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PROPOSED RANCHO 38 WAREHOUSE DEVELOPMENT A.P.N. 3128-29-102

ADELANTO, CALIFORNIA

Prepared by:

DAVID EVANS AND ASSOCIATES INC.

DRAFT REPORT
March 5, 2023

DAVID EVANS AND ASSOCIATES INC.

March 5, 2023 Job No. IPGI0000-0001

Mr. Craig Wilde
Development Manager
Industrial Property Group, Inc
10515 20th Street Southeast
Lake Stevens, Washington 98258, United States

RE: DRAFT TRAFFIC IMPACT ANALYSIS–PROPOSED RANCHO 35 WAREHOUSE DEVELOPMENT LOCATED AT ADELANTO ROAD AND RANCHO ROAD (EAST) IN ADELANTO, CALIFORNIA – A.P.N 3128-29-102

Dear Mr. Wilde,

David Evans and Associates, Inc. is pleased to submit this draft Traffic Impact Analysis report for your proposed warehouse development in Adelanto. The proposed project consists of a 689,824 square foot high-cube short-term transload warehouse located on 37.64-acres in the City of Adelanto.

This report was prepared in accordance with the City of Adelanto's Traffic Impact Analysis Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment (LOS) published in July 2020. This report meets the city's requirements for preparing a level of service assessment of local intersections to identify potential near term and cumulative degradation of the city's level of service policies. In addition, this report includes a screening assessment based on the city's criteria for identifying developments requiring a vehicles mile traveled (VMT) analysis impacts using under the California Environmental Quality Act (CEQA) as adopted by the City Council in Resolution No. 20-41A.

We are pleased to have been of assistance to you in processing and obtaining approval for the project. If you have any questions or comments, please feel free to contact me at 909-912-7304.

Respectfully submitted,

DAVID EVANS AND ASSOCIATES, INC.

James M. Daisa, P.E.
Senior Project Manager / Associate

DAVID EVANS AND ASSOCIATES INC.

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DAVID EVANS AND ASSOCIATES INC.

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1 EXECUTIVE SUMMARY

This executive summary presents the findings and recommendations of this study.

1.1 City of Adelanto and Caltrans Intersection Level of Service Policies

The City of Adelanto's Traffic Impact Analysis Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment (July 2020) outlines the policies and methods for complying with the new CEQA expectations for Vehicle Miles Traveled (VMT) analysis and the applicable Adelanto General Plan consistency requirements, which requires performing intersection level of service (LOS) analysis.

The City of Adelanto has adopted vehicle LOS policies that set standards for which local agency infrastructure will strive to maintain. These policies are contained in the City's General Plan and therefore apply to discretionary approvals of new land use and transportation projects.

The City of Adelanto requires mitigation to maintain the General Plan goal of LOS D on all its roadways. This level of service policy applies to local Adelanto roadways, roads of regional importance as part of the City's Congestion Management Program (CMP) network and State highways.

The Caltrans' Guide for the Preparation of Traffic Impact Studies (December 2002) states "Caltrans endeavors to maintain a target LOS at the transition between LOS "C" and LOS "D" (see Appendix "C-3") on State highway facilities, however, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency (City of Adelanto) consult with Caltrans to determine the appropriate target LOS". This policy is consistent with Caltrans' practice of setting level of service thresholds for State highway facilities equal to the threshold of the jurisdiction where the facility is located but no greater than a 45 second average delay per vehicle in the peak hour (mid LOS D). Caltrans acknowledges that this may not always be feasible. For this study, the City's LOS D is assumed to be the minimum level of service criteria for the study intersections.

Level of Service Comparison With and Without the Proposed Project

Table 1-1 compares the weekday peak hour background plus project LOS at the study intersection. Background conditions represent the project's opening year of 2024 and include growth in ambient traffic from regional and local development equaling 3.5 percent annually. In this year 2024 scenario, the intersections continue to operate at the same LOS during the peak hours with the project.

Table 1-1: Comparison of Background and Background Plus Project Intersection Level of Service

Intersection	Control Type	Background Conditions				Background plus Project Conditions				Change in Delay (Seconds)	
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour			
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	AM	PM
1. Highway 395 / Rancho Road (West)	TS	87.6	F	73.4	E	87.8	F	73.9	E	0.2	0.5
2. Adelanto Road / Rancho Road (West)[a]	SSSC	12.1	B	13.4	B	12.4	B	14.4	B	0.3	1.0
3. Adelanto Road / Rancho Road (East)	SSSC	9.6	A	9.1	A	10.4	B	10.1	B	0.8	1.0
4. Rancho Road (East)/ Driveway #1	SSSC	Future Project Driveways				9.3	A	9.7	A	Not Applicable	
5. Rancho Road (East)/ Driveway #2	SSSC					9.0	A	9.4	A		
6. Rancho Road (East)/ Driveway #3	SSSC					8.9	A	9.2	A		

[a] Intersection is evaluated with a single left turn lane and maximum allowable saturation flow rate due to an HCM 6th Edition limitation that doesn't support more than one exclusive lane or turning movement at a stop-controlled intersection.
Definitions and Abbreviations:
TS – Traffic signal-controlled intersection, SSSC – Side-street stop-controlled intersection, Delay – seconds per vehicle, LOS – Level of Service

With the addition of project traffic to background conditions, the AM peak hour continues to operate at LOS F with a 0.2 second increase in delay, the PM peak hour continues to operate at LOS E with a 0.5 second increase in delay.

Table 1-2 compares the weekday peak hour year 2040 future plus project LOS at the study intersections. Future year 2040 conditions represent a long-range forecast for addressing the cumulative impacts of regional growth in traffic as determined through land use and traffic projections from the San Bernardino Countywide Traffic Analysis Model (SBTAM).

Table 1-2: Comparison of Future and Future Plus Project Intersection Level of Service

Intersection	Control Type	Future Year 2040 Conditions				Future Year 2040 + Project Conditions				Change in Delay (Seconds)	
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour			
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	AM	PM
1. Highway 395 / Rancho Road (West)	TS	208.7	F	297.2	F	209.0	F	301.0	F	0.3	3.8
2. Adelanto Road / Rancho Road (West)[a]	SSSC	14.9	B	16.9	C	15.7	C	18.1	C	0.8	1.2
3. Adelanto Road / Rancho Road (East)	SSSC	12.7	B	9.6	A	13.9	B	11.2	B	1.2	1.6
4. Rancho Road (East)/ Driveway #1	SSSC	Future Project Driveways				9.7	A	10.0	B	Not Applicable	
5. Rancho Road (East)/ Driveway #2	SSSC					9.5	A	9.6	A		
6. Rancho Road (East)/ Driveway #3	SSSC					9.3	A	9.5	A		

[a] Intersection is evaluated with a single left turn lane and maximum allowable saturation flow rate due to an HCM 6th Edition limitation that doesn't support more than one exclusive lane or turning movement at a stop-controlled intersection.
Definitions and Abbreviations:
TS – Traffic signal-controlled intersection, SSSC – Side-street stop-controlled intersection, Delay – seconds per vehicle, LOS – Level of Service

In the future year 2040 scenario, the intersection of Highway 395 and Rancho Road operates at LOS F in both the AM and PM peak hours. The addition of project traffic to the future year 2040 scenario increases delay in the AM peak hour by 0.3 seconds and by 3.8 seconds in the PM peak hour.

1.2 Recommended Measures to Improve Level of Service at Highway 395 and Rancho Road (West)

In existing conditions, the intersection of Highway 395 at Rancho Road operates at LOS E in both peak hours which degrades to a LOS F in the AM peak hour and a worse LOS E in the PM peak hour under 2024 background conditions without the project. In all subsequent scenarios, with or without the project, the intersection is projected to operate at LOS F in both peak hours. The level of service under all conditions exceeds the City of Adelanto's level of service policy standard of LOS D.

Based on the analyses this study recommends the following measures:

1. Intersection improvements.
    a. Within the existing Rancho Road (West) right of way, convert the eastbound shared through-right lane to an exclusive right turn lane. The eastbound approach configuration should accommodate an exclusive left turn lane, a through lane, and an exclusive right turn lane.
    b. Within the existing Rancho Road (West) right of way, convert the westbound shared through-right lane to an exclusive right turn lane. The westbound approach configuration should accommodate an exclusive left turn lane, a through lane, and an exclusive right turn lane.
2. Optimize the traffic signal timing and include an eastbound right turn overlap.

The following supports this recommendation:

- The existing through movement in the eastbound direction of Rancho Road at US 395 is low (less than 200 vph in the peak hours). Future projections do not increase the peak hour through movements significantly. These low volumes can be accommodated by the capacity of a single through lane.
- The existing eastbound right turn movement from Rancho Road onto southbound US 395 is over 400 vehicles in the PM peak hour and projected to be as high as 600 vehicles in future conditions—a volume warranting an exclusive right turn lane.

In addition, the eastbound right turn lane should have an overlap phase with the northbound left turn phase. Currently, no U-turns are permitted from northbound US 395 so restricting an existing movement from the state highway is not required. Finally, intersection signal timing should be optimized with consideration to the new intersection configuration. The recommendations are illustrated in the diagram below.

The recommended interim mitigation measure for the intersection of Highway 395 and Rancho Road consists of converting the eastbound and westbound through-right lanes to exclusive right turn lanes, and add an eastbound right turn overlap phase to the signal controller.

Implementation of the interim mitigation measures involves removal of old pavement markings, installing new thermoplastic pavement markings, installing new signs per the California MUTCD, installation of one new eastbound facing signal head (for right turn overlap phased), repositioning existing signal heads to align with through lanes, and modifying the signal phasing at the controller unit.

Level of Service With Recommended Improvements

The proposed intersection improvements are most effective in the PM peak hour in which the high eastbound to southbound turn volume occurs. The proposed improvements offset the project's delay in the AM peak hour (reducing the intersection delay to less than the background (without project) conditions) and improve the level of service from a LOS F to a LOS D in the PM peak hour. **Table 1-3** shows the intersection level of service under project conditions with the proposed improvements implemented.

Table 1-3: Intersection Capacity Analysis – Project Conditions with Interim Mitigations

Intersection	Control Type	Background Conditions				Background plus Project Conditions				Change in Delay (Seconds)	
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour			
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	AM	PM
1. Highway 395 / Rancho Road (West)	TS	87.6	F	73.4	E	87.8	F	73.9	E	0.2	0.5
Interim Mitigation: convert EBTHR and WBTHR to right turn lanes, provide eastbound right turn overlap phase, and optimize signal timing		Not Applicable				85.8	F	52.8	D	-1.8	-20.6

Table 1-4 shows the intersection level of service under future year 2040 plus project conditions with the proposed improvements implemented.

Table 1-4: Intersection Capacity Analysis –Future Plus Project Conditions with Interim Mitigations

Intersection	Control Type	Future Year 2040 Conditions				Future Year 2040 + Project Conditions				Change in Delay (Seconds)	
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour			
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	AM	PM
1. Highway 395 / Rancho Road (West)	TS	208.7	F	297.2	F	209.0	F	301.0	F	0.3	3.8
Interim Mitigation: convert EBTHR and WBTHR to right turn lanes, provide eastbound right turn overlap phase, and optimize signal timing		Not Applicable				204.7	F	193.4	F	-4.0	-103.8

The recommended improvements effectively mitigate the project's increase in delay. As shown in **Table 1-4** the improvements reduce the year 2040 future conditions delay to below future year 2040 conditions without the project.

1.3 Summary of Vehicle Miles of Travel (VMT) Analysis

A. Project Type Screening Criterion

On April 27, 2022, Adelanto's City Council approved a resolution that replaces the previous project type screening criteria based on daily traffic with a threshold based on CO2 emissions generated by a development's traffic generation. Resolution No. 20-41-A adopts a carbon dioxide equivalent threshold of significance for purposes of analyzing transportation impacts under CEQA.

Based on analysis supporting the resolution, the project type screening includes a list of common land uses and the maximum size of development (dwelling units or square feet) that would generate less than the threshold established for CO2 emissions (3,000 MT). This list includes warehousing (unrefrigerated) at a threshold of 306,000 square feet and high-cube short-term transload warehousing at 413,000 square feet.

The new project type screening criterion adopted in Resolution 20-41-A states that an unrefrigerated warehouse of 306,000 square feet or less would generate CO2 emissions less than 3,000 metric tons (MT) per day and, therefore, have a less-than-significant impact on VMT under CEQA. The proposed 689,824 square foot high-cube short-term transload warehouse exceeds the threshold. **The project was not screened from requiring a VMT analysis using the screening criterion based on CO2 emissions adopted in Resolution 20-41-A.**

B. Project-Generated VMT Analysis

The SBTAM model was used estimate project-generated VMT for both baseline (2016) and horizon year (2040) scenarios. The SBTAM socioeconomic database for each scenario were updated with the project land use to calculate project VMT. The databases were also used to obtain the county's population and employment to estimate service population.

C. Conclusions of the VMT Analyses

The VMT analysis conducted to identify potentially significant project-generated VMT impacts under CEQA concludes that the proposed project generates a VMT / service population less than San Bernardino County's regional average baseline significance threshold of 32.7 VMT/service population, and, therefore, does not cause a significant impact based on the city's adopted significance thresholds for project-generated VMT.

Another VMT analysis conducted to identify potentially significant impacts of the project's "effects on countywide VMT" under CEQA concludes that the VMT / service population metric for the baseline and horizon year scenarios "with the project" do not increase the metric over the "without project" scenarios. Therefore, the proposed project does not cause a significant impact based on the city's adopted significance thresholds for the project's effect on countywide VMT.

2 INTRODUCTION

This report identifies the traffic impacts and presents recommendations for access and traffic mitigation for the proposed Warehouse Development project in the City of Adelanto, California. The proposed project consists of a 689,824 square foot high-cube short-term transload warehouse located on 37.64-acres. **Figure 1** illustrates the vicinity map, and **Figure 2** illustrates the proposed project site plan. The intent of this report is to evaluate potentially significant traffic impacts caused by the proposed development in accordance with the City of Adelanto's traffic impact study requirements and under the following scenarios:

- Existing Conditions
- Background Conditions (Year 2024)
- Project Conditions (Year 2024)
- Future Year 2040 Conditions
- Future Year Plus Project Conditions

2.1 Scenario Definitions

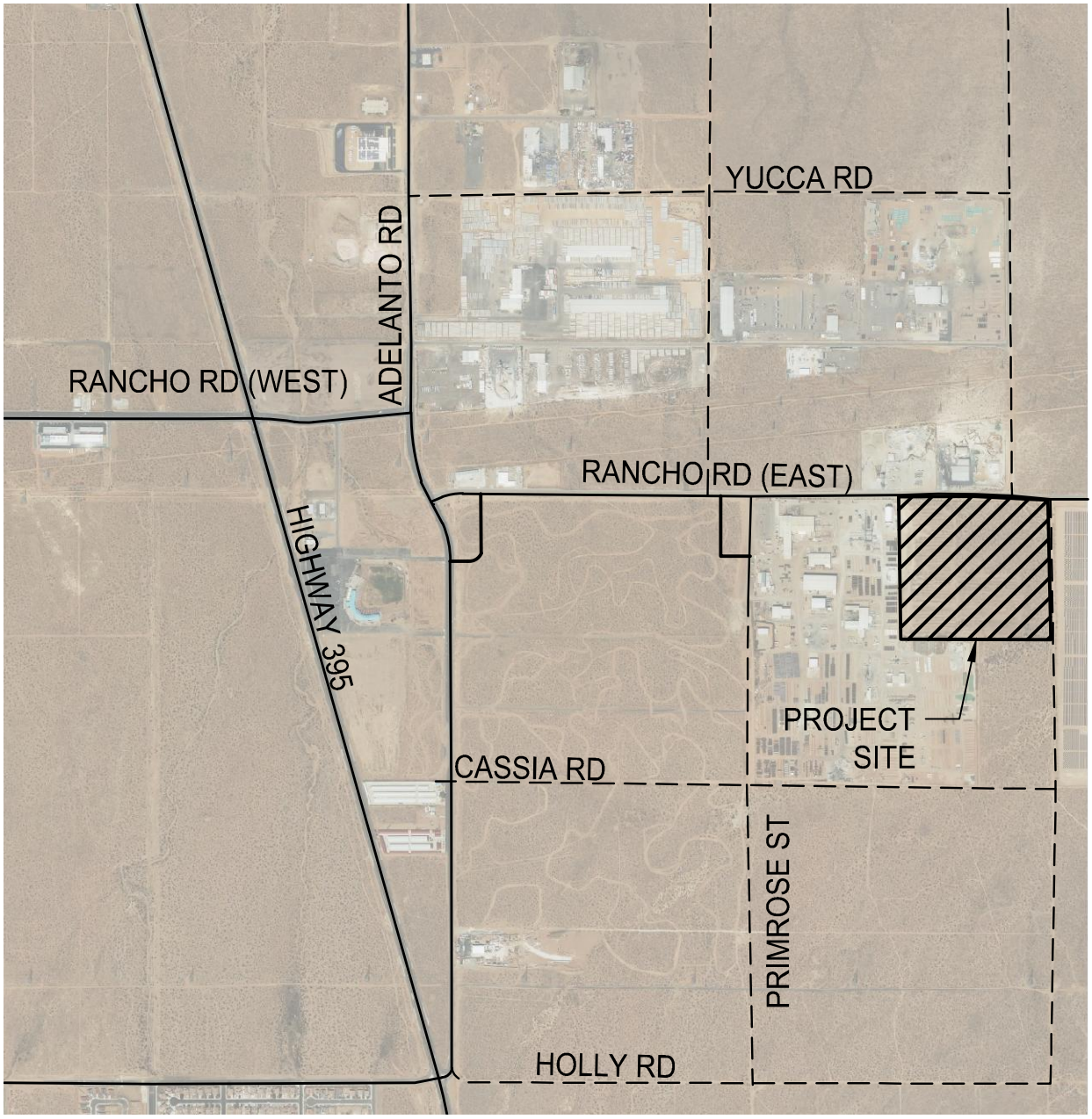
Existing Conditions. This scenario represents existing transportation conditions at the time this report was prepared. Data includes traffic counts collected in August 2022 and current roadway and intersection geometries. This scenario is used as the baseline condition from which to measure project-specific impacts.

Background Conditions (Year 2024). This scenario represents conditions at the time the project is anticipated to be constructed and occupied (Year 2024 for this project) but without traffic generated by the project. The ambient growth is a general rate of growth in traffic from overall regional development (assumed to be 3.5% annually for this study).

Project Conditions (Year 2024). This scenario adds the project's estimated traffic generation at project buildout (Year 2024) to the Background Conditions scenario described above. Impacts identified in this scenario are considered "cumulative" impacts—impacts that the project contributes to, but does not solely cause, and may be responsible for a fair-share of the cost to implement any mitigation measures.

Future Year 2040 Conditions. This scenario represents regional ambient growth in traffic up to the year 2040. Ambient growth derived from forecasts from the Adelanto Transportation Analysis Model (SBTAM).

Future Year 2040 with Project Conditions. This scenario adds the project's estimated traffic generation to the Future Conditions scenario described above. Impacts identified in this scenario are considered "cumulative" impacts—impacts that the project contributes to, but does not solely cause, and may be responsible for a fair-share of the cost to implement any mitigation measures.



DAVID EVANS AND ASSOCIATES INC.

FIGURE 1: VICINITY MAP
ADELANTO 38 DEVELOPMENT
ADELANTO, CA

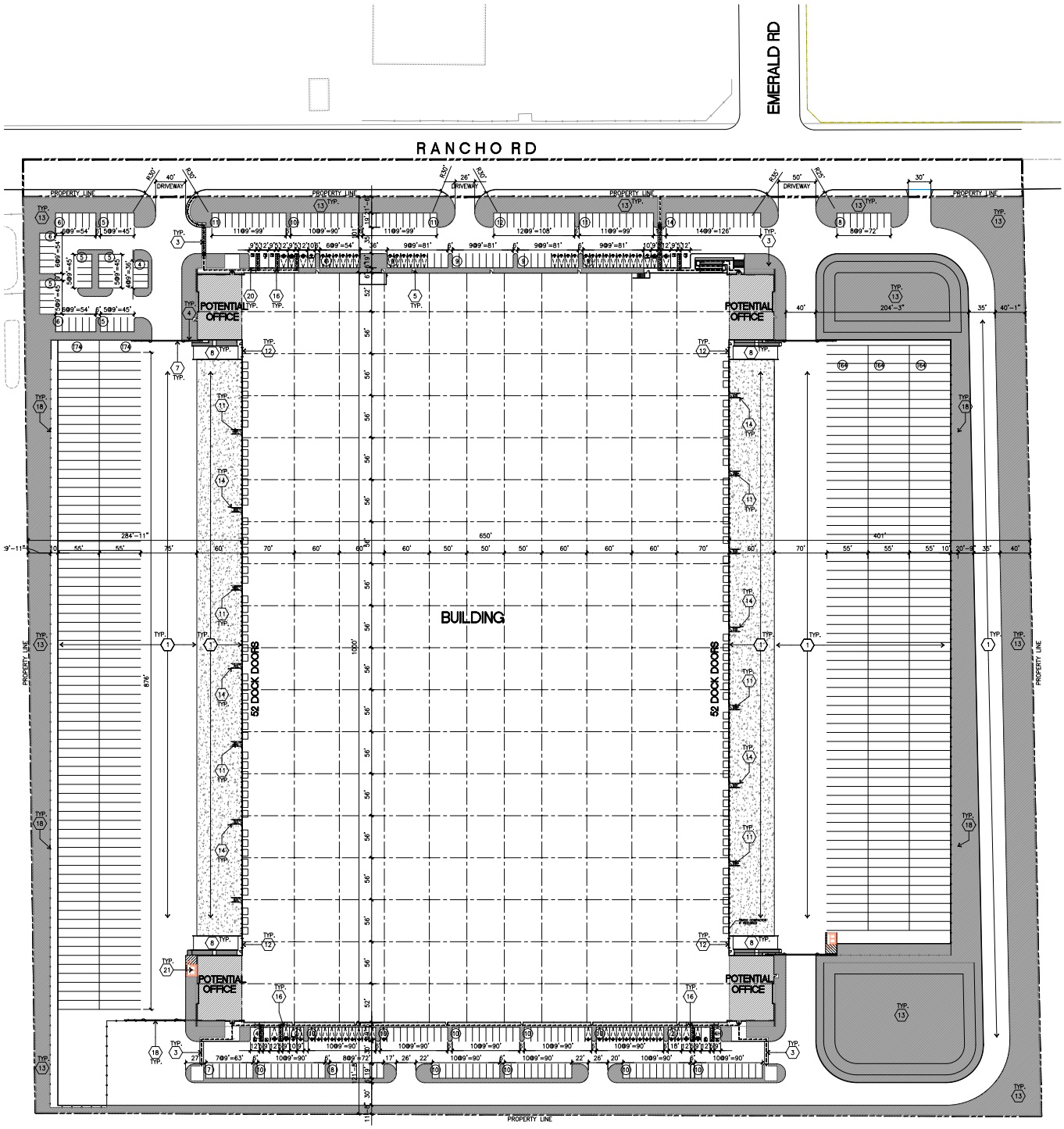


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FIGURE 2: PROJECT SITE PLAN
ADELANTO 38 DEVELOPMENT
ADELANTO, CA

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3 EXISTING CONDITIONS

The proposed project consists of a 689,824 foot high-cube short-term transload warehouse located on 37.64-acres in the City of Adelanto.

3.1 City of Adelanto and Caltrans Intersection Level of Service Policies

The City of Adelanto's Traffic Impact Analysis Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment (July 2020) outlines the policies and methods for complying with the new CEQA expectations for Vehicle Miles Traveled (VMT) analysis and the applicable Adelanto General Plan consistency requirements, which requires performing intersection level of service (LOS) analysis.

The City of Adelanto has adopted vehicle LOS policies that set standards for which local agency infrastructure will strive to maintain. These policies are contained in the City's General Plan and therefore apply to discretionary approvals of new land use and transportation projects.

The City of Adelanto requires mitigation to maintain the General Plan goal of LOS D on all its roadways. This level of service policy applies to local Adelanto roadways, roads of regional importance as part of the City's Congestion Management Program (CMP) network and State highways.

The Caltrans' Guide for the Preparation of Traffic Impact Studies (December 2002) states "Caltrans endeavors to maintain a target LOS at the transition between LOS "C" and LOS "D" (see Appendix "C-3") on State highway facilities, however, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency (City of Adelanto) consult with Caltrans to determine the appropriate target LOS". This policy is consistent with Caltrans' practice of setting level of service thresholds for State highway facilities equal to the threshold of the jurisdiction where the facility is located but no greater than a 45 second average delay per vehicle in the peak hour (mid LOS D). Caltrans acknowledges that this may not always be feasible. For this study, the City's LOS D is assumed to be the minimum level of service criteria for the study intersections.

3.2 Local and Major Roadways

Highway 395 is a major north-south primarily four-lane road (two lane in each direction with turn pockets at key intersections and a double-double yellow striped median) in the project area. This road is a state highway owned and operated by Caltrans. Highway 395 is identified as a super arterial on the City of Adelanto Circulation Plan. The posted speed limit within the project area is 55 mph.

Adelanto Road is a major north-south primarily five lane road (two lanes in each direction with a with turn pockets at key intersections) in the project area. Adelanto Road is identified as a major arterial on the City of Adelanto Circulation Plan. The posted speed limit within the project area is 55 mph.

Rancho Road is a major east-west road. Rancho Road, west of Adelanto Road, is primarily a five-lane road (two lanes in each direction with a with turn pockets at key intersections) in the project area. Rancho Road, east of Adelanto Road, is primarily a two-lane road (a single lane in each direction with a with turn pockets at key intersections) in the project area. Rancho Road is identified as a major arterial on the City of Adelanto Circulation Plan.

Emerald Road is primarily a north-south unimproved road in the project area. Mesa Linda Road is identified as a major arterial on the City of Adelanto Circulation Plan.

3.3 Site Access

The project proposes three primary driveways and one secondary driveways along Rancho Road. The project's access is evaluated in Chapter 5 of this report.

3.4 Study Intersections

The project would potentially affect three existing intersection and the project's proposed primary driveways:

1. Highway 395 / Rancho Road (West)
2. Adelanto Road / Rancho Road (West)
3. Adelanto Road / Rancho Road (East)
4. Rancho Road (East)/ Driveway #1
5. Rancho Road (East)/ Driveway #2
6. Rancho Road (East)/ Driveway #3

The intersection of Highway 395 at Rancho Road is currently signalized. The intersections of Adelanto Road at Rancho Road (West) and Adelanto Road at Rancho Road (East) are currently side street stop controlled.

3.5 Existing Traffic Volumes

Turn movement counts were conducted in August 2022 by Newport Traffic Studies, an independent traffic data collection company. These counts were collected during the AM (7:00-9:00 AM) and PM (4:00-6:00 PM) peak periods. The existing turn movement counts are included in **Appendix B** of this study. **Figure 3** illustrates the existing peak hour traffic volumes in the study area.

3.6 Intersection Capacity Analysis Methodology

Intersection level of service (LOS) is determined using Synchro software[1] which implements the methodology in Chapter 19 and Chapter 20 of the Highway Capacity Manual, 6th Edition (HCM 6)[2] and conforms to the procedures and assumptions in the City's Traffic Impact Analysis Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment (LOS). The intersection analyses use existing intersection geometrics and existing traffic volumes in determining AM and PM peak hour intersection level of service. **Table 3-1** provides LOS thresholds for signalized intersections as provided in the HCM 6 Chapter 19. The level of service for a Two-Way Stop Controlled (TWSC) intersection is determined by the computed or measured control delay. The LOS is determined for each minor-street movement (or shared movement) by using the criteria provided in **Table 3-2**.

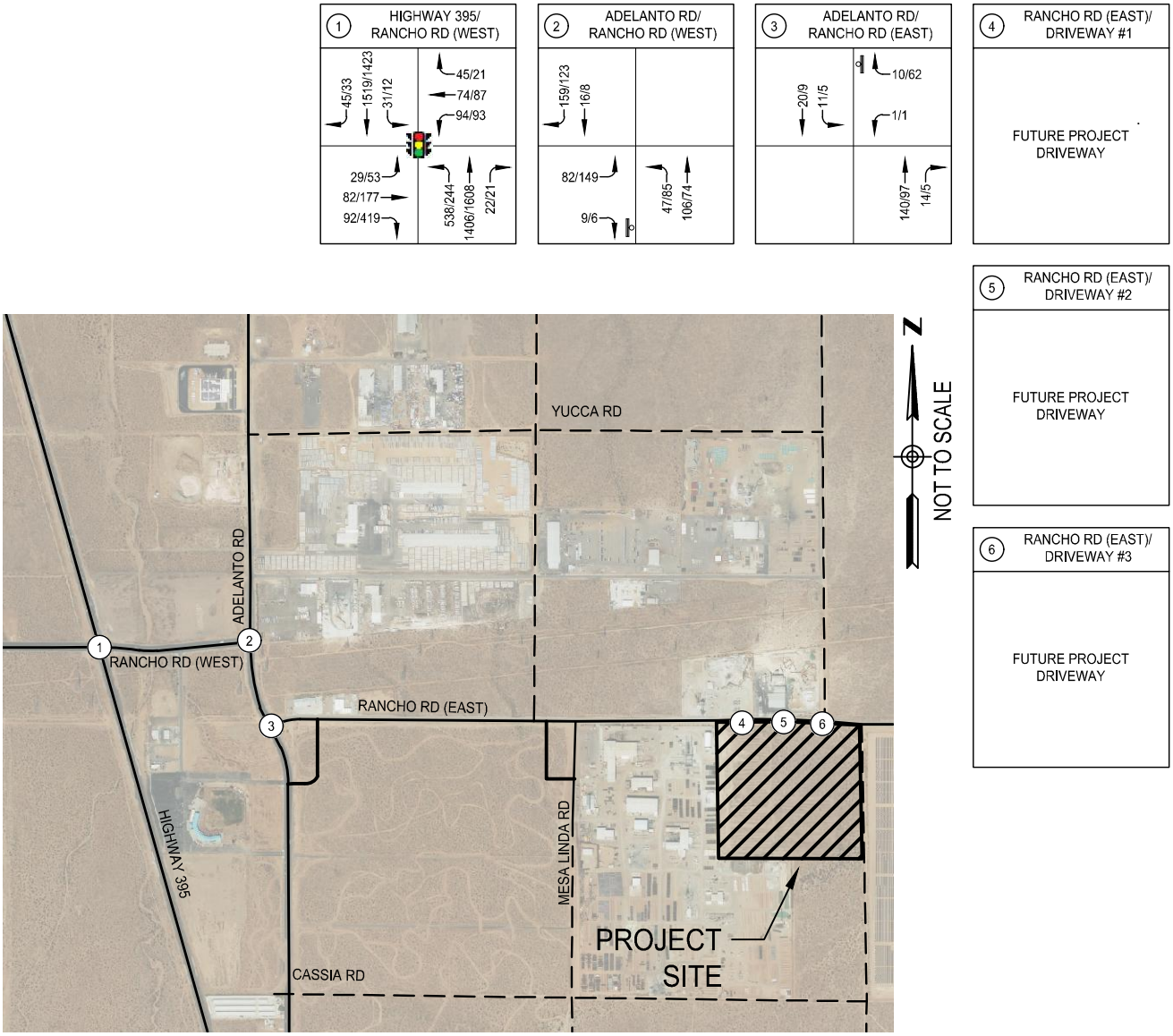
Table 3-1: HCM 6 – LOS Criteria for Signalized Intersections

Control Delay (s/veh)	LOS by Volume-to-Capacity Ratio [a]	
	≤1.0	>1.0
≤ 10	A	F
> 10 - 20	B	F
> 20 - 35	C	F
> 35 - 55	D	F
> 55 - 80	E	F
> 80	F	F
[a] For approach-based and intersection-wide assessments, LOS is defined solely by control delay. Source: Highway Capacity Manual 6th Edition, Exhibit 19-8.		

Table 3-2: HCM 6 – Level of Service Criteria for Two-Way Stop Controlled (TWSC) Intersections

Control Delay (s/veh)	LOS by Volume-to-Capacity Ratio	
	v/c ≤1.0	v/c >1.0
0 - 10	A	F
> 10 -15	B	F
> 15 - 25	C	F
> 25 - 35	D	F
> 35 - 50	E	F
> 50	F	F
Note: The LOS criteria apply to each lane on a given approach and to each approach on the minor street. LOS is not calculated for the uncontrolled major-Street approaches or for the intersection as a whole. Source: Highway Capacity Manual 6th Edition, Exhibit 20-2.		

1 Trafficware Ltd, version 10.
2 Transportation Research Board, Washington D.C., 2010.



LEGEND

- XX/XX - AM/PM PEAK HOUR VOLUMES
- (#) - STUDY INTERSECTIONS
- SIGNALIZED INTERSECTION
- STOP CONTROLLED APPROACH

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FIGURE 3: EXISTING TRAFFIC VOLUMES
ADELANTO 38 DEVELOPMENT
ADELANTO, CA

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3.7 Existing Traffic Analysis

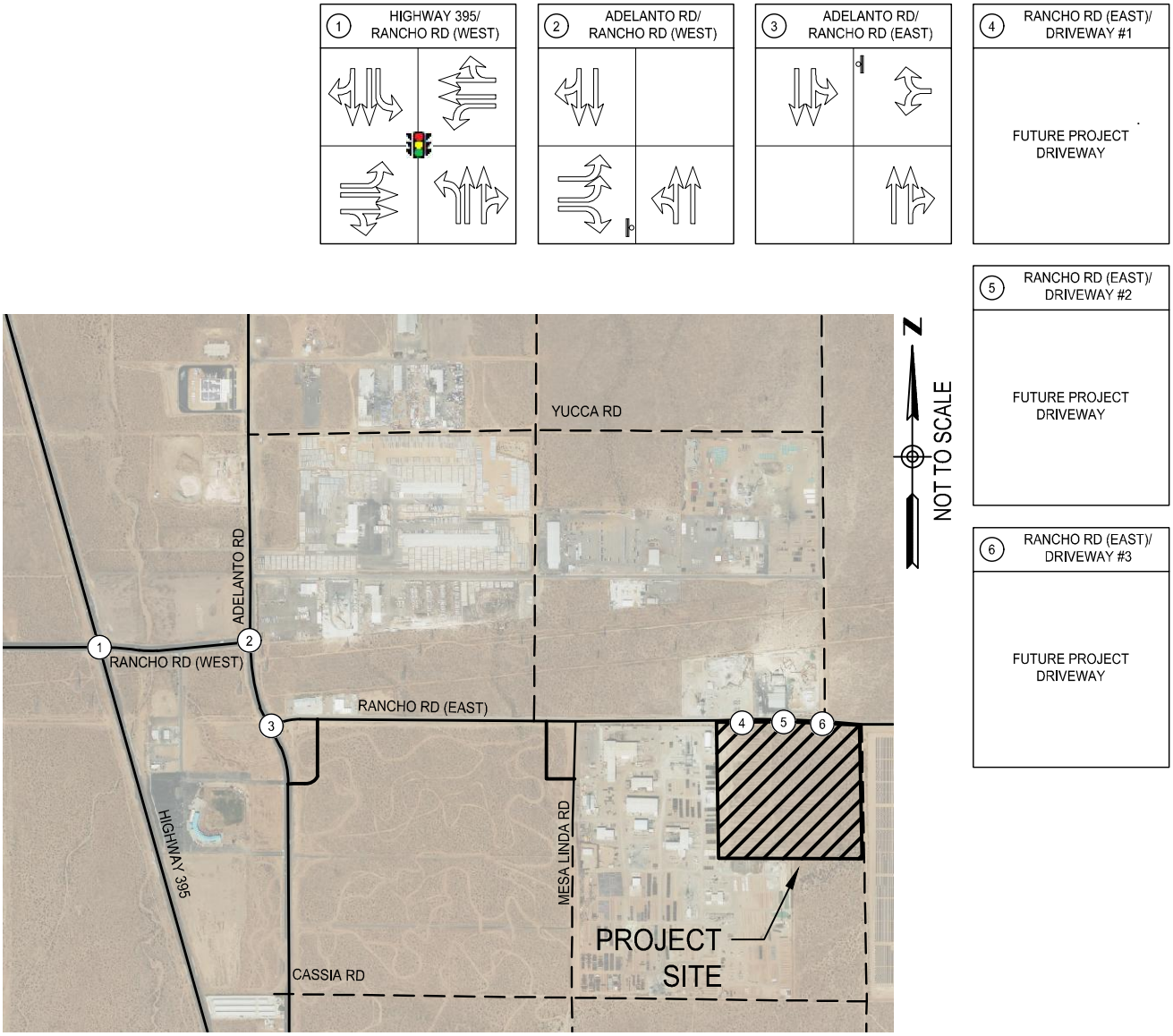
Existing intersection geometrics and existing AM and PM peak hour traffic counts are used in analyzing existing intersection capacity. **Table 3-3** and **Appendix D** provide the results of the analysis. **Figure 4** illustrates the existing intersection geometrics utilized in the capacity analysis.

Table 3-3: Intersection Capacity Analysis – Existing Conditions

Intersection	Control Type	AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS
1. Highway 395 / Rancho Road (West)	TS	**73.7**	**E**	**56.5**	**E**
2. Adelanto Road / Rancho Road (West)[(1)]	SSSC	11.8	B	12.8	B
3. Adelanto Road / Rancho Road (East)	SSSC	9.5	A	9.0	A

[a] Intersection is evaluated with a single left turn lane and maximum allowable saturation flow rate due to an HCM 6th Edition limitation that doesn't support more than one exclusive lane or turning movement at a stop-controlled intersection.
Definitions and Abbreviations:
TS – Traffic signal-controlled intersection, SSSC – Side-street stop-controlled intersection, Delay – seconds per vehicle, LOS – Level of Service

As presented in **Table 3-3***,* under existing conditions, the intersection of Highway 395 at Rancho Road is currently operating at LOS E during the AM and the PM peak hour, and the intersections of Adelanto Road / Rancho Road (West) and Adelanto Road / Rancho Road (East) currently operate at LOS B or better.



LEGEND

- EXISTING GEOMETRICS
- # - STUDY INTERSECTIONS
- SIGNALIZED INTERSECTION
- STOP CONTROLLED APPROACH

DAVID EVANS AND ASSOCIATES INC.

FIGURE 4: EXISTING INTERSECTION GEOMETRICS
ADELANTO 38 DEVELOPMENT
ADELANTO, CA

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4 BACKGROUND CONDITIONS

This scenario evaluates impacts due to ambient growth in traffic and traffic generated by other area development projects within the study area up to the Year 2024 when project construction is expected to be completed.

The ambient growth is a general rate of growth in traffic from overall regional development (assumed to be 3.5% annually for this study).

