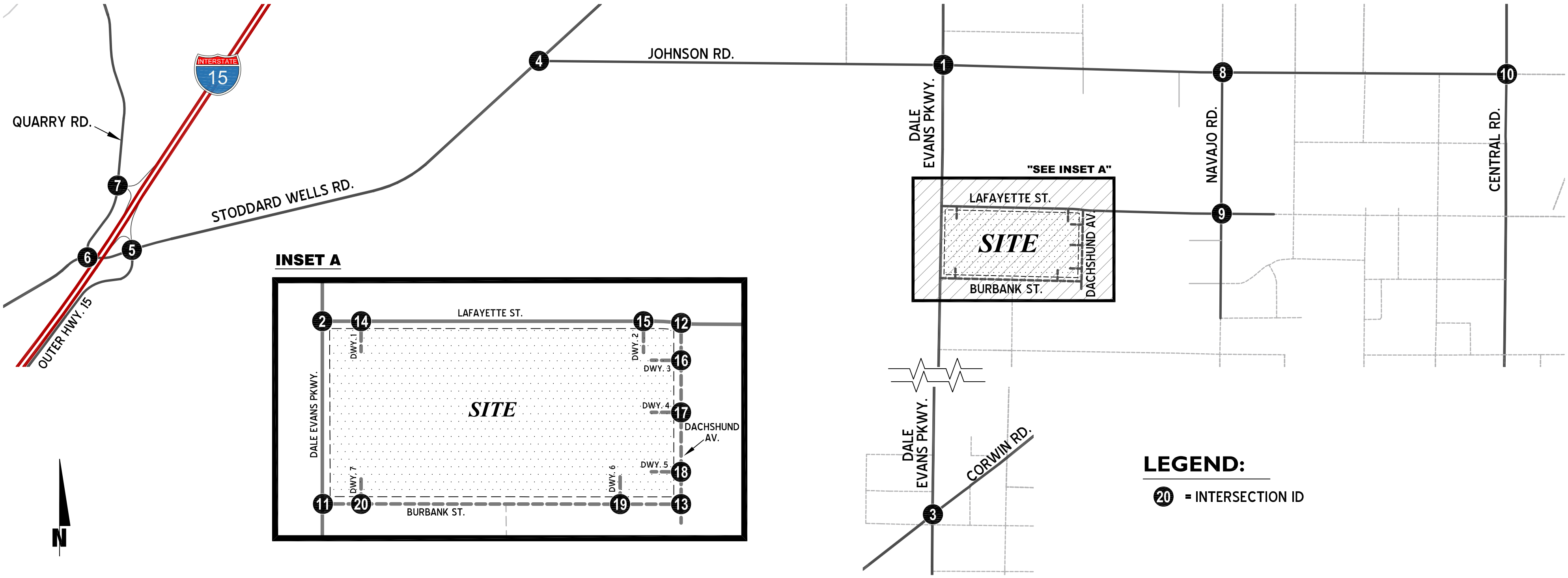


EXHIBIT 5-2 (PAGE 2 OF 3): OPENING YEAR CUMULATIVE (2024) WITH PROJECT PM PEAK HOUR INTERSECTION VOLUMES



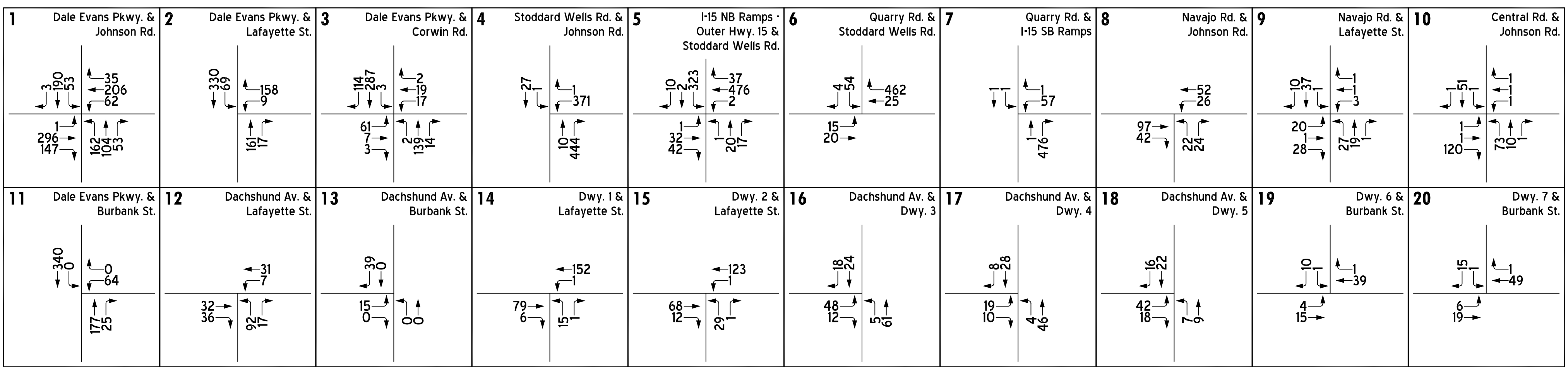
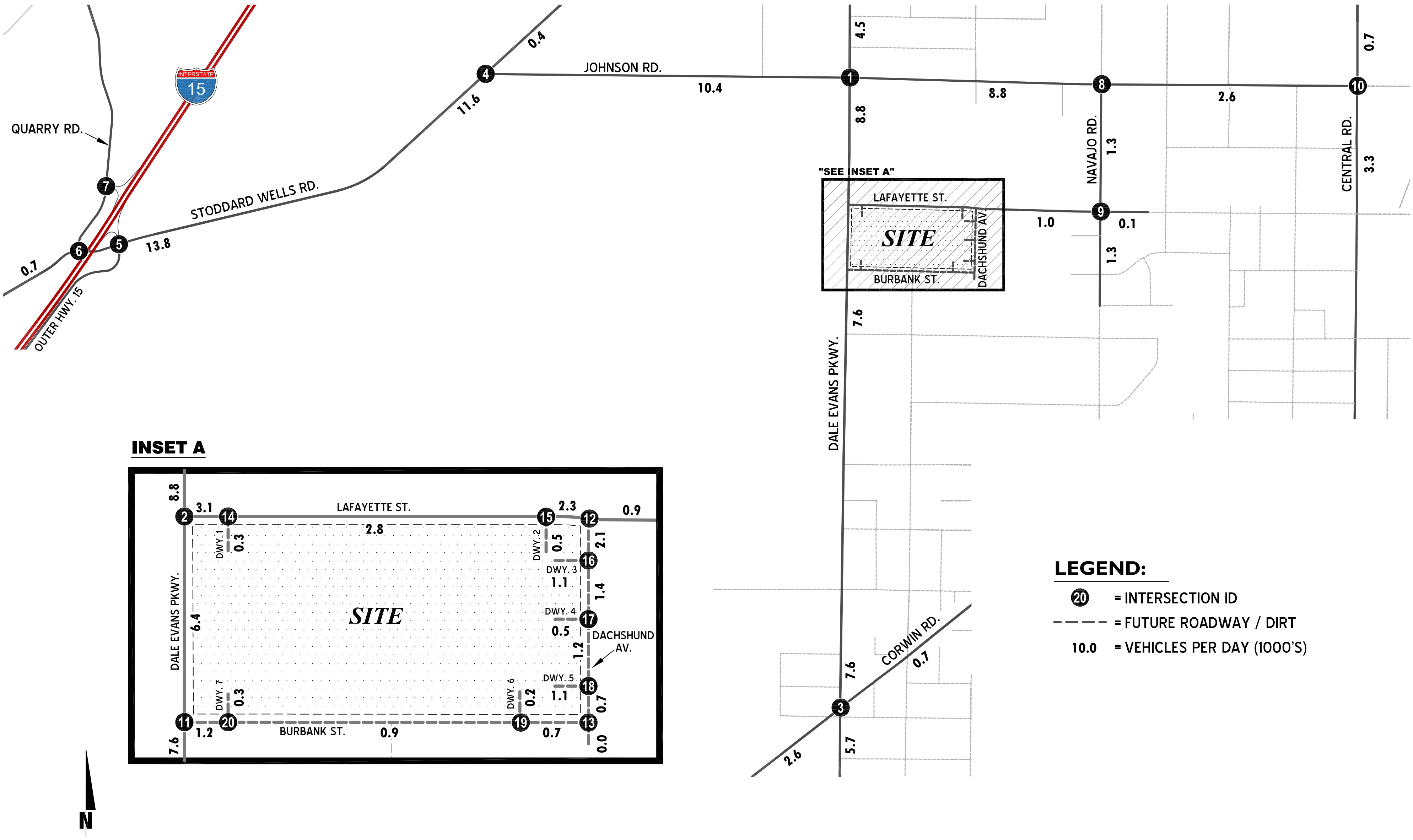


