

BEYOND FOOD MART (NEC TRUMBLE AND ETHANAC) TRAFFIC IMPACT ANALYSIS

City of Perris

February 26, 2024



Traffic Engineering • Transportation Planning • Parking • Noise & Vibration
Air Quality • Global Climate Change • Health Risk Assessment

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City of Perris

February 26, 2024

prepared by

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Project No. 19674

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EXECUTIVE SUMMARY

This section summarizes the proposed project, operational findings, and identifies recommendations (if any) as specified in this study.

Project Description

The 2.54-acre project site (APN: 329-240-021, 022) is located at the northeast corner of Trumble Road and Ethanac Road in the City of Perris, California. The project site is currently undeveloped and zoned Community Commercial (CC).

The proposed project (CUP 22-05292) involves construction of a 7,250 square foot convenience store/gas station including drive through window with eight (8) dual-sided gasoline fuel pumps (i.e., 16-vehicle fueling positions) and an automated car wash tunnel. Vehicular access for the project site is proposed via one full access driveway on Trumble Road and one right-turn in/out only access driveway on Ethanac Road.

Project Trip Generation

The proposed project is forecast to generate a total of approximately 3,187 daily trips, including 193 trips during the AM peak hour and 221 trips during the PM peak hour.

Level of Service Analysis

The study intersections are forecast to operate within acceptable Levels of Service (D or better) during the peak hours for the Existing and Existing Plus Project analysis scenario conditions, except for the following study intersections that are projected to operate at unacceptable Level of Service E during the PM peak hour:

3. Encanto Drive (NS) at Ethanac Road (EW)

The study intersections are forecast to operate within acceptable Levels of Service (D or better on local roads, or E or better at I-215 Ramps) during the peak hours for the Opening Year (2025) Without Project analysis scenario conditions, except for the following study intersections that are projected to operate at unacceptable Levels of Service during the peak hours:

1. I-215 SB Ramps (NS) at Ethanac Road (EW)
3. Encanto Drive (NS) at Ethanac Road (EW)
4. Trumble Road (NS) at Ethanac Road (EW)
5. Sherman Road (NS) at Ethanac Road (EW)

The study area intersections are forecast to operate within acceptable Levels of Service with the recommended improvements summarized below.

Summary of Improvements

Project design features, necessary to provide project access, are outlined in the Site Access & On-Site Circulation (see Section 7).

The following improvements are recommended to maintain acceptable Levels of Service at the study intersections for Existing Plus Project conditions:

3. Encanto Drive (NS) at Ethanac Road (EW)
 - Prohibit northbound left turns at Encanto Drive intersection from 7-9 AM and 4-6 PM.

In addition, the following improvements are recommended to maintain acceptable Levels of Service at the study intersections for Opening Year (2025) conditions:

1. I-215 SB Ramps (NS) at Ethanac Road (EW)
 - Construct additional right-turn lane.
 - Restripe the southbound approach to provide one left turn lane, one shared through/right turn lane and one right turn lane.
3. Encanto Drive (NS) at Ethanac Road (EW)
 - Install a raised median to restrict northbound and westbound left turns.
4. Trumble Road (NS) at Ethanac Road (EW)
 - Add one southbound right turn lane with right-turn overlap signal phasing and restripe the existing shared through/right turn lane to a through lane.
 - Restripe the eastbound right turn lane to a shared through/right turn lane. This improvement will require construction of one additional eastbound receiving lane.
 - Construct the westbound approach lane to consist of one left turn lane, two through lanes, and one right turn lane. This improvement will require construction of one additional westbound receiving lane.
5. Sherman Road (NS) at Ethanac Road (EW)
 - Install traffic signal.
 - Add eastbound left turn lane.

The study area intersections are forecast to operate within acceptable Levels of Service with the recommended improvements.

Vehicle Miles Traveled Analysis

For compliance with CEQA requirements, the project satisfies the City-established VMT screening criteria for local serving land use; therefore, the proposed project may be presumed to result in a less than significant VMT impact. The project VMT assessment is documented in the Vehicle Miles Traveled Analysis (see Section 9) of this report.

1. INTRODUCTION

This section provides an overview of the proposed project and the general scope of the analysis.

PURPOSE AND OBJECTIVES

The purpose of this study is to evaluate the potential for transportation impacts resulting from the development of the proposed project in the context of the City of Perris's discretionary authority for conformance with locally established operational standards. Although this is a technical report, effort has been made to prepare the report clearly and concisely. A glossary is provided in Appendix A to assist the reader with technical terms.