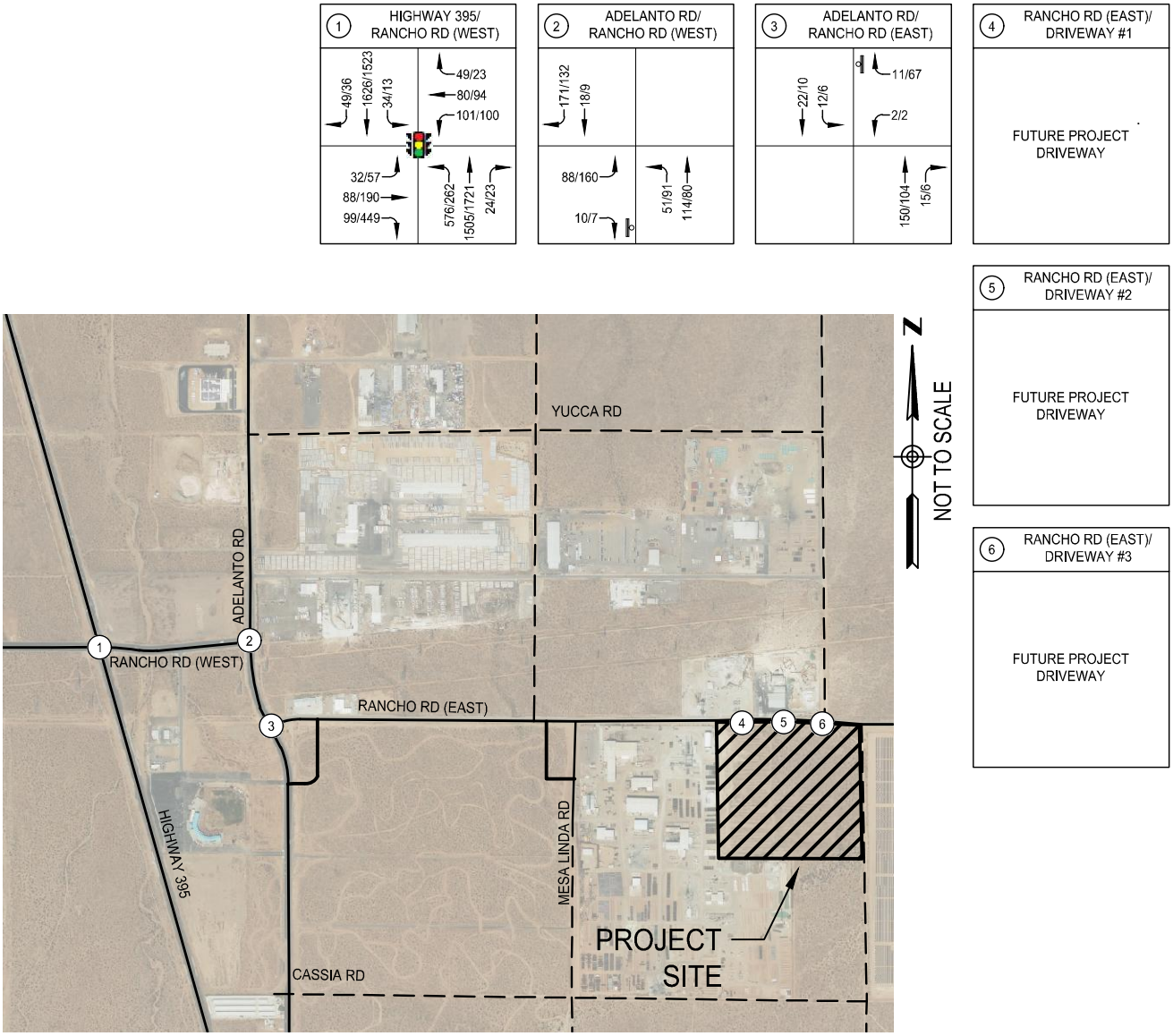
4.1 Background Conditions Traffic Analysis

The background conditions intersection capacity analysis uses existing intersection geometrics and the projected AM and PM peak hour traffic shown in **Figure 5**. **Table 4-1** and **Appendix D** provides the results of the analysis.

Table 4-1: Intersection Capacity Analysis – Background Conditions

Intersection	Intersection Control Type	AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS
1. Highway 395 / Rancho Road (West)	TS	**87.6**	**F**	**73.4**	**E**
2. Adelanto Road / Rancho Road (West)[a]	SSSC	12.1	B	13.4	B
3. Adelanto Road / Rancho Road (East)	SSSC	9.6	A	9.1	A
[a] Intersection is evaluated with a single left turn lane and maximum allowable saturation flow rate due to an HCM 6th Edition limitation that doesn't support more than one exclusive lane or turning movement at a stop-controlled intersection. Definitions and Abbreviations: TS – Traffic signal-controlled intersection, SSSC – Side-street stop-controlled intersection, Delay – seconds per vehicle, LOS – Level of Service					

As presented in **Table 4-1***,* under background conditions, the study intersections would operate at the same level of service during the peak hours with the addition of regional ambient growth, except the intersection of Highway 395 at Rancho Road which degrades to a LOS F in the AM peak hour and a worse LOS E in the PM peak hour. The intersections of Adelanto Road / Rancho Road (West) and Adelanto Road / Rancho Road (East) would operate at LOS B or better.



LEGEND

- XX/XX - AM/PM PEAK HOUR VOLUMES
- (#) - STUDY INTERSECTIONS
- SIGNALIZED INTERSECTION
- STOP CONTROLLED APPROACH

DAVID EVANS AND ASSOCIATES INC.

FIGURE 5: BACKGROUND TRAFFIC VOLUMES
ADELANTO 38 DEVELOPMENT
ADELANTO, CA

5 PROJECT CONDITIONS

This scenario evaluates potential impacts with the project generated traffic at opening day (2024) to the background conditions scenario.

5.1 Project Description and Trip Generation

Table 5-1 summarizes the estimated trip generation of the proposed project for an average weekday, and weekday AM (7-9 AM) and PM (4-6 PM) peak hours. The Institute of Transportation Engineers (ITE) Trip Generation manual, 11th Edition is the source of the trip generation rates for warehouse project for an average weekday, and weekday AM (7-9 AM) and PM (4-6 PM) peak hours. Although the actual operation of the proposed warehouse is unknown at this time, about 15 percent of the building is assumed to be utilized for cold storage. Cold storage warehousing has a higher trip generation rate than conventional warehousing, so the proposed project is divided into 586,350 square feet of conventional warehouse and 103,474 square feet of cold storage warehouse. This split is reflected in **Table 5-1.**

The Institute of Transportation Engineers (ITE) Trip Generation manual, 11th Edition is the source of the trip generation rates for Warehouse (Land Use Category 150) trips per 1,000 square feet of gross floor area for the Peak Hour of the Adjacent Street Traffic (between 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM).

The source of the mode share split between passenger cars and trucks is the Fontana Truck Trip Generation Study3. The passenger car / truck split used in **Table 5-1** is based on data collected for warehouse uses (ITE Land Use Category 150) in the Fontana study. Adelanto's TIS guidelines require the conversion of trucks into an equivalent number of passenger cars when conducting intersection capacity analyses to determine level of service. Passenger Car Equivalent (PCE) factors are industry standard conversion factors. The Passenger Car Equivalents (PCE) factors are provided by vehicle type and number of axles for trucks. Passenger Car Equivalent (PCE) factors are from the City of Hesperia's (a neighboring municipality in the Victor Valley) *Traffic Impact Analysis Report Guidelines for Vehicle Miles Traveled (VMT) and Level of Service (LOS) Assessment* dated July 2020. The Passenger Car Equivalents (PCE) factors are provided by vehicle type and number of axles for trucks.

As presented in **Table 5-1**, the proposed project is estimated to generate about 1,375 daily PCE trips, 97 AM peak hour PCE trips, and 112 PM peak hour PCE trips.

5.2 Project Trip Distribution and Assignment

The distribution of project trips to the surrounding street network is based on assumed origins of the project's employees and customers. The directional distribution patterns (east, west, north, and south) are consistent with area traffic patterns, and the source of the trip (i.e., primary, diverted link or pass-by) then assigned to the street system based on the type of trip or the most direct route on major streets.

The following exhibits illustrate both the directional distribution (percent direction) and the assignment of project traffic (peak hour trips) to the street system. **Figure 6** presents the distribution of project-generated auto trips to the study intersections in percentages by movement and direction. **Figure 7** presents the distribution of project-generated truck trips to the study intersections in percentages by movement and direction.

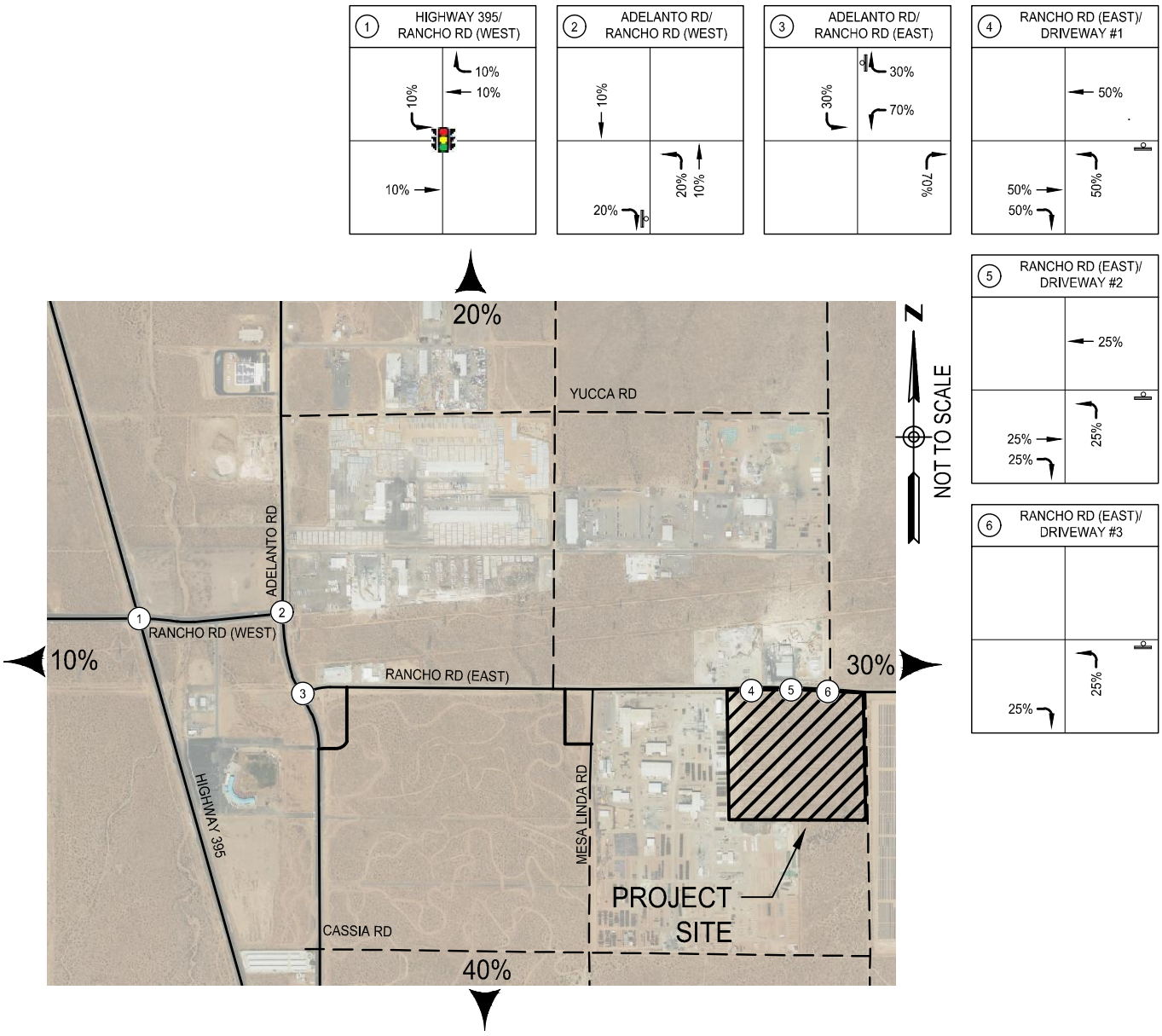
Figure 8 the assignment of the project-generated auto trips to the study intersections. **Figure 9** presents the assignment of the project-generated truck trips to the study intersections, and **Figure 10** presents the total project trips assigned to each study intersection.

3 Fontana Truck Trip Generation Study. City of Fontana, County of San Bernardino, and the State of California. August 2003. This study evaluates vehicle trip generation characteristics of several land use categories that typically generate significant volumes of truck traffic. The study collected data at numerous industrial facilities including mix of vehicles by axle. The data from this study has been integrated into ITE's Trip Generation manual.

Table 5-1: Project Trip Generation

	Use	Gross Floor Area (KSF)	Daily	AM Peak Hour of Adjacent Street Traffic			PM Peak Hour of Adjacent Street Traffic		
				In	Out	Total	In	Out	Total
1	**High Cube Transload Warehouse (Comprises 85% of Building)** (ITE Land Use Category 154)	586.4	*Vehicle Trip Generation Rates (Trips Per 1,000 Square Feet of Gross Floor Area)*						
			1.40	0.06	0.02	0.08	0.03	0.07	0.10
			Total Vehicle Trip Generation						
			821	37	11	48	17	42	59
		Mode Share	*Total Project Trip Generation by Vehicle Type*						
	Passenger Cars (Percent of Total)	79.57%	654	29	9	38	14	34	48
	2-Axle Trucks (Percent of Total)	3.46%	29	2	1	3	1	1	2
	3-Axle Trucks (Percent of Total)	4.64%	39	2	1	3	1	2	3
	4-Axle Trucks (Percent of Total)	12.33%	102	5	2	7	3	6	9
		PCE Factor	*Project Trip Generation in Passenger Car Equivalents (PCE)*						
	Passenger Cars)	1	654	29	9	38	14	34	48
	2-Axle Trucks	1.5	44	3	2	5	2	2	4
	3-Axle Trucks (Percent of Total)	2	78	4	2	6	2	4	6
	4-Axle Trucks (Percent of Total)	3	306	15	6	21	9	18	27
		PCE Total	*1,082*	*51*	*19*	70	*27*	*58*	85
2	**High Cube Cold Storage Warehouse (Comprises 15% of Building)** (ITE Land Use Category 157)	103.4	*Vehicle Trip Generation Rates (Trips Per 1,000 Square Feet of Gross Floor Area)*						
			2.12	0.08	0.03	0.11	0.03	0.09	0.12
			Total Vehicle Trip Generation						
			220	9	3	12	4	9	13
		Mode Share	*Total Project Trip Generation by Vehicle Type*						
	Passenger Cars (Percent of Total)	79.57%	175	7	3	10	3	7	10
	2-Axle Trucks (Percent of Total)	3.46%	8	1	1	2	1	1	2
	3-Axle Trucks (Percent of Total)	4.64%	11	1	1	2	1	1	2
	4-Axle Trucks (Percent of Total)	12.33%	28	2	1	3	1	2	3
		PCE Factor	*Total Project Trip Generation in Passenger Car Equivalents (PCE)*						
	Passenger Cars)	1	175	7	3	10	3	7	10
	2-Axle Trucks	1.5	12	2	2	4	2	2	4
	3-Axle Trucks (Percent of Total)	2	22	2	2	4	2	2	4
	4-Axle Trucks (Percent of Total)	3	84	6	3	9	3	6	9
		PCE Total	*293*	*17*	*10*	27	*10*	*17*	27
	Combined Total Project Trips								
		Mode Share	*Combined Total Project Trip Generation by Vehicle Type*						
	Passenger Cars (Percent of Total)	79.57%	829	36	12	48	17	41	58
	2-Axle Trucks (Percent of Total)	3.46%	37	3	2	5	2	2	4
	3-Axle Trucks (Percent of Total)	4.64%	50	3	2	5	2	3	5
	4-Axle Trucks (Percent of Total)	12.33%	130	7	3	10	4	8	12
	Total Combined Project Vehicle Trips (Non-PCE)		**1,046**	**49**	**19**	**68**	**25**	**54**	**79**
		PCE Factor	*Combined Total Project Trip Generation in PCEs*						
	Passenger Cars)	1	829	36	12	48	17	41	58
	2-Axle Trucks	1.5	56	5	4	9	4	4	8
	3-Axle Trucks (Percent of Total)	2	100	6	4	10	4	6	10
	4-Axle Trucks (Percent of Total)	3	390	21	9	30	12	24	36
	Total Combined Project Vehicle Trips (PCE)		**1,375**	**68**	**29**	**97**	**37**	**75**	**112**

Notes:
KSF = Thousands of Square Feet.
AM / PM Peak Hour of Adjacent Street Traffic = Trip generation coinciding with the highest hourly volumes of traffic on the adjacent streets during the AM (7:00 AM and 9:00 AM) and PM (4:00 PM and 6:00 PM) commuter peak periods.
Source of trip generation rates: Institute of Transportation Engineers (ITE) Trip Generation (11th Edition). Average rates for land use category 154 (High-Cube Transload and Short-Term Storage Warehouse) and land use category 154 (High-Cube Cold Storage Warehouse)
Source of passenger car / truck mode share (percentage of total): Fontana Truck Trip Generation Study for Heavy Warehouse Uses (August 2003).
Passenger Car Equivalents (PCE) factors: Industry standard values utilized in neighboring jurisdictions.



LEGEND

XX% - GENERAL PROJECT TRIP DISTRIBUTION

XX% - SPECIFIC PROJECT TRIP PERCENTAGE

(#) - STUDY INTERSECTIONS

- STOP CONTROLLED INTERSECTION

- SIGNAL CONTROLLED INTERSECTION

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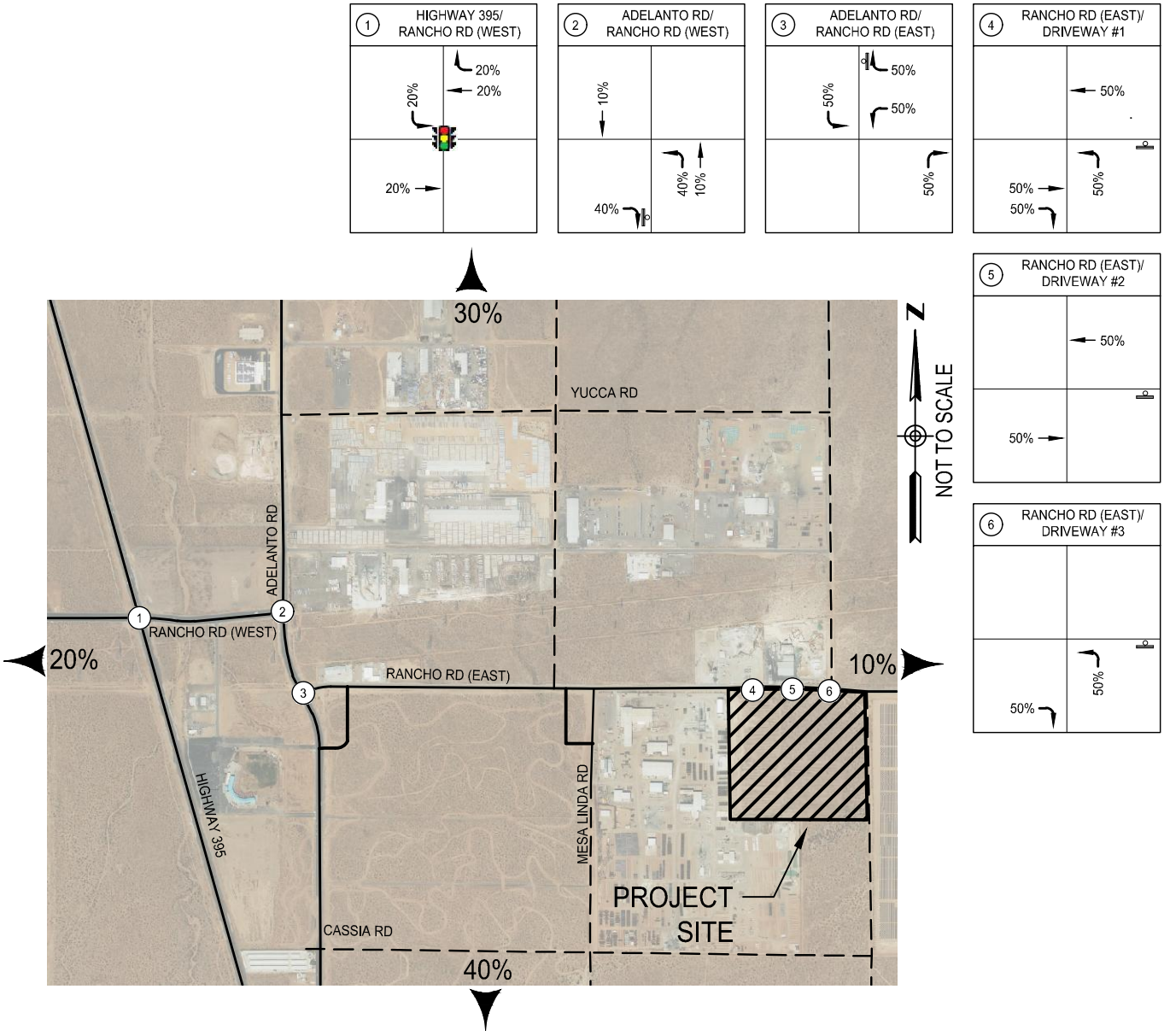
FIGURE 6: PROJECT AUTO TRIP DISTRIBUTION
ADELANTO 38 DEVELOPMENT
ADELANTO, CA



LEGEND

XX% - GENERAL PROJECT TRIP DISTRIBUTION

XX% - SPECIFIC PROJECT TRIP PERCENTAGE

(#) - STUDY INTERSECTIONS

- STOP CONTROLLED INTERSECTION

- SIGNAL CONTROLLED INTERSECTION

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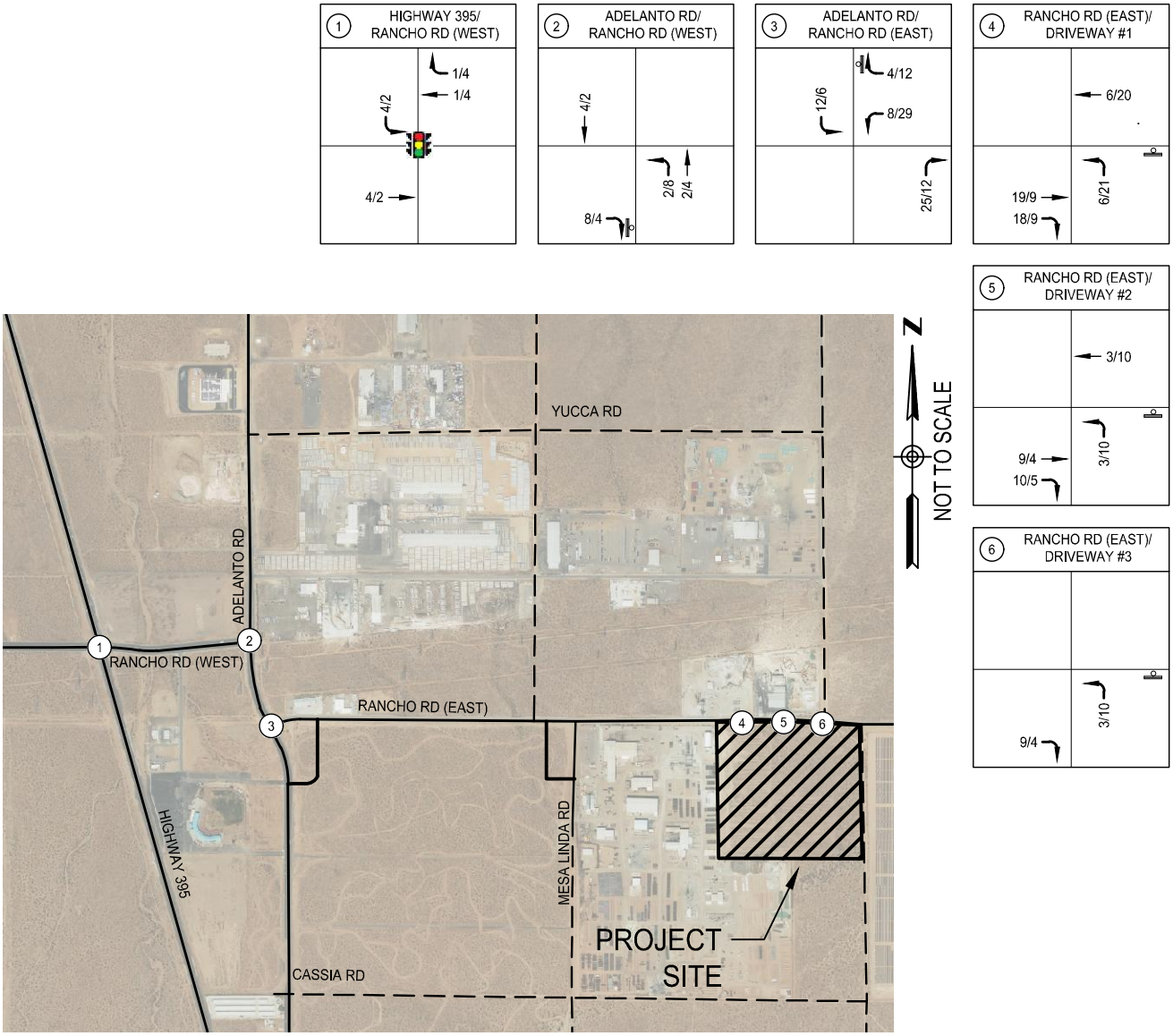
FIGURE 7: PROJECT TRUCK TRIP DISTRIBUTION
ADELANTO 38 DEVELOPMENT
ADELANTO, CA



PROJECT AUTO TRIPS

AM PEAK - 36 IN / 12 OUT
PM PEAK - 17 IN / 41 OUT

LEGEND

XX/XX - AM/PM PROJECT AUTO TRIPS
(#) - STUDY INTERSECTIONS
- SIGNALIZED INTERSECTION
- STOP CONTROLLED APPROACH

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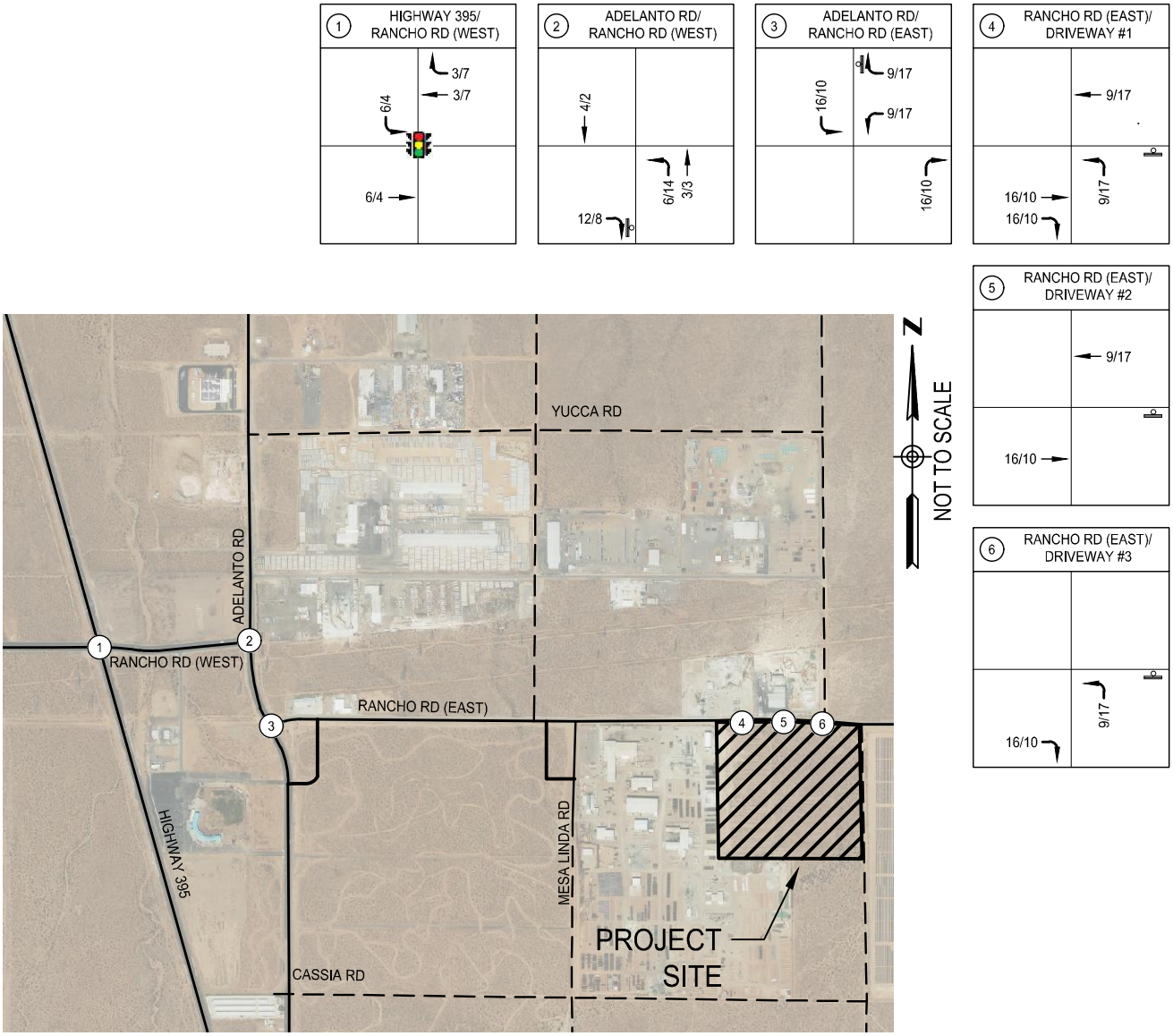
FIGURE 8: PROJECT AUTO TRIPS
ADELANTO 38 DEVELOPMENT
ADELANTO, CA



PROJECT TRUCK PCE TRIPS

AM PEAK - 32 IN / 17 OUT
PM PEAK - 20 IN / 34 OUT

LEGEND

- XX/XX - AM/PM PROJECT TRUCK PCE TRIPS
- (#) - STUDY INTERSECTIONS
- SIGNALIZED INTERSECTION
- STOP CONTROLLED APPROACH

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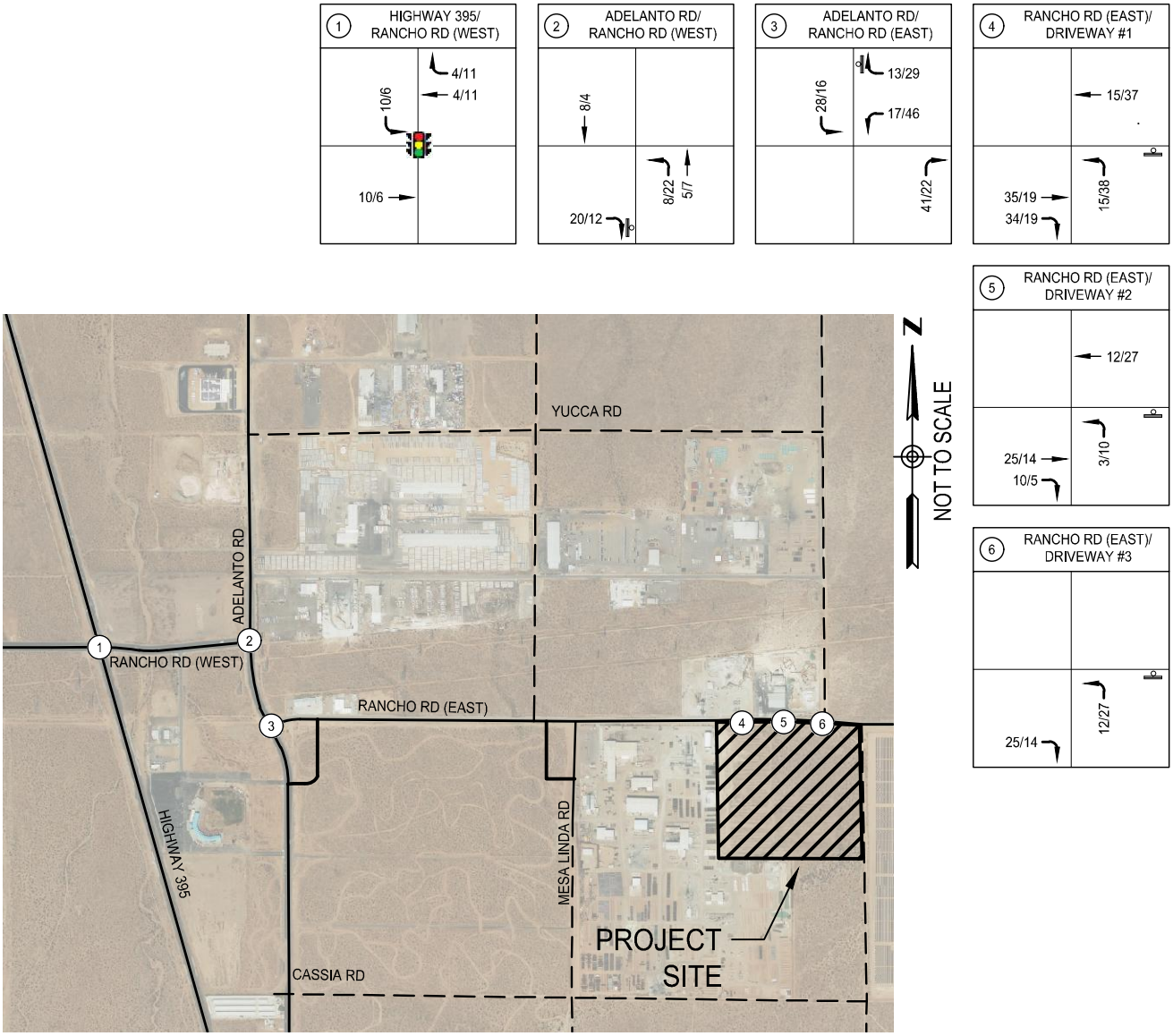
FIGURE 9: PROJECT TRUCK TRIPS
ADELANTO 38 DEVELOPMENT
ADELANTO, CA



TOTAL PROJECT PCE TRIPS

AM PEAK - 68 IN / 29 OUT
PM PEAK - 37 IN / 75 OUT

LEGEND

XX/XX - AM/PM TOTAL PROJECT PCE TRIPS
(#) - STUDY INTERSECTIONS
- SIGNALIZED INTERSECTION
- STOP CONTROLLED APPROACH

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FIGURE 10: TOTAL COMBINED PROJECT TRIPS
ADELANTO 38 DEVELOPMENT
ADELANTO, CA

5.3 Project Conditions Traffic Analysis

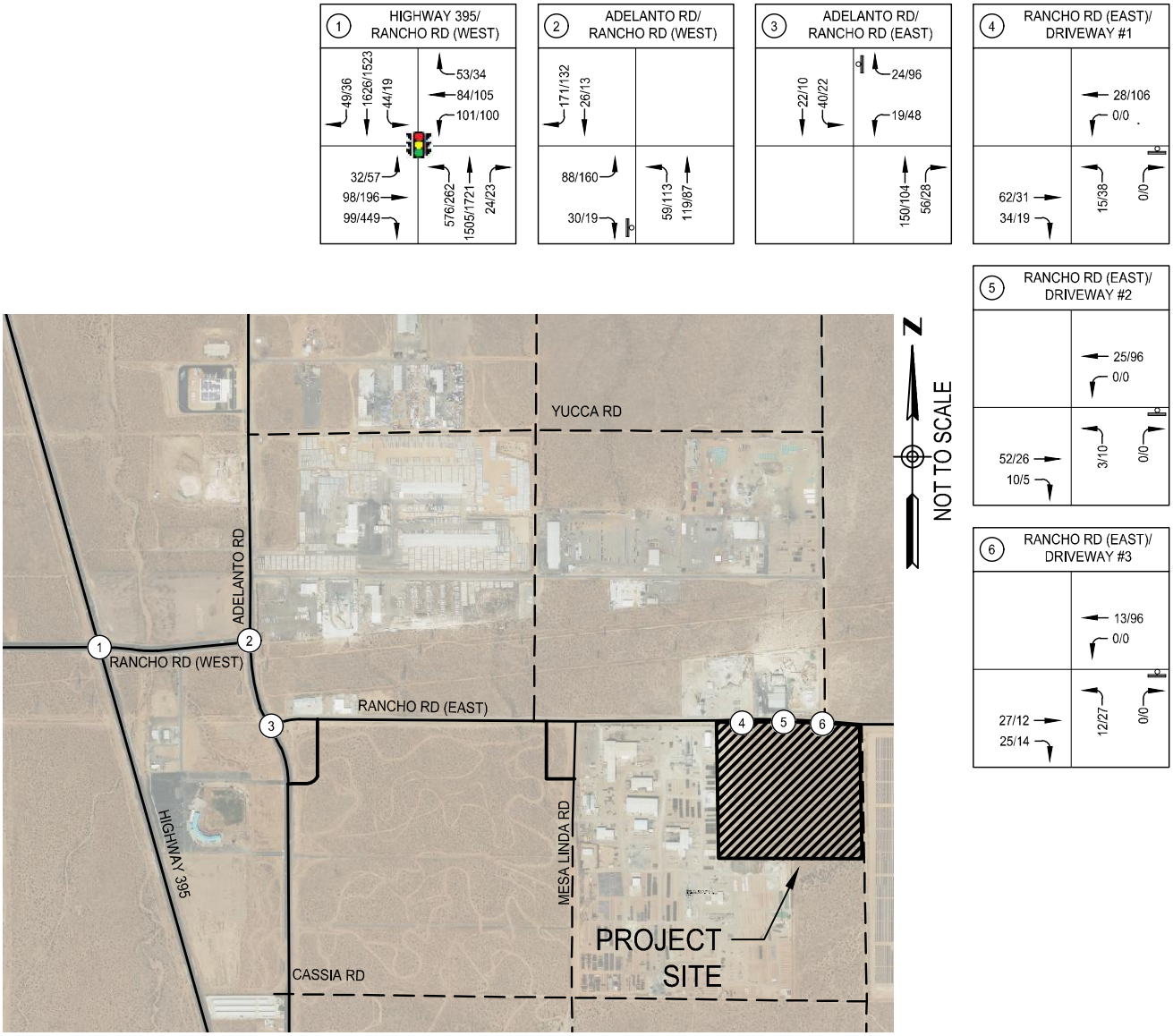
The intersection capacity analysis of project conditions uses the AM and PM peak hour traffic volumes shown in **Figure 11. Table 5-2** and **Appendix D** provide the results of the analysis.

Table 5-2: Intersection Capacity Analysis –Project Conditions

Intersection	Control Type	Background Conditions				Background plus Project Conditions				Change in Delay (Seconds)	
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour			
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	AM	PM
1. Highway 395 / Rancho Road (West)	TS	87.6	F	73.4	E	87.8	F	73.9	E	0.2	0.5
2. Adelanto Road / Rancho Road (West)[a]	SSSC	12.1	B	13.4	B	12.4	B	14.4	B	0.3	1.0
3. Adelanto Road / Rancho Road (East)	SSSC	9.6	A	9.1	A	10.4	B	10.1	B	0.8	1.0
4. Rancho Road (East)/ Driveway #1	SSSC	Future Project Driveways				9.3	A	9.7	A	Not Applicable	
5. Rancho Road (East)/ Driveway #2	SSSC					9.0	A	9.4	A		
6. Rancho Road (East)/ Driveway #3	SSSC					8.9	A	9.2	A		

[a] Intersection is evaluated with a single left turn lane and maximum allowable saturation flow rate due to an HCM 6th Edition limitation that doesn't support more than one exclusive lane or turning movement at a stop-controlled intersection.
Definitions and Abbreviations:
TS – Traffic signal-controlled intersection, SSSC – Side-street stop-controlled intersection, Delay – seconds per vehicle, LOS – Level of Service

As presented in **Table 5-2**, under project conditions, the study intersection and project driveway, are projected to continue to operate at the same LOS during the peak hours with the regional ambient growth and project traffic. The intersection of Highway 395 at Rancho Road will continue operating at LOS F during the AM and the PM peak hours and the intersections of Adelanto Road / Rancho Road (West) and Adelanto Road / Rancho Road (East) are anticipated to continue operating at LOS B or better.



LEGEND

- XX/XX - AM/PM PEAK HOUR VOLUMES
- (#) - STUDY INTERSECTIONS
- SIGNALIZED INTERSECTION
- STOP CONTROLLED APPROACH

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FIGURE 11: PROJECT TRAFFIC VOLUMES
ADELANTO 38 DEVELOPMENT
ADELANTO, CA

6 FUTURE CONDITIONS

The Future Conditions scenario represents regional ambient growth in traffic up to the year 2040. Ambient growth derived from forecasts from the Adelanto Transportation Analysis Model (SBTAM). Intersection turn movements were derived from post processing forecasted approach volumes and balancing the turn movement volumes for each study intersection.

The SBTAM traffic model plots are provided in **Appendix C**.