EXHIBIT 5-2 (PAGE 3 OF 3): OPENING YEAR CUMULATIVE (2024) WITH PROJECT AVERAGE DAILY TRAFFIC (ADT) VOLUMES



5.4 INTERSECTION OPERATIONS ANALYSIS

5.4.1 OPENING YEAR CUMULATIVE (2024) WITHOUT PROJECT TRAFFIC CONDITIONS

LOS calculations were conducted for the study intersections to evaluate their operations under Opening Year Cumulative (2024) Without Project conditions with roadway and intersection geometrics consistent with Section 6.1 *Roadway Improvements*. As shown on Table 5-1, the following intersections are anticipated to operate at an unacceptable LOS under Opening Year Cumulative (2024) Without Project traffic conditions:

- Dale Evans/Johnson Rd. (#1) - LOS F PM peak hour
- I-15 NB Ramps/Stoddard Wells (#5) – LOS F PM peak hour

The intersection operations analysis worksheets for Opening Year Cumulative (2024) Without Project traffic conditions are included in Appendix 5.1 of this TA.

5.4.2 OPENING YEAR CUMULATIVE (2024) WITH PROJECT TRAFFIC CONDITIONS

As shown on Table 5-1, there are no additional study area intersections anticipated to operate at a deficient LOS during any of the peak hours for Opening Year Cumulative (2024) With Project traffic conditions with the addition of Project traffic.

The intersection operations analysis worksheets for Opening Year Cumulative (2024) With Project traffic conditions are included in Appendix 5.2 of this TA.

5.5 TRAFFIC SIGNAL WARRANTS ANALYSIS

The traffic signal warrant analysis for Opening Year Cumulative (2024) traffic conditions are based on the peak hour volumes or planning level ADT volume-based traffic signal warrants. The following intersections are anticipated to meet peak hour volume warrants for Opening Year Cumulative (2024) Without Project traffic conditions (see Appendix 5.3):

- Dale Evans/Johnson Rd. (#1)
- Stoddard Wells Road/Johnson Road (#4)
- I-15 NB Ramps/Stoddard Wells (#5)

However, the intersection of Stoddard Wells Road/Johnson Road experiences acceptable LOS operations and a signal may not be required for Opening Year Cumulative conditions. There are no additional study area intersections anticipated to meet traffic signal warrants under Opening Year Cumulative (2024) With Project traffic conditions (see Appendix 5.4).

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TABLE 5-1: INTERSECTION ANALYSIS FOR OPENING YEAR CUMULATIVE (2024) CONDITIONS

#	Intersection	Traffic Control[1]	Intersection Approach Lanes[2] Northbound			Southbound			Eastbound			Westbound			2024 w/o Project Delay[3] (secs.)		Level of Service		2024 w/ Project Delay[3] (secs.)		Level of Service	
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	AM	PM	AM	PM
1	Dale Evans Pkwy. / Johnson Rd.																					
	- Without Improvements	AWS	1	1	1	1	1	0	0	1!	0	0.5	0.5	1>>	11.2	>80	B	F	13.4	>80	B	F
	- With Improvements	**TS**	1	1	1	1	1	0	**1**	1	0	**1**	1	1>>	21.3	29.9	C	C	23.1	38.9	C	D
2	Dale Evans Pkwy. / Lafayette St.	CSS	0	1	1	1	1	0	0	0	0	**1**	0	1	10.4	10.9	B	B	10.7	11.5	B	B
3	Dale Evans Pkwy. / Corwin Rd.	AWS	0	1!	0	0	1!	0	0	1!	0	0	1!	0	8.8	10.8	A	B	9.3	12.6	A	B
4	Stoddard Wells Rd. / Johnson Rd.	CSS	0	1	0	0.5	0.5	0	0	0	0	0	1!	0	11.6	25.3	B	D	12.7	34.9	B	D
5	I-15 NB Ramps / Stoddard Wells Rd.																					
	- Without Improvements	CSS	0	1!	0	0	1!	0	0	1!	0	0	1!	0	19.7	>80	C	F	32.7	>80	D	F
	- With Improvements	**TS**	0	1!	0	**1**	1	0	0	1!	0	0	1!	0	13.0	30.7	B	C	14.2	38.6	B	D
6	Quarry Rd. / Stoddard Wells Rd.	CSS	0	0	0	0	1!	0	0.5	0.5	0	0	1	0	10.0	12.1	B	B	10.1	13.2	B	B
7	Quarry Rd. / I-15 SB Ramps	CSS	0	1	0	0.5	0.5	0	0	0	0	0	1!	0	9.8	11.2	A	B	9.9	12.1	A	B
8	Navajo Rd. / Johnson Rd.	CSS	0	1!	0	0	0	0	0	1	0	0.5	0.5	0	9.4	10.4	A	B	9.5	10.4	A	B
9	Navajo Rd. / Lafayette St.	CSS	0	1!	0	0	1!	0	0	1!	0	0	1!	0	9.0	10.0	A	B	9.1	10.0	A	B
10	Central Rd. / Johnson Rd.	CSS	0	1!	0	0	1!	0	0	1!	0	0	1!	0	10.1	10.0	B	B	10.3	10.2	B	B
11	Dale Evans Pkwy. / Burbank St.	**CSS**	0	1	0	0.5	0.5	0	0	0	0	0	**1!**	0	-	-	-	-	11.4	13.8	B	B
12	Dachshund Av. / Lafayette St.	**CSS**	**1**	0	**1**	0	0	0	0	1	0	0.5	0.5	0	-	-	-	-	9.2	9.6	A	A
13	Dachshund Av. / Burbank St.	**CSS**	**0.5**	**0.5**	0	0	**1**	0	0	**1!**	0	0	0	0	-	-	-	-	8.7	8.7	A	A
14	Dwy. 1 / Lafayette St.	**CSS**	0	**1!**	0	0	0	0	0	1	0	0.5	0.5	0	-	-	-	-	9.4	10.0	A	B
15	Dwy. 2 / Lafayette St.	**CSS**	0	**1!**	0	0	0	0	0	1	0	0.5	0.5	0	-	-	-	-	9.3	9.8	A	A
16	Dachshund Av. / Dwy. 3	**CSS**	**0.5**	**0.5**	0	0	**1**	0	0	**1!**	0	0	0	0	-	-	-	-	9.1	9.3	A	A
17	Dachshund Av. / Dwy. 4	**CSS**	**0.5**	**0.5**	0	0	**1**	0	0	**1!**	0	0	0	0	-	-	-	-	8.9	8.9	A	A
18	Dachshund Av. / Dwy. 5	**CSS**	**0.5**	**0.5**	0	0	**1**	0	0	**1!**	0	0	0	0	-	-	-	-	8.8	9.0	A	A
19	Dwy. 6 / Burbank St.	**CSS**	0	0	0	0	**1!**	0	**0.5**	**0.5**	0	0	**1**	0	-	-	-	-	8.5	8.6	A	A
20	Dwy. 7 / Burbank St.	**CSS**	0	0	0	0	**1!**	0	**0.5**	**0.5**	0	0	**1**	0	-	-	-	-	8.5	8.6	A	A

[1] TS = Traffic Signal; CSS = Cross-Street Stop; AWS = All Way Stop

[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; 0.5 = Shared Lane; 1! = Shared Left/Through/Right lane;
>> = Free-Right Turn; **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 shown.