This study was prepared in consultation with the City of Perris staff following the procedures and methodologies for assessing transportation impacts established by the City of Perris. To assess the project's conformance with local operational standards, this study evaluates the project's effect on traffic operations and, if necessary, identifies recommended improvements or corrective measures to alleviate operational deficiencies substantially caused or worsened by the proposed project. For compliance with California Environmental Quality Act (CEQA) requirements, a vehicle miles traveled (VMT) assessment is documented in the Vehicle Miles Traveled (Section 9) of this report.

PROJECT DESCRIPTION

The 2.54-acre project site (APN: 329-240-021, 022) is located at the northeast corner of Trumble Road and Ethanac Road in the City of Perris, California. The project site is currently undeveloped. Figure 1 and Figure 2 show the regional and project location maps.

The proposed project (CUP 22-05292) involves construction of a 7,250 square foot convenience store/gas station including drive through window with eight (8) dual-sided gasoline fuel pumps (i.e., 16-vehicle fueling positions) and an automated car wash tunnel. Vehicular access for the project site is proposed via one full access driveway on Trumble Road and one right-turn in/out only access driveway on Ethanac Road. Figure 3 illustrates the project site plan.

SCOPE OF ANALYSIS

The scope of this analysis was determined in consultation with the City of Perris as documented in the City-approved scoping agreement provided in Appendix B.

Study Area

Figure 4 illustrates the study area. In accordance with the City of Perris requirements, the study area was determined in consultation with the City of Perris engineering staff and consists of classified roadway intersections to which the project is forecast to contribute 50 or more peak hour trips. Based on the project trip generation and distribution forecasts presented later in this report, the study area consists of the following study intersections, each within the City of Perris jurisdiction:

1. I-215 SB Ramps (NS) at Ethanac Road (EW) ¹
2. I-215 NB Ramps (NS) at Ethanac Road (EW)
3. Encanto Drive (NS) at Ethanac Road (EW)
4. Trumble Road (NS) at Ethanac Road (EW)
5. Sherman Road (NS) at Ethanac Road (EW)

¹ (NS) = north-south roadway; (EW) = east-west roadway.

6. Trumble Road (NS) at Project Driveway (EW)
7. Project Driveway (NS) at Ethanac Road (EW)

Analysis Scenarios

This study includes an evaluation of the following analysis scenarios for weekday AM and PM peak hour conditions:

- Existing
- Existing Plus Project
- Opening Year (2025) Without Project
- Opening Year (2025) With Project