6.1 Future Conditions Traffic Analysis

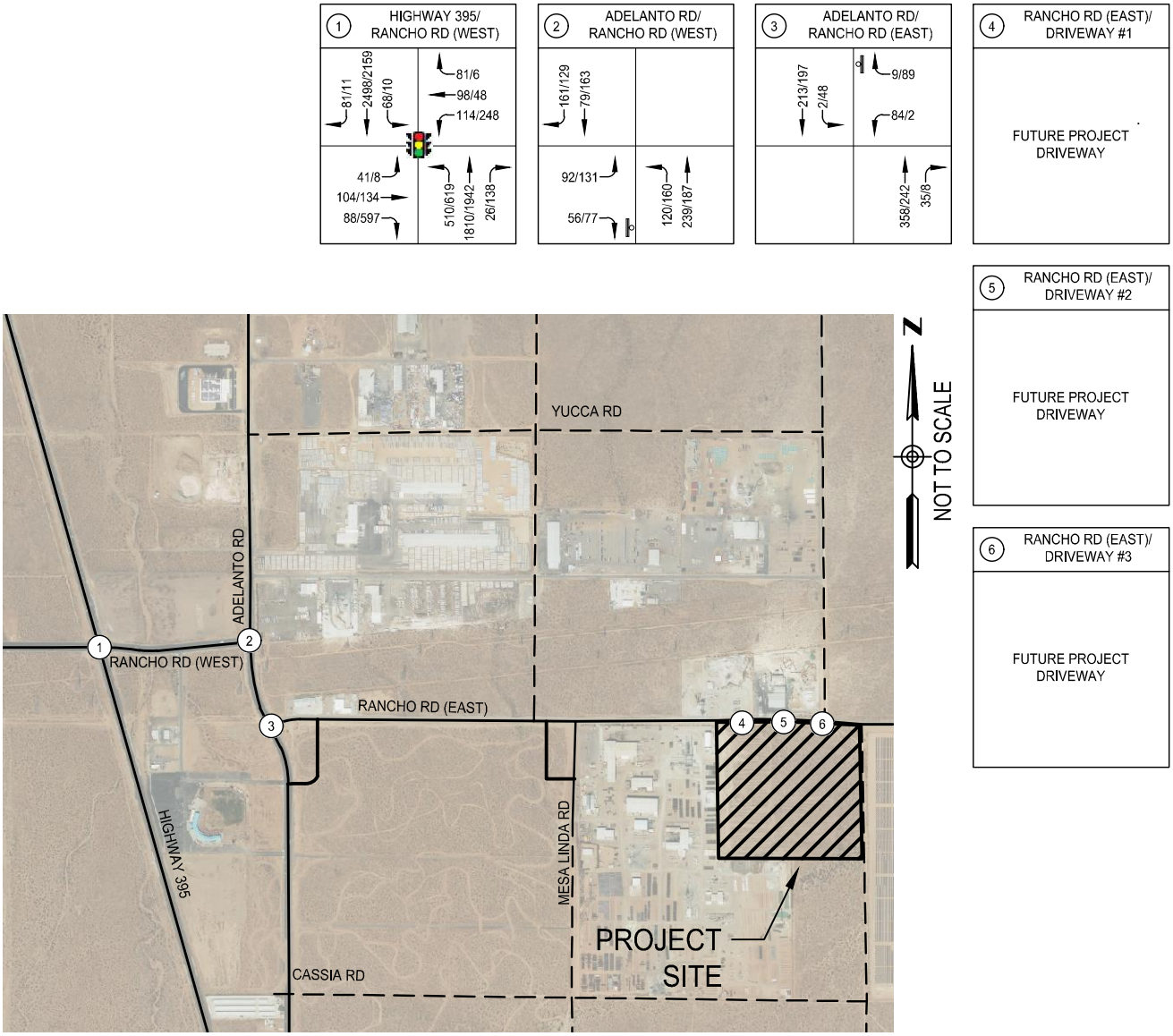
The Future Conditions intersection capacity analysis uses existing intersection geometrics and the projected AM and PM peak hour traffic shown in **Figure 12**. **Table 6-1** and **Appendix D** provides the results of the analysis.

Table 6-1: Intersection Capacity Analysis – Future Conditions

Intersection	Control Type	AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS
1. Highway 395 / Rancho Road (West)	TS	208.7	F	297.2	F
2. Adelanto Road / Rancho Road (West)[a]	SSSC	14.9	B	16.9	C
3. Adelanto Road / Rancho Road (East)	SSSC	12.7	B	9.6	A

[a] Intersection is evaluated with a single left turn lane and maximum allowable saturation flow rate due to an HCM 6th Edition limitation that doesn't support more than one exclusive lane or turning movement at a stop-controlled intersection.
Definitions and Abbreviations:
TS – Traffic signal-controlled intersection, SSSC – Side-street stop-controlled intersection, Delay – seconds per vehicle, LOS – Level of Service

As presented in **Table 6-1***,* under Future Conditions, the study intersections are anticipated to continue to operate at the same LOS during the peak hours with the regional ambient growth. The intersection of Highway 395 at Rancho Road is anticipated to continue operating at LOS F during the AM and the PM peak hours and the intersections of Adelanto Road / Rancho Road (West) and Adelanto Road / Rancho Road (East) are anticipated to continue operating at LOS C or better.



LEGEND

- XX/XX - AM/PM PEAK HOUR VOLUMES
- (#) - STUDY INTERSECTIONS
- SIGNALIZED INTERSECTION
- STOP CONTROLLED APPROACH

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FIGURE 12: FUTURE TRAFFIC VOLUMES
ADELANTO 38 DEVELOPMENT
ADELANTO, CA

7 FUTURE PLUS PROJECT CONDITIONS

The future plus project conditions scenario adds the project's estimated traffic generation to the future condition's scenario. As described in the previous section, the forecasted future year 2040 traffic intersection turn movements were derived from post processing forecasted approach volumes and balancing the turn movement volumes for each study intersection. The SBTAM traffic model plots are provided in **Appendix C**.

7.1 Future Plus Project Traffic Analysis

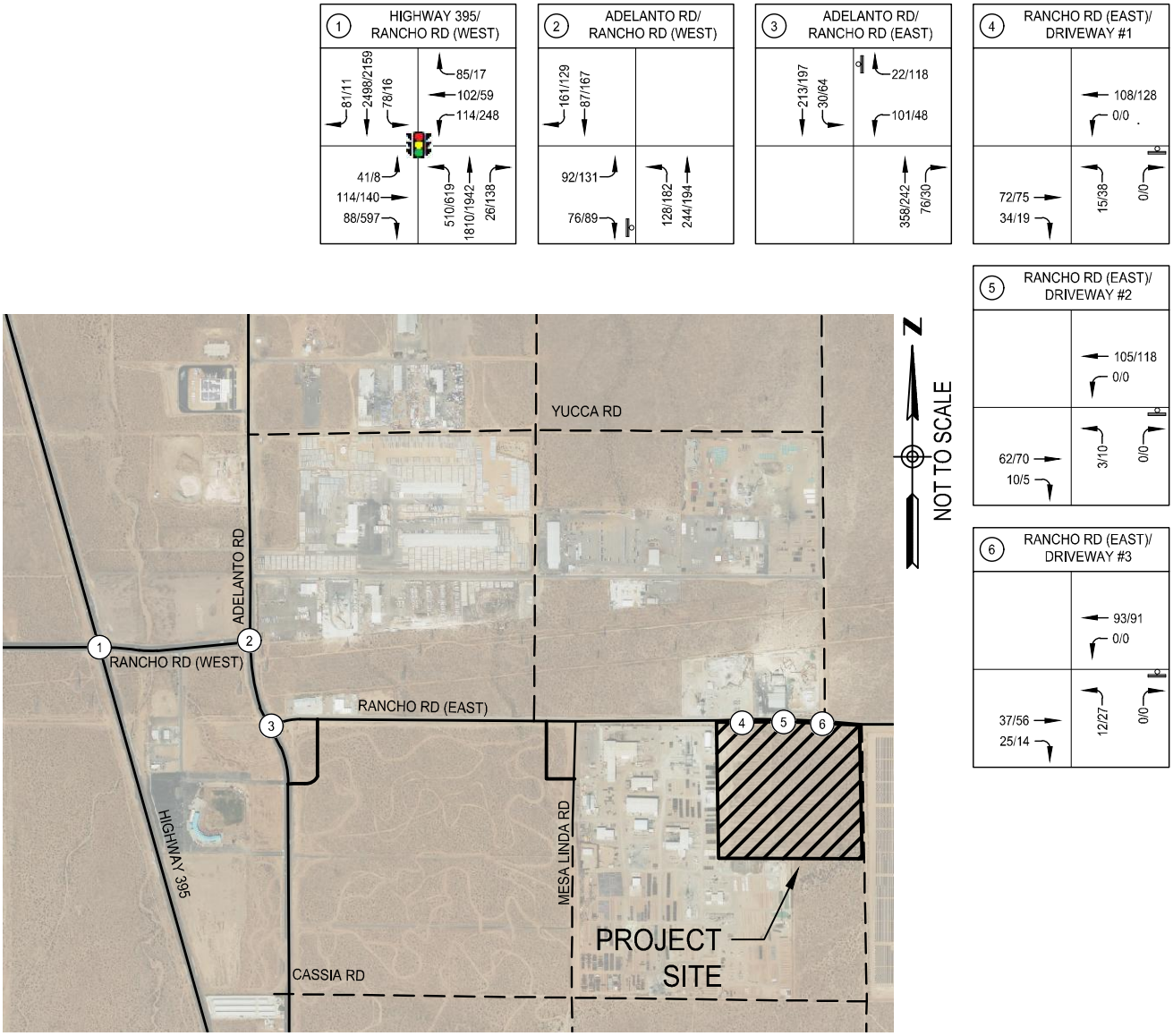
The intersection capacity analysis of future plus project conditions uses existing intersection geometrics and the projected AM and PM peak hour traffic volumes shown in **Figure 13**. **Table 7-1** and **Appendix D** provide the results of the analysis.

Table 7-1: Intersection Capacity Analysis – Future Plus Project Conditions

Intersection	Control Type	Future Year 2040 Conditions				Future Year 2040 + Project Conditions				Change in Delay (Seconds)	
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour			
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	AM	PM
1. Highway 395 / Rancho Road (West)	TS	208.7	F	297.2	F	209.0	F	301.0	F	0.3	3.8
2. Adelanto Road / Rancho Road (West)[a]	SSSC	14.9	B	16.9	C	15.7	C	18.1	C	0.8	1.2
3. Adelanto Road / Rancho Road (East)	SSSC	12.7	B	9.6	A	13.9	B	11.2	B	1.2	1.6
4. Rancho Road (East)/ Driveway #1	SSSC	Future Project Driveways				9.7	A	10.0	B	Not Applicable	
5. Rancho Road (East)/ Driveway #2	SSSC					9.5	A	9.6	A		
6. Rancho Road (East)/ Driveway #3	SSSC					9.3	A	9.5	A		

[a] Intersection is evaluated with a single left turn lane and maximum allowable saturation flow rate due to an HCM 6th Edition limitation that doesn't support more than one exclusive lane or turning movement at a stop-controlled intersection.
Definitions and Abbreviations:
TS – Traffic signal-controlled intersection, SSSC – Side-street stop-controlled intersection, Delay – seconds per vehicle, LOS – Level of Service

As presented in **Table 7-1**, under future plus project conditions, the study intersection and project driveway, are projected to continue to operate at the same LOS during the peak hours with the regional ambient growth and project traffic. The intersection of Highway 395 at Rancho Road is anticipated to continue operating at LOS F during the AM and the PM peak hours and the intersections of Adelanto Road / Rancho Road (West) and Adelanto Road / Rancho Road (East) are anticipated to continue operating at LOS C or better.



LEGEND

XX/XX - AM/PM PEAK HOUR VOLUMES

(#) - STUDY INTERSECTIONS

- SIGNALIZED INTERSECTION

- STOP CONTROLLED APPROACH

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FIGURE 13: FUTURE PLUS PROJECT TRAFFIC VOLUMES
ADELANTO 38 DEVELOPMENT
ADELANTO, CA

8 Recommended Measures to Improve Level of Service at Highway 395 and Rancho Road (West)

In existing conditions, the intersection of Highway 395 at Rancho Road operates at LOS E in both peak hours which degrades to a LOS F in the AM peak hour and worse LOS E in the PM peak hour under 2024 background conditions without the project. In all subsequent scenarios, with or without the project, the intersection is projected to operate at LOS F in both peak hours. The level of service under all conditions exceeds the City of Adelanto's level of service policy standard of LOS D.

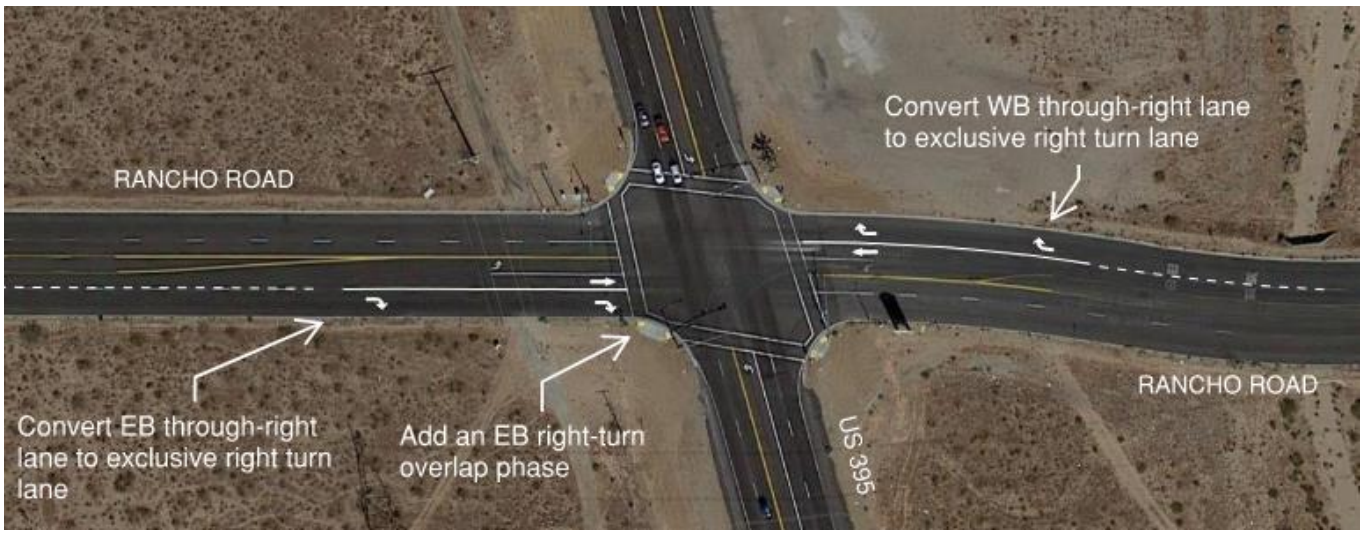
Based on the analyses this study recommends the following measures:

1. **Intersection improvements.**
    a. Within the existing Rancho Road (West) right of way, convert the eastbound shared through-right lane to an exclusive right turn lane. The eastbound approach configuration should accommodate an exclusive left turn lane, a through lane, and an exclusive right turn lane.
    b. Within the existing Rancho Road (West) right of way, convert the westbound shared through-right lane to an exclusive right turn lane. The westbound approach configuration should accommodate an exclusive left turn lane, a through lane, and an exclusive right turn lane.
2. **Optimize the traffic signal timing and include an eastbound right turn overlap.**

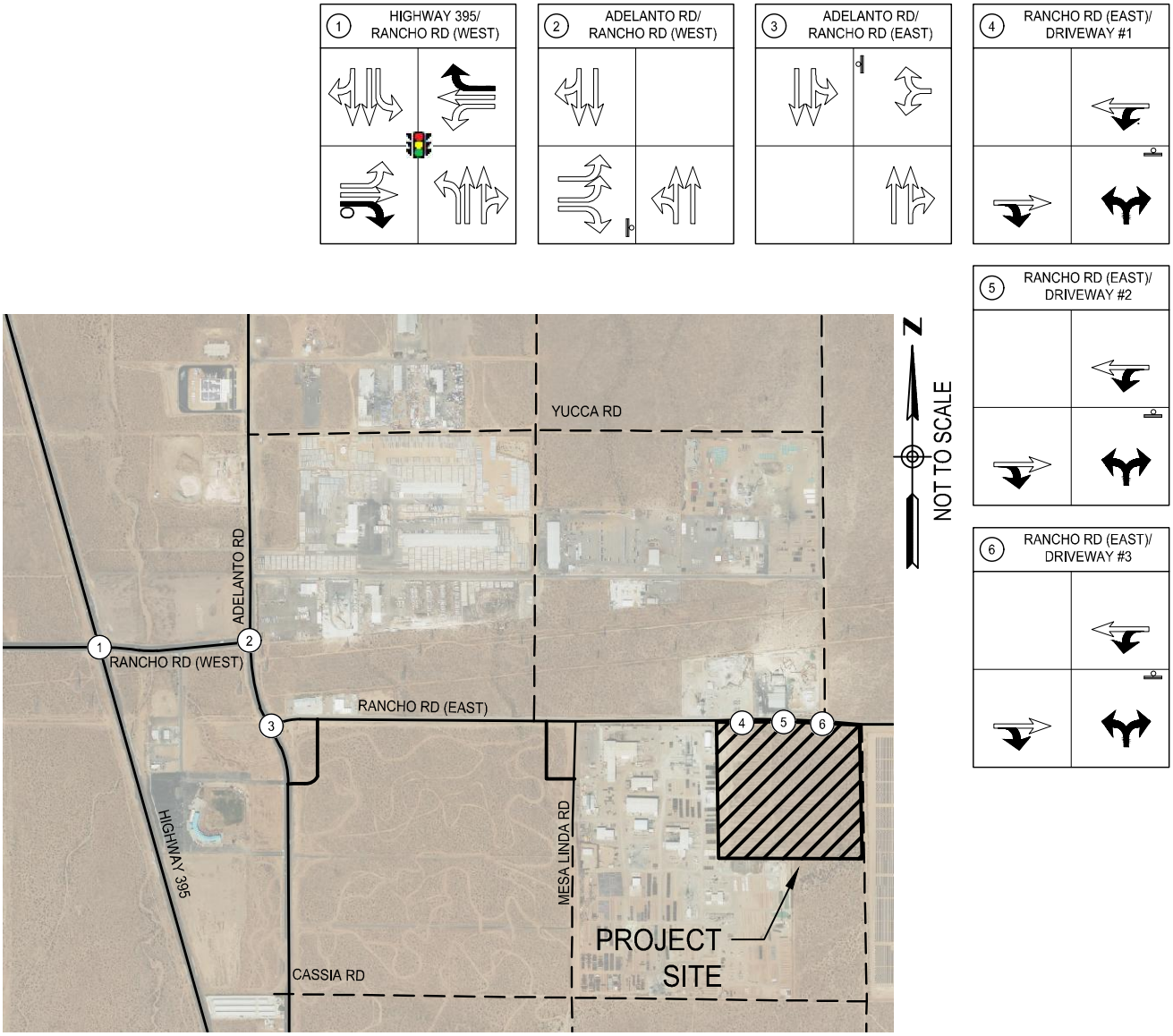
The proposed project interim improvements consist of converting the eastbound through-right lane and westbound through-right lane to exclusive right turn lanes. The following support this recommendation:

- The existing through movements in both directions of Rancho Road at US 395 are low (less than 200 vph eastbound and less than 100 vph westbound in the peak hours). Future projections do not increase the peak hour through movements significantly (to less than 250 vph eastbound and less than 150 vph westbound). These low volumes can be accommodated by the capacity of a single through lane.
- The existing and future eastbound right turn movement from Rancho Road onto southbound US 395 is between 600 and 700 vehicles per hour—a volume warranting an exclusive right turn lane.

In addition, the eastbound right turn lane should have an overlap phase with the northbound left turn phase. Currently, no U-turns are permitted from northbound US 395 so restricting an existing movement from the state highway is not required. Finally, intersection signal timing and offsets should be optimized with consideration to the new intersection configuration. The recommendations are illustrated in the diagram below and in **Figure 14**.



The recommended interim mitigation measure for the intersection of Highway 395 and Rancho Road consists of converting the eastbound and westbound through-right lanes to exclusive right turn lanes, and add an eastbound right turn overlap phase to the signal controller.



LEGEND

- EXISTING GEOMETRICS
- PROPOSED GEOMETRICS
- (#) - STUDY INTERSECTIONS
- SIGNALIZED INTERSECTION
- STOP CONTROLLED APPROACH
- O - RIGHT TURN OVERLAP

DAVID EVANS AND ASSOCIATES INC.

FIGURE 14: MITIGATED GEOMETRICS
ADELANTO 38 DEVELOPMENT
ADELANTO, CA

Implementation of the interim mitigation measures involves removal of old pavement markings, installing new thermoplastic pavement markings, installing new signs per the California MUTCD, installation of one new eastbound facing signal head (for right turn overlap phased), repositioning existing signal heads to align with through lanes, and modifying the signal phasing at the controller unit.

Level of Service With Recommended Improvements

The intersection improvements do not bring the intersection level of service to a LOS D or better but result in reducing the intersection delay to less than the background (without project) conditions in both the AM and PM peak hours effectively mitigating the project's increase in delay. **Table 8-1** shows the intersection level of service under project conditions with the proposed improvements implemented.

Table 8-1: Intersection Capacity Analysis – Project Conditions with Interim Mitigations

Intersection	Control Type	Background Conditions				Background plus Project Conditions				Change in Delay (Seconds)	
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour			
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	AM	PM
1. Highway 395 / Rancho Road (West)	TS	87.6	F	73.4	E	87.8	F	73.9	E	0.2	0.5
Interim Mitigation: convert EBTHR and WBTHR to right turn lanes, provide eastbound right turn overlap phase, and optimize signal timing		Not Applicable				85.8	F	52.8	D	-1.8	-20.6

Table 8-2 shows the intersection level of service under future year 2040 plus project conditions with the proposed improvements implemented.

Table 8-2: Intersection Capacity Analysis –Future Plus Project Conditions with Interim Mitigations

Intersection	Control Type	Future Year 2040 Conditions				Future Year 2040 + Project Conditions				Change in Delay (Seconds)	
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour			
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	AM	PM
1. Highway 395 / Rancho Road (West)	TS	208.7	F	297.2	F	209.0	F	301.0	F	0.3	3.8
Interim Mitigation: convert EBTHR and WBTHR to right turn lanes, provide eastbound right turn overlap phase, and optimize signal timing		Not Applicable				204.7	F	193.4	F	-4.0	-103.8

As under project conditions, the recommended improvements effectively mitigate the project's increase in delay. As shown in **Table 8-2** the improvements reduce the year 2040 future conditions delay to below background plus project conditions

9 VEHICLE MILES TRAVELED ANALYSIS

The VMT analysis screening assessment included in the approved November 9, 2022, scoping agreement concluded that the project was required to prepare a detailed analysis of project-generated VMT as part of the project's environmental clearance under CEQA.

The VMT analysis was prepared in accordance with the Town's adopted Resolution No. 2021-08 (Adopting Thresholds of Significance for Vehicle Miles Traveled (VMT) Under the California Environmental Quality Act (CEQA)) which states that a development project would result in a significant project-generated VMT impact if either of the following conditions are satisfied:

1. The baseline project-generated VMT per service population exceeds the San Bernardino County regional average baseline of 32.7% VMT per service population, or
2. The cumulative project-generated VMT per service population exceeds the San Bernardino County regional average baseline of 32.7% VMT per service population.

The project's effect on VMT would also be considered significant if it resulted in either of the following conditions to be satisfied:

1. The baseline link-level boundary (County of San Bernardino) VMT per service population increases under the plus project condition compared to the no project condition, or
2. The cumulative link-level boundary (County of San Bernardino) VMT per service population increases under the plus project condition compared to the no project condition.

The full VMT report is in **Appendix E**.

D. Project-Generated VMT Analysis

The SBTAM model was used estimate project-generated VMT for both baseline (2016) and horizon year (2040) scenarios. The SBTAM socioeconomic database for each scenario were updated with the project land use to calculate project VMT. The databases were also used to obtain the county's population and employment to estimate service population.

Table 9-1 presents the results of the project-generated VMT analyses for the baseline and horizon year scenarios. As shown in **Table 9-1**, in both the baseline and horizon year scenarios, the VMT/service population metric for the Adelanto 38 project is less than the San Bernardino County's regional average baseline significance threshold of 32.7 VMT/service population.

Table 9-1: Project-Generated VMT Analysis

Metric	2016 Baseline Conditions		2040 Conditions	
	Adelanto 38 Warehouse (project)	City of Adelanto (Threshold) [a]	Adelanto 38 Warehouse (project)	City of Adelanto (Threshold) [a]
Population	0		0	
Employment [b]	327		327	
Service Population	327		327	
OD VMT [c]	9,549		9,875	
OD VMT per service population	29.2	32.7	30.2	32.7

Notes:
[a] Source: Threshold value obtained from City of Adelanto "Traffic Impact Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment (LOS), July 2020).
[b] Source: SCAG Employment Density Study Summary Report, October 31, 2001 (using 2,111 square feet per employee).
[c] The project's Origin/Destination (OD) VMT derived from the San Bernardino Traffic Analysis Model (SBTAM)
Source of analysis: General Technologies and Solutions (GTS)

The outcome of the second analysis, the project's effect on countywide VMT, is presented in **Table 9-2** The SBTAM model was used to estimate the VMT on all roadways within San Bernadino County's unincorporated areas for the baseline and 2040 scenarios with and without the project. Using the resulting countywide VMT, the metric indicating a significant impact (VMT/Service population) at a countywide (unincorporated) scale was calculated.

Table 9-2: Project Effect on Roadway VMT within Unincorporated Areas of San Bernardino County

Metric	2016 Baseline		2040 Conditions	
	With Project	Without Project	With Project	Without Project
Roadway VMT [a]	57,497,592	57,484,358	88,527,742	88,879,672
Service population [b]	2,891,567	2,891,240	3,699,825	3,699,498
VMT per service population	19.9	19.9	23.9	24.0

Notes:
[a] Roadway VMT = sum of all vehicle miles travel on all streets within unincorporated San Bernardino County.
[b] Service population = sum of residents and employees in San Bernardino County in the scenario being analyzed. Source: 2016 and 2040 land use summaries from the San Bernardino Traffic Analysis Model (SBTAM)
Source of analysis: General Technologies and Solutions (GTS)

Table 9-2 shows that the VMT/Service population metric under the "with project" conditions compared to the metric under the "without project" conditions in both scenarios does not increase and does not satisfy the city's significance threshold described above.

E. Conclusions of the VMT Analyses

The VMT analysis conducted to identify potentially significant project-generated VMT impacts under CEQA concludes that the proposed project generates a VMT / Service population less than San Bernardino County's regional average baseline significance threshold of 32.7 VMT/service population, and, therefore, does not cause a significant impact based on the city's adopted significance thresholds for project-generated VMT.

Another VMT analysis conducted to identify potentially significant impacts of the project's "effects on countywide VMT" under CEQA concludes that the VMT / service population metric for the baseline and horizon year scenarios "with the project" do not increase the metric over the "without project" scenarios. Therefore, the proposed project does not cause a significant impact based on the town's adopted significance thresholds for the project's effect on countywide VMT.

10 APPENDICES

Appendix A: Scope Agreement
Appendix B: Traffic Counts
Appendix C: Forecast Model Volume Development
Appendix D: Intersection Capacity Analysis
Appendix E: Vehicle Miles Traveled Analysis

DAVID EVANS AND ASSOCIATES INC.

Appendix A: Scope Agreement

DAVID EVANS
AND ASSOCIATES INC.

November 9, 2022 Job No. WCREWR38-0001

MEMORANDUM

To: Mr. Craig Wilde
Development Manager
Industrial Property Group, Inc
10515 20th Street Southeast
Lake Stevens, Washington 98258, United States

From: James Daisa, PE
Senior Transportation Project Manager

RE: FOCUSED TRAFFIC IMPACT ANALYSIS SCOPING AGREEMENT FOR THE PROPOSED RANCHO 38 WAREHOUSE DEVELOPMENT LOCATED AT SWC OF ADELANTO ROAD AND EMERALD ROAD IN ADELANTO, CALIFORNIA (A.P.N. 312829102)

This memorandum presents key elements of the proposed Focused Traffic Impact Study Report (TIS Report) scope of work for the above referenced development project. The purpose of this memorandum is to inform the City of Adelanto of the assumptions and methodologies prior to preparing the study. We will incorporate any changes specified by the city, and once approved, this document will serve as our notification to proceed.

In addition to the information provided below and attached exhibits, the city's standard Project Traffic Analysis Scoping Form is included with this memorandum (see **Attachment 1**) in accordance with the City of Adelanto's *Traffic Impact Analysis Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment* (July 2020) and Resolution No. 20-41A, recently adopted by the City Council, which updates the guidelines with new vehicle miles of travel screening criteria based on GHG emissions.

A. Project Description

The proposed project consists of a 638,720 square foot warehouse located on 39.24-acres in the City of Adelanto. The project site is located at the southwest corner of Emerald Road and Rancho Road, as illustrated in **Exhibit A**. The site is bounded to the north by Rancho Road, to the south by undeveloped land and existing industrial uses, to the east by unimproved Emerald Road and a solar farm, and to the west by the Northwest Pipe Company. **Exhibit B** shows the proposed site plan.

Site Access and Circulation

Access to the site is from three full access driveways proposed on Rancho Road equally spaced about 385 feet apart. The westernmost driveway (Driveway #1) is 40 feet in width and serves as truck access to the warehouse building and its loading docks (54 docks on the west side) via a gated entrance approximately 235-feet south of the proposed curb line of Rancho Road—length for a single lane queue of three 72-foot long STAA 5-axle trucks or a double lane queue of six STAA trucks. The westernmost driveway also provides automobile access to the parking lots on the north side of the building as does the 26-foot-wide middle driveway (Driveway #2) on Rancho Road.

Access to the loading docks (58 docks on the east side of the building) from the easternmost driveway (Driveway #3) is restricted by a gate located about 180-feet south of the proposed curb line of Rancho Road—length for two to four 72-foot long STAA 5-axle trucks in a single or double lane queue respectively. The easternmost driveway connects to a tertiary access road (35-feet in width) that circumvents the east side of the facility and provides access to the loading docks on both sides of the building from gated entrances on the south side of the facility. This tertiary access road also accesses the automobile parking lot on the south side of the facility. Driveway #3 may be aligned with the north leg of the future improved Emerald Road forming a four intersection.

B. Project Trip Generation

Table 1 summarizes the estimated trip generation of the proposed 638,720 square foot warehouse project for an average weekday, and weekday AM (7-9 AM) and PM (4-6 PM) peak hours. Although the actual operation of the proposed warehouse is unknown at this time, about 15 percent of the building is assumed to be utilized for cold storage. Cold storage warehousing has a higher trip generation rate than conventional warehousing, so the proposed project is divided into 542,900 square feet of conventional warehouse and 95,800 square feet of cold storage warehouse. This split is reflected in **Table 1**.

The Institute of Transportation Engineers (ITE) Trip Generation manual, 11th Edition is the source of the trip generation rates for Warehouse (Land Use Category 150) trips per 1,000 square feet of gross floor area for the Peak Hour of the Adjacent Street Traffic (between 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM).

The source of the mode share split between passenger cars and trucks is the Fontana Truck Trip Generation Study[1]. The passenger car / truck split used in **Table 1** is based on data collected for warehouse uses (ITE Land Use Category 150) in the Fontana study. Adelanto's TIS guidelines require the conversion of trucks into an equivalent number of passenger cars when conducting intersection capacity analyses to determine level of service. Passenger Car Equivalent (PCE) factors are industry standard conversion factors. The Passenger Car Equivalents (PCE) factors are provided by vehicle type and number of axles for trucks.

As presented in **Table 1**, the proposed project is estimated to generate about 1,265 daily PCE trips, 77 AM peak hour PCE trips, and 88 PM peak hour PCE trips.

C. Project Trip Distribution and Assignment

Project traffic was distributed by general direction (east, west, north, and south) based on where the warehouse employees are likely to reside (e.g., concentration of residential neighborhoods) and routes to major roadways and highways trucks are likely to use to access the project. Once the directional distribution pattern was established, project trips were assigned to the area streets that provide the most direct route to these directions.

Exhibit C-1 shows the distribution of project-generated automobile trips to the study intersections in percentages by movement and direction. **Exhibit C-2** shows the distribution of project-generated truck trips to the study intersections in percentages by movement and direction. The assignment of the automobile and trucks trips to the proposed study intersections are illustrated in the exhibits described below:

- **Exhibit D-1** - Project-generated automobile trips (AM and PM Peak Hours)
- **Exhibit D-2** - Project-generated truck trips (AM and PM Peak Hours)
- **Exhibit D-3** - Total automobile and truck project-generated trips (AM and PM Peak Hours)

The project-only traffic volumes shown in the exhibits are in passenger car equivalents (PCEs). The estimated trip generation and distribution is also summarized in the Project Traffic Analysis Scoping Form (**Attachment 1**).

[1] Fontana Truck Trip Generation Study. City of Fontana, County of San Bernardino, and the State of California. August 2003. This study evaluates vehicle trip generation characteristics of several land use categories that typically generate significant volumes of truck traffic. The study collected data at numerous industrial facilities including mix of vehicles by axle. The data from this study has been integrated into ITE's Trip Generation manual.

Table 1: Project Trip Generation

	Use	Gross Floor Area (KSF)	Daily	AM Peak Hour of Adjacent Street Traffic			PM Peak Hour of Adjacent Street Traffic		
				In	Out	Total	In	Out	Total
1	**High Cube Transload Warehouse (Comprises 85% of Building)** (ITE Land Use Category 154)	542.9	*Vehicle Trip Generation Rates (Trips Per 1,000 Square Feet of Gross Floor Area)*						
			1.40	0.06	0.02	0.08	0.03	0.07	0.10
			Total Vehicle Trip Generation						
			761	34	10	44	16	39	55
		Mode Share	*Total Project Trip Generation by Vehicle Type*						
	Passenger Cars (Percent of Total)	79.57%	605	27	8	35	13	31	44
	2-Axle Trucks (Percent of Total)	3.46%	27	2	1	3	1	1	2
	3-Axle Trucks (Percent of Total)	4.64%	36	2	1	3	1	2	3
	4-Axle Trucks (Percent of Total)	12.33%	94	5	2	7	2	5	7
		PCE Factor	*Project Trip Generation in Passenger Car Equivalents (PCE)*						
	Passenger Cars)	1	605	27	8	35	13	31	44
	2-Axle Trucks	1.5	41	3	2	5	2	2	4
	3-Axle Trucks (Percent of Total)	2	72	4	2	6	2	4	6
	4-Axle Trucks (Percent of Total)	3	282	15	6	21	6	15	21
		PCE Total	*1,000*	*49*	*18*	67	*23*	*52*	75
2	**High Cube Cold Storage Warehouse (Comprises 15% of Building)** (ITE Land Use Category 157)	95.8	*Vehicle Trip Generation Rates (Trips Per 1,000 Square Feet of Gross Floor Area)*						
			2.12	0.08	0.03	0.11	0.03	0.09	0.12
			Total Vehicle Trip Generation						
			204	8	2	10	4	9	13
		Mode Share	*Total Project Trip Generation by Vehicle Type*						
	Passenger Cars (Percent of Total)	79.57%	162	7	2	9	3	7	10
	2-Axle Trucks (Percent of Total)	3.46%	8	1	1	2	1	1	2
	3-Axle Trucks (Percent of Total)	4.64%	10	1	1	2	1	1	2
	4-Axle Trucks (Percent of Total)	12.33%	26	2	1	3	1	2	3
		PCE Factor	*Total Project Trip Generation in Passenger Car Equivalents (PCE)*						
	Passenger Cars)	1	162	7	2	9	3	7	10
	2-Axle Trucks	1.5	12	2	2	4	2	2	4
	3-Axle Trucks (Percent of Total)	2	20	2	2	4	2	2	4
	4-Axle Trucks (Percent of Total)	3	78	6	3	9	3	6	9
		PCE Total	*272*	*17*	*9*	26	*10*	*17*	27
	Combined Total Project Trips								
		Mode Share	*Combined Total Project Trip Generation by Vehicle Type*						
	Passenger Cars (Percent of Total)	79.57%	767	33	10	43	15	38	53
	2-Axle Trucks (Percent of Total)	3.46%	34	1	1	2	1	2	3
	3-Axle Trucks (Percent of Total)	4.64%	45	2	1	3	1	2	3
	4-Axle Trucks (Percent of Total)	12.33%	119	6	2	8	2	6	8
	Total Combined Project Vehicle Trips (Non-PCE)		**965**	**42**	**14**	**56**	**19**	**48**	**67**
		PCE Factor	*Combined Total Project Trip Generation in PCEs*						
	Passenger Cars)	1	767	33	10	43	15	38	53
	2-Axle Trucks	1.5	51	2	2	4	2	3	5
	3-Axle Trucks (Percent of Total)	2	90	4	2	6	2	4	6
	4-Axle Trucks (Percent of Total)	3	357	18	6	24	6	18	24
	Total Combined Project Vehicle Trips (PCE)		**1,265**	**57**	**20**	**77**	**25**	**63**	**88**

Notes:
KSF = Thousands of Square Feet.
AM / PM Peak Hour of Adjacent Street Traffic = Trip generation coinciding with the highest hourly volumes of traffic on the adjacent streets during the AM (7:00 AM and 9:00 AM) and PM (4:00 PM and 6:00 PM) commuter peak periods.
Source of trip generation rates: Institute of Transportation Engineers (ITE) Trip Generation (11th Edition). Average rates for land use category 154 (High-Cube Transload and Short-Term Storage Warehouse) and land use category 154 (High-Cube Cold Storage Warehouse)
Source of passenger car / truck mode share (percentage of total): Fontana Truck Trip Generation Study for Heavy Warehouse Uses (August 2003).
Passenger Car Equivalents (PCE) factors: Industry standard values utilized in neighboring jurisdictions.

D. Study Intersections

This focused traffic study evaluates project access driveways and key intersections on routes used by project traffic to access the site. This scope proposes to include three existing intersections and three proposed driveways for inclusion in the study.

1. Highway 395 / Rancho Road (West)
2. Adelanto Road / Rancho Road (West)
3. Adelanto Road / Rancho Road (East)
4. Rancho Road (East)/ Driveway #1
5. Rancho Road (East)/ Driveway #2
6. Rancho Road (East) / Driveway #3

The intersection of Highway 395 at Rancho Road (West) is owned and operated by Caltrans and currently controlled by a 6-phase traffic signal. The intersections of Adelanto Road at Rancho Road (West) and Rancho Road (East) are currently side-street stop-controlled.

E. Traffic Analysis Scenarios

The traffic analysis scenarios, consistent with the city's impact analysis guidelines, include:

1. Existing conditions AM (7-9 AM) and PM (4-6 PM)
2. Background conditions (representing the project's opening year in 2024 with growth in background traffic without the project):
    a. Growth forecasts (based on the estimated combination of the ambient growth in traffic plus traffic generated by nearby, but unidentified, development equaling 3.5% annually).
3. Project conditions
    a. Project traffic added to background condition forecasts
4. Future year 2040 conditions (representing the regional planning horizon of 2040 without project)
    a. Forecasts derived from the San Bernardino Transportation Analysis Model (SBTAM)
5. Future year 2040 plus project
    a. Project traffic added to the forecasts developed for future year 2040 conditions

F. Vehicle Miles of Travel (VMT) Screening

The City of Adelanto has developed guidelines for analyzing a project's vehicle miles of travel (VMT) as the measure of environmental transportation impact under CEQA in accordance with SB 743 effective July 1, 2020. According to the city's guidelines a VMT analysis is required of projects that have the potential to increase the average VMT per service population (e.g., population plus employment) compared to the current County of San Bernardino VMT threshold of 32.7 VMT/service population. The guidelines also provide criteria for screening out development that because of the characteristics of the land use or because of its location are likely to have a less-than-significant impact on vehicles miles traveled.

Project Screening from Conducting VMT Analyses

Adelanto has adopted three screening criteria to screen projects from requiring a project-level VMT analysis, of which only two are applicable to the proposed project.

1. <u>Low VMT Area Screening</u>

The San Bernardino County Transportation Authority's (SBCTA) VMT screening tool evaluates project sites potentially located within a "low VMT generating area". These are areas in the which the existing land uses (or the projected land uses) generate low levels of VMT due to the characteristic of the land uses in the area or due to the area's geographic location near other areas with a mix of land uses so people need not drive far for work, shopping, or school. The tool identifies the average VMT for the land uses in each of the SBCTA model's traffic analysis zones (TAZ's) by horizon year. The tool compares the TAZ's average VMT metric to the county's VMT threshold of 32.7% VMT/Service Population to determine a low VMT generation area.