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6 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.

6.1 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).
- If applicable, 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.
- Other parallel facilities, that although not evaluated for the purposes of this analysis, are anticipated to be in place for Horizon Year traffic conditions and would affect the travel patterns within the study area.

6.2 WITHOUT PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes the refined post-process volumes obtained from known nearby projects and the SBTAM (see Section 4.7 *Horizon Year (2040) Volume Development* of this TA for a detailed discussion on the post-processing methodology). The weekday ADT and weekday peak hour volumes which can be expected for Horizon Year (2040) Without Project traffic conditions are shown on Exhibit 6-1.

6.3 WITH PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes the refined Horizon Year without Project volumes, plus the traffic generated by the proposed Project. The weekday ADT and weekday peak hour volumes which can be expected for Horizon Year (2040) With Project traffic conditions are shown on Exhibit 6-2.

6.4 INTERSECTION OPERATIONS ANALYSIS

6.4.1 HORIZON YEAR (2040) WITHOUT PROJECT TRAFFIC CONDITIONS

LOS calculations were conducted for the study intersections to evaluate their operations under Horizon Year (2040) Without Project conditions. As shown on Table 6-1, 8 study area intersections are anticipated to operate at an unacceptable LOS under Horizon Year (2040) Without Project traffic conditions, without improvements. However, with General plan improvements, acceptable LOS is anticipated at study area intersections.

The intersection operations analysis worksheets for Horizon Year (2040) Without Project traffic conditions are included in Appendix 6.1 of this TA.

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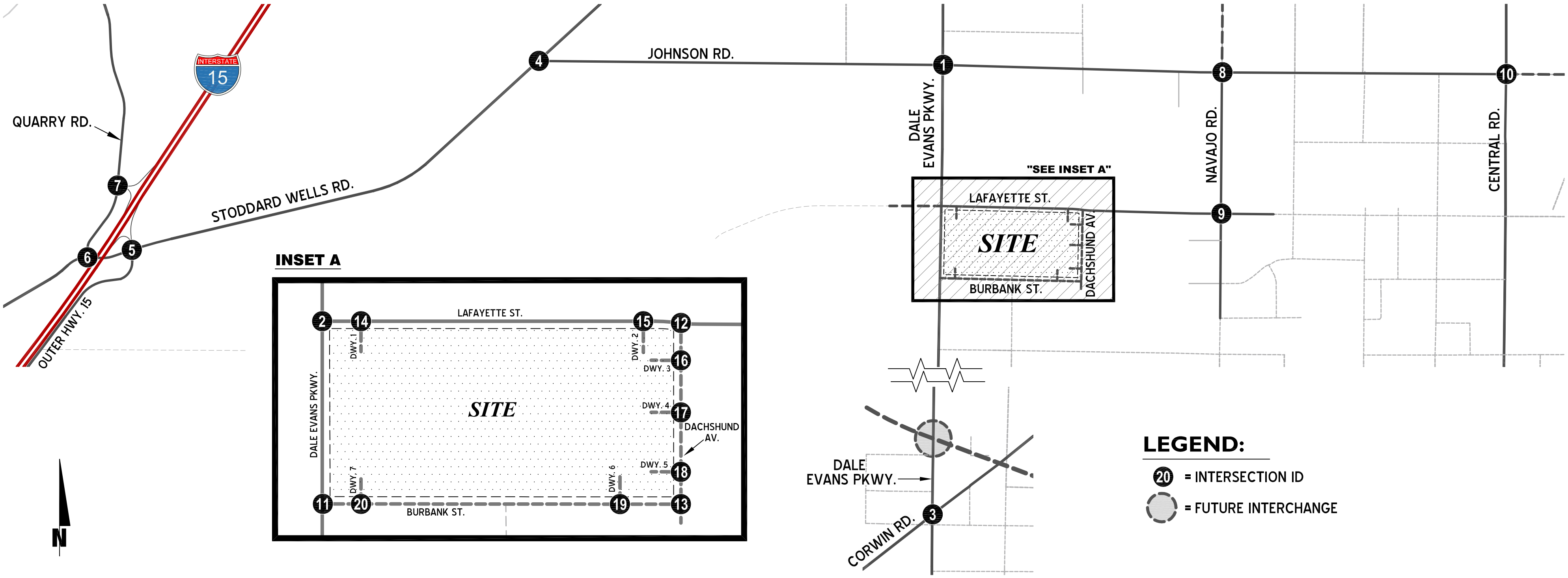
EXHIBIT 6-1 (PAGE 1 OF 3): HORIZON YEAR (2040) WITHOUT PROJECT AM PEAK HOUR INTERSECTION VOLUMES