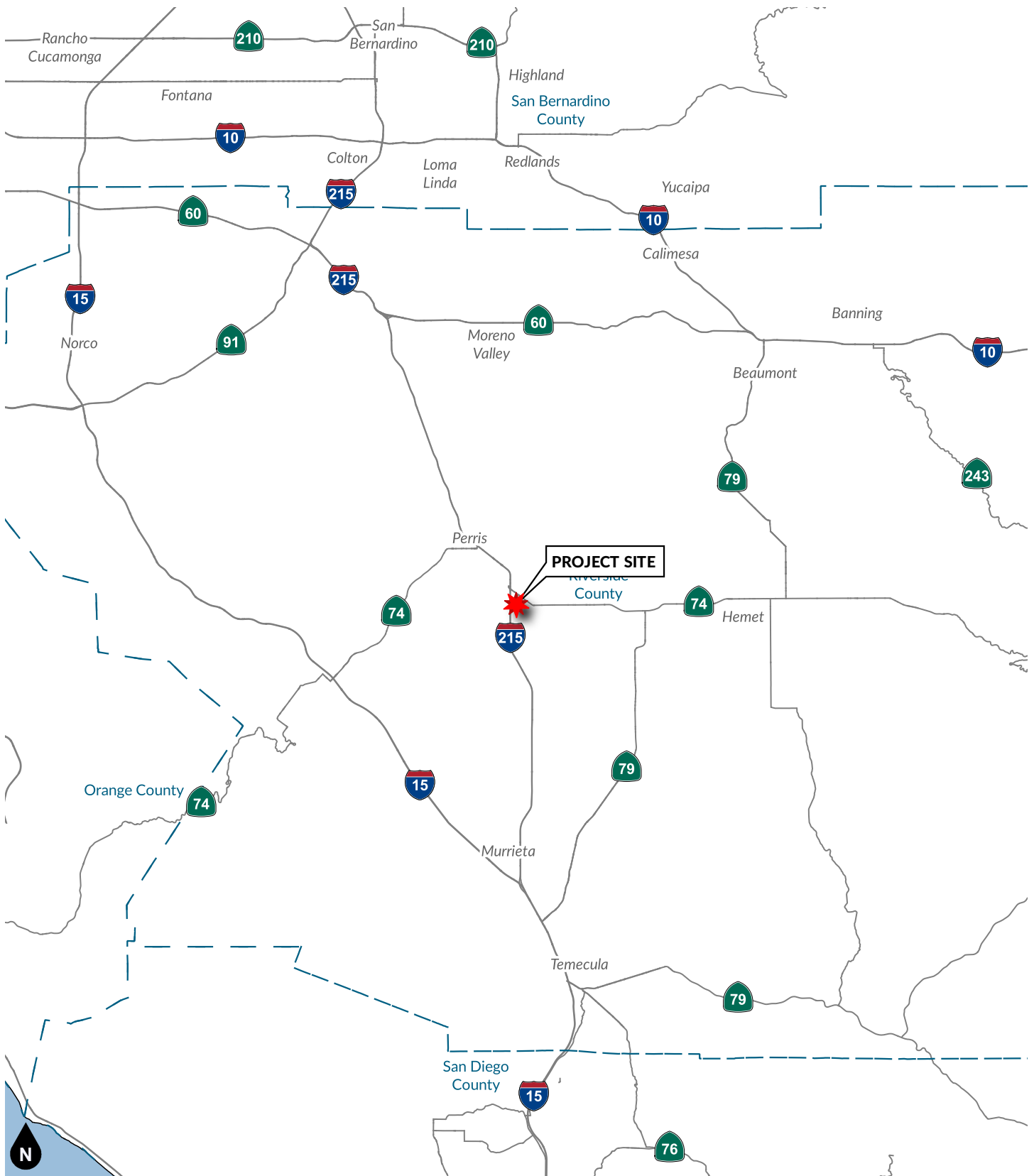


Figure 1
Regional Location Map