If the land uses in the TAZ in which the proposed project is located generates VMT less than the threshold, the project is in a low VMT generating area. The project may then be presumed to have a less-than-significant impact on VMT as long as the project's land use is consistent with the existing and/or planned land use within the TAZ that was found to generate low levels of VMT. If the project land use is substantially different than the land use assumed in the SBCTA model, then the project cannot be presumed to have the same low VMT characteristics.

The visual output of the project area is shown in **Figure A** with low VMT generating TAZs highlighted in green. The proposed warehouse development project is located within TAZ 53909402 which, based on the outcome of the VMT screening tool shown in **Table 2**, is not a low VMT generating area. **The project is not screened from requiring a VMT analysis based on the low VMT generating area criterion.**

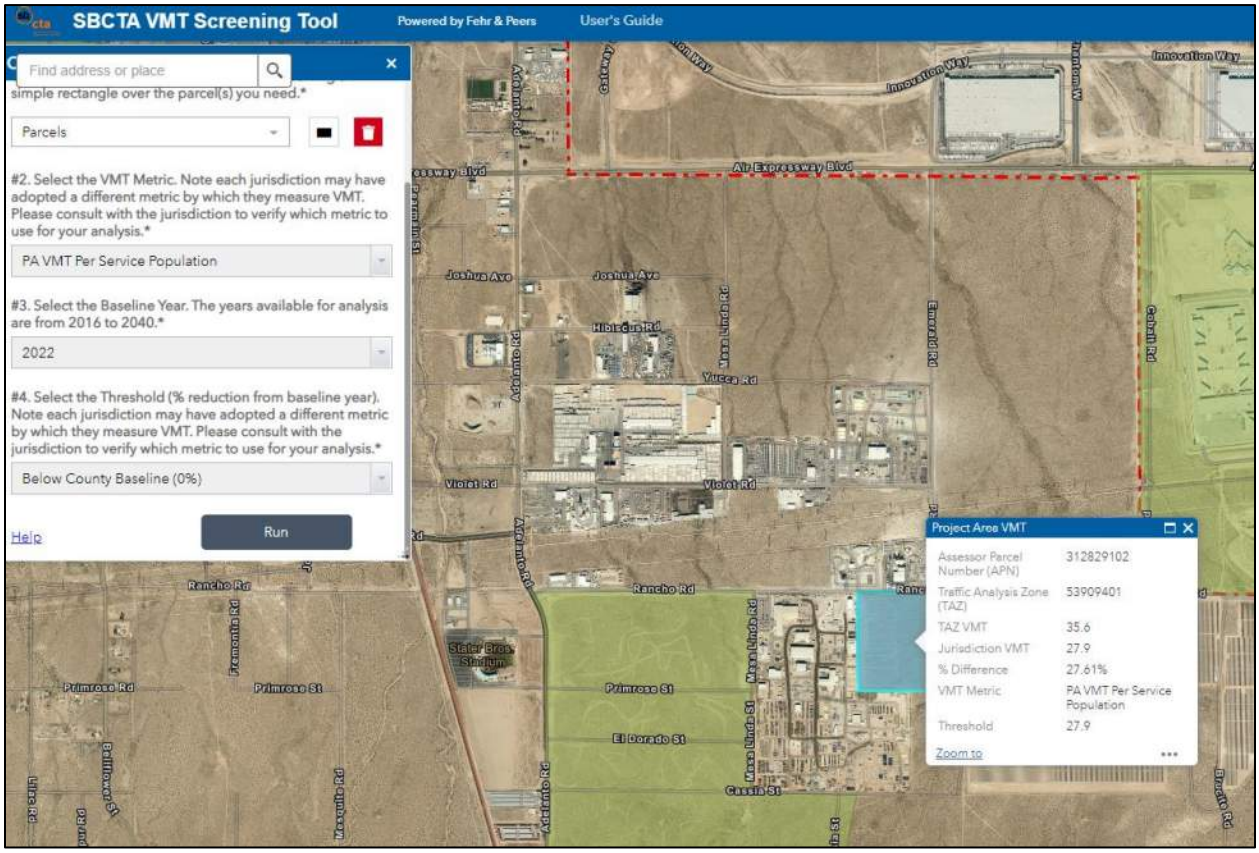


Figure A: SBCTA Low VMT Area screening tool output indicating that the project is not located within a low VMT generating Traffic Analysis Zone (TAZ) which are highlighted in green.

Table 2: SBCTA Low VMT Generating Area Screening for Project by TAZ

Baseline Year	TAZ Number	Metric	TAZ VMT (VMT/Service Population)	Adelanto's Adopted Threshold (VMT/Service Population)	Percent Difference
2022	53909401	VMT / Service Population	35.6	32.7	28%
Notes: Source: SBCTA VMT screening tool attribution table for TAZ 53909401. VMT presented (TAZ VMT) is calculated from PA VMT per service population for the baseline year of 2022 per the city's guidelines. Service population = residents + employees					

2. <u>Project Type Screening</u>

On April 27, 2022, Adelanto's City Council approved a resolution that replaces the project type screening criteria based on daily traffic with a threshold based on CO2 emissions generated by a development's traffic generation. Resolution No. 20-41-A adopts a carbon dioxide equivalent threshold of significance for

purposes of analyzing transportation impacts under CEQA. The City of Adelanto land uses were evaluated using city specific average trip lengths by trip purpose derived from the San Bernardino Transportation Analysis Model (SBTAM) and evaluated in the context of the South Coast Air Quality Management District (SCAQMD) threshold of 3,000 MT of CO2e per annum.

Based on analysis supporting the resolution, the project type screening includes a list of common land uses and the maximum size of development (dwelling units or square feet) that would generate less than the threshold established for CO2 emissions (3,000 MT). This list includes warehousing (unrefrigerated) at a threshold of 306,000 square feet and high-cube short-term transload warehousing at 413,000 square feet. The proposed 638,720 square foot high-cube short-term transload warehouse exceeds the threshold. **The project is not screened from requiring a VMT analysis using the screening criterion based on CO2 emissions adopted in Resolution 20-41-A.**

If you have any questions or comments, please feel free to contact me at (909) 912-7304.

Attachments:

1. Exhibit A – Vicinity Map
2. Exhibit B – Site Plan
3. Exhibit C-1 – Project Auto Trip Distribution
4. Exhibit C-2 – Project Truck Trip Distribution
5. Exhibit D-1– Project Auto Trips
6. Exhibit D-2– Project Truck Trips
7. Exhibit D-3 – Total Project Trips
8. Attachment 1 – Standard Traffic Analysis Scoping Form

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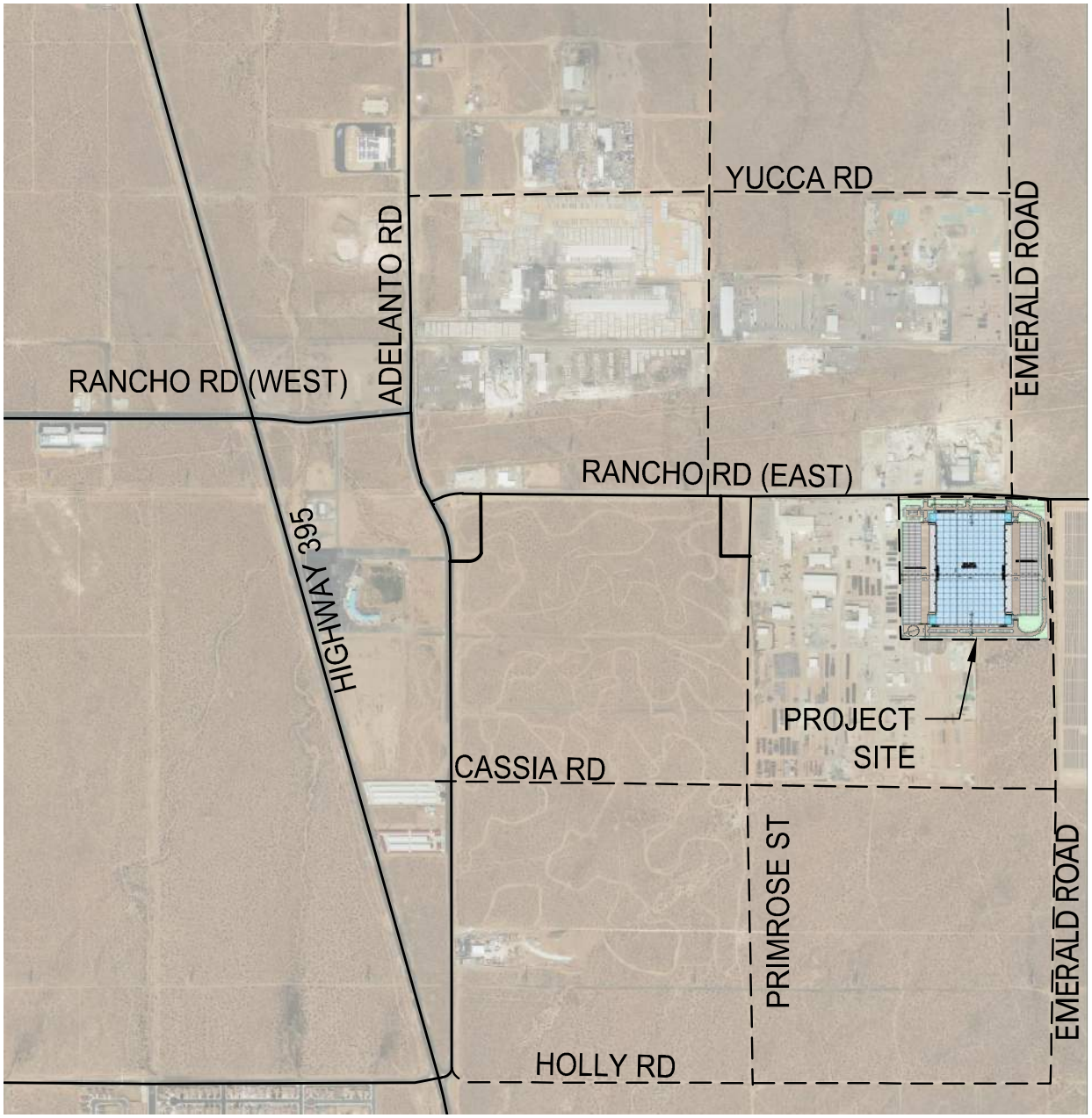

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EXHIBIT A: VICINITY MAP
ADELANTO 38 DEVELOPMENT
ADELANTO, CA

RANCHO RD

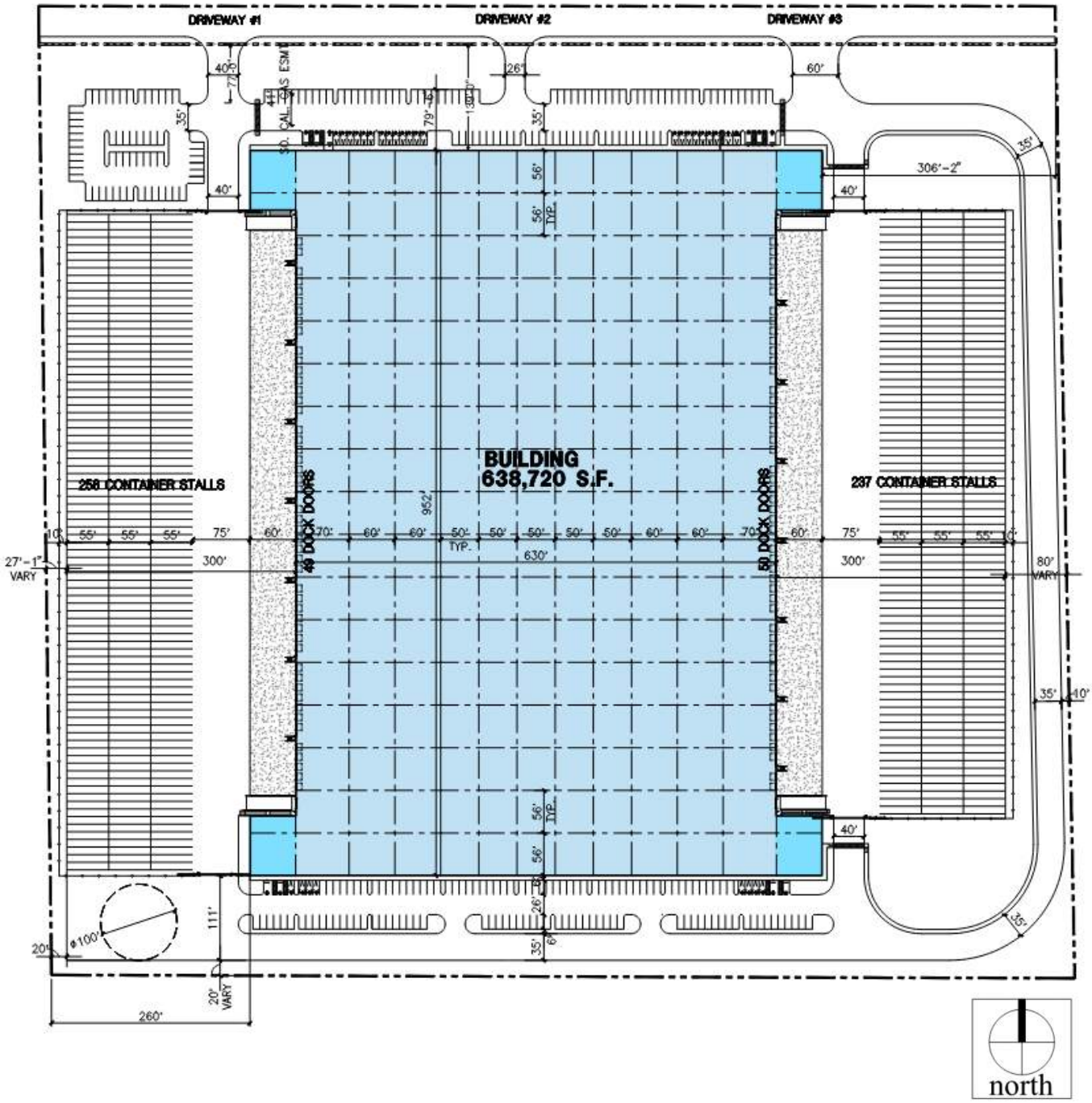

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EXHIBIT B: SITE PLAN
ADELANTO 38 DEVELOPMENT
ADELANTO, CA

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LEGEND

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- STOP CONTROLLED INTERSECTION

- SIGNAL CONTROLLED INTERSECTION

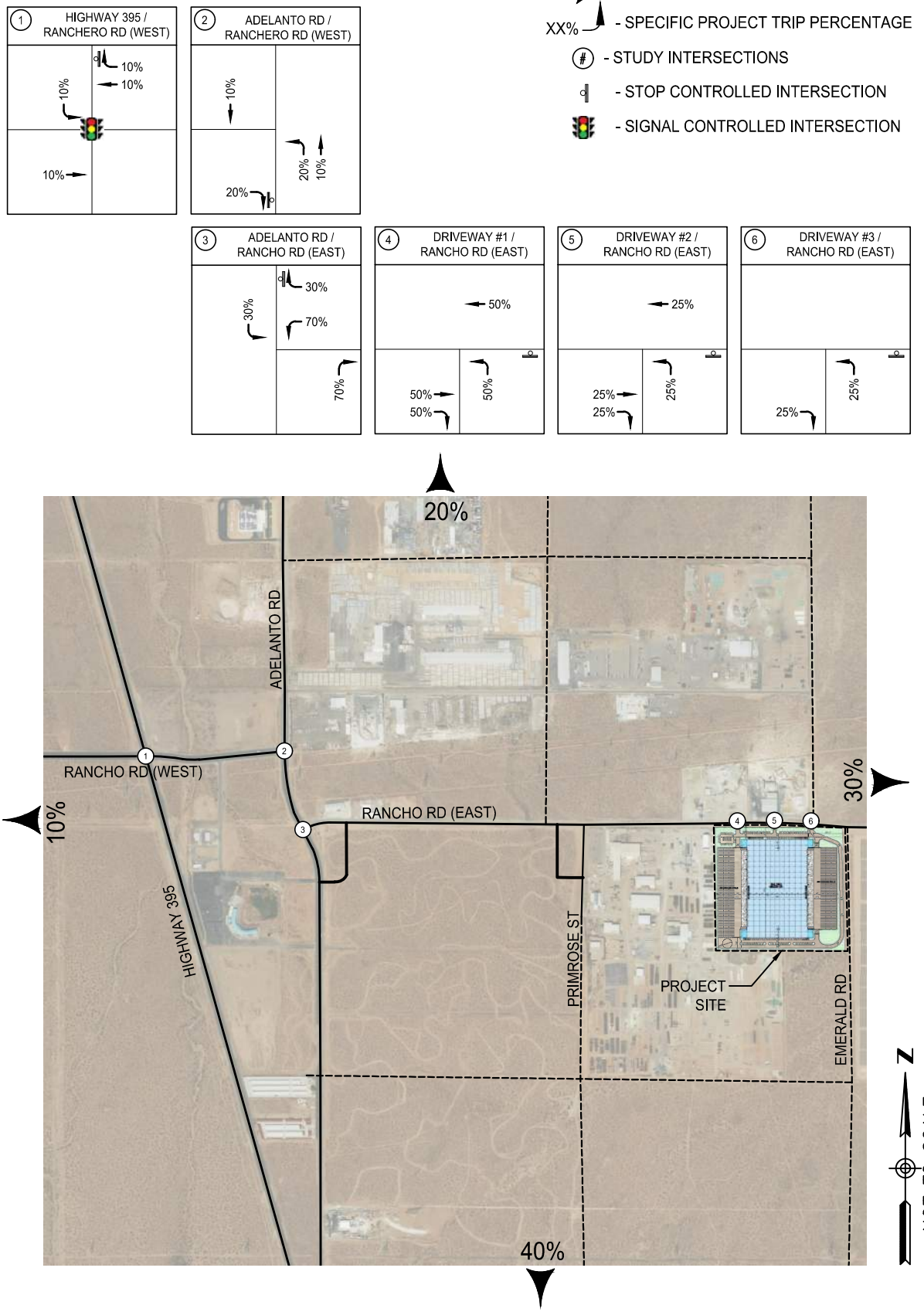

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EXHIBIT C-1: PROJECT AUTO TRIP DISTRIBUTION
ADELANTO 38 DEVELOPMENT
ADELANTO, CA

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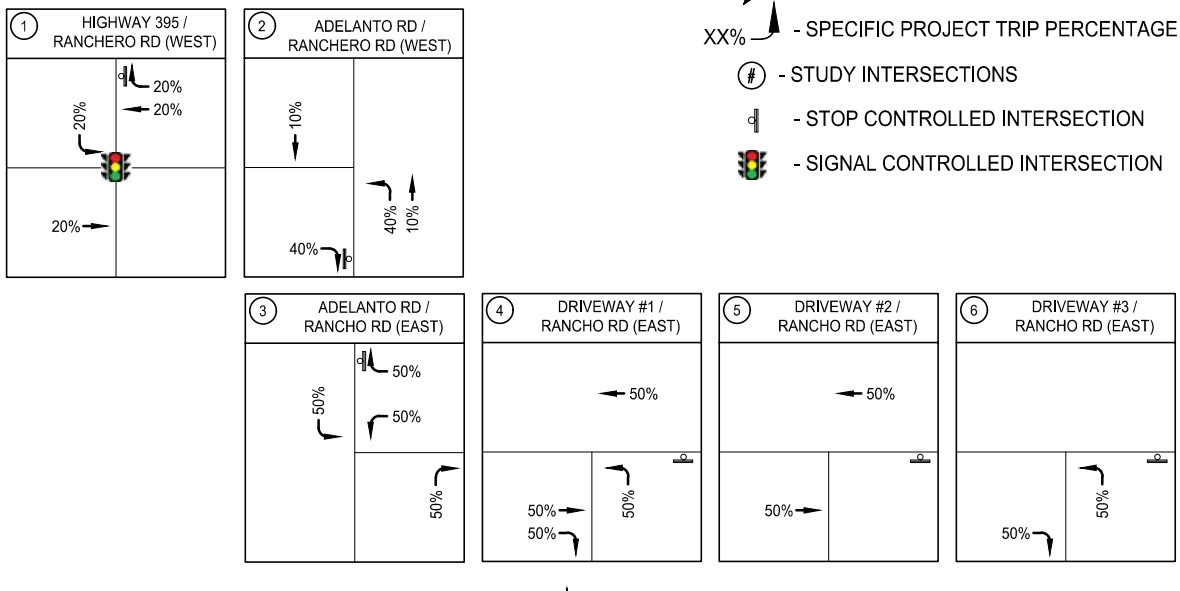

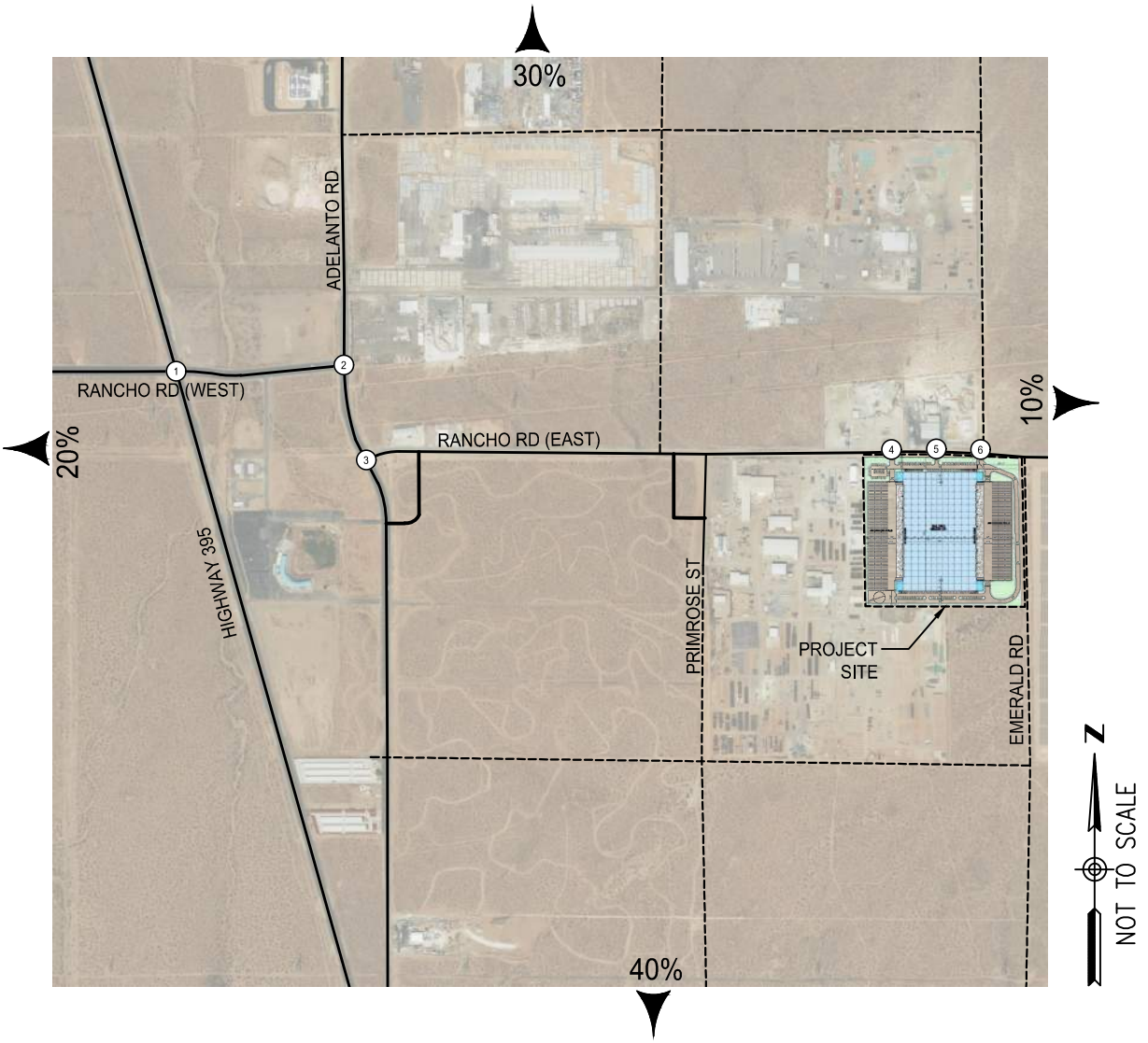

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EXHIBIT C-2: PROJECT TRUCK TRIP DISTRIBUTION
ADELANTO 38 DEVELOPMENT
ADELANTO, CA

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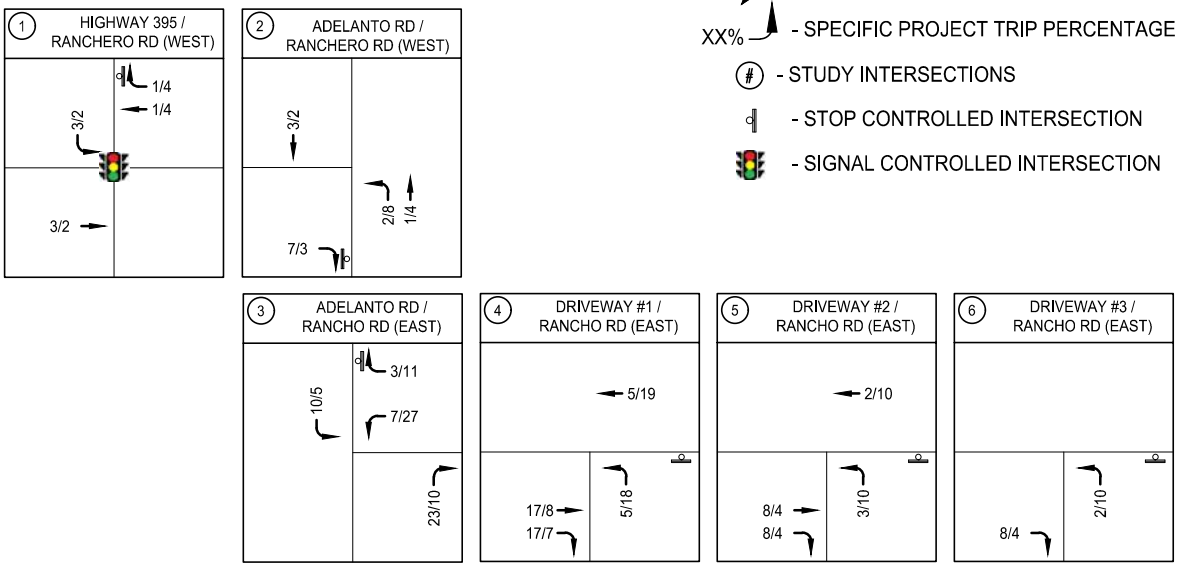
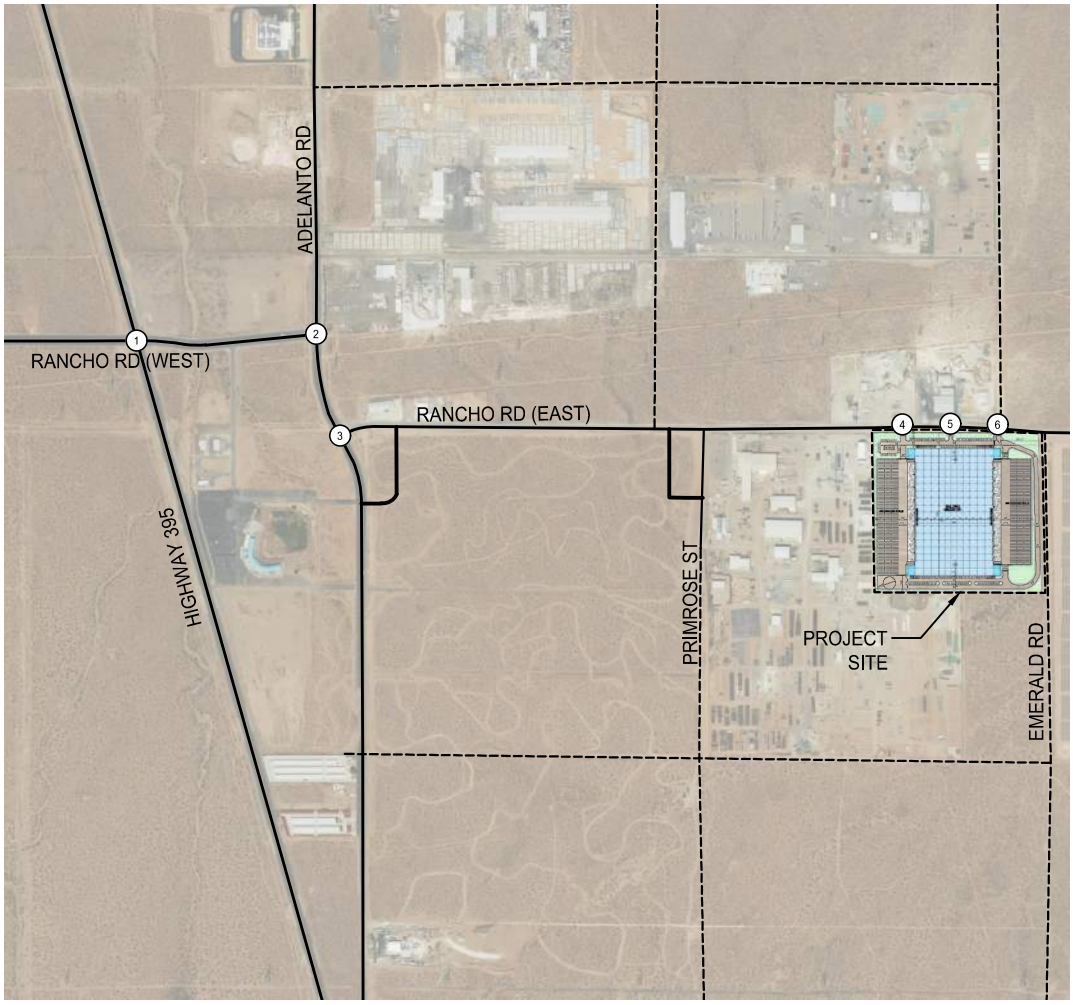
- STOP CONTROLLED INTERSECTION

- SIGNAL CONTROLLED INTERSECTION





PROJECT AUTO TRIPS

AM PEAK PERIOD - 33 IN / 10 OUT

PM PEAK PERIOD - 15 IN / 38 OUT

N

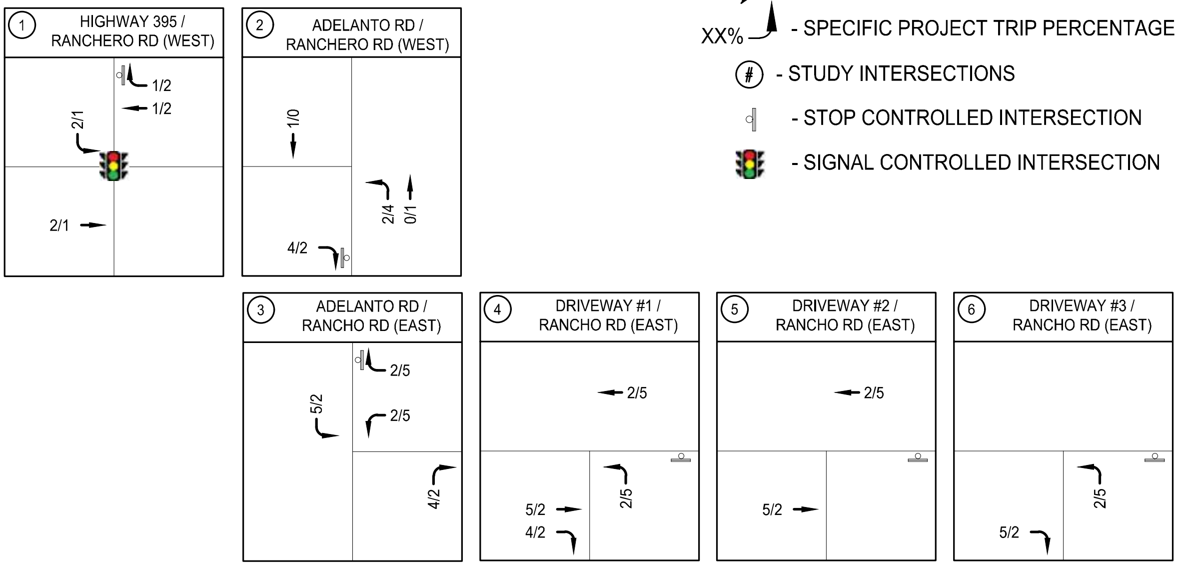
NOT TO SCALE

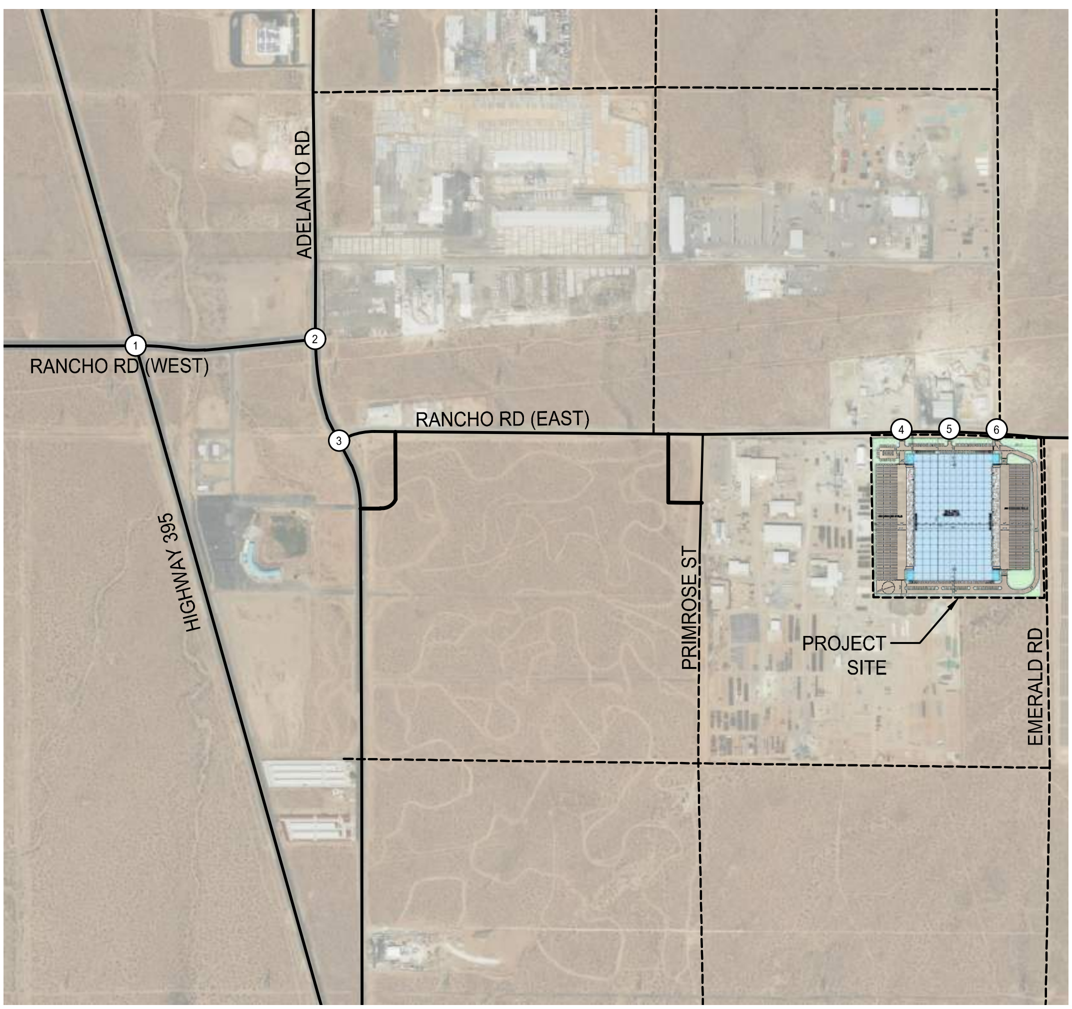
DAVID EVANS AND ASSOCIATES INC.

EXHIBIT D-1: PROJECT AUTO TRIPS
ADELANTO 38 DEVELOPMENT
ADELANTO, CA

LEGEND

XX% - GENERAL PROJECT TRIP DISTRIBUTION
XX% - SPECIFIC PROJECT TRIP PERCENTAGE
- STUDY INTERSECTIONS
- STOP CONTROLLED INTERSECTION
- SIGNAL CONTROLLED INTERSECTION





PROJECT AUTO TRIPS

AM PEAK PERIOD - 9 IN / 4 OUT
PM PEAK PERIOD - 4 IN / 10 OUT

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NOT TO SCALE

DAVID EVANS AND ASSOCIATES INC.

EXHIBIT D-2: PROJECT TRUCK TRIPS
ADELANTO 38 DEVELOPMENT
ADELANTO, CA

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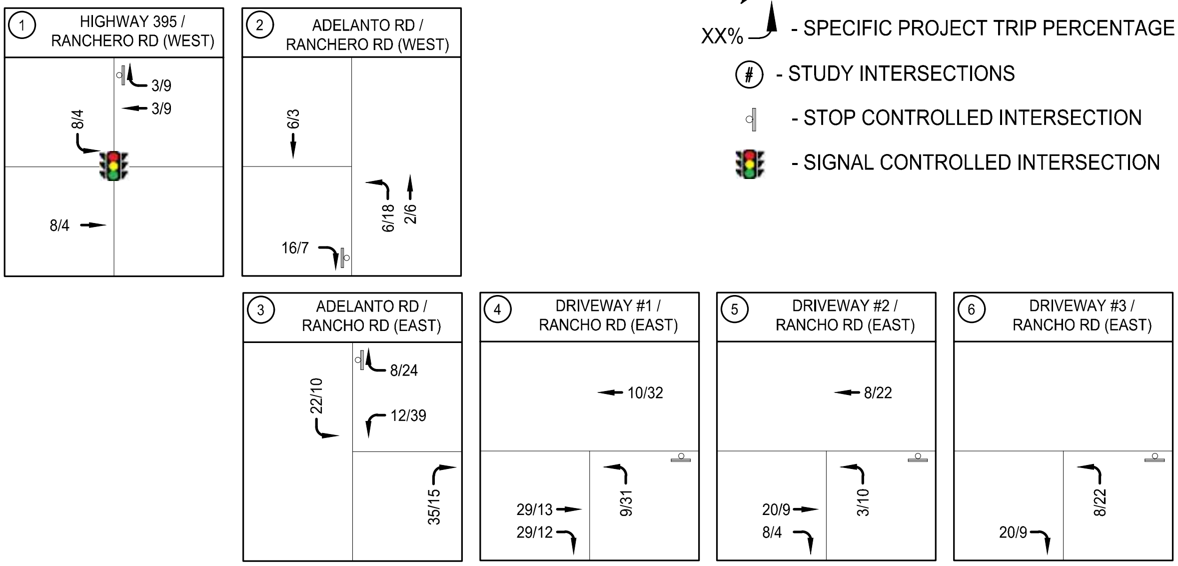
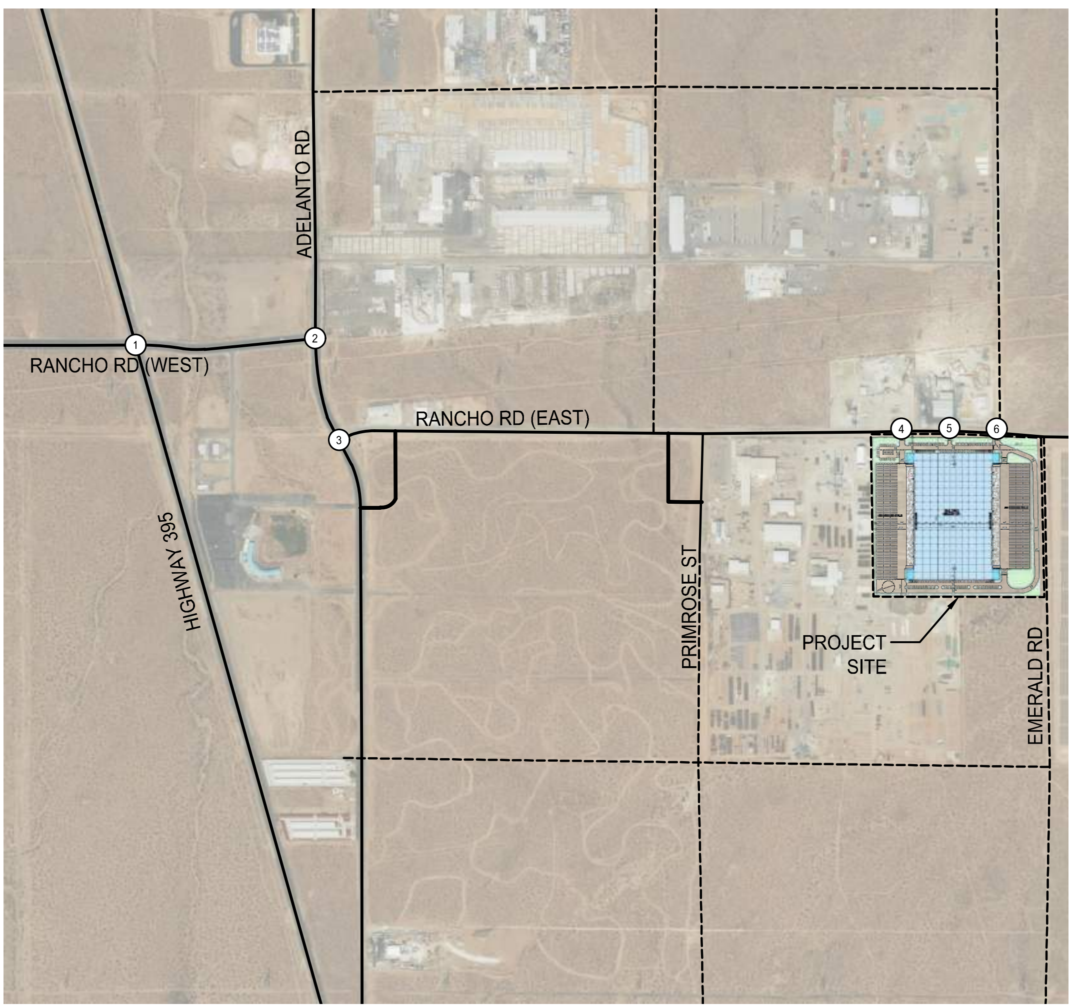
XX% - SPECIFIC PROJECT TRIP PERCENTAGE

- STUDY INTERSECTIONS

- STOP CONTROLLED INTERSECTION

- SIGNAL CONTROLLED INTERSECTION





PROJECT AUTO TRIPS

AM PEAK PERIOD - 57 IN / 20 OUT

PM PEAK PERIOD - 25 IN / 63 OUT

N

NOT TO SCALE

DAVID EVANS AND ASSOCIATES INC.