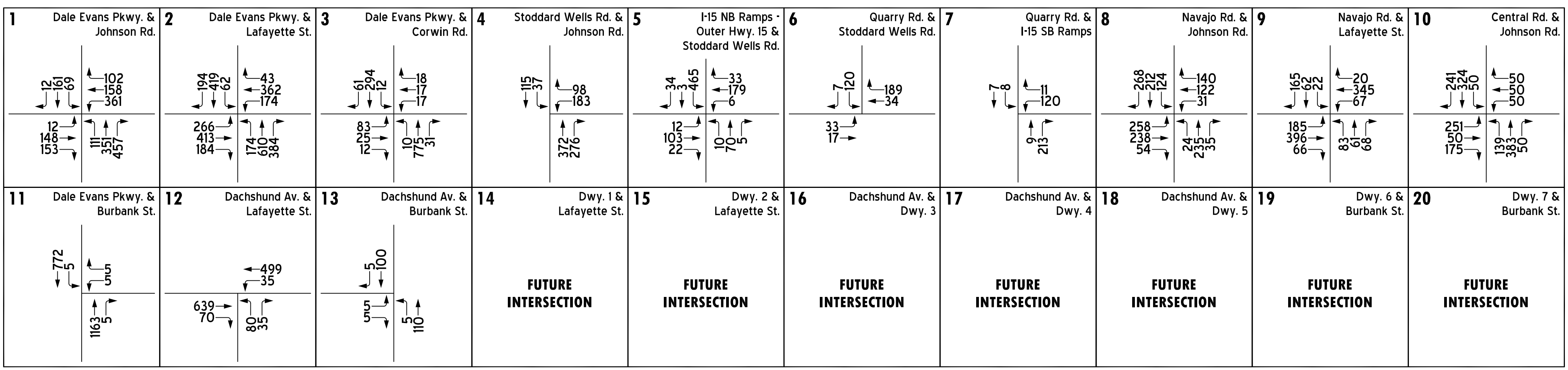
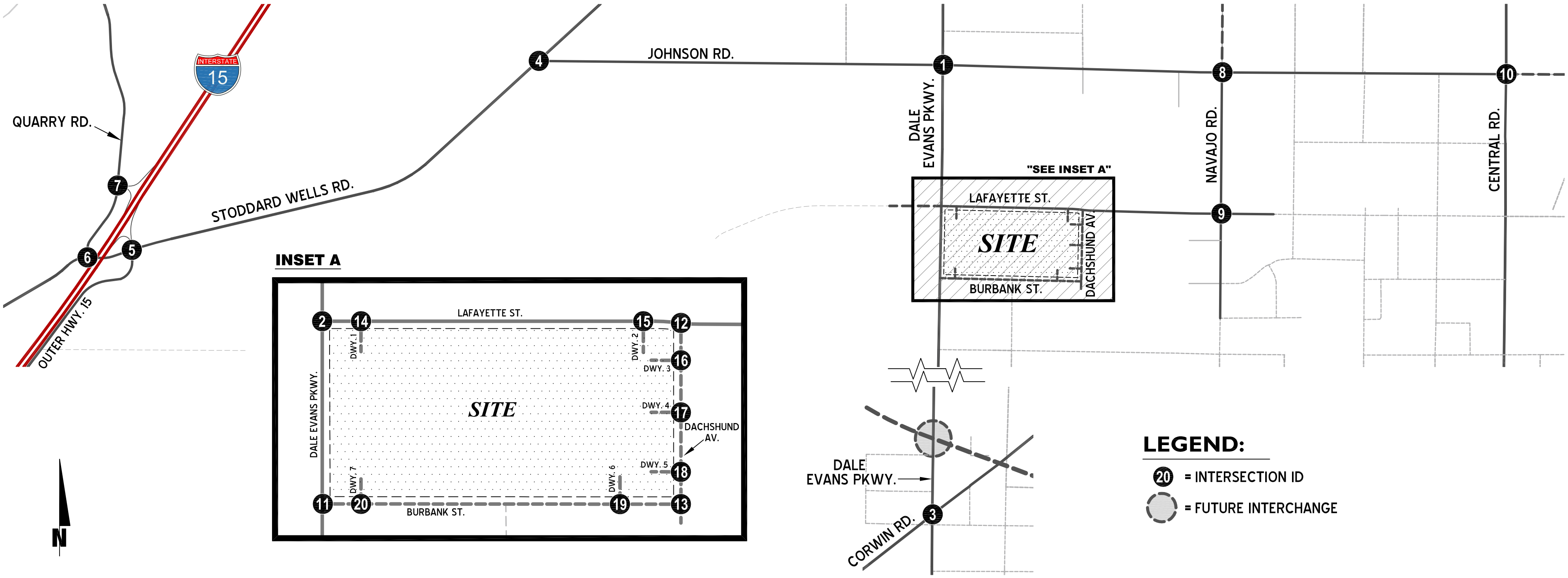


EXHIBIT 6-1 (PAGE 2 OF 3): HORIZON YEAR (2040) WITHOUT PROJECT PM PEAK HOUR INTERSECTION VOLUMES



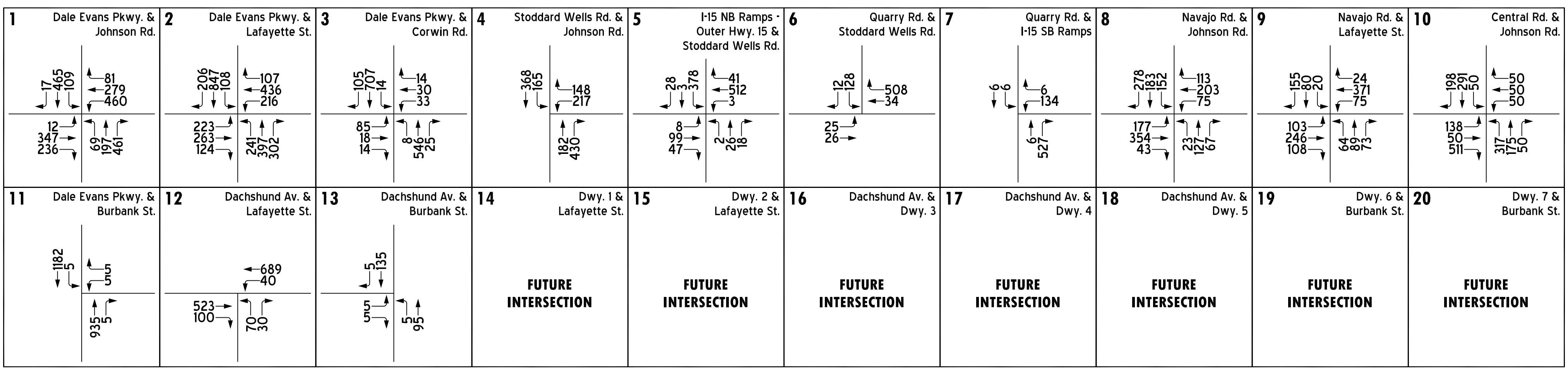


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EXHIBIT 6-1 (PAGE 3 OF 3): HORIZON YEAR (2040) WITHOUT PROJECT AVERAGE DAILY TRAFFIC (ADT) VOLUMES