EXHIBIT D-3: TOTAL PROJECT TRIPS IN PASSENGER CAR EQUIVALENTS (PCE)
ADELANTO 38 DEVELOPMENT
ADELANTO, CA

Drawing Name: P:\I\IPGI00000001\0400CAD\Exhibit C.dwg
Last Opened: Nov 08, 2022 - 3:54pm by: Tmsm

ATTACHMENT 1

Project Scoping Form

This scoping form shall be submitted to the City of Adelanto to assist in identifying infrastructure improvements that may be required to support traffic from the proposed project.

Project Identification:

Case Number:	
Related Cases:	
SP No.	
EIR No.	
GPA No.	
CZ No.	
Project Name:	Adelanto Rancho 38 Warehouse
Project Address:	Located on Rancho Road (East) No street address A.P.N. 312829102
Project Opening Year:	2024
Project Description:	638,720 SF high-cube short-term transload warehouse with 15% cold storage on 38.2-acre site

	Consultant:	**Developer:**
Name:	David Evans & Associates, Inc. Attn: James Daisa	Industrial Property Group, Inc. Attn: Craig Wilde
Address:	18484 Outer Highway 18 North, Suite 225	10515 20th Street Southeast
	Apple Valley, CA 92307	Lake Stevens, WA
Telephone:	909.912.7304	314.713.9516
Fax/Email:	Jim.daisa@seainc.com	craig@industrialpg.com

Trip Generation Information:

Trip Generation Data Source: ITE Trip Generation, 11th Edition

Current General Plan Land Use: Manufacturing / Industrial Proposed General Plan Land Use: Manufacturing / Industrial
Current Zoning: MI Proposed Zoning: MI

	Existing Trip Generation			Proposed Trip Generation		
	In	Out	Total	In	Out	Total
AM Trips	0	0	0	57	20	77*
PM Trips	0	0	0	25	63	88*
*Trip generation is in passenger car equivalents (PCEs)						

Trip Internalization:	Yes	No	**X**	(0 % Trip Discount)
Pass-By Allowance:	Yes	No	**X**	(0 % Trip Discount)

Potential Screening Checks

Is your project screened from specific analyses (see Page 11 of the guidelines related to LOS assessment and Pages 24-26)?

Is the project screened from LOS assessment? Yes No **X**

LOS screening justification (see Page 11 of the guidelines):

Is the project screened from VMT assessment? Yes No **X**

VMT screening justification (see Pages 24-26 of the guidelines):

Level of Service Scoping

- Proposed Trip Distribution (Attach Graphic for Detailed Distribution):

North	South	East	West
20/30%	40/40%	30/10%	10/20%
XX/YY = Automobile / Truck Distribution			

- Attach list of Approved and Pending Projects that need to be considered (provided by the City Traffic Engineer and adjacent agencies)
    - See Scoping Agreement Memorandum for forecasting assumptions
- Attach list of study intersections/roadway segments
    - See Scoping Agreement Memorandum for study intersections
- Attach site plan
    - See Scoping Agreement Memorandum for site plan (Exhibit B)
- Note other specific items to be addressed:
    - Site access – Driveway analysis included in study
    - On-site circulation – not applicable
    - Parking - not applicable
    - Consistency with Plans supporting Bikes/Peds/Transit - not applicable
    - Other
- Date of Traffic Counts: August / September 2022 (school was in session)
- Attach proposed analysis scenarios (years plus proposed forecasting approach)
    - See Scoping Agreement Memorandum for analysis scenarios
- Attach proposed phasing approach (if the project is phased) - not applicable

VMT Scoping

For projects that are not screened, identify the following:

- Travel Demand Forecasting Model Used - SBTAM Model
- Attach SBCTA Screening VMT Assessment output or describe why it is not appropriate for use
    - Not applicable
- Attach proposed Model Land Use Inputs and Assumed Conversion Factors (attach)
    - To be determined

DAVID EVANS AND ASSOCIATES INC.

Appendix B: Traffic Counts

INTERSECTION TURN COUNT

PEAK HOUR

NORTH-SOUTH STREET: HWY 395
EAST-WEST STREET: RANCHO RD (W)
JURISDICTION: ADELANTO

DATE: 11-01-22

PEAK HOUR: 07:30AM

NORTH LEG

TOTAL: 1,595

Rt	Thru	Lt	
45	1519	31	Total
14	359	10	1st
11	378	5	2nd
5	410	6	3rd
15	372	10	4th

EAST LEG TOTAL: 213

	1st	2nd	3rd	4th	Total
Rt	10	10	16	9	45
Thru	16	19	23	16	74
Lt	19	16	22	37	94

WEST LEG TOTAL: 203

Total	1st	2nd	3rd	4th	
29	5	8	10	6	Lt
82	23	16	23	20	Thru
92	16	19	27	30	Rt

PEAK HOUR FACTORS

NORTH LEG = 0.95
SOUTH LEG = 0.97
EAST LEG = 0.86
WEST LEG = 0.85

ALL LEGS = 0.96

SOUTH LEG

TOTAL: 1,966

	Lt	Thru	Rt
1st	151	329	7
2nd	150	349	7
3rd	114	373	5
4th	123	355	3
Total	538	1406	22

HOUR TOTAL: 3,977

Prepared by NEWPORT TRAFFIC STUDIES

SANBAG CLASSIFICATION SUMMARY

NORTH-SOUTH STREET : HWY 395 ADELANTO

EAST-WEST STREET : RANCHO RD (W) 11-01-22

BEGINNING TIME : 07:00AM

AUTOS RT	AUTOS THRU	AUTOS LT	LARGE 2 AXLE RT	LARGE 2 AXLE THRU	LARGE 2 AXLE LT	3 AXLE RT	3 AXLE THRU	3 AXLE LT	4(+) AXLE RT	4(+) AXLE THRU	4(+) AXLE LT	TOTALS
						NORTH LEG						
4	216	2	0	2	0	0	0	0	2	5	0	231
10	330	10	0	3	1	0	0	0	0	10	2	366
13	344	8	1	2	0	0	2	0	0	11	2	383
9	357	3	0	5	2	0	3	0	2	13	0	394
3	387	6	0	2	0	0	1	0	2	20	0	421
14	354	8	0	3	0	0	0	0	1	15	2	397
9	299	10	0	3	1	0	.0	0	0	12	0	334
10	310	8	0	4	0	0	1	0	0	14	1	348
72	2597	55	1	24	4	0	7	0	7	100	7	2874
						SOUTH LEG						
6	232	92	0	5	0	0	0	1	0	26	0	362
9	306	141	0	2	2	1	0	0	0	25	0	486
6	315	147	0	3	1	1	0	0	0	11	3	487
6	332	144	0	3	0	0	0	3	1	14	3	506
4	345	112	0	3	0	0	2	0	1	23	2	492
1	337	120	0	0	3	1	4	0	1	14	0	481
4	286	92	0	2	2	1	0	1	0	9	1	398
7	298	97	0	3	1	0	2	1	0	15	1	425
43	2451	945	0	21	9	4	8	6	3	137	10	3637
						EAST LEG						
3	21	6	0	0	0	0	0	0	1	0	0	31
1	20	2	0	0	2	1	0	0	1	0	2	29
8	15	15	0	0	0	0	1	2	2	0	2	45
9	13	12	0	1	0	0	2	0	1	3	4	45
16	17	19	0	1	1	0	2	0	0	3	2	61
9	10	28	0	1	1	0	0	1	0	5	7	62
8	20	7	0	0	3	1	1	1	0	0	14	55
8	9	10	0	2	0	1	3	1	1	1	11	47
62	125	99	0	5	7	3	9	5	6	12	42	375
						WEST LEG						
11	3	2	2	0	0	0	1	0	1	0	0	20
22	5	2	0	1	0	0	0	0	0	3	0	33
13	18	5	3	2	0	0	1	0	0	2	0	44
16	14	7	3	0	0	0	0	0	0	2	1	43
24	21	10	0	1	0	0	0	0	3	1	0	60
30	19	5	0	1	0	0	0	0	0	0	1	56
27	13	6	1	2	0	0	2	0	2	4	0	57
22	14	2	0	0	0	0	1	0	3	0	2	44
165	107	39	9	7	0	0	5	0	9	12	4	357

Prepared by Newport Traffic Studies

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: HWY 395

EAST-WEST STREET: RANCHO RD (W)

TIME: 07:00AM-08:00AM DATE: 11-01-22

NORTH LEG

Rt	Thru	Lt	
41	1303	30	Total
6	223	2	1st
10	343	13	2nd
14	359	10	3rd
11	378	5	4th

	1st	2nd	3rd	4th	Total
Rt	4	3	10	10	27
Thru	21	20	16	19	76
Lt	6	6	19	16	47

Total	1st	2nd	3rd	4th	
17	2	2	5	8	Lt
52	4	9	23	16	Thru
71	14	22	16	19	Rt

	Lt	Thru	Rt
1st	93	263	6
2nd	143	333	10
3rd	151	329	7
4th	150	349	7
Total	537	1274	30

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: HWY 395

EAST-WEST STREET: RANCHO RD (W)

TIME: 08:00AM-09:00AM DATE: 11-01-22

NORTH LEG

Rt	Thru	Lt	
39	1425	36	Total
5	410	6	1st
15	372	10	2nd
9	314	11	3rd
10	329	9	4th

	1st	2nd	3rd	4th	Total
Rt	16	9	9	10	44
Thru	23	16	21	15	75
Lt	22	37	25	22	106

Total	1st	2nd	3rd	4th	
26	10	6	6	4	Lt
79	23	20	21	15	Thru
112	27	30	30	25	Rt

	Lt	Thru	Rt
1st	114	373	5
2nd	123	355	3
3rd	96	297	5
4th	100	318	7
Total	433	1343	20

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURN COUNT

PEAK HOUR

NORTH-SOUTH STREET: HWY 395
EAST-WEST STREET: RANCHO RD (W)
JURISDICTION: ADELANTO

DATE: 11-01-22

PEAK HOUR: 04:30PM

NORTH LEG

TOTAL: 1,468

Rt	Thru	Lt	
33	1423	12	Total
6	339	2	1st
11	376	4	2nd
10	342	4	3rd
6	366	2	4th

EAST LEG TOTAL: 201

	1st	2nd	3rd	4th	Total
Rt	6	6	5	4	21
Thru	18	13	25	31	87
Lt	30	27	16	20	93

WEST LEG TOTAL: 649

Total	1st	2nd	3rd	4th	
53	11	16	16	10	Lt
177	33	51	43	50	Thru
419	89	129	116	85	Rt

PEAK HOUR FACTORS

NORTH LEG = 0.94
SOUTH LEG = 0.93
EAST LEG = 0.91
WEST LEG = 0.83

ALL LEGS = 0.95

SOUTH LEG

TOTAL: 1,873

	Lt	Thru	Rt
1st	40	421	0
2nd	61	400	5
3rd	73	422	6
4th	70	365	10
Total	244	1608	21

HOUR TOTAL: 4,191

Prepared by NEWPORT TRAFFIC STUDIES

SANBAG CLASSIFICATION SUMMARY

NORTH-SOUTH STREET : HWY 395 ADELANTO

EAST-WEST STREET : RANCHO RD (W) 11-01-22

BEGINNING TIME : 04:00PM

AUTOS RT	AUTOS THRU	AUTOS LT	LARGE 2 AXLE RT	LARGE 2 AXLE THRU	LARGE 2 AXLE LT	3 AXLE RT	3 AXLE THRU	3 AXLE LT	4(+) AXLE RT	4(+) AXLE THRU	4(+) AXLE LT	TOTALS
					NORTH LEG							
10	238	0	0	2	0	0	1	0	0	14	0	265
5	251	0	0	3	0	0	0	0	0	25	0	284
3	321	2	1	2	0	0	0	0	2	16	0	347
8	357	1	1	0	1	0	0	0	2	19	2	391
7	316	4	0	2	0	0	1	0	3	23	0	356
6	344	1	0	1	0	0	0	0	0	21	1	374
4	328	3	0	1	0	0	3	0	1	27	1	368
4	304	4	0	0	0	0	1	0	1	22	0	336
47	2459	15	2	11	1	0	6	0	9	167	4	2721
					SOUTH LEG							
6	304	20	0	0	0	0	2	0	0	10	0	342
6	365	30	0	2	1	0	0	0	0	21	0	425
0	405	39	0	0	1	0	0	0	0	16	0	461
5	385	59	0	1	2	0	0	0	0	14	0	466
3	406	71	0	1	2	0	1	0	3	14	0	501
10	354	70	0	0	0	0	1	0	0	10	0	445
3	309	56	0	3	0	0	0	0	2	17	0	390
4	295	59	0	2	1	0	3	0	2	13	0	379
37	2823	404	0	9	7	0	7	0	7	115	0	3409
					EAST LEG							
8	18	21	0	1	2	0	0	0	0	0	0	50
8	23	31	0	0	0	0	1	0	2	0	2	67
4	16	27	0	0	1	0	0	0	2	2	2	54
6	11	26	0	0	1	0	0	0	0	2	0	46
5	24	16	0	1	0	0	0	0	0	0	0	46
3	29	20	0	1	0	0	0	0	1	1	0	55
0	28	21	0	0	1	0	0	0	0	2	1	53
2	22	11	0	2	0	0	1	0	1	1	3	43
36	171	173	0	5	5	0	2	0	6	8	8	414
					WEST LEG							
65	45	14	1	0	0	0	0	0	0	1	0	126
101	40	21	0	0	0	0	0	0	2	0	0	164
87	30	10	1	1	1	1	2	0	0	0	0	133
128	51	14	0	0	1	1	0	0	0	0	1	196
115	41	13	1	2	1	0	0	0	0	0	2	175
84	48	9	1	0	0	0	0	0	0	2	1	145
59	31	15	0	1	0	0	1	0	2	0	0	109
48	30	10	0	0	0	0	0	0	2	0	0	90
687	316	106	4	4	3	2	3	0	6	3	4	1138

Prepared by Newport Traffic Studies

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: HWY 395

EAST-WEST STREET: RANCHO RD (W)

TIME: 04:00PM-05:00PM DATE: 11-01-22

NORTH LEG

Rt	Thru	Lt	
32	1249	6	Total
10	255	0	1st
5	279	0	2nd
6	339	2	3rd
11	376	4	4th

	1st	2nd	3rd	4th	Total
Rt	8	10	6	6	30
Thru	19	24	18	13	74
Lt	23	33	30	27	113

Total	1st	2nd	3rd	4th	
62	14	21	11	16	Lt
170	46	40	33	51	Thru
387	66	103	89	129	Rt

	Lt	Thru	Rt
1st	20	316	6
2nd	31	388	6
3rd	40	421	0
4th	61	400	5
Total	152	1525	17

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: HWY 395

EAST-WEST STREET: RANCHO RD (W)

TIME: 05:00PM-06:00PM DATE: 11-01-22

NORTH LEG

Rt	Thru	Lt	
26	1394	14	Total
10	342	4	1st
6	366	2	2nd
5	359	4	3rd
5	327	4	4th

	1st	2nd	3rd	4th	Total
Rt	5	4	0	3	12
Thru	25	31	30	26	112
Lt	16	20	23	14	73

Total	1st	2nd	3rd	4th	
51	16	10	15	10	Lt
156	43	50	33	30	Thru
312	116	85	61	50	Rt

	Lt	Thru	Rt
1st	73	422	6
2nd	70	365	10
3rd	56	329	5
4th	60	313	6
Total	259	1429	27

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURN COUNT

PEAK HOUR

NORTH-SOUTH STREET: ADELANTO
EAST-WEST STREET: RANCHO (W)
JURISDICTION: ADELANTO

DATE: 08-31-22

PEAK HOUR: 07:45AM

NORTH LEG

TOTAL: 175

Rt	Thru	Lt	
159	16		Total
44	1		1st
40	10		2nd
43	3		3rd
32	2		4th

EAST LEG TOTAL: 0

	1st	2nd	3rd	4th	Total
Rt					
Thru					
Lt					

WEST LEG TOTAL: 91

Total	1st	2nd	3rd	4th	
82	17	28	20	17	Lt
					Thru
9	3	2	2	2	Rt

SOUTH LEG

TOTAL: 153

	Lt	Thru	Rt
1st	12	31	
2nd	14	30	
3rd	11	23	
4th	10	22	
Total	47	106	

PEAK HOUR FACTORS

NORTH LEG = 0.88
SOUTH LEG = 0.87
EAST LEG =
WEST LEG = 0.76

ALL LEGS = 0.84

HOUR TOTAL: 419

Prepared by NEWPORT TRAFFIC STUDIES

SANBAG CLASSIFICATION SUMMARY

NORTH-SOUTH STREET : ADELANTO — ADELANTO

EAST-WEST STREET : RANCHO (W) — 08-31-22

BEGINNING TIME : 07:00AM

AUTOS RT	AUTOS THRU	AUTOS LT	LARGE 2 AXLE RT	LARGE 2 AXLE THRU	LARGE 2 AXLE LT	3 AXLE RT	3 AXLE THRU	3 AXLE LT	4(+) AXLE RT	4(+) AXLE THRU	4(+) AXLE LT	TOTALS
NORTH LEG												
13	0	0	1	0	0	2	1	0	5	0	0	22
19	1	0	2	0	0	2	1	0	1	0	0	26
28	3	0	2	0	0	0	1	0	5	1	0	40
32	1	0	2	0	0	3	0	0	7	0	0	45
23	9	0	3	0	0	4	0	0	10	1	0	50
29	2	0	1	0	0	2	0	0	11	1	0	46
21	0	0	0	0	0	3	1	0	8	1	0	34
16	9	0	0	0	0	2	0	0	2	1	0	30
181	25	0	11	0	0	18	4	0	49	5	0	293
SOUTH LEG												
0	11	14	0	1	0	0	1	0	0	3	0	30
0	18	8	0	1	0	0	0	0	0	2	1	30
0	13	11	0	0	0	0	1	0	0	4	0	29
0	24	10	0	2	0	0	1	0	0	4	2	43
0	7	13	0	3	0	0	2	0	0	18	1	44
0	9	10	0	3	0	0	3	0	0	8	1	34
0	14	9	0	1	0	0	4	0	0	3	1	32
0	13	10	0	0	0	0	2	0	0	3	2	30
0	109	85	0	11	0	0	14	0	0	45	8	272
EAST LEG												
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
WEST LEG												
0	0	3	0	0	0	0	0	2	1	0	5	11
0	0	14	0	0	1	0	0	1	0	0	0	16
0	0	3	0	0	3	0	0	1	0	0	0	7
3	0	15	0	0	2	0	0	0	0	0	0	20
2	0	22	0	0	0	0	0	4	0	0	2	30
2	0	13	0	0	0	0	0	1	0	0	6	22
1	0	12	0	0	1	1	0	2	0	0	2	19
1	0	18	0	0	0	2	0	0	0	0	0	21
9	0	100	0	0	7	3	0	11	1	0	15	146

Prepared by Newport Traffic Studies

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: ADELANTO

EAST-WEST STREET: RANCHO (W)

TIME: 07:00AM-08:00AM DATE: 08-31-22

NORTH LEG

124	9		Total
21	1		1st
24	2		2nd
35	5		3rd
44	1		4th
Rt	Thru	Lt	

Rt					
Thru					
Lt					
	1st	2nd	3rd	4th	Total

Total	1st	2nd	3rd	4th	
50	10	16	7	17	Lt
					Thru
4	1	0	0	3	Rt

	Lt	Thru	Rt
1st	14	16	
2nd	9	21	
3rd	11	18	
4th	12	31	
Total	46	86	

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: ADELANTO

EAST-WEST STREET: RANCHO (W)

TIME: 08:00AM-09:00AM DATE: 08-31-22

NORTH LEG

Rt	Thru	Lt	
135	25		Total
40	10		1st
43	3		2nd
32	2		3rd
20	10		4th

	1st	2nd	3rd	4th	Total
Rt					
Thru					
Lt					

Total	1st	2nd	3rd	4th	
83	28	20	17	18	Lt
					Thru
9	2	2	2	3	Rt

	Lt	Thru	Rt
1st	14	30	
2nd	11	23	
3rd	10	22	
4th	12	18	
Total	47	93	

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURN COUNT

PEAK HOUR

NORTH-SOUTH STREET: ADELANTO
EAST-WEST STREET: RANCHO (W)
JURISDICTION: ADELANTO

DATE: 08-31-22

PEAK HOUR: 04:15PM

NORTH LEG

TOTAL: 131

Rt	Thru	Lt	
123	8		Total
41	2		1st
29	1		2nd
17	1		3rd
36	4		4th

EAST LEG TOTAL: 0

	1st	2nd	3rd	4th	Total
Rt					
Thru					
Lt					

WEST LEG TOTAL: 155

Total	1st	2nd	3rd	4th	
149	40	33	30	46	Lt
					Thru
6	0	2	1	3	Rt

SOUTH LEG

TOTAL: 159

	Lt	Thru	Rt
1st	21	18	
2nd	27	20	
3rd	17	12	
4th	20	24	
Total	85	74	

PEAK HOUR FACTORS

NORTH LEG = 0.76
SOUTH LEG = 0.85
EAST LEG =
WEST LEG = 0.79

ALL LEGS = 0.84

HOUR TOTAL: 445

Prepared by NEWPORT TRAFFIC STUDIES

SANBAG CLASSIFICATION SUMMARY

NORTH-SOUTH STREET : ADELANTO ADELANTO

EAST-WEST STREET : RANCHO (W) 08-31-22

BEGINNING TIME : 04:00PM

AUTOS RT	AUTOS THRU	AUTOS LT	LARGE 2 AXLE RT	LARGE 2 AXLE THRU	LARGE 2 AXLE LT	3 AXLE RT	3 AXLE THRU	3 AXLE LT	4(+) AXLE RT	4(+) AXLE THRU	4(+) AXLE LT	TOTALS
NORTH LEG												
37	3	0	3	0	0	0	0	0	1	0	0	44
40	2	0	1	0	0	0	0	0	0	0	0	43
27	1	0	0	0	0	0	0	0	2	0	0	30
15	1	0	1	0	0	0	0	0	1	0	0	18
36	2	0	0	0	0	0	0	0	0	2	0	40
4	2	0	0	0	0	0	0	0	0	0	0	6
21	0	0	0	0	0	1	0	0	3	0	0	25
15	0	0	0	0	0	1	0	0	2	0	0	18
195	11	0	5	0	0	2	0	0	9	2	0	224
SOUTH LEG												
0	16	12	0	0	1	0	3	0	0	0	3	35
0	15	19	0	1	0	0	1	0	0	1	2	39
0	10	27	0	4	0	0	1	0	0	5	0	47
0	10	17	0	0	0	0	0	0	0	2	0	29
0	23	20	0	0	0	0	1	0	0	0	0	44
0	10	18	0	0	0	0	0	0	0	3	0	31
0	6	18	0	0	1	0	0	0	0	5	0	30
0	6	21	0	2	0	0	0	0	0	3	0	32
0	96	152	0	7	2	0	6	0	0	19	5	287
EAST LEG												
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
WEST LEG												
0	0	33	0	0	0	0	0	0	0	0	0	33
0	0	37	0	0	1	0	0	0	0	0	2	40
2	0	32	0	0	1	0	0	0	0	0	0	35
1	0	29	0	0	0	0	0	1	0	0	0	31
3	0	46	0	0	0	0	0	0	0	0	0	49
1	0	44	1	0	0	0	0	2	0	0	0	48
1	0	40	0	0	0	0	0	0	0	0	0	41
3	0	21	0	0	1	0	0	0	2	0	0	27
11	0	282	1	0	3	0	0	3	2	0	2	304

Prepared by Newport Traffic Studies

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: ADELANTO

EAST-WEST STREET: RANCHO (W)

TIME: 04:00PM-05:00PM DATE: 08-31-22

NORTH LEG

Rt	Thru	Lt	
128	7		Total
41	3		1st
41	2		2nd
29	1		3rd
17	1		4th

	1st	2nd	3rd	4th	Total
Rt					
Thru					
Lt					

Total	1st	2nd	3rd	4th	
136	33	40	33	30	Lt
					Thru
3	0	0	2	1	Rt

	Lt	Thru	Rt
1st	16	19	
2nd	21	18	
3rd	27	20	
4th	17	12	
Total	81	69	

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: ADELANTO

EAST-WEST STREET: RANCHO (W)

TIME: 05:00PM-06:00PM DATE: 08-31-22

NORTH LEG

Rt	Thru	Lt	
83	6		Total
36	4		1st
4	2		2nd
25	0		3rd
18	0		4th

	1st	2nd	3rd	4th	Total
Rt					
Thru					
Lt					

Total	1st	2nd	3rd	4th	
154	46	46	40	22	Lt
					Thru
11	3	2	1	5	Rt

	Lt	Thru	Rt
1st	20	24	
2nd	18	13	
3rd	19	11	
4th	21	11	
Total	78	59	

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURN COUNT

PEAK HOUR

NORTH-SOUTH STREET: ADELANTO
EAST-WEST STREET: RANCHO (E)
JURISDICTION: ADELANTO

DATE: 08-31-22

PEAK HOUR: 07:45AM

NORTH LEG

TOTAL: 31

	20	11	Total
	4	6	1st
	10	2	2nd
	4	1	3rd
	2	2	4th
Rt	Thru	Lt	

EAST LEG TOTAL: 10

Rt	2	3	0	5	10
Thru					
Lt	0	0	0	0	
	1st	2nd	3rd	4th	Total

Total	1st	2nd	3rd	4th	
					Lt
					Thru
					Rt

WEST LEG TOTAL: 0

PEAK HOUR FACTORS

NORTH LEG = 0.65
SOUTH LEG = 0.82
EAST LEG = 0.50
WEST LEG =

ALL LEGS = 0.79

	Lt	Thru	Rt
1st		41	4
2nd		42	5
3rd		29	2
4th		28	3
Total		140	14

SOUTH LEG

TOTAL: 154

HOUR TOTAL: 195

Prepared by NEWPORT TRAFFIC STUDIES

SANBAG CLASSIFICATION SUMMARY

NORTH-SOUTH STREET : ADELANTO | ADELANTO

EAST-WEST STREET : RANCHO (E) | 08-31-22

BEGINNING TIME : 07:00AM

AUTOS			LARGE 2 AXLE			3 AXLE			4(+) AXLE			TOTALS
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	
						NORTH LEG						
0	0	0	0	0	0	0	1	0	0	1	0	2
0	0	1	0	0	0	0	0	1	0	2	0	4
0	2	0	0	1	0	0	1	0	0	1	0	5
0	4	6	0	0	0	0	0	0	0	0	0	10
0	10	1	0	0	0	0	0	0	0	0	1	12
0	3	1	0	0	0	0	0	0	0	1	0	5
0	1	1	0	0	0	0	0	1	0	1	0	4
0	10	0	0	0	0	0	0	2	0	0	1	13
0	30	10	0	1	0	0	2	4	0	6	2	55
						SOUTH LEG						
0	24	0	0	1	0	0	1	0	0	3	0	29
0	27	0	0	1	0	1	0	0	0	1	0	30
0	21	0	0	0	0	0	1	0	1	3	0	26
4	34	0	0	2	0	0	1	0	0	4	0	45
3	21	0	0	3	0	2	2	0	0	16	0	47
2	15	0	0	3	0	0	2	0	0	9	0	31
2	20	0	0	1	0	1	4	0	0	3	0	31
1	22	0	0	0	0	2	2	0	0	4	0	31
12	184	0	0	11	0	6	13	0	1	43	0	270
						EAST LEG						
1	0	0	0	0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	0	1	0	0	1
3	0	0	0	0	0	0	0	0	1	0	0	4
0	0	0	0	0	0	0	0	0	2	0	0	2
3	0	0	0	0	0	0	0	0	0	0	0	3
0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	2	0	0	5
1	0	0	0	0	0	0	0	1	1	0	0	3
11	0	0	0	0	0	0	0	1	7	0	0	19
						WEST LEG						
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: ADELANTO

EAST-WEST STREET: RANCHO (E)

TIME: 07:00AM-08:00AM DATE: 08-31-22

NORTH LEG

	13	8	Total
	2	0	1st
	2	2	2nd
	5	0	3rd
	4	6	4th
Rt	Thru	Lt	

Rt	1	1	4	2	8
Thru					
Lt	0	0	0	0	0
	1st	2nd	3rd	4th	Total

Total	1st	2nd	3rd	4th	
					Lt
					Thru
					Rt

	Lt	Thru	Rt
1st		29	0
2nd		29	1
3rd		25	1
4th		41	4
Total		124	6

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: ADELANTO

EAST-WEST STREET: RANCHO (E)

TIME: 08:00AM-09:00AM DATE: 08-31-22

NORTH LEG

	26	8	Total
	10	2	1st
	4	1	2nd
	2	2	3rd
	10	3	4th
	Rt	Thru	Lt

Rt	3	0	5	2	10
Thru					
Lt	0	0	0	1	1
	1st	2nd	3rd	4th	Total

Total	1st	2nd	3rd	4th	
					Lt
					Thru
					Rt

	Lt	Thru	Rt
1st		42	5
2nd		29	2
3rd		28	3
4th		28	3
Total		127	13

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURN COUNT

PEAK HOUR

NORTH-SOUTH STREET: ADELANTO
EAST-WEST STREET: RANCHO (E)
JURISDICTION: ADELANTO

DATE: 08-31-22

PEAK HOUR: 04:15PM

NORTH LEG

TOTAL: 14

	9	5	Total
	1	1	1st
	2	1	2nd
	2	0	3rd
	4	3	4th
Rt	Thru	Lt	

EAST LEG TOTAL: 63

Rt	15	19	4	24	62
Thru					
Lt	0	0	0	1	1
	1st	2nd	3rd	4th	Total

WEST LEG TOTAL: 0

Total	1st	2nd	3rd	4th	
					Lt
					Thru
					Rt

PEAK HOUR FACTORS

NORTH LEG = 0.50
SOUTH LEG = 0.91
EAST LEG = 0.63
WEST LEG =

ALL LEGS = 0.81

SOUTH LEG

TOTAL: 102

	Lt	Thru	Rt
1st		24	0
2nd		28	0
3rd		25	2
4th		20	3
Total		97	5

HOUR TOTAL: 179

Prepared by NEWPORT TRAFFIC STUDIES

SANBAG CLASSIFICATION SUMMARY

NORTH-SOUTH STREET : ADELANTO

ADELANTO

EAST-WEST STREET : RANCHO (E)

BEGINNING TIME : 04:00PM

AUTOS			LARGE 2 AXLE			3 AXLE			4(+) AXLE			TOTALS
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	
						NORTH LEG						
0	0	3	0	0	0	0	0	0	0	0	0	3
0	1	1	0	0	0	0	0	0	0	0	0	2
0	2	1	0	0	0	0	0	0	0	0	0	3
0	2	0	0	0	0	0	0	0	0	0	0	2
0	3	2	0	0	0	0	0	0	0	1	1	7
0	3	1	0	0	0	0	0	0	0	0	0	4
0	0	1	0	0	0	0	0	0	0	0	0	1
0	1	2	0	0	0	0	0	0	0	1	1	5
0	12	11	0	0	0	0	0	0	0	2	2	27
						SOUTH LEG						
1	18	0	0	0	0	0	3	0	0	3	0	25
0	19	0	0	1	0	0	1	0	0	3	0	24
0	19	0	0	4	0	0	0	0	0	5	0	28
2	23	0	0	0	0	0	0	0	0	2	0	27
2	19	0	0	0	0	0	1	0	1	0	0	23
0	17	0	0	0	0	0	0	0	0	3	0	20
2	14	0	0	1	0	1	0	0	0	5	0	23
1	23	0	0	2	0	0	0	0	0	4	0	30
8	152	0	0	8	0	1	5	0	1	25	0	200
						EAST LEG						
10	0	0	1	0	0	0	0	0	0	0	0	11
15	0	0	0	0	0	0	0	0	0	0	0	15
18	0	0	0	0	0	1	0	0	0	0	0	19
4	0	0	0	0	0	0	0	0	0	0	0	4
24	0	1	0	0	0	0	0	0	0	0	0	25
11	0	0	0	0	0	0	0	0	0	0	0	11
10	0	1	0	0	0	0	0	0	0	0	0	11
2	0	0	1	0	0	0	0	0	0	0	0	3
94	0	2	2	0	0	1	0	0	0	0	0	99
						WEST LEG						
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0

Prepared by Newport Traffic Studies

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: ADELANTO

EAST-WEST STREET: RANCHO (E)

TIME: 04:00PM-05:00PM DATE: 08-31-22

NORTH LEG

	5	5	Total
	0	3	1st
	1	1	2nd
	2	1	3rd
	2	0	4th

Rt Thru Lt

Rt	11	15	19	4	49
Thru					
Lt	0	0	0	0	0

1st 2nd 3rd 4th Total

Total	1st	2nd	3rd	4th	
					Lt
					Thru
					Rt

	Lt	Thru	Rt
1st		24	1
2nd		24	0
3rd		28	0
4th		25	2
Total		101	3

Prepared by NEWPORT TRAFFIC STUDIES

INTERSECTION TURNING COUNT

NORTH-SOUTH STREET: ADELANTO

EAST-WEST STREET: RANCHO (E)

TIME: 05:00PM-06:00PM DATE: 08-31-22

NORTH LEG

	9	8	Total
	4	3	1st
	3	1	2nd
	0	1	3rd
	2	3	4th
Rt	Thru	Lt	

Rt	24	11	10	3	48
Thru					
Lt	1	0	1	0	2
	1st	2nd	3rd	4th	Total

Total	1st	2nd	3rd	4th	
					Lt
					Thru
					Rt

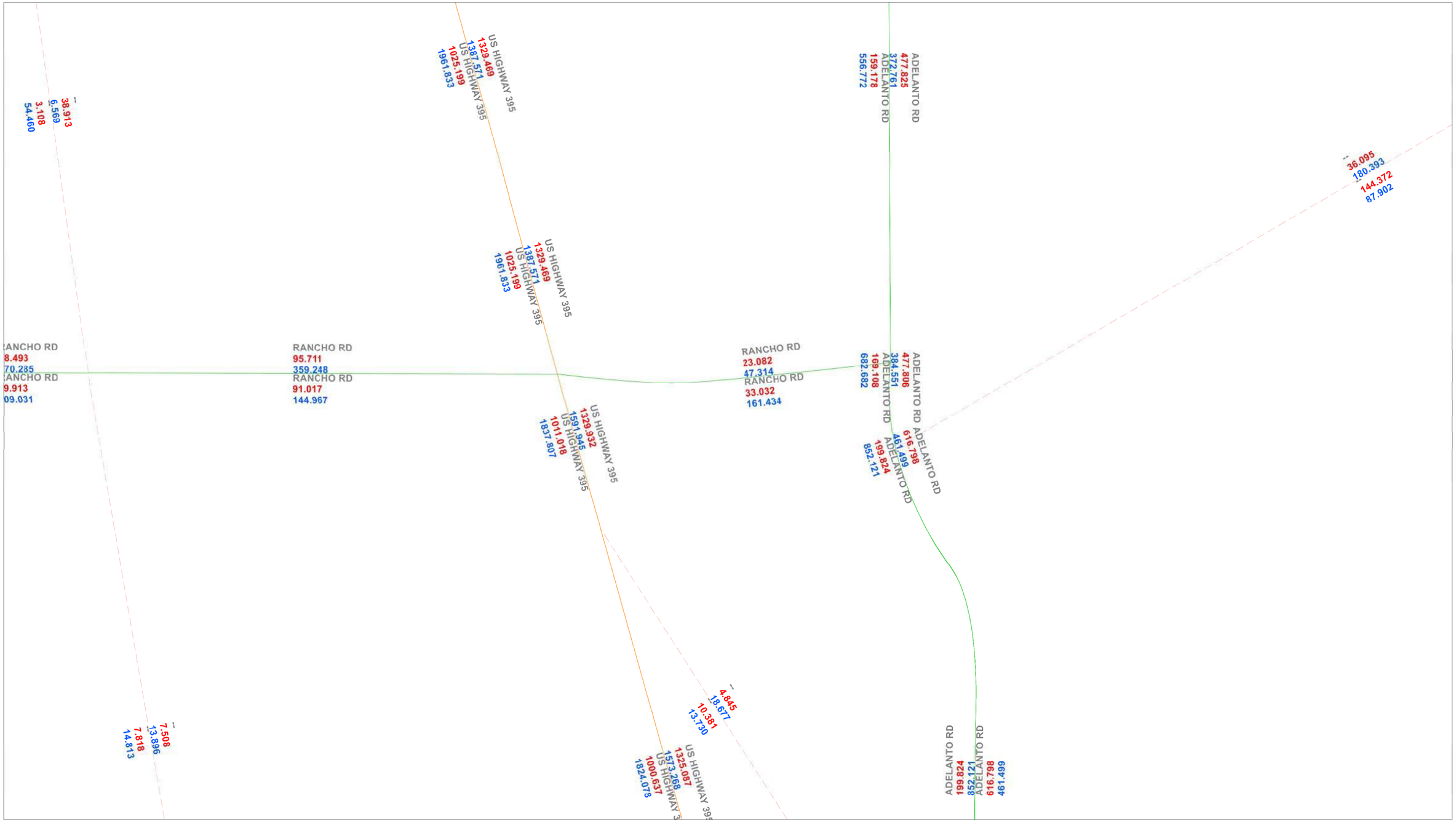
	Lt	Thru	Rt
1st		20	3
2nd		20	0
3rd		20	3
4th		29	1
Total		89	7

Prepared by NEWPORT TRAFFIC STUDIES

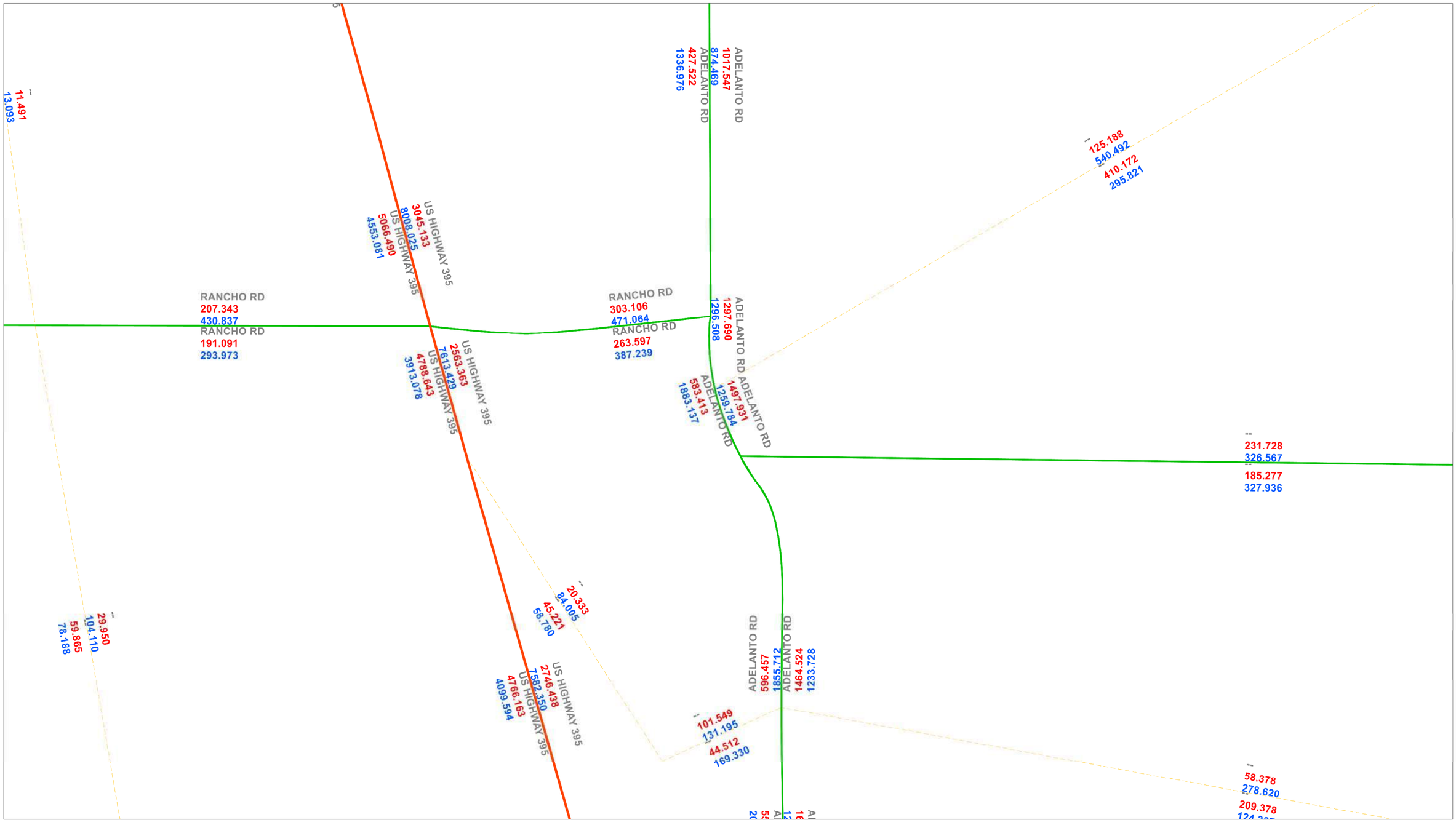
DAVID EVANS AND ASSOCIATES INC.

Appendix C: Forecast Model Volume Development

ADELANTO - 2016 AM/PM VOLUME



ADELANTO - 2040 AM/PM VOLUME



CALCULATION OF FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES (NCHRP 255)

Intersection No.: 1
North/South Street: HIGHWAY 395
East/West Street: RANCHO RD (WEST)

Analysis Condition: YEAR 2040 FUTURE TRAFFIC

A.M. Peak Hour

Approach Direction		Base Year Count	Forecast Future Year Link Volume			Turn Volume	Rounded Volume
South leg	Left	542	Approach	2,634	Left	510	511
NB	Through	1,757	Departure	2,869	Through	2,177	2,177
	Right	11			Right	13	14
North leg	Left	18	Approach	2,703	Left	43	43
SB	Through	1,580	Departure	2,253	Through	2,561	2,562
	Right	43			Right	79	80
West leg	Left	19	Approach	330	Left	26	27
EB	Through	98	Departure	676	Through	132	132
	Right	186			Right	171	171
East leg	Left	110	Approach	272	Left	137	138
WB	Through	61	Departure	188	Through	86	87
	Right	27			Right	50	51

P.M. Peak Hour

Approach Direction		Base Year Count	Forecast Future Year Link Volume			Turn Volume	Rounded Volume
South leg	Left	219	Approach	3,130	Left	211	211
NB	Through	1,772	Departure	2,811	Through	2,950	2,950
	Right	9			Right	12	13
North leg	Left	4	Approach	2,164	Left	7	7
SB	Through	1,652	Departure	3,125	Through	2,074	2,075
	Right	22			Right	26	26
West leg	Left	89	Approach	948	Left	130	130
EB	Through	190	Departure	348	Through	226	227
	Right	641			Right	574	574
East leg	Left	128	Approach	323	Left	163	163
WB	Through	93	Departure	245	Through	111	112
	Right	22			Right	46	46

CALCULATION OF FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES (NCHRP 255)

Intersection No.: 2
North/South Street: ADELANTO RD
East/West Street: RANCHO RD (WEST)

Analysis Condition: YEAR 2040 FUTURE TRAFFIC

A.M. Peak Hour

Approach Direction		Base Year Count	Forecast Future Year Link Volume			Turn Volume	Rounded Volume
South leg	Left	47	Approach	369	Left	120	120
NB	Through	106	Departure	134	Through	238	239
	Right	0			Right	0	0
North leg	Left	0	Approach	246	Left	0	0
SB	Through	16	Departure	330	Through	78	79
	Right	159			Right	160	161
West leg	Left	82	Approach	152	Left	92	92
EB	Through	0	Departure	280	Through	0	0
	Right	9			Right	56	56
East leg	Left	0	Approach	0	Left	0	0
WB	Through	0	Departure	0	Through	0	0
	Right	0			Right	0	0

P.M. Peak Hour

Approach Direction		Base Year Count	Forecast Future Year Link Volume			Turn Volume	Rounded Volume
South leg	Left	85	Approach	330	Left	159	160
NB	Through	74	Departure	239	Through	187	187
	Right	0			Right	0	0
North leg	Left	0	Approach	278	Left	0	0
SB	Through	8	Departure	317	Through	163	163
	Right	123			Right	129	129
West leg	Left	149	Approach	197	Left	130	131
EB	Through	0	Departure	288	Through	0	0
	Right	6			Right	76	77
East leg	Left	0	Approach	0	Left	0	0
WB	Through	0	Departure	0	Through	0	0
	Right	0			Right	0	0

CALCULATION OF FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES (NCHRP 255)

Intersection No.: 3
North/South Street: ADELANTO RD
East/West Street: RANCHO RD (EAST)

Analysis Condition: YEAR 2040 FUTURE TRAFFIC

A.M. Peak Hour

Approach Direction		Base Year Count	Forecast Future Year Link Volume			Turn Volume	Rounded Volume
South leg	Left	0	Approach	377	Left	0	0
NB	Through	140	Departure	296	Through	357	358
	Right	14			Right	35	35
North leg	Left	11	Approach	140	Left	1	2
SB	Through	20	Departure	366	Through	213	213
	Right	0			Right	0	0
West leg	Left	0	Approach	0	Left	0	0
EB	Through	0	Departure	0	Through	0	0
	Right	0			Right	0	0
East leg	Left	1	Approach	63	Left	83	84
WB	Through	0	Departure	36	Through	0	0
	Right	10			Right	9	9

P.M. Peak Hour

Approach Direction		Base Year Count	Forecast Future Year Link Volume			Turn Volume	Rounded Volume
South leg	Left	0	Approach	247	Left	0	0
NB	Through	97	Departure	198	Through	241	242
	Right	5			Right	7	8
North leg	Left	5	Approach	239	Left	48	48
SB	Through	9	Departure	330	Through	196	197
	Right	0			Right	0	0
West leg	Left	0	Approach	0	Left	0	0
EB	Through	0	Departure	0	Through	0	0
	Right	0			Right	0	0
East leg	Left	1	Approach	90	Left	2	2
WB	Through	0	Departure	55	Through	0	0
	Right	62			Right	89	89

DAVID EVANS AND ASSOCIATES INC.

Appendix D: Intersection Capacity Analysis

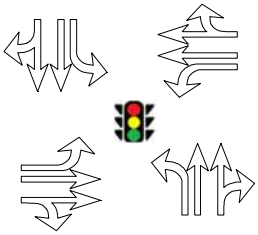
DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN MOVEMENTS	HEAY	27-Feb-23	IPGI0000-0001	1 OF 2

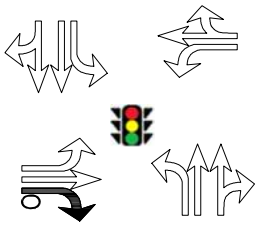
E/W STREET : RANCHO RD (WEST)
N/S STREET : HIGHWAY 395
CONDITION : AM PEAK HOUR

INTERSECTION : 1
PROJECTED GROWTH PER YEAR : 3.5%

CONDITION DIAGRAMS



EXISTING GEOMETRICS



PROJECT GEOMETRICS

TURN MOVEMENTS

Condition	Existing Condition	Ambient Growth	Background Condition	Project Trips	Project Condition	Future Condition	Future + Project Condition
Scenario #	1		3		5	7	9
RANCHO RD (WEST)							
EB LEFT	29	3	32	0	32	41	41
EB THRU	82	6	88	10	98	104	114
EB RIGHT	92	7	99	0	99	88	88
WB LEFT	94	7	101	0	101	114	114
WB THRU	74	6	80	4	84	98	102
WB RIGHT	45	4	49	4	53	81	85
HIGHWAY 395							
NB LEFT	538	38	576	0	576	510	510
NB THRU	1406	99	1505	0	1505	1810	1810
NB RIGHT	22	2	24	0	24	26	26
SB LEFT	31	3	34	10	44	68	78
SB THRU	1519	107	1626	0	1626	2498	2498
SB RIGHT	45	4	49	0	49	81	81
TOTALS	**3977**	**286**	**4263**	**28**	**4291**	**5519**	**5547**

	Project Trips	Project Condition	Existing Condition	Fair Share Percentage
YEAR 2024 FAIR SHARE	**28**	**4291**	**3977**	**9%**

	Project Trips	Future + Project Condition	Existing Condition	Fair Share Percentage
YEAR 2040 FAIR SHARE	**28**	**5547**	**3977**	**2%**

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET	OF
TURN VOLUME SUMMARY	HEAY	27-Feb-23	IPGI0000-0001	2	OF 2

E/W STREET : RANCHO RD (WEST)
N/S STREET : HIGHWAY 395
CONDITION : AM PEAK HOUR
PHF : 0.96

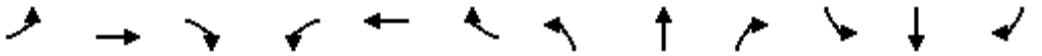
NORTH LEG											
AUTO			LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
13	344	8	1	2	0	0	2	0	0	11	2
9	357	3	0	5	2	0	3	0	2	13	0
3	387	6	0	2	0	0	1	0	2	20	0
14	354	8	0	3	0	0	0	0	1	15	2

SOUTH LEG											
AUTO			LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
6	315	147	0	3	1	1	0	0	0	11	3
6	332	144	0	3	0	0	0	3	1	14	3
4	345	112	0	3	0	0	2	0	1	23	2
1	337	120	0	0	3	1	4	0	1	14	0

EAST LEG											
AUTO			LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
8	15	15	0	0	0	0	1	2	2	0	2
9	13	12	0	1	0	0	2	0	1	3	4
16	17	19	0	1	1	0	2	0	0	3	2
9	10	28	0	1	1	0	0	1	0	5	7

WEST LEG											
AUTO			LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
13	18	5	3	2	0	0	1	0	0	2	0
16	14	7	3	0	0	0	0	0	0	2	1
24	21	10	0	1	0	0	0	0	3	1	0
30	19	5	0	1	0	0	0	0	0	0	1

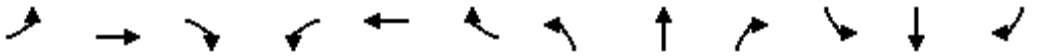
	Truck Volumes	Auto Volumes	Totals	Truck Percentage	Balanced Totals
RANCHO RD (WEST)					
EB LEFT	2	27	**29**	**7%**	**29**
EB THRU	10	72	**82**	**12%**	**82**
EB RIGHT	9	83	**92**	**10%**	**92**
WB LEFT	20	74	**94**	**21%**	**94**
WB THRU	19	55	**74**	**26%**	**74**
WB RIGHT	3	42	**45**	**7%**	**45**
HIGHWAY 395					
NB LEFT	15	523	**538**	**3%**	**538**
NB THRU	77	1329	**1406**	**5%**	**1406**
NB RIGHT	5	17	**22**	**23%**	**22**
SB LEFT	6	25	**31**	**19%**	**31**
SB THRU	77	1442	**1519**	**5%**	**1519**
SB RIGHT	6	39	**45**	**13%**	**45**



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	82	92	94	74	45	538	1406	22	31	1519	45
Future Volume (veh/h)	29	82	92	94	74	45	538	1406	22	31	1519	45
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1702	1722	1752	1505	1515	1796	1758	1826	1559	1533	1826	1707
Adj Flow Rate, veh/h	30	85	96	98	77	47	560	1465	23	32	1582	47
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	12	10	21	26	7	3	5	23	19	5	13
Cap, veh/h	196	297	265	153	322	182	533	2495	39	73	1532	45
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.32	0.71	0.71	0.05	0.45	0.45
Sat Flow, veh/h	1153	1636	1459	968	1772	1002	1674	3496	55	1460	3440	102
Grp Volume(v), veh/h	30	85	96	98	61	63	560	726	762	32	796	833
Grp Sat Flow(s),veh/h/ln	1153	1636	1459	968	1439	1334	1674	1735	1816	1460	1735	1808
Q Serve(g_s), s	5.0	9.9	12.7	21.7	8.0	8.9	70.0	45.4	45.5	4.7	98.0	98.0
Cycle Q Clear(g_c), s	13.9	9.9	12.7	34.4	8.0	8.9	70.0	45.4	45.5	4.7	98.0	98.0
Prop In Lane	1.00		1.00	1.00		0.75	1.00		0.03	1.00		0.06
Lane Grp Cap(c), veh/h	196	297	265	153	262	243	533	1238	1296	73	773	805
V/C Ratio(X)	0.15	0.29	0.36	0.64	0.23	0.26	1.05	0.59	0.59	0.44	1.03	1.03
Avail Cap(c_a), veh/h	196	297	265	153	262	243	533	1238	1296	73	773	805
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	83.2	77.7	78.8	93.9	76.9	77.3	75.0	15.5	15.5	101.5	61.0	61.0
Incr Delay (d2), s/veh	1.7	2.4	3.8	18.8	2.1	2.6	53.1	2.0	2.0	18.0	40.3	41.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	4.4	5.1	6.3	3.2	3.3	37.3	17.6	18.4	2.1	50.3	52.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	84.9	80.1	82.6	112.7	79.0	79.8	128.1	17.6	17.5	119.5	101.3	102.0
LnGrp LOS	F	F	F	F	E	E	F	B	B	F	F	F
Approach Vol, veh/h		211			222			2048			1661	
Approach Delay, s/veh		81.9			94.1			47.8			102.0	
Approach LOS		F			F			D			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.0	161.0		44.0	74.0	102.0		44.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	11.0	157.0		40.0	70.0	98.0		40.0				
Max Q Clear Time (g_c+I1), s	6.7	47.5		15.9	72.0	100.0		36.4				
Green Ext Time (p_c), s	0.0	13.1		1.2	0.0	0.0		0.4				

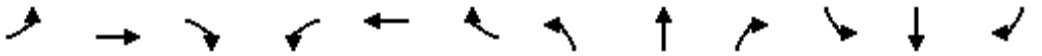
Intersection Summary			
HCM 6th Ctrl Delay		73.7	
HCM 6th LOS		E	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	32	88	99	101	80	49	576	1505	24	34	1626	49
Future Volume (veh/h)	32	88	99	101	80	49	576	1505	24	34	1626	49
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1702	1722	1752	1505	1515	1796	1758	1826	1559	1533	1826	1707
Adj Flow Rate, veh/h	33	92	103	105	83	51	600	1568	25	35	1694	51
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	12	10	21	26	7	3	5	23	19	5	13
Cap, veh/h	191	297	265	147	321	183	533	2494	40	73	1532	46
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.32	0.71	0.71	0.05	0.45	0.45
Sat Flow, veh/h	1142	1636	1459	956	1766	1006	1674	3495	56	1460	3439	103
Grp Volume(v), veh/h	33	92	103	105	66	68	600	777	816	35	852	893
Grp Sat Flow(s),veh/h/ln	1142	1636	1459	956	1439	1334	1674	1735	1816	1460	1735	1807
Q Serve(g_s), s	5.6	10.7	13.7	23.9	8.7	9.6	70.0	51.2	51.4	5.1	98.0	98.0
Cycle Q Clear(g_c), s	15.2	10.7	13.7	37.6	8.7	9.6	70.0	51.2	51.4	5.1	98.0	98.0
Prop In Lane	1.00		1.00	1.00		0.75	1.00		0.03	1.00		0.06
Lane Grp Cap(c), veh/h	191	297	265	147	262	242	533	1238	1296	73	773	805
V/C Ratio(X)	0.17	0.31	0.39	0.71	0.25	0.28	1.13	0.63	0.63	0.48	1.10	1.11
Avail Cap(c_a), veh/h	191	297	265	147	262	242	533	1238	1296	73	773	805
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	84.1	78.0	79.2	95.8	77.2	77.6	75.0	16.3	16.4	101.7	61.0	61.0
Incr Delay (d2), s/veh	2.0	2.7	4.2	25.5	2.3	2.8	78.6	2.4	2.3	20.8	64.1	66.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	4.8	5.5	7.0	3.4	3.5	41.1	19.8	20.8	2.4	55.4	58.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	86.1	80.7	83.5	121.2	79.5	80.4	153.6	18.8	18.7	122.6	125.1	127.1
LnGrp LOS	F	F	F	F	E	F	F	B	B	F	F	F
Approach Vol, veh/h		228			239			2193			1780	
Approach Delay, s/veh		82.7			98.1			55.6			126.1	
Approach LOS		F			F			E			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.0	161.0		44.0	74.0	102.0		44.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	11.0	157.0		40.0	70.0	98.0		40.0				
Max Q Clear Time (g_c+I1), s	7.1	53.4		17.2	72.0	100.0		39.6				
Green Ext Time (p_c), s	0.0	15.3		1.2	0.0	0.0		0.1				

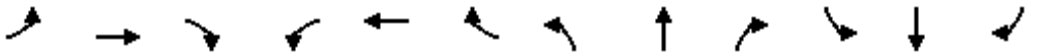
Intersection Summary												
HCM 6th Ctrl Delay			87.6									
HCM 6th LOS			F									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	32	98	99	101	84	53	576	1505	24	44	1626	49
Future Volume (veh/h)	32	98	99	101	84	53	576	1505	24	44	1626	49
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1702	1722	1752	1505	1515	1796	1758	1826	1559	1533	1826	1707
Adj Flow Rate, veh/h	33	102	103	105	88	55	600	1568	25	46	1694	51
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	12	10	21	26	7	3	5	23	19	5	13
Cap, veh/h	186	297	265	146	319	185	533	2494	40	73	1532	46
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.32	0.71	0.71	0.05	0.45	0.45
Sat Flow, veh/h	1133	1636	1459	947	1754	1017	1674	3495	56	1460	3439	103
Grp Volume(v), veh/h	33	102	103	105	71	72	600	777	816	46	852	893
Grp Sat Flow(s),veh/h/ln	1133	1636	1459	947	1439	1332	1674	1735	1816	1460	1735	1807
Q Serve(g_s), s	5.7	12.0	13.7	24.1	9.3	10.3	70.0	51.2	51.4	6.8	98.0	98.0
Cycle Q Clear(g_c), s	16.0	12.0	13.7	37.8	9.3	10.3	70.0	51.2	51.4	6.8	98.0	98.0
Prop In Lane	1.00		1.00	1.00		0.76	1.00		0.03	1.00		0.06
Lane Grp Cap(c), veh/h	186	297	265	146	262	242	533	1238	1296	73	773	805
V/C Ratio(X)	0.18	0.34	0.39	0.72	0.27	0.30	1.13	0.63	0.63	0.63	1.10	1.11
Avail Cap(c_a), veh/h	186	297	265	146	262	242	533	1238	1296	73	773	805
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	84.8	78.5	79.2	95.9	77.5	77.8	75.0	16.3	16.4	102.5	61.0	61.0
Incr Delay (d2), s/veh	2.1	3.1	4.2	26.1	2.5	3.1	78.6	2.4	2.3	34.7	64.1	66.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	5.4	5.5	7.1	3.7	3.8	41.1	19.8	20.8	3.3	55.4	58.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	86.8	81.7	83.5	122.0	80.0	81.0	153.6	18.8	18.7	137.2	125.1	127.1
LnGrp LOS	F	F	F	F	E	F	F	B	B	F	F	F
Approach Vol, veh/h		238			248			2193			1791	
Approach Delay, s/veh		83.2			98.0			55.6			126.4	
Approach LOS		F			F			E			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.0	161.0		44.0	74.0	102.0		44.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	11.0	157.0		40.0	70.0	98.0		40.0				
Max Q Clear Time (g_c+I1), s	8.8	53.4		18.0	72.0	100.0		39.8				
Green Ext Time (p_c), s	0.0	15.3		1.3	0.0	0.0		0.0				

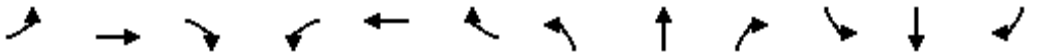
Intersection Summary			
HCM 6th Ctrl Delay		87.8	
HCM 6th LOS		F	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	32	98	99	101	84	53	576	1505	24	44	1626	49
Future Volume (veh/h)	32	98	99	101	84	53	576	1505	24	44	1626	49
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1702	1722	1752	1505	1515	1796	1758	1826	1559	1533	1826	1707
Adj Flow Rate, veh/h	33	102	103	105	88	55	600	1568	25	46	1694	51
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	12	10	21	26	7	3	5	23	19	5	13
Cap, veh/h	186	313	736	168	319	185	525	2446	39	93	1547	46
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.31	0.70	0.70	0.06	0.45	0.45
Sat Flow, veh/h	1133	1722	1485	1040	1754	1017	1674	3495	56	1460	3439	103
Grp Volume(v), veh/h	33	102	103	105	71	72	600	777	816	46	852	893
Grp Sat Flow(s),veh/h/ln	1133	1722	1485	1040	1439	1332	1674	1735	1816	1460	1735	1807
Q Serve(g_s), s	5.7	11.3	8.3	21.5	9.3	10.3	69.0	53.6	53.8	6.7	99.0	99.0
Cycle Q Clear(g_c), s	16.0	11.3	8.3	32.8	9.3	10.3	69.0	53.6	53.8	6.7	99.0	99.0
Prop In Lane	1.00		1.00	1.00		0.76	1.00		0.03	1.00		0.06
Lane Grp Cap(c), veh/h	186	313	736	168	262	242	525	1214	1271	93	781	813
V/C Ratio(X)	0.18	0.33	0.14	0.62	0.27	0.30	1.14	0.64	0.64	0.50	1.09	1.10
Avail Cap(c_a), veh/h	186	313	736	168	262	242	525	1214	1271	93	781	813
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	84.8	78.3	30.1	92.5	77.5	77.8	75.5	17.9	18.0	99.6	60.5	60.5
Incr Delay (d2), s/veh	2.1	2.8	0.4	16.2	2.5	3.1	85.0	2.6	2.5	17.6	59.9	61.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	5.3	3.2	6.6	3.7	3.8	41.4	21.1	22.1	3.0	55.0	57.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	86.8	81.0	30.5	108.7	80.0	81.0	160.5	20.5	20.5	117.2	120.4	122.4
LnGrp LOS	F	F	C	F	E	F	F	C	C	F	F	F
Approach Vol, veh/h		238			248			2193			1791	
Approach Delay, s/veh		60.0			92.4			58.8			121.3	
Approach LOS		E			F			E			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	18.0	158.0		44.0	73.0	103.0		44.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	14.0	154.0		40.0	69.0	99.0		40.0				
Max Q Clear Time (g_c+I1), s	8.7	55.8		18.0	71.0	101.0		34.8				
Green Ext Time (p_c), s	0.0	15.2		1.0	0.0	0.0		0.5				

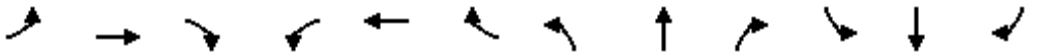
Intersection Summary			
HCM 6th Ctrl Delay		85.8	
HCM 6th LOS		F	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	104	88	114	98	81	510	1810	26	68	2498	81
Future Volume (veh/h)	41	104	88	114	98	81	510	1810	26	68	2498	81
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1702	1722	1752	1505	1515	1796	1758	1826	1559	1533	1826	1707
Adj Flow Rate, veh/h	43	108	92	119	102	84	531	1885	27	71	2602	84
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	12	10	21	26	7	3	5	23	19	5	13
Cap, veh/h	162	318	248	149	284	214	533	2499	36	73	1528	49
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.32	0.71	0.71	0.05	0.45	0.45
Sat Flow, veh/h	1090	1749	1364	952	1563	1179	1674	3501	50	1460	3431	110
Grp Volume(v), veh/h	43	100	100	119	93	93	531	932	980	71	1309	1377
Grp Sat Flow(s),veh/h/ln	1090	1636	1477	952	1439	1303	1674	1735	1817	1460	1735	1806
Q Serve(g_s), s	8.0	11.8	13.0	27.0	12.5	13.8	69.7	73.1	73.8	10.7	98.0	98.0
Cycle Q Clear(g_c), s	21.8	11.8	13.0	40.0	12.5	13.8	69.7	73.1	73.8	10.7	98.0	98.0
Prop In Lane	1.00		0.92	1.00		0.90	1.00		0.03	1.00		0.06
Lane Grp Cap(c), veh/h	162	297	268	149	262	237	533	1238	1297	73	773	805
V/C Ratio(X)	0.26	0.34	0.37	0.80	0.36	0.39	1.00	0.75	0.76	0.97	1.69	1.71
Avail Cap(c_a), veh/h	162	297	268	149	262	237	533	1238	1297	73	773	805
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	88.9	78.5	79.0	96.8	78.7	79.3	74.9	19.5	19.6	104.3	61.0	61.0
Incr Delay (d2), s/veh	3.9	3.1	3.9	34.3	3.8	4.8	38.2	4.3	4.1	97.9	317.7	325.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	5.3	5.3	8.3	5.0	5.0	34.9	28.6	30.2	6.0	109.8	116.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	92.8	81.5	82.9	131.1	82.5	84.1	113.1	23.7	23.7	202.2	378.7	386.7
LnGrp LOS	F	F	F	F	F	F	F	C	C	F	F	F
Approach Vol, veh/h		243			305			2443			2757	
Approach Delay, s/veh		84.1			101.9			43.2			378.2	
Approach LOS		F			F			D			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.0	161.0		44.0	74.0	102.0		44.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	11.0	157.0		40.0	70.0	98.0		40.0				
Max Q Clear Time (g_c+I1), s	12.7	75.8		23.8	71.7	100.0		42.0				
Green Ext Time (p_c), s	0.0	23.9		1.2	0.0	0.0		0.0				

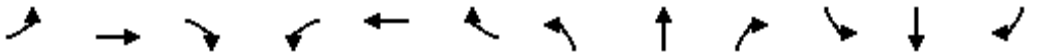
Intersection Summary			
HCM 6th Ctrl Delay		208.7	
HCM 6th LOS		F	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	114	88	114	102	85	510	1810	26	78	2498	81
Future Volume (veh/h)	41	114	88	114	102	85	510	1810	26	78	2498	81
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1702	1722	1752	1505	1515	1796	1758	1826	1559	1533	1826	1707
Adj Flow Rate, veh/h	43	119	92	119	106	89	531	1885	27	81	2602	84
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	12	10	21	26	7	3	5	23	19	5	13
Cap, veh/h	158	331	237	145	282	217	533	2499	36	73	1528	49
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.32	0.71	0.71	0.05	0.45	0.45
Sat Flow, veh/h	1081	1821	1302	942	1548	1191	1674	3501	50	1460	3431	110
Grp Volume(v), veh/h	43	106	105	119	98	97	531	932	980	81	1309	1377
Grp Sat Flow(s),veh/h/ln	1081	1636	1488	942	1439	1300	1674	1735	1817	1460	1735	1806
Q Serve(g_s), s	8.1	12.5	13.7	26.3	13.1	14.5	69.7	73.1	73.8	11.0	98.0	98.0
Cycle Q Clear(g_c), s	22.6	12.5	13.7	40.0	13.1	14.5	69.7	73.1	73.8	11.0	98.0	98.0
Prop In Lane	1.00		0.88	1.00		0.92	1.00		0.03	1.00		0.06
Lane Grp Cap(c), veh/h	158	297	270	145	262	236	533	1238	1297	73	773	805
V/C Ratio(X)	0.27	0.36	0.39	0.82	0.37	0.41	1.00	0.75	0.76	1.11	1.69	1.71
Avail Cap(c_a), veh/h	158	297	270	145	262	236	533	1238	1297	73	773	805
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	89.6	78.7	79.2	97.5	79.0	79.6	74.9	19.5	19.6	104.5	61.0	61.0
Incr Delay (d2), s/veh	4.2	3.3	4.2	38.0	4.0	5.2	38.2	4.3	4.1	138.3	317.7	325.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	5.6	5.6	8.5	5.2	5.3	34.9	28.6	30.2	7.0	109.8	116.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	93.8	82.0	83.4	135.6	83.1	84.8	113.1	23.7	23.7	242.8	378.7	386.7
LnGrp LOS	F	F	F	F	F	F	F	C	C	F	F	F
Approach Vol, veh/h		254			314			2443			2767	
Approach Delay, s/veh		84.6			103.5			43.2			378.7	
Approach LOS		F			F			D			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.0	161.0		44.0	74.0	102.0		44.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	11.0	157.0		40.0	70.0	98.0		40.0				
Max Q Clear Time (g_c+I1), s	13.0	75.8		24.6	71.7	100.0		42.0				
Green Ext Time (p_c), s	0.0	23.9		1.2	0.0	0.0		0.0				

Intersection Summary		
HCM 6th Ctrl Delay		209.0
HCM 6th LOS		F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	114	88	114	102	85	510	1810	26	78	2498	81
Future Volume (veh/h)	41	114	88	114	102	85	510	1810	26	78	2498	81
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1702	1722	1752	1505	1515	1796	1758	1826	1559	1533	1826	1707
Adj Flow Rate, veh/h	43	119	92	119	106	89	531	1885	27	81	2602	84
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	12	10	21	26	7	3	5	23	19	5	13
Cap, veh/h	158	313	736	157	282	217	525	2387	34	119	1544	50
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.31	0.68	0.68	0.08	0.45	0.45
Sat Flow, veh/h	1081	1722	1485	1024	1548	1191	1674	3501	50	1460	3431	110
Grp Volume(v), veh/h	43	119	92	119	98	97	531	932	980	81	1309	1377
Grp Sat Flow(s),veh/h/ln	1081	1722	1485	1024	1439	1300	1674	1735	1817	1460	1735	1806
Q Serve(g_s), s	8.1	13.4	7.3	25.4	13.1	14.5	69.0	81.2	82.0	11.9	99.0	99.0
Cycle Q Clear(g_c), s	22.6	13.4	7.3	38.8	13.1	14.5	69.0	81.2	82.0	11.9	99.0	99.0
Prop In Lane	1.00		1.00	1.00		0.92	1.00		0.03	1.00		0.06
Lane Grp Cap(c), veh/h	158	313	736	157	262	236	525	1183	1239	119	781	813
V/C Ratio(X)	0.27	0.38	0.13	0.76	0.37	0.41	1.01	0.79	0.79	0.68	1.68	1.69
Avail Cap(c_a), veh/h	158	313	736	157	262	236	525	1183	1239	119	781	813
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	89.6	79.1	29.9	96.1	79.0	79.6	75.5	24.1	24.2	98.2	60.5	60.5
Incr Delay (d2), s/veh	4.2	3.5	0.3	28.6	4.0	5.2	42.1	5.3	5.2	26.8	310.0	318.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	6.3	2.8	8.1	5.2	5.3	35.2	32.8	34.7	5.4	109.2	115.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	93.8	82.6	30.2	124.8	83.1	84.8	117.6	29.4	29.4	125.0	370.5	378.5
LnGrp LOS	F	F	C	F	F	F	F	C	C	F	F	F
Approach Vol, veh/h		254			314			2443			2767	
Approach Delay, s/veh		65.5			99.4			48.6			367.3	
Approach LOS		E			F			D			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	22.0	154.0		44.0	73.0	103.0		44.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	18.0	150.0		40.0	69.0	99.0		40.0				
Max Q Clear Time (g_c+I1), s	13.9	84.0		24.6	71.0	101.0		40.8				
Green Ext Time (p_c), s	0.0	22.9		1.0	0.0	0.0		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		204.7	
HCM 6th LOS		F	

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN MOVEMENTS	HEAY	27-Feb-23	IPGI0000-0001	1 OF 2

E/W STREET : RANCHO RD (WEST)
N/S STREET : HIGHWAY 395
CONDITION : PM PEAK HOUR

INTERSECTION : 1
PROJECTED GROWTH PER YEAR : 3.5%

TURN MOVEMENTS

Condition	Existing Condition	Ambient Growth	Background Condition	Project Trips	Project Condition	Future Condition	Future + Project Condition
Scenario #	2		4		6	8	10
RANCHO RD (WEST)							
EB LEFT	53	4	57	0	57	8	8
EB THRU	177	13	190	6	196	134	140
EB RIGHT	419	30	449	0	449	597	597
WB LEFT	93	7	100	0	100	248	248
WB THRU	87	7	94	11	105	48	59
WB RIGHT	21	2	23	11	34	6	17
HIGHWAY 395							
NB LEFT	244	18	262	0	262	619	619
NB THRU	1608	113	1721	0	1721	1942	1942
NB RIGHT	21	2	23	0	23	138	138
SB LEFT	12	1	13	6	19	10	16
SB THRU	1423	100	1523	0	1523	2159	2159
SB RIGHT	33	3	36	0	36	11	11
TOTALS	**4191**	**300**	**4491**	**34**	**4525**	**5920**	**5954**

	Project Trips	Project Condition	Existing Condition	Fair Share Percentage
YEAR 2024 FAIR SHARE	**34**	**4525**	**4191**	**10%**

	Project Trips	Future + Project Condition	Existing Condition	Fair Share Percentage
YEAR 2040 FAIR SHARE	**34**	**5954**	**4191**	**2%**

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET	OF
TURN VOLUME SUMMARY	HEAY	27-Feb-23	IPGI0000-0001	2	OF 2

E/W STREET : RANCHO RD (WEST)
N/S STREET : HIGHWAY 395
CONDITION : PM PEAK HOUR
PHF : 0.95

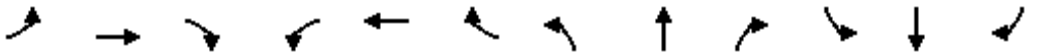
NORTH LEG											
AUTO			LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
3	321	2	1	2	0	0	0	0	2	16	0
8	357	1	1	0	1	0	0	0	2	19	2
7	316	4	0	2	0	0	1	0	3	23	0
6	344	1	0	1	0	0	0	0	0	21	1

SOUTH LEG											
AUTO			LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	405	39	0	0	1	0	0	0	0	16	0
5	385	59	0	1	2	0	0	0	0	14	0
3	406	71	0	1	2	0	1	0	3	14	0
10	354	70	0	0	0	0	1	0	0	10	0

EAST LEG											
AUTO			LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
4	16	27	0	0	1	0	0	0	2	2	2
6	11	26	0	0	1	0	0	0	0	2	0
5	24	16	0	1	0	0	0	0	0	0	0
3	29	20	0	1	0	0	0	0	1	1	0

WEST LEG											
AUTO			LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
87	30	10	1	1	1	1	2	0	0	0	0
128	51	14	0	0	1	1	0	0	0	0	1
115	41	13	1	2	1	0	0	0	0	0	2
84	48	9	1	0	0	0	0	0	0	2	1

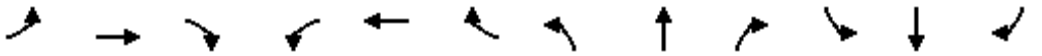
	Truck Volumes	Auto Volumes	Totals	Truck Percentage	Balanced Totals
RANCHO RD (WEST)					
EB LEFT	7	46	**53**	**13%**	**53**
EB THRU	7	170	**177**	**4%**	**177**
EB RIGHT	5	414	**419**	**1%**	**419**
WB LEFT	4	89	**93**	**4%**	**93**
WB THRU	7	80	**87**	**8%**	**87**
WB RIGHT	3	18	**21**	**14%**	**21**
HIGHWAY 395					
NB LEFT	5	239	**244**	**2%**	**244**
NB THRU	58	1550	**1608**	**4%**	**1608**
NB RIGHT	3	18	**21**	**14%**	**21**
SB LEFT	4	8	**12**	**33%**	**12**
SB THRU	85	1338	**1423**	**6%**	**1423**
SB RIGHT	9	24	**33**	**27%**	**33**



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	177	419	93	87	21	244	1608	21	12	1423	33
Future Volume (veh/h)	53	177	419	93	87	21	244	1608	21	12	1423	33
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1617	1841	1885	1744	1781	1693	1772	1841	1693	1337	1811	1500
Adj Flow Rate, veh/h	56	186	441	98	92	22	257	1693	22	13	1498	35
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	13	4	1	4	8	14	2	4	14	33	6	27
Cap, veh/h	368	538	480	81	839	195	260	1958	25	59	1533	36
Arrive On Green	0.31	0.31	0.31	0.31	0.31	0.31	0.15	0.55	0.55	0.05	0.45	0.45
Sat Flow, veh/h	1106	1749	1560	744	2728	632	1688	3535	46	1273	3437	80
Grp Volume(v), veh/h	56	186	441	98	56	58	257	836	879	13	749	784
Grp Sat Flow(s),veh/h/ln	1106	1749	1560	744	1692	1668	1688	1749	1832	1273	1721	1797
Q Serve(g_s), s	5.0	10.7	35.5	4.5	3.1	3.2	19.8	53.2	53.4	1.3	55.5	55.8
Cycle Q Clear(g_c), s	8.2	10.7	35.5	40.0	3.1	3.2	19.8	53.2	53.4	1.3	55.5	55.8
Prop In Lane	1.00		1.00	1.00		0.38	1.00		0.03	1.00		0.04
Lane Grp Cap(c), veh/h	368	538	480	81	521	513	260	969	1015	59	768	802
V/C Ratio(X)	0.15	0.35	0.92	1.21	0.11	0.11	0.99	0.86	0.87	0.22	0.98	0.98
Avail Cap(c_a), veh/h	368	538	480	81	521	513	260	969	1015	59	768	802
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.2	34.9	43.4	64.3	32.2	32.3	54.9	24.8	24.9	59.7	35.3	35.4
Incr Delay (d2), s/veh	0.9	1.8	25.1	165.0	0.4	0.4	53.3	10.1	9.8	8.5	27.1	26.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	4.9	16.9	6.4	1.3	1.4	11.9	22.1	23.2	0.5	27.0	28.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.1	36.6	68.6	229.3	32.6	32.7	108.2	34.9	34.7	68.2	62.4	62.3
LnGrp LOS	D	D	E	F	C	C	F	C	C	E	E	E
Approach Vol, veh/h		683			212			1972			1546	
Approach Delay, s/veh		57.2			123.6			44.4			62.4	
Approach LOS		E			F			D			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.0	76.0		44.0	24.0	62.0		44.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	6.0	72.0		40.0	20.0	58.0		40.0				
Max Q Clear Time (g_c+I1), s	3.3	55.4		37.5	21.8	57.8		42.0				
Green Ext Time (p_c), s	0.0	9.9		1.1	0.0	0.2		0.0				