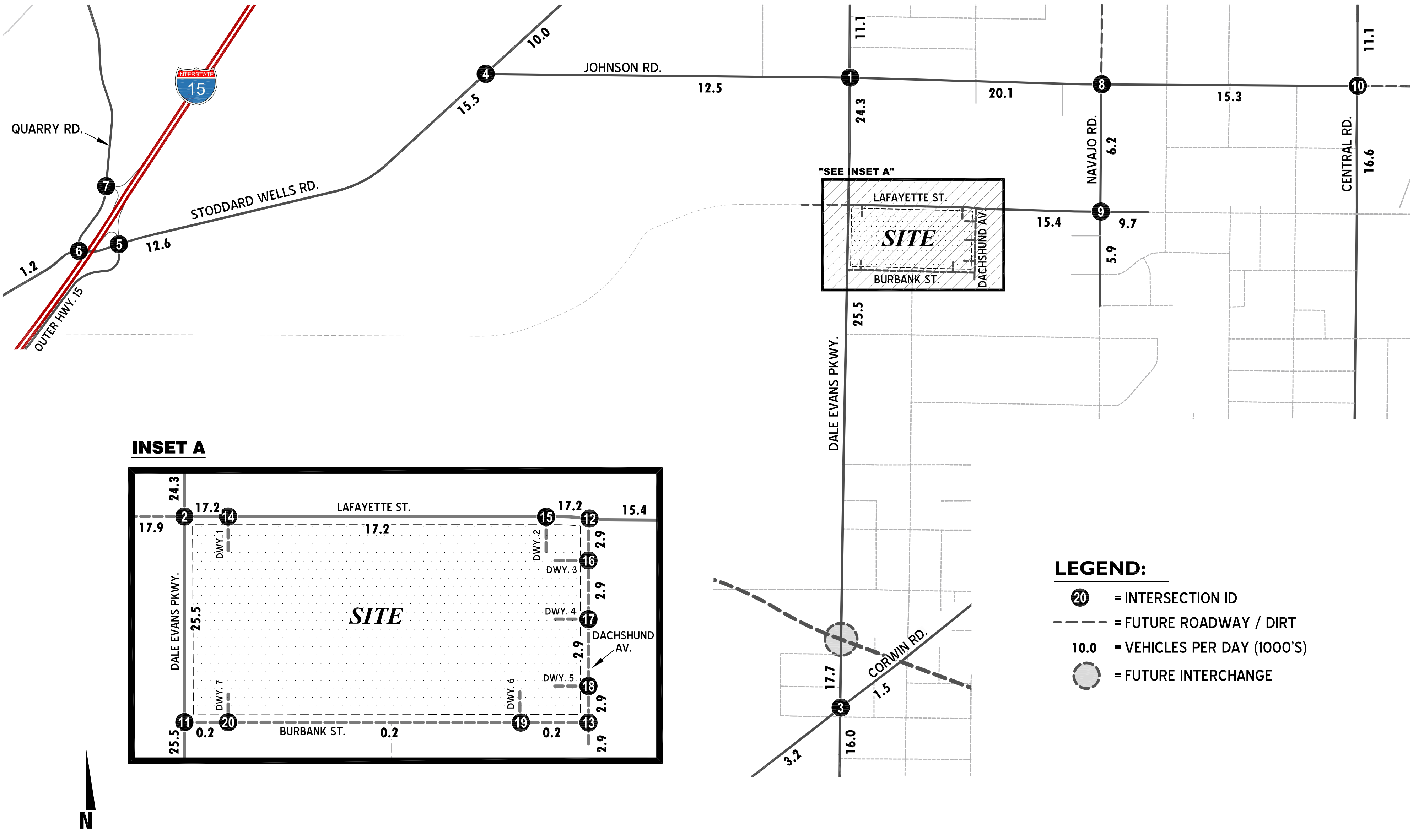
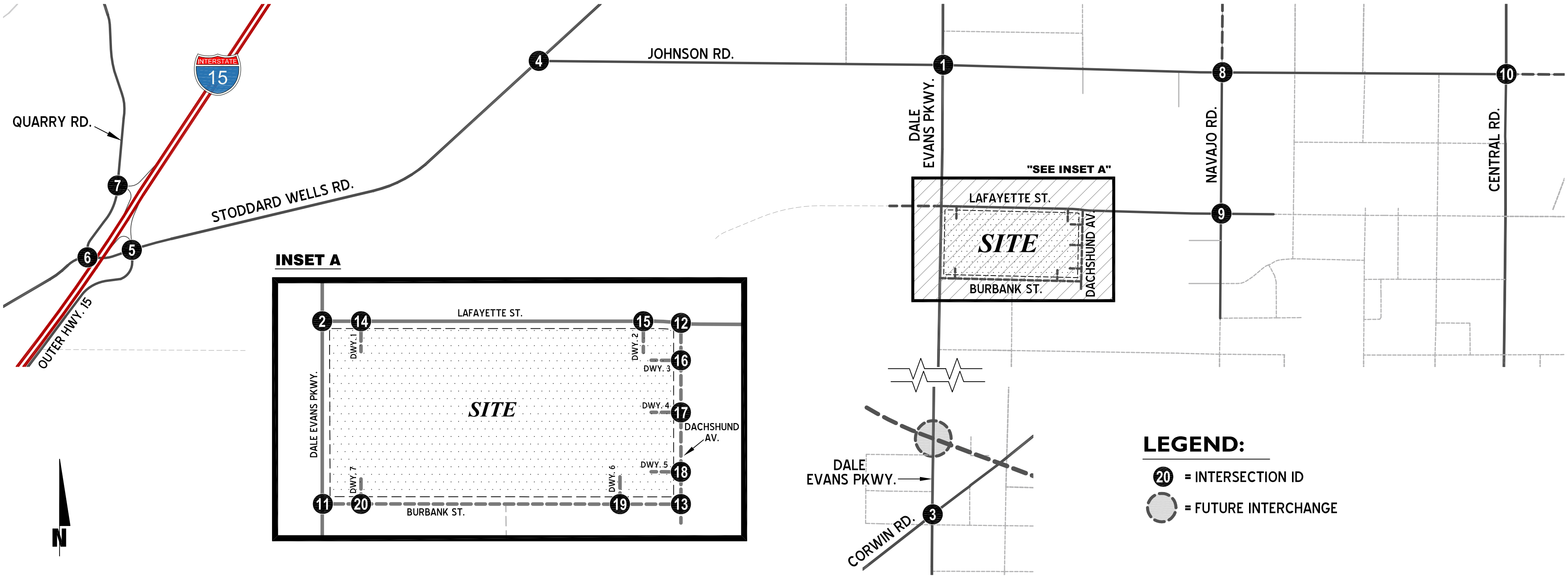


EXHIBIT 6-2 (PAGE 1 OF 3): HORIZON YEAR (2040) WITH PROJECT AM PEAK HOUR INTERSECTION VOLUMES



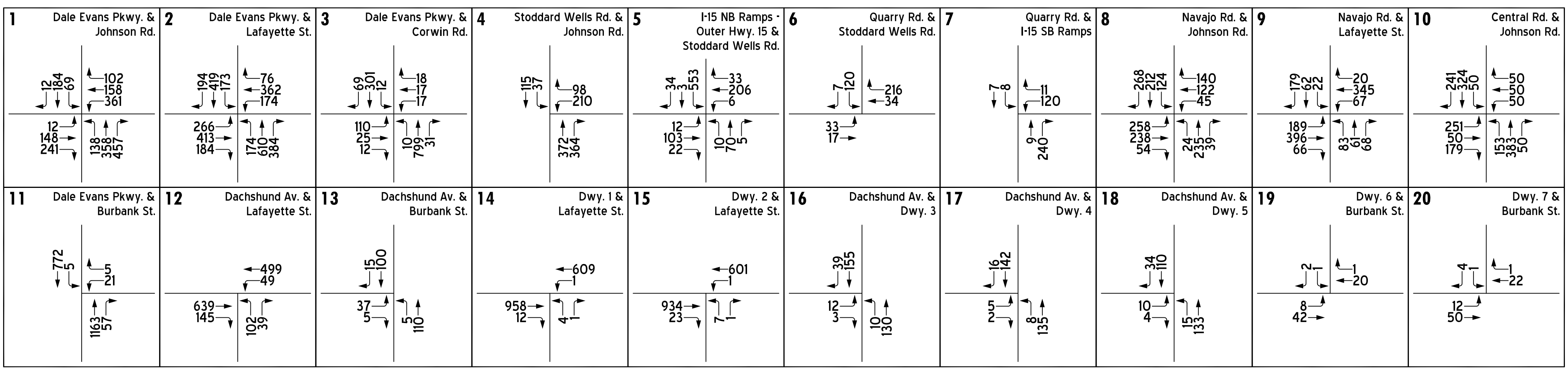
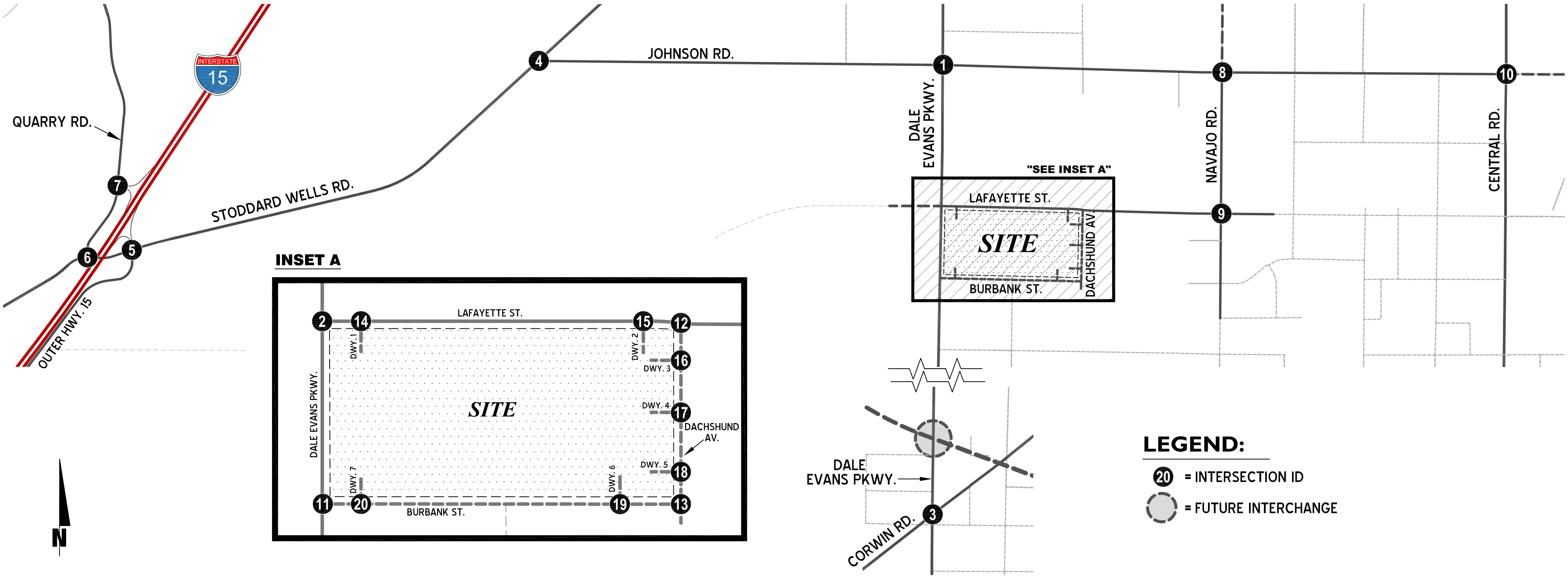