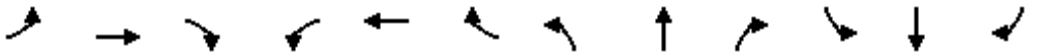
Intersection Summary			
HCM 6th Ctrl Delay		56.5	
HCM 6th LOS		E	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	57	190	449	100	94	23	262	1721	23	13	1523	36
Future Volume (veh/h)	57	190	449	100	94	23	262	1721	23	13	1523	36
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1617	1841	1885	1744	1781	1693	1772	1841	1693	1337	1811	1500
Adj Flow Rate, veh/h	60	200	473	105	99	24	276	1812	24	14	1603	38
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	13	4	1	4	8	14	2	4	14	33	6	27
Cap, veh/h	363	538	480	60	837	197	260	1957	26	59	1533	36
Arrive On Green	0.31	0.31	0.31	0.31	0.31	0.31	0.15	0.55	0.55	0.05	0.45	0.45
Sat Flow, veh/h	1097	1749	1560	713	2720	639	1688	3534	47	1273	3436	81
Grp Volume(v), veh/h	60	200	473	105	60	63	276	895	941	14	801	840
Grp Sat Flow(s),veh/h/ln	1097	1749	1560	713	1692	1666	1688	1749	1832	1273	1721	1796
Q Serve(g_s), s	5.4	11.6	39.2	0.8	3.3	3.5	20.0	60.8	61.2	1.4	58.0	58.0
Cycle Q Clear(g_c), s	8.9	11.6	39.2	40.0	3.3	3.5	20.0	60.8	61.2	1.4	58.0	58.0
Prop In Lane	1.00		1.00	1.00		0.38	1.00		0.03	1.00		0.05
Lane Grp Cap(c), veh/h	363	538	480	60	521	513	260	969	1015	59	768	801
V/C Ratio(X)	0.17	0.37	0.99	1.75	0.12	0.12	1.06	0.92	0.93	0.24	1.04	1.05
Avail Cap(c_a), veh/h	363	538	480	60	521	513	260	969	1015	59	768	801
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.6	35.2	44.7	65.0	32.3	32.4	55.0	26.5	26.6	59.8	36.0	36.0
Incr Delay (d2), s/veh	1.0	2.0	37.6	397.5	0.5	0.5	73.5	15.5	15.4	9.3	44.5	45.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	5.3	20.0	8.6	1.5	1.5	13.4	26.4	27.8	0.6	31.6	33.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.6	37.1	82.4	462.4	32.8	32.9	128.5	42.0	42.0	69.1	80.5	81.0
LnGrp LOS	D	D	F	F	C	C	F	D	D	E	F	F
Approach Vol, veh/h		733			228			2112			1655	
Approach Delay, s/veh		66.3			230.7			53.3			80.7	
Approach LOS		E			F			D			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.0	76.0		44.0	24.0	62.0		44.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	6.0	72.0		40.0	20.0	58.0		40.0				
Max Q Clear Time (g_c+I1), s	3.4	63.2		41.2	22.0	60.0		42.0				
Green Ext Time (p_c), s	0.0	6.6		0.0	0.0	0.0		0.0				

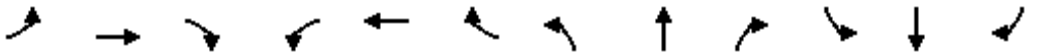
Intersection Summary			
HCM 6th Ctrl Delay		73.4	
HCM 6th LOS		E	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	57	196	449	100	105	34	262	1721	23	19	1523	36
Future Volume (veh/h)	57	196	449	100	105	34	262	1721	23	19	1523	36
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1617	1841	1885	1744	1781	1693	1772	1841	1693	1337	1811	1500
Adj Flow Rate, veh/h	60	206	473	105	111	36	276	1812	24	20	1603	38
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	13	4	1	4	8	14	2	4	14	33	6	27
Cap, veh/h	359	552	492	68	801	250	260	1930	26	59	1506	36
Arrive On Green	0.32	0.32	0.32	0.32	0.32	0.32	0.15	0.55	0.55	0.05	0.44	0.44
Sat Flow, veh/h	1073	1749	1560	709	2539	792	1688	3534	47	1273	3436	81
Grp Volume(v), veh/h	60	206	473	105	72	75	276	895	941	20	801	840
Grp Sat Flow(s),veh/h/ln	1073	1749	1560	709	1692	1639	1688	1749	1832	1273	1721	1796
Q Serve(g_s), s	5.5	11.9	38.7	2.3	4.0	4.2	20.0	61.8	62.3	2.0	57.0	57.0
Cycle Q Clear(g_c), s	9.8	11.9	38.7	41.0	4.0	4.2	20.0	61.8	62.3	2.0	57.0	57.0
Prop In Lane	1.00		1.00	1.00		0.48	1.00		0.03	1.00		0.05
Lane Grp Cap(c), veh/h	359	552	492	68	534	517	260	955	1001	59	754	788
V/C Ratio(X)	0.17	0.37	0.96	1.55	0.14	0.14	1.06	0.94	0.94	0.34	1.06	1.07
Avail Cap(c_a), veh/h	359	552	492	68	534	517	260	955	1001	59	754	788
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.4	34.5	43.7	64.8	31.8	31.9	55.0	27.4	27.5	60.1	36.5	36.5
Incr Delay (d2), s/veh	1.0	1.9	32.0	307.4	0.5	0.6	73.5	17.4	17.3	15.0	50.5	51.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	5.4	19.2	8.0	1.7	1.8	13.4	27.3	28.7	0.9	32.4	34.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.4	36.5	75.8	372.2	32.4	32.5	128.5	44.8	44.8	75.1	87.0	87.7
LnGrp LOS	D	D	E	F	C	C	F	D	D	E	F	F
Approach Vol, veh/h		739			252			2112			1661	
Approach Delay, s/veh		61.6			174.0			55.7			87.2	
Approach LOS		E			F			E			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.0	75.0		45.0	24.0	61.0		45.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	6.0	71.0		41.0	20.0	57.0		41.0				
Max Q Clear Time (g_c+I1), s	4.0	64.3		40.7	22.0	59.0		43.0				
Green Ext Time (p_c), s	0.0	5.2		0.1	0.0	0.0		0.0				

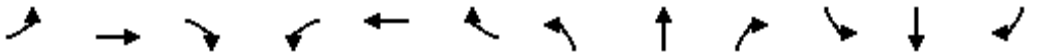
Intersection Summary			
HCM 6th Ctrl Delay		73.9	
HCM 6th LOS		E	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	57	196	449	100	105	34	262	1721	23	19	1523	36
Future Volume (veh/h)	57	196	449	100	105	34	262	1721	23	19	1523	36
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1617	1841	1885	1744	1781	1693	1772	1841	1693	1337	1811	1500
Adj Flow Rate, veh/h	60	206	473	105	111	36	276	1812	24	20	1603	38
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	13	4	1	4	8	14	2	4	14	33	6	27
Cap, veh/h	322	526	719	190	726	226	277	2070	27	55	1595	38
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.16	0.59	0.59	0.04	0.46	0.46
Sat Flow, veh/h	1073	1841	1598	709	2539	792	1688	3534	47	1273	3436	81
Grp Volume(v), veh/h	60	206	473	105	72	75	276	895	941	20	801	840
Grp Sat Flow(s),veh/h/ln	1073	1841	1598	709	1692	1639	1688	1749	1832	1273	1721	1796
Q Serve(g_s), s	6.2	12.6	32.4	19.6	4.5	4.8	22.9	60.8	61.2	2.1	65.0	65.0
Cycle Q Clear(g_c), s	11.0	12.6	32.4	32.2	4.5	4.8	22.9	60.8	61.2	2.1	65.0	65.0
Prop In Lane	1.00		1.00	1.00		0.48	1.00		0.03	1.00		0.05
Lane Grp Cap(c), veh/h	322	526	719	190	484	468	277	1024	1073	55	799	834
V/C Ratio(X)	0.19	0.39	0.66	0.55	0.15	0.16	1.00	0.87	0.88	0.37	1.00	1.01
Avail Cap(c_a), veh/h	322	526	719	190	484	468	277	1024	1073	55	799	834
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.5	40.2	30.1	53.1	37.3	37.4	58.4	24.6	24.7	65.2	37.5	37.5
Incr Delay (d2), s/veh	1.3	2.2	4.7	11.0	0.7	0.7	52.9	10.3	10.1	18.0	32.6	32.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	6.1	13.4	4.1	2.0	2.0	13.5	25.1	26.4	0.9	32.3	33.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.8	42.4	34.8	64.2	38.0	38.1	111.4	34.9	34.8	83.1	70.1	70.3
LnGrp LOS	D	D	C	E	D	D	F	C	C	F	F	F
Approach Vol, veh/h		739			252			2112			1661	
Approach Delay, s/veh		37.5			48.9			44.9			70.4	
Approach LOS		D			D			D			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.0	86.0		44.0	27.0	69.0		44.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	6.0	82.0		40.0	23.0	65.0		40.0				
Max Q Clear Time (g_c+I1), s	4.1	63.2		34.4	24.9	67.0		34.2				
Green Ext Time (p_c), s	0.0	11.7		1.7	0.0	0.0		0.7				

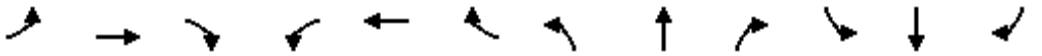
Intersection Summary			
HCM 6th Ctrl Delay		52.8	
HCM 6th LOS		D	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	134	597	248	48	6	619	1942	138	10	2159	11
Future Volume (veh/h)	8	134	597	248	48	6	619	1942	138	10	2159	11
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1617	1841	1885	1744	1781	1693	1772	1841	1693	1337	1811	1500
Adj Flow Rate, veh/h	8	141	628	261	51	6	652	2044	145	11	2273	12
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	13	4	1	4	8	14	2	4	14	33	6	27
Cap, veh/h	400	538	480	55	941	109	260	1836	129	59	1566	8
Arrive On Green	0.31	0.31	0.31	0.31	0.31	0.31	0.15	0.55	0.55	0.05	0.45	0.45
Sat Flow, veh/h	1164	1749	1560	652	3057	353	1688	3315	232	1273	3510	19
Grp Volume(v), veh/h	8	141	628	261	28	29	652	1066	1123	11	1113	1172
Grp Sat Flow(s),veh/h/ln	1164	1749	1560	652	1692	1718	1688	1749	1799	1273	1721	1808
Q Serve(g_s), s	0.6	7.9	40.0	0.0	1.5	1.6	20.0	72.0	72.0	1.1	58.0	58.0
Cycle Q Clear(g_c), s	2.2	7.9	40.0	40.0	1.5	1.6	20.0	72.0	72.0	1.1	58.0	58.0
Prop In Lane	1.00		1.00	1.00		0.21	1.00		0.13	1.00		0.01
Lane Grp Cap(c), veh/h	400	538	480	55	521	529	260	969	996	59	768	807
V/C Ratio(X)	0.02	0.26	1.31	4.71	0.05	0.06	2.51	1.10	1.13	0.19	1.45	1.45
Avail Cap(c_a), veh/h	400	538	480	55	521	529	260	969	996	59	768	807
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.5	33.9	45.0	65.0	31.7	31.7	55.0	29.0	29.0	59.7	36.0	36.0
Incr Delay (d2), s/veh	0.1	1.2	153.2	1710.9	0.2	0.2	691.4	60.7	70.1	6.9	209.9	210.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	3.6	35.7	28.2	0.7	0.7	58.0	42.6	46.4	0.5	66.9	70.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.6	35.1	198.2	1775.9	31.9	31.9	746.4	89.7	99.1	66.6	245.9	246.7
LnGrp LOS	C	D	F	F	C	C	F	F	F	E	F	F
Approach Vol, veh/h		777			318			2841			2296	
Approach Delay, s/veh		166.9			1463.3			244.1			245.5	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.0	76.0		44.0	24.0	62.0		44.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	6.0	72.0		40.0	20.0	58.0		40.0				
Max Q Clear Time (g_c+I1), s	3.1	74.0		42.0	22.0	60.0		42.0				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.0				

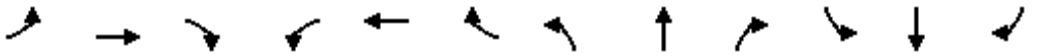
Intersection Summary												
HCM 6th Ctrl Delay			297.2									
HCM 6th LOS			F									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	140	597	248	59	17	619	1942	138	16	2159	11
Future Volume (veh/h)	8	140	597	248	59	17	619	1942	138	16	2159	11
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1617	1841	1885	1744	1781	1693	1772	1841	1693	1337	1811	1500
Adj Flow Rate, veh/h	8	147	628	261	62	18	652	2044	145	17	2273	12
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	13	4	1	4	8	14	2	4	14	33	6	27
Cap, veh/h	395	552	492	55	824	230	260	1811	127	59	1539	8
Arrive On Green	0.32	0.32	0.32	0.32	0.32	0.32	0.15	0.55	0.55	0.05	0.44	0.44
Sat Flow, veh/h	1140	1749	1560	649	2614	729	1688	3315	232	1273	3510	19
Grp Volume(v), veh/h	8	147	628	261	39	41	652	1066	1123	17	1113	1172
Grp Sat Flow(s),veh/h/ln	1140	1749	1560	649	1692	1650	1688	1749	1799	1273	1721	1808
Q Serve(g_s), s	0.6	8.2	41.0	0.0	2.1	2.3	20.0	71.0	71.0	1.7	57.0	57.0
Cycle Q Clear(g_c), s	2.9	8.2	41.0	41.0	2.1	2.3	20.0	71.0	71.0	1.7	57.0	57.0
Prop In Lane	1.00		1.00	1.00		0.44	1.00		0.13	1.00		0.01
Lane Grp Cap(c), veh/h	395	552	492	55	534	520	260	955	982	59	754	793
V/C Ratio(X)	0.02	0.27	1.28	4.71	0.07	0.08	2.51	1.12	1.14	0.29	1.48	1.48
Avail Cap(c_a), veh/h	395	552	492	55	534	520	260	955	982	59	754	793
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.3	33.3	44.5	65.0	31.2	31.2	55.0	29.5	29.5	59.9	36.5	36.5
Incr Delay (d2), s/veh	0.1	1.2	139.5	1710.9	0.3	0.3	691.4	66.7	76.5	12.0	221.2	222.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	3.7	34.8	28.2	0.9	1.0	58.0	43.7	47.6	0.7	68.2	71.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.3	34.4	184.0	1775.9	31.5	31.5	746.4	96.2	106.0	72.0	257.7	258.6
LnGrp LOS	C	C	F	F	C	C	F	F	F	E	F	F
Approach Vol, veh/h		783			341			2841			2302	
Approach Delay, s/veh		154.4			1366.7			249.3			256.8	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.0	75.0		45.0	24.0	61.0		45.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	6.0	71.0		41.0	20.0	57.0		41.0				
Max Q Clear Time (g_c+I1), s	3.7	73.0		43.0	22.0	59.0		43.0				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			301.0									
HCM 6th LOS			F									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	140	597	248	59	17	619	1942	138	16	2159	11
Future Volume (veh/h)	8	140	597	248	59	17	619	1942	138	16	2159	11
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1617	1841	1885	1744	1781	1693	1772	1841	1693	1337	1811	1500
Adj Flow Rate, veh/h	8	147	628	261	62	18	652	2044	145	17	2273	12
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	13	4	1	4	8	14	2	4	14	33	6	27
Cap, veh/h	357	526	719	197	747	208	277	1942	136	55	1630	9
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.16	0.59	0.59	0.04	0.46	0.46
Sat Flow, veh/h	1140	1841	1598	649	2614	729	1688	3315	232	1273	3510	19
Grp Volume(v), veh/h	8	147	628	261	39	41	652	1066	1123	17	1113	1172
Grp Sat Flow(s),veh/h/ln	1140	1841	1598	649	1692	1650	1688	1749	1799	1273	1721	1808
Q Serve(g_s), s	0.7	8.7	40.0	31.3	2.4	2.5	23.0	82.0	82.0	1.8	65.0	65.0
Cycle Q Clear(g_c), s	3.3	8.7	40.0	40.0	2.4	2.5	23.0	82.0	82.0	1.8	65.0	65.0
Prop In Lane	1.00		1.00	1.00		0.44	1.00		0.13	1.00		0.01
Lane Grp Cap(c), veh/h	357	526	719	197	484	472	277	1024	1054	55	799	839
V/C Ratio(X)	0.02	0.28	0.87	1.33	0.08	0.09	2.35	1.04	1.07	0.31	1.39	1.40
Avail Cap(c_a), veh/h	357	526	719	197	484	472	277	1024	1054	55	799	839
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.8	38.8	34.9	58.4	36.6	36.6	58.5	29.0	29.0	65.0	37.5	37.5
Incr Delay (d2), s/veh	0.1	1.3	13.9	178.3	0.3	0.4	619.4	39.4	46.9	14.3	184.8	185.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	4.2	21.9	16.8	1.0	1.1	57.1	41.1	44.5	0.8	66.1	69.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.9	40.1	48.8	236.7	36.9	37.0	677.9	68.4	75.9	79.3	222.3	223.0
LnGrp LOS	D	D	D	F	D	D	F	F	F	E	F	F
Approach Vol, veh/h		783			341			2841			2302	
Approach Delay, s/veh		47.1			189.8			211.2			221.6	
Approach LOS		D			F			F			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.0	86.0		44.0	27.0	69.0		44.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	6.0	82.0		40.0	23.0	65.0		40.0				
Max Q Clear Time (g_c+I1), s	3.8	84.0		42.0	25.0	67.0		42.0				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			193.4									
HCM 6th LOS			F									

CALCULATION OF FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES (NCHRP 255)

Intersection No.: 1
North/South Street: HIGHWAY 395
East/West Street: RANCHO RD (WEST)

Analysis Condition: YEAR 2040 FUTURE TRAFFIC

A.M. Peak Hour

Approach Direction		Base Year Count	Forecast Future Year Link Volume			Turn Volume	Rounded Volume
South leg	Left	538	Approach	2,290	Left	509	510
NB	Through	1,406	Departure	2,698	Through	1,809	1,810
	Right	22			Right	25	26
North leg	Left	31	Approach	2,657	Left	68	68
SB	Through	1,519	Departure	1,930	Through	2,498	2,498
	Right	45			Right	81	81
West leg	Left	29	Approach	230	Left	41	41
EB	Through	82	Departure	687	Through	103	104
	Right	92			Right	87	88
East leg	Left	94	Approach	287	Left	113	114
WB	Through	74	Departure	196	Through	97	98
	Right	45			Right	80	81

P.M. Peak Hour

Approach Direction		Base Year Count	Forecast Future Year Link Volume			Turn Volume	Rounded Volume
South leg	Left	244	Approach	3,003	Left	619	619
NB	Through	1,608	Departure	3,003	Through	1,941	1,942
	Right	21			Right	137	138
North leg	Left	12	Approach	1,954	Left	10	10
SB	Through	1,423	Departure	1,954	Through	2,158	2,159
	Right	33			Right	10	11
West leg	Left	53	Approach	677	Left	7	8
EB	Through	177	Departure	677	Through	134	134
	Right	419			Right	597	597
East leg	Left	93	Approach	281	Left	248	248
WB	Through	87	Departure	281	Through	48	48
	Right	21			Right	5	6

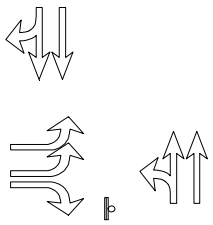
DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN MOVEMENTS	HEAY	27-Feb-23	IPGI0000-0001	1 OF 2

E/W STREET : RANCHO RD (WEST)
N/S STREET : ADELANTO RD
CONDITION : AM PEAK HOUR

INTERSECTION : 2
PROJECTED GROWTH PER YEAR : 3.5%

CONDITION DIAGRAMS



EXISTING GEOMETRICS

TURN MOVEMENTS

Condition	Existing Condition	Ambient Growth	Background Condition	Project Trips	Project Condition	Future Condition	Future + Project Condition
Scenario #	1		3		5	7	9

RANCHO RD (WEST)

EB LEFT	82	6	88	0	88	92	92
EB THRU	0	0	0	0	0	0	0
EB RIGHT	9	1	10	20	30	56	76
WB LEFT	0	0	0	0	0	0	0
WB THRU	0	0	0	0	0	0	0
WB RIGHT	0	0	0	0	0	0	0

ADELANTO RD

NB LEFT	47	4	51	8	59	120	128
NB THRU	106	8	114	5	119	239	244
NB RIGHT	0	0	0	0	0	0	0
SB LEFT	0	0	0	0	0	0	0
SB THRU	16	2	18	8	26	79	87
SB RIGHT	159	12	171	0	171	161	161
TOTALS	**419**	**33**	**452**	**41**	**493**	**747**	**788**

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET	OF
TURN VOLUME SUMMARY	HEAY	27-Feb-23	IPGI0000-0001	2	OF 2

E/W STREET : RANCHO RD (WEST)
CONDITION : AM PEAK HOUR

N/S STREET : ADELANTO RD
PHF : 0.84

NORTH LEG											
AUTO			LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
32	1	0	2	0	0	3	0	0	7	0	0
23	9	0	3	0	0	4	0	0	10	1	0
29	2	0	1	0	0	2	0	0	11	1	0
21	0	0	0	0	0	3	1	0	8	1	0

SOUTH LEG											
AUTO			LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	24	10	0	2	0	0	1	0	0	4	2
0	7	13	0	3	0	0	2	0	0	18	1
0	9	10	0	3	0	0	3	0	0	8	1
0	14	9	0	1	0	0	4	0	0	3	1

EAST LEG											
AUTO			LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0

WEST LEG											
AUTO			LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
3	0	15	0	0	2	0	0	0	0	0	0
2	0	22	0	0	0	0	0	4	0	0	2
2	0	13	0	0	0	0	0	1	0	0	6
1	0	12	0	0	1	1	0	2	0	0	2

	Truck Volumes	Auto Volumes	Totals	Truck Percentage	Balanced Totals
RANCHO RD (WEST)					
EB LEFT	20	62	**82**	**24%**	**82**
EB THRU	0	0	**0**	**0%**	**0**
EB RIGHT	1	8	**9**	**11%**	**9**
WB LEFT	0	0	**0**	**0%**	**0**
WB THRU	0	0	**0**	**0%**	**0**
WB RIGHT	0	0	**0**	**0%**	**0**
ADELANTO RD					
NB LEFT	5	42	**47**	**11%**	**47**
NB THRU	52	54	**106**	**49%**	**106**
NB RIGHT	0	0	**0**	**0%**	**0**
SB LEFT	0	0	**0**	**0%**	**0**
SB THRU	4	12	**16**	**25%**	**16**
SB RIGHT	54	105	**159**	**34%**	**159**

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	82	9	47	106	16	159
Future Vol, veh/h	82	9	47	106	16	159
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	24	11	11	49	25	34
Mvmt Flow	98	11	56	126	19	189

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	289	104	208	0	-	0
Stage 1	114	-	-	-	-	-
Stage 2	175	-	-	-	-	-
Critical Hdwy	7.28	7.12	4.32	-	-	-
Critical Hdwy Stg 1	6.28	-	-	-	-	-
Critical Hdwy Stg 2	6.28	-	-	-	-	-
Follow-up Hdwy	3.74	3.41	2.31	-	-	-
Pot Cap-1 Maneuver	621	902	1297	-	-	-
Stage 1	837	-	-	-	-	-
Stage 2	776	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	592	902	1297	-	-	-
Mov Cap-2 Maneuver	629	-	-	-	-	-
Stage 1	798	-	-	-	-	-
Stage 2	776	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.5	2.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1297	-	629	902	-	-
HCM Lane V/C Ratio	0.043	-	0.155	0.012	-	-
HCM Control Delay (s)	7.9	0.1	11.8	9	-	-
HCM Lane LOS	A	A	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.5	0	-	-

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	88	10	51	114	18	171
Future Vol, veh/h	88	10	51	114	18	171
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	24	11	11	49	25	34
Mvmt Flow	105	12	61	136	21	204

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	313	113	225	0	-	0
Stage 1	123	-	-	-	-	-
Stage 2	190	-	-	-	-	-
Critical Hdwy	7.28	7.12	4.32	-	-	-
Critical Hdwy Stg 1	6.28	-	-	-	-	-
Critical Hdwy Stg 2	6.28	-	-	-	-	-
Follow-up Hdwy	3.74	3.41	2.31	-	-	-
Pot Cap-1 Maneuver	599	890	1278	-	-	-
Stage 1	827	-	-	-	-	-
Stage 2	761	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	568	890	1278	-	-	-
Mov Cap-2 Maneuver	612	-	-	-	-	-
Stage 1	784	-	-	-	-	-
Stage 2	761	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.8	2.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1278	-	612	890	-	-
HCM Lane V/C Ratio	0.048	-	0.171	0.013	-	-
HCM Control Delay (s)	8	0.1	12.1	9.1	-	-
HCM Lane LOS	A	A	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.6	0	-	-

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	88	30	59	119	26	171
Future Vol, veh/h	88	30	59	119	26	171
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	24	11	11	49	25	34
Mvmt Flow	105	36	70	142	31	204

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	344	118	235	0	-	0
Stage 1	133	-	-	-	-	-
Stage 2	211	-	-	-	-	-
Critical Hdwy	7.28	7.12	4.32	-	-	-
Critical Hdwy Stg 1	6.28	-	-	-	-	-
Critical Hdwy Stg 2	6.28	-	-	-	-	-
Follow-up Hdwy	3.74	3.41	2.31	-	-	-
Pot Cap-1 Maneuver	571	884	1266	-	-	-
Stage 1	817	-	-	-	-	-
Stage 2	742	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	537	884	1266	-	-	-
Mov Cap-2 Maneuver	589	-	-	-	-	-
Stage 1	768	-	-	-	-	-
Stage 2	742	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.6	2.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1266	-	589	884	-	-
HCM Lane V/C Ratio	0.055	-	0.178	0.04	-	-
HCM Control Delay (s)	8	0.1	12.4	9.2	-	-
HCM Lane LOS	A	A	B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	0.6	0.1	-	-

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	92	56	120	239	79	161
Future Vol, veh/h	92	56	120	239	79	161
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	24	11	11	49	25	34
Mvmt Flow	97	59	126	252	83	169

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	546	126	252	0	-	0
Stage 1	168	-	-	-	-	-
Stage 2	378	-	-	-	-	-
Critical Hdwy	7.28	7.12	4.32	-	-	-
Critical Hdwy Stg 1	6.28	-	-	-	-	-
Critical Hdwy Stg 2	6.28	-	-	-	-	-
Follow-up Hdwy	3.74	3.41	2.31	-	-	-
Pot Cap-1 Maneuver	418	873	1247	-	-	-
Stage 1	783	-	-	-	-	-
Stage 2	602	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	369	873	1247	-	-	-
Mov Cap-2 Maneuver	460	-	-	-	-	-
Stage 1	691	-	-	-	-	-
Stage 2	602	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.8	2.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1247	-	460	873	-	-
HCM Lane V/C Ratio	0.101	-	0.211	0.068	-	-
HCM Control Delay (s)	8.2	0.2	14.9	9.4	-	-
HCM Lane LOS	A	A	B	A	-	-
HCM 95th %tile Q(veh)	0.3	-	0.8	0.2	-	-

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	92	76	128	244	87	161
Future Vol, veh/h	92	76	128	244	87	161
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	95	95	95	95	95
Heavy Vehicles, %	24	11	11	49	25	34
Mvmt Flow	110	80	135	257	92	169

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	576	131	261	0	-	0
Stage 1	177	-	-	-	-	-
Stage 2	399	-	-	-	-	-
Critical Hdwy	7.28	7.12	4.32	-	-	-
Critical Hdwy Stg 1	6.28	-	-	-	-	-
Critical Hdwy Stg 2	6.28	-	-	-	-	-
Follow-up Hdwy	3.74	3.41	2.31	-	-	-
Pot Cap-1 Maneuver	399	866	1237	-	-	-
Stage 1	774	-	-	-	-	-
Stage 2	586	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	348	866	1237	-	-	-
Mov Cap-2 Maneuver	444	-	-	-	-	-
Stage 1	676	-	-	-	-	-
Stage 2	586	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.1	3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1237	-	444	866	-	-
HCM Lane V/C Ratio	0.109	-	0.247	0.092	-	-
HCM Control Delay (s)	8.3	0.3	15.7	9.6	-	-
HCM Lane LOS	A	A	C	A	-	-
HCM 95th %tile Q(veh)	0.4	-	1	0.3	-	-

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN MOVEMENTS	HEAY	27-Feb-23	IPGI0000-0001	1 OF 2

E/W STREET : RANCHO RD (WEST)
N/S STREET : ADELANTO RD
CONDITION : PM PEAK HOUR

INTERSECTION : 2
PROJECTED GROWTH PER YEAR : 3.5%

TURN MOVEMENTS

Condition	Existing Condition	Ambient Growth	Background Condition	Project Trips	Project Condition	Future Condition	Future + Project Condition
Scenario #	2		4		6	8	10
RANCHO RD (WEST)							
EB LEFT	149	11	160	0	160	131	131
EB THRU	0	0	0	0	0	0	0
EB RIGHT	6	1	7	12	19	77	89
WB LEFT	0	0	0	0	0	0	0
WB THRU	0	0	0	0	0	0	0
WB RIGHT	0	0	0	0	0	0	0
ADELANTO RD							
NB LEFT	85	6	91	22	113	160	182
NB THRU	74	6	80	7	87	187	194
NB RIGHT	0	0	0	0	0	0	0
SB LEFT	0	0	0	0	0	0	0
SB THRU	8	1	9	4	13	163	167
SB RIGHT	123	9	132	0	132	129	129
TOTALS	**445**	**34**	**479**	**45**	**524**	**847**	**892**

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET	OF
TURN VOLUME SUMMARY	HEAY	27-Feb-23	IPGI0000-0001	2	OF 2

E/W STREET : RANCHO RD (WEST)
CONDITION : PM PEAK HOUR
N/S STREET : ADELANTO RD
PHF : 0.84

NORTH LEG											
AUTO			LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
40	2	0	1	0	0	0	0	0	0	0	0
27	1	0	0	0	0	0	0	0	2	0	0
15	1	0	1	0	0	0	0	0	1	0	0
36	2	0	0	0	0	0	0	0	0	2	0

SOUTH LEG											
AUTO			LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	15	19	0	1	0	0	1	0	0	1	2
0	10	27	0	4	0	0	1	0	0	5	0
0	10	17	0	0	0	0	0	0	0	2	0
0	23	20	0	0	0	0	1	0	0	0	0

EAST LEG											
AUTO			LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0

WEST LEG											
AUTO			LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	37	0	0	1	0	0	0	0	0	2
2	0	32	0	0	1	0	0	0	0	0	0
1	0	29	0	0	0	0	0	1	0	0	0
3	0	46	0	0	0	0	0	0	0	0	0

	Truck Volumes	Auto Volumes	Totals	Truck Percentage	Balanced Totals
RANCHO RD (WEST)					
EB LEFT	5	144	**149**	**3%**	**149**
EB THRU	0	0	**0**	**0%**	**0**
EB RIGHT	0	6	**6**	**1%**	**6**
WB LEFT	0	0	**0**	**0%**	**0**
WB THRU	0	0	**0**	**0%**	**0**
WB RIGHT	0	0	**0**	**0%**	**0**
ADELANTO RD					
NB LEFT	2	83	**85**	**2%**	**85**
NB THRU	16	58	**74**	**22%**	**74**
NB RIGHT	0	0	**0**	**0%**	**0**
SB LEFT	0	0	**0**	**0%**	**0**
SB THRU	2	6	**8**	**25%**	**8**
SB RIGHT	5	118	**123**	**4%**	**123**

Intersection	
Int Delay, s/veh	5.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	149	6	85	74	8	123
Future Vol, veh/h	149	6	85	74	8	123
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	3	1	2	22	25	4
Mvmt Flow	177	7	101	88	10	146

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	329	78	156	0	-	0
Stage 1	83	-	-	-	-	-
Stage 2	246	-	-	-	-	-
Critical Hdwy	6.86	6.92	4.14	-	-	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.31	2.22	-	-	-
Pot Cap-1 Maneuver	637	970	1422	-	-	-
Stage 1	928	-	-	-	-	-
Stage 2	769	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	589	970	1422	-	-	-
Mov Cap-2 Maneuver	636	-	-	-	-	-
Stage 1	858	-	-	-	-	-
Stage 2	769	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.6	4.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1422	-	636	970	-	-
HCM Lane V/C Ratio	0.071	-	0.279	0.007	-	-
HCM Control Delay (s)	7.7	0.1	12.8	8.7	-	-
HCM Lane LOS	A	A	B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	1.1	0	-	-

Intersection	
Int Delay, s/veh	6.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	160	7	91	80	9	132
Future Vol, veh/h	160	7	91	80	9	132
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	3	1	2	22	25	4
Mvmt Flow	190	8	108	95	11	157

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	354	84	168	0	-	0
Stage 1	90	-	-	-	-	-
Stage 2	264	-	-	-	-	-
Critical Hdwy	6.86	6.92	4.14	-	-	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.31	2.22	-	-	-
Pot Cap-1 Maneuver	615	962	1407	-	-	-
Stage 1	920	-	-	-	-	-
Stage 2	753	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	565	962	1407	-	-	-
Mov Cap-2 Maneuver	618	-	-	-	-	-
Stage 1	845	-	-	-	-	-
Stage 2	753	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.2	4.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1407	-	618	962	-	-
HCM Lane V/C Ratio	0.077	-	0.308	0.009	-	-
HCM Control Delay (s)	7.8	0.1	13.4	8.8	-	-
HCM Lane LOS	A	A	B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	1.3	0	-	-

Intersection	
Int Delay, s/veh	6.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	160	19	113	87	13	132
Future Vol, veh/h	160	19	113	87	13	132
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	3	1	2	22	25	4
Mvmt Flow	190	23	135	104	15	157

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	416	86	172	0	-	0
Stage 1	94	-	-	-	-	-
Stage 2	322	-	-	-	-	-
Critical Hdwy	6.86	6.92	4.14	-	-	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.31	2.22	-	-	-
Pot Cap-1 Maneuver	562	959	1402	-	-	-
Stage 1	916	-	-	-	-	-
Stage 2	704	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	505	959	1402	-	-	-
Mov Cap-2 Maneuver	573	-	-	-	-	-
Stage 1	823	-	-	-	-	-
Stage 2	704	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.8	4.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1402	-	573	959	-	-
HCM Lane V/C Ratio	0.096	-	0.332	0.024	-	-
HCM Control Delay (s)	7.8	0.1	14.4	8.8	-	-
HCM Lane LOS	A	A	B	A	-	-
HCM 95th %tile Q(veh)	0.3	-	1.4	0.1	-	-

Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	131	77	160	187	163	129
Future Vol, veh/h	131	77	160	187	163	129
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	3	1	2	22	25	4
Mvmt Flow	138	81	168	197	172	136

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	675	154	308	0	-	0
Stage 1	240	-	-	-	-	-
Stage 2	435	-	-	-	-	-
Critical Hdwy	6.86	6.92	4.14	-	-	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.31	2.22	-	-	-
Pot Cap-1 Maneuver	385	868	1249	-	-	-
Stage 1	774	-	-	-	-	-
Stage 2	617	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	327	868	1249	-	-	-
Mov Cap-2 Maneuver	439	-	-	-	-	-
Stage 1	657	-	-	-	-	-
Stage 2	617	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.2	3.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1249	-	439	868	-	-
HCM Lane V/C Ratio	0.135	-	0.314	0.093	-	-
HCM Control Delay (s)	8.3	0.2	16.9	9.6	-	-
HCM Lane LOS	A	A	C	A	-	-
HCM 95th %tile Q(veh)	0.5	-	1.3	0.3	-	-

Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	131	89	182	194	167	129
Future Vol, veh/h	131	89	182	194	167	129
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	3	1	2	22	25	4
Mvmt Flow	138	94	192	204	176	136

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	730	156	312	0	-	0
Stage 1	244	-	-	-	-	-
Stage 2	486	-	-	-	-	-
Critical Hdwy	6.86	6.92	4.14	-	-	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.31	2.22	-	-	-
Pot Cap-1 Maneuver	355	865	1245	-	-	-
Stage 1	771	-	-	-	-	-
Stage 2	581	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	293	865	1245	-	-	-
Mov Cap-2 Maneuver	411	-	-	-	-	-
Stage 1	637	-	-	-	-	-
Stage 2	581	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.7	4.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1245	-	411	865	-	-
HCM Lane V/C Ratio	0.154	-	0.336	0.108	-	-
HCM Control Delay (s)	8.4	0.3	18.1	9.7	-	-
HCM Lane LOS	A	A	C	A	-	-
HCM 95th %tile Q(veh)	0.5	-	1.5	0.4	-	-

CALCULATION OF FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES (NCHRP 255)

Intersection No.: 2
North/South Street: ADELANTO RD
East/West Street: RANCHO RD (WEST)

Analysis Condition: YEAR 2040 FUTURE TRAFFIC

A.M. Peak Hour

Approach Direction		Base Year Count	Forecast Future Year Link Volume			Turn Volume	Rounded Volume
South leg	Left	47	Approach	369	Left	120	120
NB	Through	106	Departure	134	Through	238	239
	Right	0			Right	0	0
North leg	Left	0	Approach	246	Left	0	0
SB	Through	16	Departure	330	Through	78	79
	Right	159			Right	160	161
West leg	Left	82	Approach	152	Left	92	92
EB	Through	0	Departure	280	Through	0	0
	Right	9			Right	56	56
East leg	Left	0	Approach	0	Left	0	0
WB	Through	0	Departure	0	Through	0	0
	Right	0			Right	0	0

P.M. Peak Hour

Approach Direction		Base Year Count	Forecast Future Year Link Volume			Turn Volume	Rounded Volume
South leg	Left	85	Approach	330	Left	159	160
NB	Through	74	Departure	239	Through	187	187
	Right	0			Right	0	0
North leg	Left	0	Approach	278	Left	0	0
SB	Through	8	Departure	317	Through	163	163
	Right	123			Right	129	129
West leg	Left	149	Approach	197	Left	130	131
EB	Through	0	Departure	288	Through	0	0
	Right	6			Right	76	77
East leg	Left	0	Approach	0	Left	0	0
WB	Through	0	Departure	0	Through	0	0
	Right	0			Right	0	0

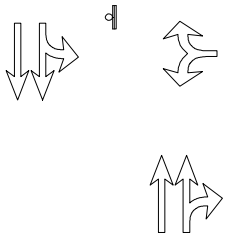
DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN MOVEMENTS	HEAY	27-Feb-23	IPGI0000-0001	1 OF 2

E/W STREET : RANCHO RD (EAST)
N/S STREET : ADELANTO RD
CONDITION : AM PEAK HOUR

INTERSECTION : 3
PROJECTED GROWTH PER YEAR : 3.5%

CONDITION DIAGRAMS



EXISTING GEOMETRICS

TURN MOVEMENTS

Condition	Existing Condition	Ambient Growth	Background Condition	Project Trips	Project Condition	Future Condition	Future + Project Condition
Scenario #	1		3		5	7	9
RANCHO RD (EAST)							
EB LEFT	0	0	0	0	0	0	0
EB THRU	0	0	0	0	0	0	0
EB RIGHT	0	0	0	0	0	0	0
WB LEFT	1	1	2	17	19	84	101
WB THRU	0	0	0	0	0	0	0
WB RIGHT	10	1	11	13	24	9	22
ADELANTO RD							
NB LEFT	0	0	0	0	0	0	0
NB THRU	140	10	150	0	150	358	358
NB RIGHT	14	1	15	41	56	35	76
SB LEFT	11	1	12	28	40	2	30
SB THRU	20	2	22	0	22	213	213
SB RIGHT	0	0	0	0	0	0	0
TOTALS	**196**	**16**	**212**	**99**	**311**	**701**	**800**