EXHIBIT 6-2 (PAGE 1 OF 3): HORIZON YEAR (2040) WITH PROJECT PM PEAK HOUR INTERSECTION VOLUMES



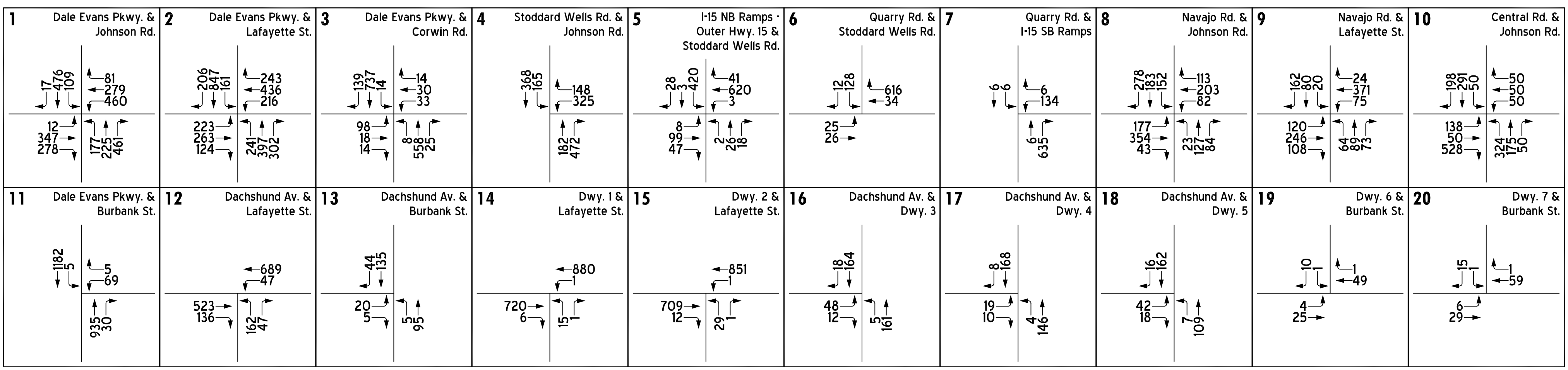
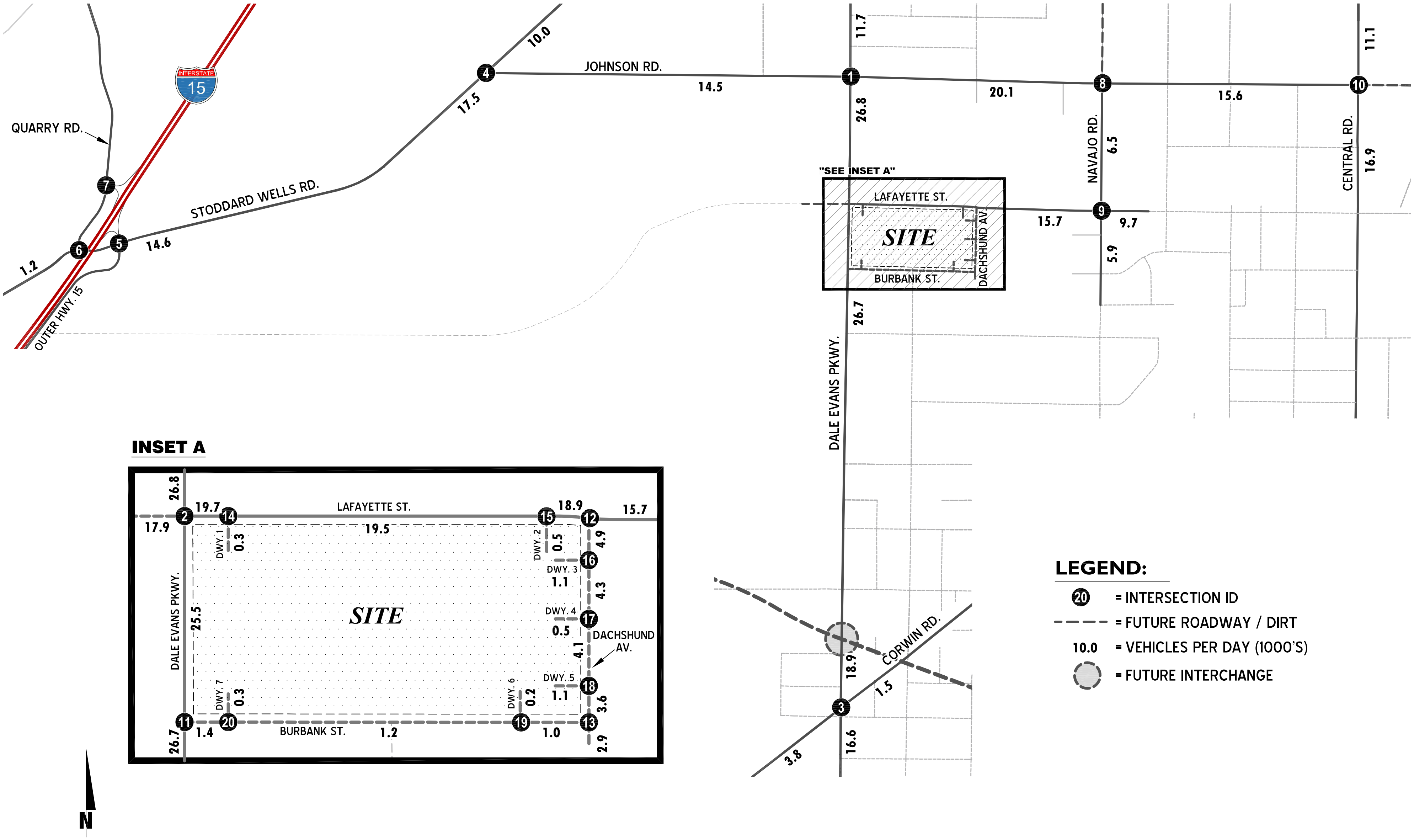


EXHIBIT 6-2 (PAGE 3 OF 3): HORIZON YEAR (2040) WITH PROJECT AVERAGE DAILY TRAFFIC (ADT) VOLUMES



6.4.2 HORIZON YEAR (2040) WITH PROJECT TRAFFIC CONDITIONS

With the addition of Project traffic, as shown on Table 6-1, there are no additional study area intersections anticipated to operate at an unacceptable LOS during the peak hours for Horizon Year (2040) With Project traffic conditions. The intersection operations analysis worksheets for Horizon Year (2040) With Project traffic conditions are included in Appendix 6.2 of this TA.

The recommended General Plan traffic control improvements and intersection lane configurations are shown on Exhibit 1-6.

6.5 TRAFFIC SIGNAL WARRANTS ANALYSIS

The traffic signal warrant analysis for Horizon Year (2040) traffic conditions are based on the peak hour volumes or planning level ADT volume-based traffic signal warrants. The following intersections are anticipated to meet a traffic signal warrant under Horizon Year (2040) traffic conditions, with or without the Project, beyond the locations previously identified for opening year cumulative conditions (see Appendix 6.3):

- Dale Evans Parkway at Lafayette Street #2
- Dale Evans Parkway at Corwin Road #3
- Navajo Road at Johnson Road #8
- Navajo Road at Lafayette Street #9
- Central Road at Johnson Road #10

6.6 QUEUING ANALYSIS

Pursuant to the Town approved scoping agreement, a queuing analysis was performed for Project access intersections. Queuing analysis findings are presented in Table 6-2. It is important to note that the available stacking distances are consistent with the measured turn pocket lengths. Adjacent to the Project site, the following two left turn pockets are recommended to be implemented in conjunction with site development:

- Dale Evans Parkway & Lafayette Street (#2) Westbound Left – 200'
- Dachshund Avenue & Lafayette Street (#12) Northbound Left – 150'

Horizon Year (2040) With Project traffic conditions, with improvements, queuing analysis worksheets are provided in Appendix 6.4.

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TABLE 6-1: INTERSECTION ANALYSIS FOR HORIZON YEAR (2040) CONDITIONS

			Intersection Approach Lanes[2]												2040 w/o Project				2040 w/ Project			
		Traffic	Northbound			Southbound			Eastbound			Westbound			Delay[3] (secs.)		Level of Service		Delay[3] (secs.)		Level of Service	
#	Intersection	Control[1]	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	AM	PM	AM	PM
1	Dale Evans Pkwy. / Johnson Rd.																					
	- Without Improvements	AWS	1	1	1	1	1	0	0	1!	0	0.5	0.5	1>>	>80	>80	F	F	>80	>80	F	F
	- With Improvements	TS	1	2	1>	1	2	0	1	2	0	1	2	1>>	44.0	44.1	D	D	48.9	48.8	D	D
2	Dale Evans Pkwy. / Lafayette St.																					
	- Without Improvements	CSS	0	1	1	1	1	0	0	0	0	0	1!	0	>80	>80	F	F	>80	>80	F	F
	- With Improvements	TS	1	2	0	1	2	0	1	2	0	1	2	0	47.7	37.8	D	D	51.9	49.7	D	D
3	Dale Evans Pkwy. / Corwin Rd.																					
	- Without Improvements	AWS	0	1!	0	0	1!	0	0	1!	0	0	1!	0	>80	>80	F	F	>80	>80	F	F
	- With Improvements	TS	1	2	0	1	2	0	1	2	0	1	2	0	13.8	13.7	B	B	15.0	14.2	B	B
4	Stoddard Wells Rd. / Johnson Rd.																					
	- Without Improvements	CSS	0	1	0	0.5	0.5	0	0	0	0	0	1!	0	32.5	>80	D	F	33.6	>80	D	F
	- With Improvements	TS	0	2	0	1	2	0	0	0	0	1	0	1	13.5	17.7	B	B	14.0	22.5	B	C
5	I-15 NB Ramps / Stoddard Wells Rd.																					
	- Without Improvements	CSS	0	1!	0	0	1!	0	0	1!	0	0	1!	0	>80	>80	F	F	>80	>80	F	F
	- With Improvements	TS	1	1	0	1	1	0	0.5	1.5	0	0.5	1.5	0	34.1	36.3	C	D	35.7	45.6	D	D
6	Quarry Rd. / Stoddard Wells Rd.	CSS	0	0	0	0	1!	0	0.5	1.5	0	0	2	0	11.2	13.5	B	B	11.3	14.5	B	B
7	Quarry Rd. / I-15 SB Ramps	CSS	0	1	0	0.5	0.5	0	0	0	0	0	1!	0	10.9	16.6	B	C	12.0	19.4	B	C
8	Navajo Rd. / Johnson Rd.																					
	- Without Improvements	CSS	0	1!	0	0	0	0	0	1	0	0.5	0.5	0	>80	>80	F	F	>80	>80	F	F
	- With Improvements	TS	1	2	0	1	2	0	1	2	0	1	2	0	18.9	20.8	B	C	19.0	21.0	B	C
9	Navajo Rd. / Lafayette St.																					
	- Without Improvements	CSS	0	1!	0	0	1!	0	0	1!	0	0	1!	0	>80	>80	F	F	>80	>80	F	F
	- With Improvements	TS	0	2	0	0	2	0	0	2	0	0	2	0	23.0	23.7	C	C	23.1	24.1	C	C
10	Central Rd. / Johnson Rd.																					
	- Without Improvements	CSS	0	1!	0	0	1!	0	0	1!	0	0	1!	0	>80	>80	F	F	>80	>80	F	F
	- With Improvements	TS	1	2	0	1	2	0	1	1	1	1	1	0	33.5	48.2	C	D	34.2	51.1	C	D
11	Dale Evans Pkwy. / Burbank St.	CSS	0	2	0	0.5	1.5	0	0	0	0	0	1!	0	22.4	17.7	C	C	33.4	34.3	D	D
12	Dachshund Av. / Lafayette St.	CSS	1	0	1	0	0	0	0	2	0	0.5	1.5	0	25.8	20.3	D	C	34.8	33.3	D	D
13	Dachshund Av. / Burbank St.	CSS	0.5	0.5	0	0	1	0	0	1!	0	0	0	0	9.5	9.6	A	A	10.1	10.2	B	B
14	Dwy. 1 / Lafayette St.	CSS	0	1!	0	0	0	0	0	2	0	0.5	1.5	0	-	-	-	-	29.4	29.5	D	D
15	Dwy. 2 / Lafayette St.	CSS	0	1!	0	0	0	0	0	2	0	0.5	1.5	0	-	-	-	-	30.7	31.9	D	D
16	Dachshund Av. / Dwy. 3	CSS	0.5	0.5	0	0	1	0	0	1!	0	0	0	0	-	-	-	-	10.6	11.2	B	B
17	Dachshund Av. / Dwy. 4	CSS	0.5	0.5	0	0	1	0	0	1!	0	0	0	0	-	-	-	-	10.2	10.5	B	B
18	Dachshund Av. / Dwy. 5	CSS	0.5	0.5	0	0	1	0	0	1!	0	0	0	0	-	-	-	-	10.2	10.7	B	B
19	Dwy. 6 / Burbank St.	CSS	0	0	0	0	1!	0	0.5	0.5	0	0	1	0	-	-	-	-	8.7	8.7	A	A
20	Dwy. 7 / Burbank St.	CSS	0	0	0	0	1!	0	0.5	0.5	0	0	1	0	-	-	-	-	8.7	8.8	A	A

[1] TS = Traffic Signal; CSS = Cross-Street Stop; AWS = All Way Stop

[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; 0.5 = Shared Lane; 1! = Shared Left/Through/Right lane; > = Right Turn Overlap Phasing
>> = Free-Right Turn; 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 shown.