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET	OF
TURN VOLUME SUMMARY	HEAY	27-Feb-23	IPGI0000-0001	2	OF 2

E/W STREET : RANCHO RD (EAST) N/S STREET : ADELANTO RD

CONDITION : AM PEAK HOUR PHF : 0.79

NORTH LEG											
AUTO			LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	4	6	0	0	0	0	0	0	0	0	0
0	10	1	0	0	0	0	0	0	0	0	1
0	3	1	0	0	0	0	0	0	0	1	0
0	1	1	0	0	0	0	0	1	0	1	0

SOUTH LEG											
AUTO			LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
4	34	0	0	2	0	0	1	0	0	4	0
3	21	0	0	3	0	2	2	0	0	16	0
2	15	0	0	3	0	0	2	0	0	9	0
2	20	0	0	1	0	1	4	0	0	3	0

EAST LEG											
AUTO			LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	0	0	0	0	0	2	0	0
3	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	2	0	0

WEST LEG											
AUTO			LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0

	Truck Volumes	Auto Volumes	Totals	Truck Percentage	Balanced Totals
RANCHO RD (EAST)					
EB LEFT	0	0	**0**	**0%**	**0**
EB THRU	0	0	**0**	**0%**	**0**
EB RIGHT	0	0	**0**	**0%**	**0**
WB LEFT	0	0	**1**	**1%**	**1**
WB THRU	0	0	**0**	**0%**	**0**
WB RIGHT	4	6	**10**	**40%**	**10**
ADELANTO RD					
NB LEFT	0	0	**0**	**0%**	**0**
NB THRU	50	90	**140**	**36%**	**140**
NB RIGHT	3	11	**14**	**21%**	**14**
SB LEFT	2	9	**11**	**18%**	**11**
SB THRU	2	18	**20**	**10%**	**20**
SB RIGHT	0	0	**0**	**0%**	**0**

Intersection	
Int Delay, s/veh	1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	10	140	14	11	20
Future Vol, veh/h	1	10	140	14	11	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	1	40	36	21	18	10
Mvmt Flow	1	13	177	18	14	25

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	227	98	0	0	195	0
Stage 1	186	-	-	-	-	-
Stage 2	41	-	-	-	-	-
Critical Hdwy	6.82	7.7	-	-	4.46	-
Critical Hdwy Stg 1	5.82	-	-	-	-	-
Critical Hdwy Stg 2	5.82	-	-	-	-	-
Follow-up Hdwy	3.51	3.7	-	-	2.38	-
Pot Cap-1 Maneuver	744	829	-	-	1266	-
Stage 1	830	-	-	-	-	-
Stage 2	979	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	736	829	-	-	1266	-
Mov Cap-2 Maneuver	733	-	-	-	-	-
Stage 1	830	-	-	-	-	-
Stage 2	968	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.5	0	2.8
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	819	1266	-
HCM Lane V/C Ratio	-	-	0.017	0.011	-
HCM Control Delay (s)	-	-	9.5	7.9	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	11	150	15	12	22
Future Vol, veh/h	2	11	150	15	12	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	1	40	36	21	18	10
Mvmt Flow	3	14	190	19	15	28

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	244	105	0	0	209	0
Stage 1	200	-	-	-	-	-
Stage 2	44	-	-	-	-	-
Critical Hdwy	6.82	7.7	-	-	4.46	-
Critical Hdwy Stg 1	5.82	-	-	-	-	-
Critical Hdwy Stg 2	5.82	-	-	-	-	-
Follow-up Hdwy	3.51	3.7	-	-	2.38	-
Pot Cap-1 Maneuver	726	820	-	-	1250	-
Stage 1	817	-	-	-	-	-
Stage 2	976	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	717	820	-	-	1250	-
Mov Cap-2 Maneuver	719	-	-	-	-	-
Stage 1	817	-	-	-	-	-
Stage 2	964	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.6	0	2.8
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	803	1250	-
HCM Lane V/C Ratio	-	-	0.02	0.012	-
HCM Control Delay (s)	-	-	9.6	7.9	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	2.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	19	24	150	56	40	22
Future Vol, veh/h	19	24	150	56	40	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	1	40	36	21	18	10
Mvmt Flow	24	30	190	71	51	28

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	342	131	0	0	261	0
Stage 1	226	-	-	-	-	-
Stage 2	116	-	-	-	-	-
Critical Hdwy	6.82	7.7	-	-	4.46	-
Critical Hdwy Stg 1	5.82	-	-	-	-	-
Critical Hdwy Stg 2	5.82	-	-	-	-	-
Follow-up Hdwy	3.51	3.7	-	-	2.38	-
Pot Cap-1 Maneuver	631	786	-	-	1192	-
Stage 1	793	-	-	-	-	-
Stage 2	899	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	604	786	-	-	1192	-
Mov Cap-2 Maneuver	651	-	-	-	-	-
Stage 1	793	-	-	-	-	-
Stage 2	860	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.4	0	5.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	720	1192	-
HCM Lane V/C Ratio	-	-	0.076	0.042	-
HCM Control Delay (s)	-	-	10.4	8.2	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

Intersection	
Int Delay, s/veh	1.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	84	9	358	35	2	213
Future Vol, veh/h	84	9	358	35	2	213
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	1	40	36	21	18	10
Mvmt Flow	88	9	377	37	2	224

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	512	207	0	0	414	0
Stage 1	396	-	-	-	-	-
Stage 2	116	-	-	-	-	-
Critical Hdwy	6.82	7.7	-	-	4.46	-
Critical Hdwy Stg 1	5.82	-	-	-	-	-
Critical Hdwy Stg 2	5.82	-	-	-	-	-
Follow-up Hdwy	3.51	3.7	-	-	2.38	-
Pot Cap-1 Maneuver	494	694	-	-	1035	-
Stage 1	652	-	-	-	-	-
Stage 2	899	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	493	694	-	-	1035	-
Mov Cap-2 Maneuver	554	-	-	-	-	-
Stage 1	652	-	-	-	-	-
Stage 2	897	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.7	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	565	1035	-
HCM Lane V/C Ratio	-	-	0.173	0.002	-
HCM Control Delay (s)	-	-	12.7	8.5	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.6	0	-

Intersection	
Int Delay, s/veh	2.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	101	22	358	76	30	213
Future Vol, veh/h	101	22	358	76	30	213
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	1	40	36	21	18	10
Mvmt Flow	106	23	377	80	32	224

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	593	229	0	0	457	0
Stage 1	417	-	-	-	-	-
Stage 2	176	-	-	-	-	-
Critical Hdwy	6.82	7.7	-	-	4.46	-
Critical Hdwy Stg 1	5.82	-	-	-	-	-
Critical Hdwy Stg 2	5.82	-	-	-	-	-
Follow-up Hdwy	3.51	3.7	-	-	2.38	-
Pot Cap-1 Maneuver	439	669	-	-	995	-
Stage 1	636	-	-	-	-	-
Stage 2	840	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	423	669	-	-	995	-
Mov Cap-2 Maneuver	511	-	-	-	-	-
Stage 1	636	-	-	-	-	-
Stage 2	809	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.9	0	1.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	534	995	-
HCM Lane V/C Ratio	-	-	0.242	0.032	-
HCM Control Delay (s)	-	-	13.9	8.7	0.1
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.9	0.1	-

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN MOVEMENTS	HEAY	27-Feb-23	IPGI0000-0001	1 OF 2

E/W STREET : RANCHO RD (EAST)
N/S STREET : ADELANTO RD
CONDITION : PM PEAK HOUR

INTERSECTION : 3
PROJECTED GROWTH PER YEAR : 3.5%

TURN MOVEMENTS

Condition	Existing Condition	Ambient Growth	Background Condition	Project Trips	Project Condition	Future Condition	Future + Project Condition
Scenario #	2		4		6	8	10
RANCHO RD (EAST)							
EB LEFT	0	0	0	0	0	0	0
EB THRU	0	0	0	0	0	0	0
EB RIGHT	0	0	0	0	0	0	0
WB LEFT	1	1	2	46	48	2	48
WB THRU	0	0	0	0	0	0	0
WB RIGHT	62	5	67	29	96	89	118
ADELANTO RD							
NB LEFT	0	0	0	0	0	0	0
NB THRU	97	7	104	0	104	242	242
NB RIGHT	5	1	6	22	28	8	30
SB LEFT	5	1	6	16	22	48	64
SB THRU	9	1	10	0	10	197	197
SB RIGHT	0	0	0	0	0	0	0
TOTALS	**179**	**16**	**195**	**113**	**308**	**586**	**699**

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET	OF
TURN VOLUME SUMMARY	HEAY	27-Feb-23	IPGI0000-0001	2	OF 2

E/W STREET : RANCHO RD (EAST) N/S STREET : ADELANTO RD

CONDITION : PM PEAK HOUR PHF : 0.81

NORTH LEG											
AUTO			LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	1	1	0	0	0	0	0	0	0	0	0
0	2	1	0	0	0	0	0	0	0	0	0
0	2	0	0	0	0	0	0	0	0	0	0
0	3	2	0	0	0	0	0	0	0	1	1

SOUTH LEG											
AUTO			LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	19	0	0	1	0	0	1	0	0	3	0
0	19	0	0	4	0	0	0	0	0	5	0
2	23	0	0	0	0	0	0	0	0	2	0
2	19	0	0	0	0	0	1	0	1	0	0

EAST LEG											
AUTO			LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
15	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	1	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0
24	0	1	0	0	0	0	0	0	0	0	0

WEST LEG											
AUTO			LARGE 2 AXLE			LARGE 3 AXLE			LARGE 4(+) AXLE		
RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0

	Truck Volumes	Auto Volumes	Totals	Truck Percentage	Balanced Totals
RANCHO RD (EAST)					
EB LEFT	0	0	**0**	**0%**	**0**
EB THRU	0	0	**0**	**0%**	**0**
EB RIGHT	0	0	**0**	**0%**	**0**
WB LEFT	0	1	**1**	**1%**	**1**
WB THRU	0	0	**0**	**0%**	**0**
WB RIGHT	1	61	**62**	**2%**	**62**
ADELANTO RD					
NB LEFT	0	0	**0**	**0%**	**0**
NB THRU	17	80	**97**	**18%**	**97**
NB RIGHT	1	4	**5**	**20%**	**5**
SB LEFT	1	4	**5**	**20%**	**5**
SB THRU	1	8	**9**	**11%**	**9**
SB RIGHT	0	0	**0**	**0%**	**0**

Intersection	
Int Delay, s/veh	3.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	62	97	5	5	9
Future Vol, veh/h	1	62	97	5	5	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	1	2	18	20	20	11
Mvmt Flow	1	77	120	6	6	11

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	141	63	0	0	126	0
Stage 1	123	-	-	-	-	-
Stage 2	18	-	-	-	-	-
Critical Hdwy	6.82	6.94	-	-	4.5	-
Critical Hdwy Stg 1	5.82	-	-	-	-	-
Critical Hdwy Stg 2	5.82	-	-	-	-	-
Follow-up Hdwy	3.51	3.32	-	-	2.4	-
Pot Cap-1 Maneuver	840	988	-	-	1336	-
Stage 1	892	-	-	-	-	-
Stage 2	1005	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	836	988	-	-	1336	-
Mov Cap-2 Maneuver	801	-	-	-	-	-
Stage 1	892	-	-	-	-	-
Stage 2	1000	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9	0	2.8
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	984	1336	-
HCM Lane V/C Ratio	-	-	0.079	0.005	-
HCM Control Delay (s)	-	-	9	7.7	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0	-

Intersection	
Int Delay, s/veh	3.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	67	104	6	6	10
Future Vol, veh/h	2	67	104	6	6	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	1	2	18	20	20	11
Mvmt Flow	2	83	128	7	7	12

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	152	68	0	0	135	0
Stage 1	132	-	-	-	-	-
Stage 2	20	-	-	-	-	-
Critical Hdwy	6.82	6.94	-	-	4.5	-
Critical Hdwy Stg 1	5.82	-	-	-	-	-
Critical Hdwy Stg 2	5.82	-	-	-	-	-
Follow-up Hdwy	3.51	3.32	-	-	2.4	-
Pot Cap-1 Maneuver	827	981	-	-	1325	-
Stage 1	883	-	-	-	-	-
Stage 2	1003	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	823	981	-	-	1325	-
Mov Cap-2 Maneuver	792	-	-	-	-	-
Stage 1	883	-	-	-	-	-
Stage 2	998	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	2.9
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	974	1325	-
HCM Lane V/C Ratio	-	-	0.087	0.006	-
HCM Control Delay (s)	-	-	9.1	7.7	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0	-

Intersection	
Int Delay, s/veh	5.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	48	96	104	28	22	10
Future Vol, veh/h	48	96	104	28	22	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	1	2	18	20	20	11
Mvmt Flow	59	119	128	35	27	12

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	206	82	0	0	163	0
Stage 1	146	-	-	-	-	-
Stage 2	60	-	-	-	-	-
Critical Hdwy	6.82	6.94	-	-	4.5	-
Critical Hdwy Stg 1	5.82	-	-	-	-	-
Critical Hdwy Stg 2	5.82	-	-	-	-	-
Follow-up Hdwy	3.51	3.32	-	-	2.4	-
Pot Cap-1 Maneuver	766	961	-	-	1291	-
Stage 1	869	-	-	-	-	-
Stage 2	958	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	750	961	-	-	1291	-
Mov Cap-2 Maneuver	751	-	-	-	-	-
Stage 1	869	-	-	-	-	-
Stage 2	938	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.1	0	5.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	879	1291	-
HCM Lane V/C Ratio	-	-	0.202	0.021	-
HCM Control Delay (s)	-	-	10.1	7.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.8	0.1	-

Intersection	
Int Delay, s/veh	2.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	89	242	8	48	197
Future Vol, veh/h	2	89	242	8	48	197
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	1	2	18	20	20	11
Mvmt Flow	2	94	255	8	51	207

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	465	132	0	0	263	0
Stage 1	259	-	-	-	-	-
Stage 2	206	-	-	-	-	-
Critical Hdwy	6.82	6.94	-	-	4.5	-
Critical Hdwy Stg 1	5.82	-	-	-	-	-
Critical Hdwy Stg 2	5.82	-	-	-	-	-
Follow-up Hdwy	3.51	3.32	-	-	2.4	-
Pot Cap-1 Maneuver	529	893	-	-	1177	-
Stage 1	764	-	-	-	-	-
Stage 2	811	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	503	893	-	-	1177	-
Mov Cap-2 Maneuver	580	-	-	-	-	-
Stage 1	764	-	-	-	-	-
Stage 2	771	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.6	0	1.7
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	883	1177	-
HCM Lane V/C Ratio	-	-	0.108	0.043	-
HCM Control Delay (s)	-	-	9.6	8.2	0.1
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0.1	-

Intersection	
Int Delay, s/veh	3.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	47	118	242	30	64	197
Future Vol, veh/h	47	118	242	30	64	197
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	1	2	18	20	20	11
Mvmt Flow	49	124	255	32	67	207

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	509	144	0	0	287	0
Stage 1	271	-	-	-	-	-
Stage 2	238	-	-	-	-	-
Critical Hdwy	6.82	6.94	-	-	4.5	-
Critical Hdwy Stg 1	5.82	-	-	-	-	-
Critical Hdwy Stg 2	5.82	-	-	-	-	-
Follow-up Hdwy	3.51	3.32	-	-	2.4	-
Pot Cap-1 Maneuver	496	877	-	-	1151	-
Stage 1	753	-	-	-	-	-
Stage 2	782	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	463	877	-	-	1151	-
Mov Cap-2 Maneuver	550	-	-	-	-	-
Stage 1	753	-	-	-	-	-
Stage 2	730	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.2	0	2.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	750	1151	-
HCM Lane V/C Ratio	-	-	0.232	0.059	-
HCM Control Delay (s)	-	-	11.2	8.3	0.2
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.9	0.2	-

CALCULATION OF FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES (NCHRP 255)

Intersection No.: 3
North/South Street: ADELANTO RD
East/West Street: RANCHO RD (EAST)

Analysis Condition: YEAR 2040 FUTURE TRAFFIC

A.M. Peak Hour

Approach Direction		Base Year Count	Forecast Future Year Link Volume			Turn Volume	Rounded Volume
South leg	Left	0	Approach	377	Left	0	0
NB	Through	140	Departure	296	Through	357	358
	Right	14			Right	35	35
North leg	Left	11	Approach	140	Left	1	2
SB	Through	20	Departure	366	Through	213	213
	Right	0			Right	0	0
West leg	Left	0	Approach	0	Left	0	0
EB	Through	0	Departure	0	Through	0	0
	Right	0			Right	0	0
East leg	Left	1	Approach	63	Left	83	84
WB	Through	0	Departure	36	Through	0	0
	Right	10			Right	9	9

P.M. Peak Hour

Approach Direction		Base Year Count	Forecast Future Year Link Volume			Turn Volume	Rounded Volume
South leg	Left	0	Approach	247	Left	0	0
NB	Through	97	Departure	198	Through	241	242
	Right	5			Right	7	8
North leg	Left	5	Approach	239	Left	48	48
SB	Through	9	Departure	330	Through	196	197
	Right	0			Right	0	0
West leg	Left	0	Approach	0	Left	0	0
EB	Through	0	Departure	0	Through	0	0
	Right	0			Right	0	0
East leg	Left	1	Approach	90	Left	2	2
WB	Through	0	Departure	55	Through	0	0
	Right	62			Right	89	89

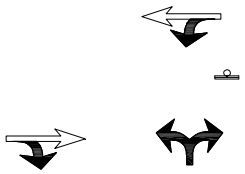
DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN MOVEMENTS	HEAY	27-Feb-23	IPGI0000-0001	1 OF 2

E/W STREET : RANCHO RD (EAST)
N/S STREET : PROJECT DRIVEWAY #1
CONDITION : AM PEAK HOUR

INTERSECTION : 4
PROJECTED GROWTH PER YEAR : 3.5%

CONDITION DIAGRAMS



PROJECT GEOMETRICS

TURN MOVEMENTS

Condition	Existing Condition	Ambient Growth	Background Condition	Project Trips	Project Condition	Future Condition	Future + Project Condition
Scenario #	1		3		5	7	9
RANCHO RD (EAST)							
EB LEFT	0	0	0	0	0	0	0
EB THRU	25	2	27	35	62	37	72
EB RIGHT	0	0	0	34	34	0	34
WB LEFT	0	0	0	0	0	0	0
WB THRU	11	2	13	15	28	93	108
WB RIGHT	0	0	0	0	0	0	0
PROJECT DRIVEWAY #1							
NB LEFT	0	0	0	15	15	0	15
NB THRU	0	0	0	0	0	0	0
NB RIGHT	0	0	0	0	0	0	0
SB LEFT	0	0	0	0	0	0	0
SB THRU	0	0	0	0	0	0	0
SB RIGHT	0	0	0	0	0	0	0
TOTALS	**36**	**4**	**40**	**99**	**139**	**130**	**229**

Intersection	
Int Delay, s/veh	1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	62	34	0	28	15	0
Future Vol, veh/h	62	34	0	28	15	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	20	1	1	40	1	1
Mvmt Flow	78	43	0	35	19	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	121	0	135	100
Stage 1	-	-	-	-	100	-
Stage 2	-	-	-	-	35	-
Critical Hdwy	-	-	4.11	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.209	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	1473	-	861	958
Stage 1	-	-	-	-	927	-
Stage 2	-	-	-	-	990	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1473	-	861	958
Mov Cap-2 Maneuver	-	-	-	-	861	-
Stage 1	-	-	-	-	927	-
Stage 2	-	-	-	-	990	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	861	-	-	1473	-
HCM Lane V/C Ratio	0.022	-	-	-	-
HCM Control Delay (s)	9.3	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	72	34	0	108	15	0
Future Vol, veh/h	72	34	0	108	15	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	20	1	1	40	1	1
Mvmt Flow	76	36	0	114	16	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	112	0	208	94
Stage 1	-	-	-	-	94	-
Stage 2	-	-	-	-	114	-
Critical Hdwy	-	-	4.11	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.209	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	1484	-	783	966
Stage 1	-	-	-	-	932	-
Stage 2	-	-	-	-	913	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1484	-	783	966
Mov Cap-2 Maneuver	-	-	-	-	783	-
Stage 1	-	-	-	-	932	-
Stage 2	-	-	-	-	913	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	783	-	-	1484	-
HCM Lane V/C Ratio	0.02	-	-	-	-
HCM Control Delay (s)	9.7	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN MOVEMENTS	HEAY	27-Feb-23	IPGI0000-0001	1 OF 2

E/W STREET : RANCHO RD (EAST)
N/S STREET : PROJECT DRIVEWAY #1
CONDITION : PM PEAK HOUR

INTERSECTION : 4
PROJECTED GROWTH PER YEAR : 3.5%

TURN MOVEMENTS

Condition	Existing Condition	Ambient Growth	Background Condition	Project Trips	Project Condition	Future Condition	Future + Project Condition
Scenario #	2		4		6	8	10
RANCHO RD (EAST)							
EB LEFT	0	0	0	0	0	0	0
EB THRU	10	2	12	19	31	56	75
EB RIGHT	0	0	0	19	19	0	19
WB LEFT	0	0	0	0	0	0	0
WB THRU	63	6	69	37	106	91	128
WB RIGHT	0	0	0	0	0	0	0
PROJECT DRIVEWAY #1							
NB LEFT	0	0	0	38	38	0	38
NB THRU	0	0	0	0	0	0	0
NB RIGHT	0	0	0	0	0	0	0
SB LEFT	0	0	0	0	0	0	0
SB THRU	0	0	0	0	0	0	0
SB RIGHT	0	0	0	0	0	0	0
TOTALS	**73**	**8**	**81**	**113**	**194**	**147**	**260**

Intersection	
Int Delay, s/veh	1.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	31	19	0	106	38	0
Future Vol, veh/h	31	19	0	106	38	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	20	1	1	2	1	1
Mvmt Flow	38	23	0	131	47	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	61	0	181	50
Stage 1	-	-	-	-	50	-
Stage 2	-	-	-	-	131	-
Critical Hdwy	-	-	4.11	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.209	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	1549	-	811	1021
Stage 1	-	-	-	-	975	-
Stage 2	-	-	-	-	898	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1549	-	811	1021
Mov Cap-2 Maneuver	-	-	-	-	811	-
Stage 1	-	-	-	-	975	-
Stage 2	-	-	-	-	898	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	811	-	-	1549	-
HCM Lane V/C Ratio	0.058	-	-	-	-
HCM Control Delay (s)	9.7	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	75	19	0	128	37	0
Future Vol, veh/h	75	19	0	128	37	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	20	1	1	2	1	1
Mvmt Flow	79	20	0	135	39	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	99	0	224	89
Stage 1	-	-	-	-	89	-
Stage 2	-	-	-	-	135	-
Critical Hdwy	-	-	4.11	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.209	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	1500	-	766	972
Stage 1	-	-	-	-	937	-
Stage 2	-	-	-	-	894	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1500	-	766	972
Mov Cap-2 Maneuver	-	-	-	-	766	-
Stage 1	-	-	-	-	937	-
Stage 2	-	-	-	-	894	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	766	-	-	1500	-
HCM Lane V/C Ratio	0.051	-	-	-	-
HCM Control Delay (s)	10	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

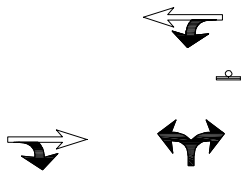
DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN MOVEMENTS	HEAY	27-Feb-23	IPGI0000-0001	1 OF 2

E/W STREET : RANCHO RD (EAST)
N/S STREET : PROJECT DRIVEWAY #2
CONDITION : AM PEAK HOUR

INTERSECTION : 5
PROJECTED GROWTH PER YEAR : 3.5%

CONDITION DIAGRAMS



PROJECT GEOMETRICS

TURN MOVEMENTS

Condition	Existing Condition	Ambient Growth	Background Condition	Project Trips	Project Condition	Future Condition	Future + Project Condition
Scenario #	1		3		5	7	9
RANCHO RD (EAST)							
EB LEFT	0	0	0	0	0	0	0
EB THRU	25	2	27	25	52	37	62
EB RIGHT	0	0	0	10	10	0	10
WB LEFT	0	0	0	0	0	0	0
WB THRU	11	2	13	12	25	93	105
WB RIGHT	0	0	0	0	0	0	0
PROJECT DRIVEWAY #2							
NB LEFT	0	0	0	3	3	0	3
NB THRU	0	0	0	0	0	0	0
NB RIGHT	0	0	0	0	0	0	0
SB LEFT	0	0	0	0	0	0	0
SB THRU	0	0	0	0	0	0	0
SB RIGHT	0	0	0	0	0	0	0
TOTALS	**36**	**4**	**40**	**50**	**90**	**130**	**180**

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	52	10	0	25	3	0
Future Vol, veh/h	52	10	0	25	3	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	20	1	1	40	1	1
Mvmt Flow	66	13	0	32	4	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	79	0	105	73
Stage 1	-	-	-	-	73	-
Stage 2	-	-	-	-	32	-
Critical Hdwy	-	-	4.11	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.209	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	1526	-	895	992
Stage 1	-	-	-	-	952	-
Stage 2	-	-	-	-	993	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1526	-	895	992
Mov Cap-2 Maneuver	-	-	-	-	895	-
Stage 1	-	-	-	-	952	-
Stage 2	-	-	-	-	993	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	895	-	-	1526	-
HCM Lane V/C Ratio	0.004	-	-	-	-
HCM Control Delay (s)	9	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	62	10	0	105	3	0
Future Vol, veh/h	62	10	0	105	3	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	20	1	1	40	1	1
Mvmt Flow	65	11	0	111	3	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	76	0	182	71
Stage 1	-	-	-	-	71	-
Stage 2	-	-	-	-	111	-
Critical Hdwy	-	-	4.11	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.209	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	1529	-	810	994
Stage 1	-	-	-	-	954	-
Stage 2	-	-	-	-	916	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1529	-	810	994
Mov Cap-2 Maneuver	-	-	-	-	810	-
Stage 1	-	-	-	-	954	-
Stage 2	-	-	-	-	916	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	810	-	-	1529	-
HCM Lane V/C Ratio	0.004	-	-	-	-
HCM Control Delay (s)	9.5	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN MOVEMENTS	HEAY	27-Feb-23	IPGI0000-0001	1 OF 2

E/W STREET : RANCHO RD (EAST)
N/S STREET : PROJECT DRIVEWAY #2
CONDITION : PM PEAK HOUR

INTERSECTION : 5
PROJECTED GROWTH PER YEAR : 3.5%

TURN MOVEMENTS

Condition	Existing Condition	Ambient Growth	Background Condition	Project Trips	Project Condition	Future Condition	Future + Project Condition
Scenario #	2		4		6	8	10
RANCHO RD (EAST)							
EB LEFT	0	0	0	0	0	0	0
EB THRU	10	2	12	14	26	56	70
EB RIGHT	0	0	0	5	5	0	5
WB LEFT	0	0	0	0	0	0	0
WB THRU	63	6	69	27	96	91	118
WB RIGHT	0	0	0	0	0	0	0
PROJECT DRIVEWAY #2							
NB LEFT	0	0	0	10	10	0	10
NB THRU	0	0	0	0	0	0	0
NB RIGHT	0	0	0	0	0	0	0
SB LEFT	0	0	0	0	0	0	0
SB THRU	0	0	0	0	0	0	0
SB RIGHT	0	0	0	0	0	0	0
TOTALS	**73**	**8**	**81**	**56**	**137**	**147**	**203**

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	26	5	0	96	10	0
Future Vol, veh/h	26	5	0	96	10	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	20	1	1	2	1	1
Mvmt Flow	32	6	0	119	12	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	38	0	154	35
Stage 1	-	-	-	-	35	-
Stage 2	-	-	-	-	119	-
Critical Hdwy	-	-	4.11	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.209	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	1579	-	840	1041
Stage 1	-	-	-	-	990	-
Stage 2	-	-	-	-	909	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1579	-	840	1041
Mov Cap-2 Maneuver	-	-	-	-	840	-
Stage 1	-	-	-	-	990	-
Stage 2	-	-	-	-	909	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	840	-	-	1579	-
HCM Lane V/C Ratio	0.015	-	-	-	-
HCM Control Delay (s)	9.4	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	70	5	0	118	10	0
Future Vol, veh/h	70	5	0	118	10	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	20	1	1	2	1	1
Mvmt Flow	74	5	0	124	11	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	79	0	201	77
Stage 1	-	-	-	-	77	-
Stage 2	-	-	-	-	124	-
Critical Hdwy	-	-	4.11	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.209	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	1526	-	790	987
Stage 1	-	-	-	-	949	-
Stage 2	-	-	-	-	904	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1526	-	790	987
Mov Cap-2 Maneuver	-	-	-	-	790	-
Stage 1	-	-	-	-	949	-
Stage 2	-	-	-	-	904	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	790	-	-	1526	-
HCM Lane V/C Ratio	0.013	-	-	-	-
HCM Control Delay (s)	9.6	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

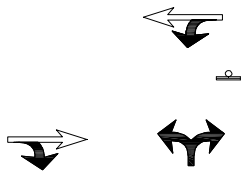
DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN MOVEMENTS	HEAY	27-Feb-23	IPGI0000-0001	1 OF 2

E/W STREET : RANCHO RD (EAST)
N/S STREET : PROJECT DRIVEWAY #3
CONDITION : AM PEAK HOUR

INTERSECTION : 6
PROJECTED GROWTH PER YEAR : 3.5%

CONDITION DIAGRAMS



PROJECT GEOMETRICS

TURN MOVEMENTS

Condition	Existing Condition	Ambient Growth	Background Condition	Project Trips	Project Condition	Future Condition	Future + Project Condition
Scenario #	1		3		5	7	9
RANCHO RD (EAST)							
EB LEFT	0	0	0	0	0	0	0
EB THRU	25	2	27	0	27	37	37
EB RIGHT	0	0	0	25	25	0	25
WB LEFT	0	0	0	0	0	0	0
WB THRU	11	2	13	0	13	93	93
WB RIGHT	0	0	0	0	0	0	0
PROJECT DRIVEWAY #3							
NB LEFT	0	0	0	12	12	0	12
NB THRU	0	0	0	0	0	0	0
NB RIGHT	0	0	0	0	0	0	0
SB LEFT	0	0	0	0	0	0	0
SB THRU	0	0	0	0	0	0	0
SB RIGHT	0	0	0	0	0	0	0
TOTALS	**36**	**4**	**40**	**37**	**77**	**130**	**167**

Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	27	25	0	13	12	0
Future Vol, veh/h	27	25	0	13	12	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	20	1	1	40	1	1
Mvmt Flow	34	32	0	16	15	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	66	0	66	50
Stage 1	-	-	-	-	50	-
Stage 2	-	-	-	-	16	-
Critical Hdwy	-	-	4.11	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.209	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	1542	-	942	1021
Stage 1	-	-	-	-	975	-
Stage 2	-	-	-	-	1009	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1542	-	942	1021
Mov Cap-2 Maneuver	-	-	-	-	942	-
Stage 1	-	-	-	-	975	-
Stage 2	-	-	-	-	1009	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	942	-	-	1542	-
HCM Lane V/C Ratio	0.016	-	-	-	-
HCM Control Delay (s)	8.9	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	37	25	0	93	12	0
Future Vol, veh/h	37	25	0	93	12	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	20	1	1	40	1	1
Mvmt Flow	39	26	0	98	13	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	65	0	150	52
Stage 1	-	-	-	-	52	-
Stage 2	-	-	-	-	98	-
Critical Hdwy	-	-	4.11	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.209	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	1544	-	844	1019
Stage 1	-	-	-	-	973	-
Stage 2	-	-	-	-	928	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1544	-	844	1019
Mov Cap-2 Maneuver	-	-	-	-	844	-
Stage 1	-	-	-	-	973	-
Stage 2	-	-	-	-	928	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	844	-	-	1544	-
HCM Lane V/C Ratio	0.015	-	-	-	-
HCM Control Delay (s)	9.3	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

DAVID EVANS AND ASSOCIATES INC.

SUBJECT	BY	DATE	JOB NO.	SHEET OF
TURN MOVEMENTS	HEAY	27-Feb-23	IPGI0000-0001	1 OF 2

E/W STREET : RANCHO RD (EAST)
N/S STREET : PROJECT DRIVEWAY #3
CONDITION : PM PEAK HOUR

INTERSECTION : 6
PROJECTED GROWTH PER YEAR : 2.0%

TURN MOVEMENTS

Condition	Existing Condition	Ambient Growth	Background Condition	Project Trips	Project Condition	Future Condition	Future + Project Condition
Scenario #	2		4		6	8	10
RANCHO RD (EAST)							
EB LEFT	0	0	0	0	0	0	0
EB THRU	10	2	12	0	12	56	56
EB RIGHT	0	0	0	14	14	0	14
WB LEFT	0	0	0	0	0	0	0
WB THRU	63	6	69	0	69	91	91
WB RIGHT	0	0	0	0	0	0	0
PROJECT DRIVEWAY #3							
NB LEFT	0	0	0	27	27	0	27
NB THRU	0	0	0	0	0	0	0
NB RIGHT	0	0	0	0	0	0	0
SB LEFT	0	0	0	0	0	0	0
SB THRU	0	0	0	0	0	0	0
SB RIGHT	0	0	0	0	0	0	0
TOTALS	**73**	**8**	**81**	**41**	**122**	**147**	**188**

Intersection	
Int Delay, s/veh	2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	12	14	0	69	27	0
Future Vol, veh/h	12	14	0	69	27	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	20	1	1	2	1	1
Mvmt Flow	15	17	0	85	33	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	32	0	109	24
Stage 1	-	-	-	-	24	-
Stage 2	-	-	-	-	85	-
Critical Hdwy	-	-	4.11	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.209	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	1587	-	891	1055
Stage 1	-	-	-	-	1001	-
Stage 2	-	-	-	-	941	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1587	-	891	1055
Mov Cap-2 Maneuver	-	-	-	-	891	-
Stage 1	-	-	-	-	1001	-
Stage 2	-	-	-	-	941	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.2
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	891	-	-	1587	-
HCM Lane V/C Ratio	0.037	-	-	-	-
HCM Control Delay (s)	9.2	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	56	14	0	91	27	0
Future Vol, veh/h	56	14	0	91	27	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	20	1	1	2	1	1
Mvmt Flow	59	15	0	96	28	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	74	0	163	67
Stage 1	-	-	-	-	67	-
Stage 2	-	-	-	-	96	-
Critical Hdwy	-	-	4.11	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.209	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	1532	-	830	999
Stage 1	-	-	-	-	958	-
Stage 2	-	-	-	-	930	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1532	-	830	999
Mov Cap-2 Maneuver	-	-	-	-	830	-
Stage 1	-	-	-	-	958	-
Stage 2	-	-	-	-	930	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	830	-	-	1532	-
HCM Lane V/C Ratio	0.034	-	-	-	-
HCM Control Delay (s)	9.5	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

DAVID EVANS AND ASSOCIATES INC.

Appendix E: Vehicle Miles Traveled Analysis

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GTS | General Technologies and Solutions

MEMORANDUM

Date:	February 24, 2023	**GTS:** 221017.01
To:	James M. Daisa (DEA)	
From:	Rawad Hani, GTS	
Subject:	**Vehicle Miles Traveled (VMT) Analysis – Rancho 38 Warehouse, Adelanto, CA**	

This memorandum describes the development of vehicle miles traveled (VMT) analysis for the proposed Rancho 38 Warehouse in the City of Adelanto (City), CA. The project is located at the southwest corner of Emerald Road and Rancho Road in the City of Adelanto. The project proposes construction of a 689,824 SF of high-cube short-term transload warehouse on 38.2-acre site. This VMT analysis evaluated the project using the 2016 and 2040 model years obtained from the San Bernardino County Transportation Authority (SBCTA).

Background

On December 28, 2018, the California Office of Administrative Law cleared the revised California Environmental Quality Act (CEQA) guidelines for use. Among the changes to the guidelines was removal of vehicle delay and level of service from consideration under CEQA. With the adopted guidelines, transportation impacts are to be evaluated based on a project's effect on vehicle miles traveled (VMT).

Methodology

The project VMT analysis was conducted using the City of Adelanto's *Traffic Impact Analysis Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment (LOS)* (Guidelines), dated July 2020. The guidelines included project screening criteria which was reviewed for the project evaluation. The project doesn't qualify for VMT screening under any of the established screening criteria. Hence, a full VMT analysis was conducted using San Bernardino County Transportation Analysis Model (SBTAM) as recommended in the City's guidelines.

SBTAM model is a socioeconomic data based model and so the project land use was converted into model employment categories using conversion factors from SCAG's *Employment Density Study Summary Report – dated October 31, 2001*. The land use conversion yielded a total of 325 employees as shown in Table 1 which was used as input for the model runs.

Table 1: Rancho 38 Warehouse – Employment Estimates

Land Use Type	Square Footage (SF)	SF/Employee *	Total Employees
Warehouse	689,824	2,111	327
Total	**689,824**		**327**

Source: SCAG Employment Density Study Summary Report, October 31, 2001

VMT Analysis

Both baseline (2016) and horizon year (2040) model runs were used to estimate project's VMT impacts. SBTAM socioeconomic databases for the scenarios were updated with the project land use to calculate project VMT. Typically, project VMT is calculated by isolating the project in a new TAZ or multiple TAZs depending on the diversity of project land uses and project size. Since, SBTAM does not allow addition of new TAZs, one TAZ was borrowed for this project. The project TAZ was utilized to calculate project specific VMT per service population.

No project specific network modifications were conducted for the model scenarios. Full model runs with feedback loops were conducted for all of the project scenarios. It should be noted that the project land use was included in the model as additional land use in the cumulative (2040) scenario and no shifting of land use from other TAZs was used. In that regard, the cumulative VMT analysis can be considered as a conservative estimate.

Based on the Guidelines, either project's Origin/Destination (OD) VMT per service population or Production/Attraction (PA) VMT per service population can be used to evaluate project impact if the project consists of a single land use. As the proposed project consists of a single land use (warehouse), either OD VMT or PA VMT per service population can be used to evaluate the project. OD VMT per service population was used as the evaluation metric for the project.

Origin-destination matrix outputs were used as trips and the trip lengths were derived from the skimming step to estimate OD VMT as recommended in the guidelines. OD matrix outputs include vehicle trips and hence no conversion for auto occupancy was applied. The trip length or distance was obtained using the model outputs from the "Skimming" step. The model skim outputs include peak and off-peak skim matrices by mode, similar to trip outputs from the model. OD VMT was estimated for both peak and off-peak and added together to estimate the total daily VMT for the project.

The project OD VMT per service population for base and cumulative scenarios was compared with San Bernardino County regional average OD VMT per service population. The San Bernardino County OD VMT per service population threshold was obtained from the guidelines (CEQA VMT Impact Thresholds section of the guidelines).

Table 2 below shows the project VMT metrics for both baseline (2016) and cumulative (2040) conditions along with the regional VMT thresholds.

Table 2: Project VMT analysis

2016	Rancho 38 Warehouse (project)	San Bernardino County (Threshold)*
Population	0	
Employment	327	
Service Population	327	
OD VMT	9,549	
OD VMT per service population	29.2	32.7
2040	**Rancho 38 Warehouse (project)**	**San Bernardino County (Threshold)***
Population	0	
Employment	327	
Service Population	327	
OD VMT	9,875	
OD VMT per service population	30.2	32.7

** Threshold value obtained from City of Adelanto "Traffic Impact Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment (LOS), July 2020)*

Table 3 illustrates the project's effect on VMT. The project's effect on VMT is a comparison of roadway VMT within San Bernardino County for both "With project" and "Without project" conditions.

Table 3: Roadway VMT within San Bernardino County

2016	With Project	Without Project
Roadway VMT	57,497,592	57,484,358
Service population	2,891,567	2,891,240
VMT per service population	19.9	19.9
2040	**With Project**	**Without Project**
Roadway VMT	88,527,742	88,879,672
Service population	3,699,825	3,699,498
VMT per service population	23.9	24.0

Conclusion

Based on the VMT analysis as shown in above Tables 2 and 3, the project doesn't constitute a significant impact for both "project generated VMT" and "project's effect on VMT.