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TABLE 6-2: PROJECT ACCESS QUEUEING ANALYSIS FOR HORIZON YEAR (2040) CONDITIONS WITH IMPROVEMENTS

ID	Intersection	Movement	# of Lanes	2040 With Project AM	PM	Peak	Volume	Storage Length[2] (ft.)	95th Percentile Queue Length (ft.)[1,3] AM	PM
2	Dale Evans Pkwy. / Lafayette St.									
		NBL	1	174	241	PM	241	**<u>200</u>**	270 [4]	251 [4]
		SBL	1	173	161	AM	173	415	238	140
		EBL	1	266	223	AM	266	**<u>200</u>**	249 [4]	239 [4]
		WBL	1	174	216	PM	216	200	177	197
12	Dachshund Av. / Lafayette St.									
		NBL	1	102	162	PM	162	150	67	85
		NBR	1	39	47	PM	47	>100	51	44
		EBT/R	1	465	398	AM	465	>100	12	26
		WBL/T	1	299	392	PM	392	>100	55	56
14	Dwy. 1 / Lafayette St.									
		NBL/R	1	5	16	PM	16	>50	13	47
		EBT/R	1	491	366	AM	491	>100	13	NOM
		WBL/T	1	306	441	PM	441	>100	12	36
15	Dwy. 2 / Lafayette St.									
		NBL/R	1	8	30	PM	30	>50	25	41
		EBT/R	1	490	367	AM	490	>100	23	25
		WBL/T	1	302	427	PM	427	>100	15	NOM
16	Dachshund Av. / Dwy. 3									
		NBL/T	1	140	166	PM	166	>100	35	15
		SBT/R	1	194	182	AM	194	>100	NOM	NOM
		EBL/R	1	15	60	PM	60	>50	46	46
17	Dachshund Av. / Dwy. 4									
		NBL/T	1	143	150	PM	150	>100	35	NOM
		SBT/R	1	158	176	PM	176	>100	NOM	15
		EBL/R	1	7	29	PM	29	>50	46	19
18	Dachshund Av. / Dwy. 5									
		NBL/T	1	148	116	AM	148	>100	35	NOM
		SBT/R	1	144	178	PM	178	>100	NOM	15
		EBL/R	1	14	60	PM	60	>50	46	51
19	Dwy. 6 / Burbank St.									
		SBL/R	1	3	11	PM	11	>50	21	36
		EBL/T	1	50	29	AM	50	>100	NOM	NOM
		WBT/R	1	21	50	PM	50	>100	NOM	NOM
20	Dwy. 7 / Burbank St.									
		SBL/R	1	5	16	PM	16	>50	18	33
		EBL/T	1	62	35	AM	62	>100	NOM	NOM
		WBT/R	1	23	60	PM	60	>100	NOM	NOM

[1] Queue length calculated using SimTraffic.

[2] 1 = Existing storage length; **<u>1</u>** = Proposed storage length

[3] NOM = Nominal, less than 5 feet.

[3] Review of SimTraffic simulation results indicate that the turn lane queue is anticipated to clear in a timely manner and that the provided pocket length is adequate to accommodate the 95th percentile queue.

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7 LOCAL AND REGIONAL FUNDING MECHANISMS

Transportation improvements within the Town of Apple Valley are funded through a combination of project mitigation, development impact fee programs or fair share contributions, such as the Town of Apple Valley Development Impact Fee (DIF) program. Identification and timing of needed improvements is generally determined through local jurisdictions based upon a variety of factors.

7.1 TOWN OF APPLE VALLEY DEVELOPMENT IMPACT FEE PROGRAM

The Town of Apple Valley has created its own local DIF program to impose and collect fees from new residential, commercial, and industrial development for the purpose of funding roadways and intersections necessary to accommodate Town growth as identified in the Town's General Plan Circulation Element.

Under the Town's DIF program, the Town 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. The timing to use the DIF fees is established through periodic capital improvement programs which are overseen by the Town's Public Works Department.

7.2 MEASURE "I" FUNDS

In 2004, the voters of San Bernardino County approved the 30-year extension of Measure "I", a one-half of one percent sales tax on retail transactions, through the year 2040, for transportation projects including, but not limited to, infrastructure improvements, commuter rail, public transit, and other identified improvements. The Measure "I" extension requires that a regional traffic impact fee be created to ensure development is paying its fair share. A regional Nexus study was prepared by the San Bernardino County Transportation Authority (SBCTA) and concluded that each jurisdiction should include a regional fee component in their local programs in order to meet the Measure "I" requirement. The regional component assigns specific facilities and cost sharing formulas to each jurisdiction and was most recently updated in March 2021. Revenues collected through these programs are used in tandem with Measure "I" funds to deliver projects identified in the Nexus Study. While Measure "I" is a self-executing sales tax administered by SBCTA, it bears discussion here because the funds raised through Measure "I" have funded in the past and will continue to fund new transportation facilities in San Bernardino County.

7.3 FAIR SHARE CONTRIBUTION

Project improvements may include a combination of fee payments to established programs (e.g., DIF), 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 Town of Apple Valley'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 toward future improvements.

Detailed fair share calculations for each peak hour, have been provided in Table 7-1 for the applicable deficient intersections shown previously in Table 1-2. Improvements included in a defined program and constructed by development may be eligible for a fee credit or reimbursement through the program where appropriate.

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TABLE 7-1: FAIR SHARE CALCULATIONS

#	Intersection	Existing (2022) Traffic	HY (2040) w/ Project Traffic	Project Only Traffic	Total New Traffic[1]	Project Fair Share (%)[2]
1	Dale Evans Pkwy. / Johnson Rd.					
	• AM Peak Hour	510	2,240	145	1,730	8.4%
	• PM Peak Hour	771	2,922	189	2,151	**8.8%**
2	Dale Evans Pkwy. / Lafayette St.					
	• AM Peak Hour	268	3,429	144	3,161	4.6%
	• PM Peak Hour	411	3,659	189	3,248	**5.8%**
3	Dale Evans Pkwy. / Corwin Rd.					
	• AM Peak Hour	288	1,421	66	1,133	5.8%
	• PM Peak Hour	426	1,688	89	1,262	**7.1%**
4	Stoddard Wells Rd. / Johnson Rd.					
	• AM Peak Hour	277	1,196	115	919	**12.5%**
	• PM Peak Hour	406	1,660	150	1,254	12.0%
5	I-15 NB Ramps / Stoddard Wells Rd.					
	• AM Peak Hour	317	1,057	115	740	15.5%
	• PM Peak Hour	477	1,315	150	838	**17.9%**
6	Quarry Rd. / Stoddard Wells Rd.					
	• AM Peak Hour	182	427	27	245	11.0%
	• PM Peak Hour	258	841	108	583	**18.5%**
8	Navajo Rd. / Johnson Rd.					
	• AM Peak Hour	130	1,759	18	1,629	1.1%
	• PM Peak Hour	197	1,819	24	1,622	**1.5%**
9	Navajo Rd. / Lafayette St.					
	• AM Peak Hour	68	1,558	18	1,490	1.2%
	• PM Peak Hour	121	1,432	24	1,311	**1.8%**
10	Central Rd. / Johnson Rd.					
	• AM Peak Hour	119	1,831	18	1,712	1.1%
	• PM Peak Hour	198	1,954	24	1,756	**1.4%**
11	Dale Evans Pkwy. / Burbank St.					
	• AM Peak Hour	247	2,023	68	1,776	3.8%
	• PM Peak Hour	375	2,226	89	1,851	**4.8%**
12	Dachshund Av. / Lafayette St.					
	• AM Peak Hour	37	1,473	115	1,436	8.0%
	• PM Peak Hour	61	1,604	152	1,543	**9.9%**
13	Dachshund Av. / Burbank St.					
	• AM Peak Hour	0	272	42	272	15.4%
	• PM Peak Hour	0	304	54	304	**17.8%**

[1] Total New Traffic = (Horizon Year 2040 with Project - Existing Traffic)
[2] Project Fair Share % = (Project Only Traffic / Total New Traffic)

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8 REFERENCES

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