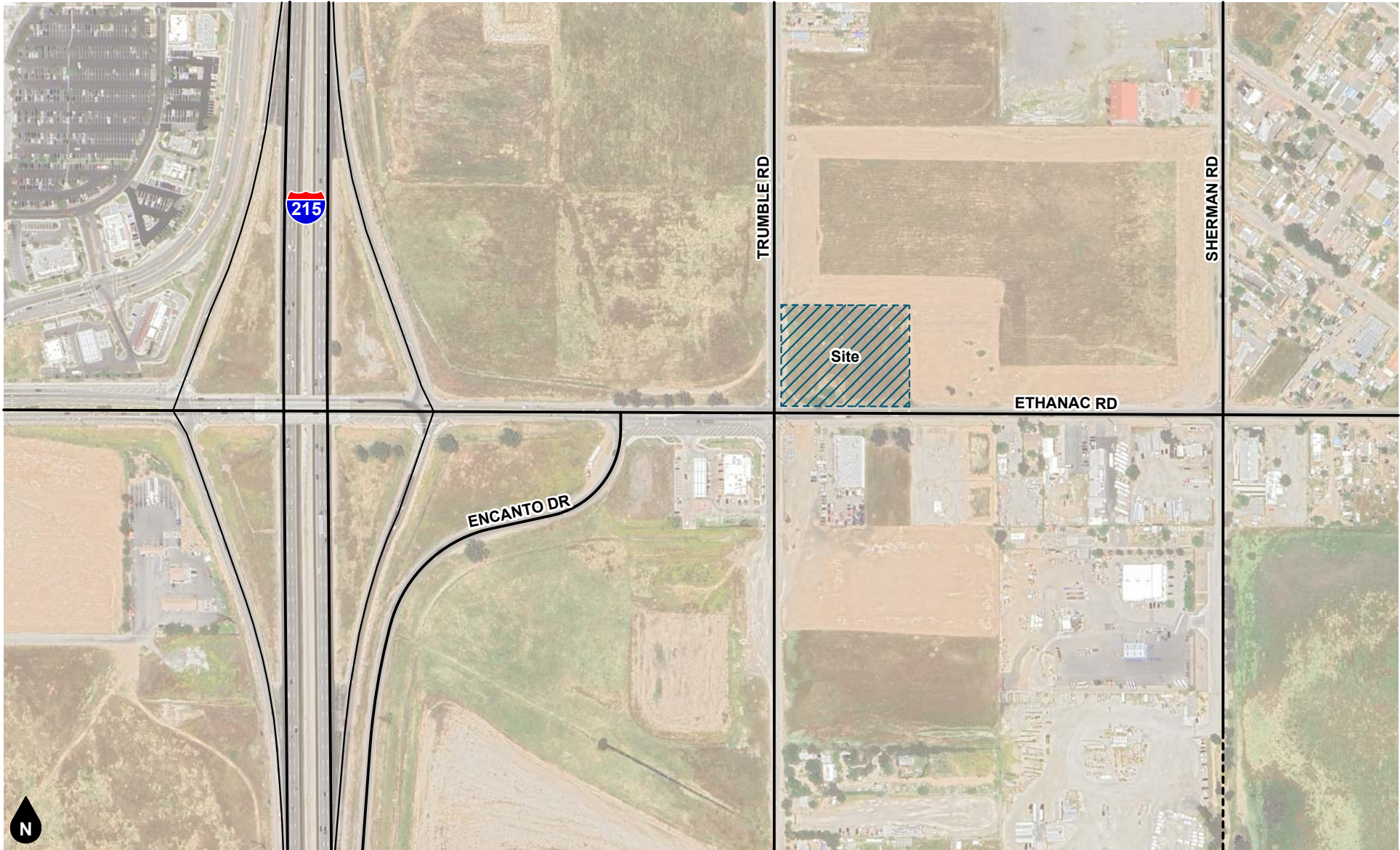


Figure 2
Project Location Map

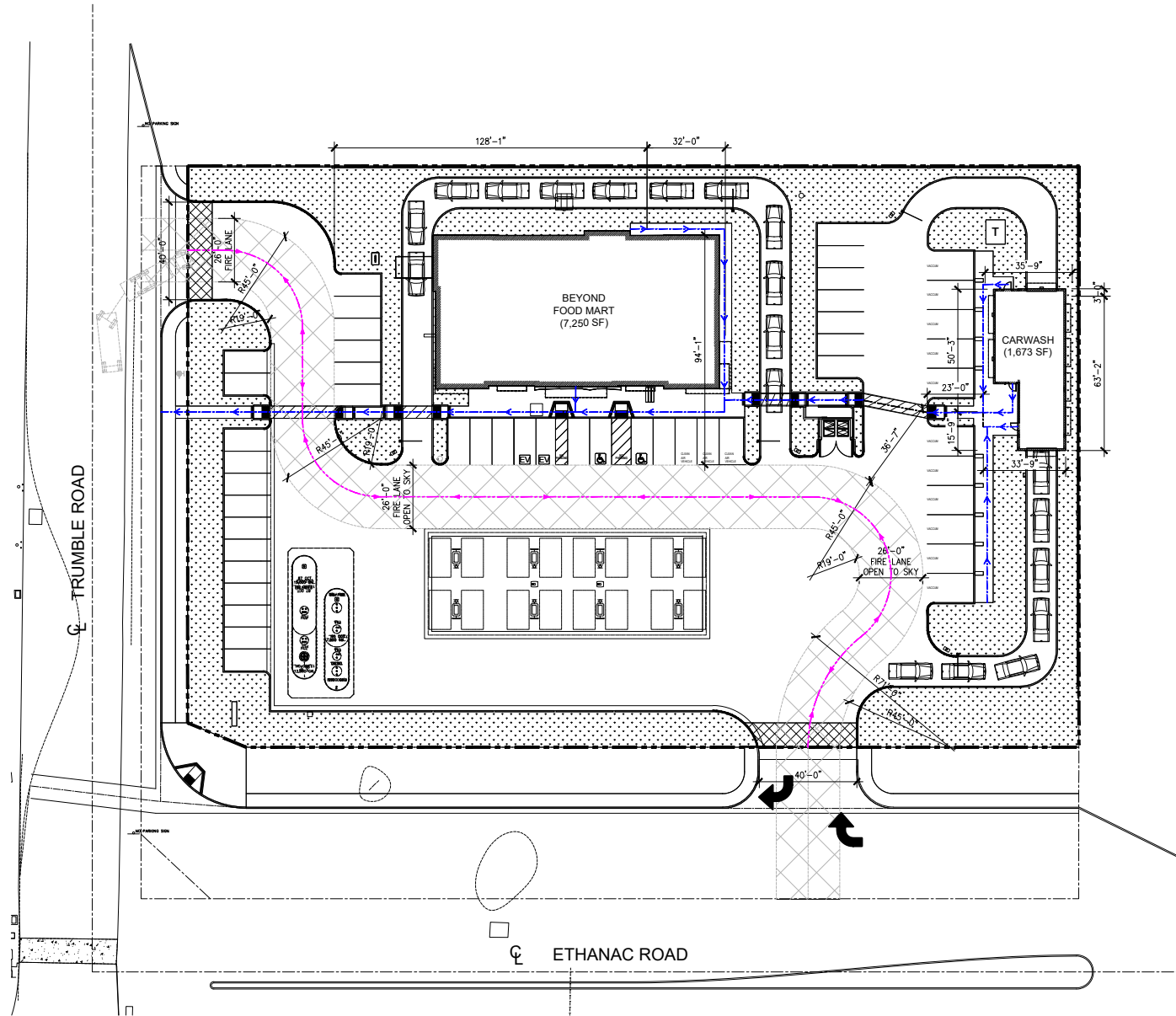
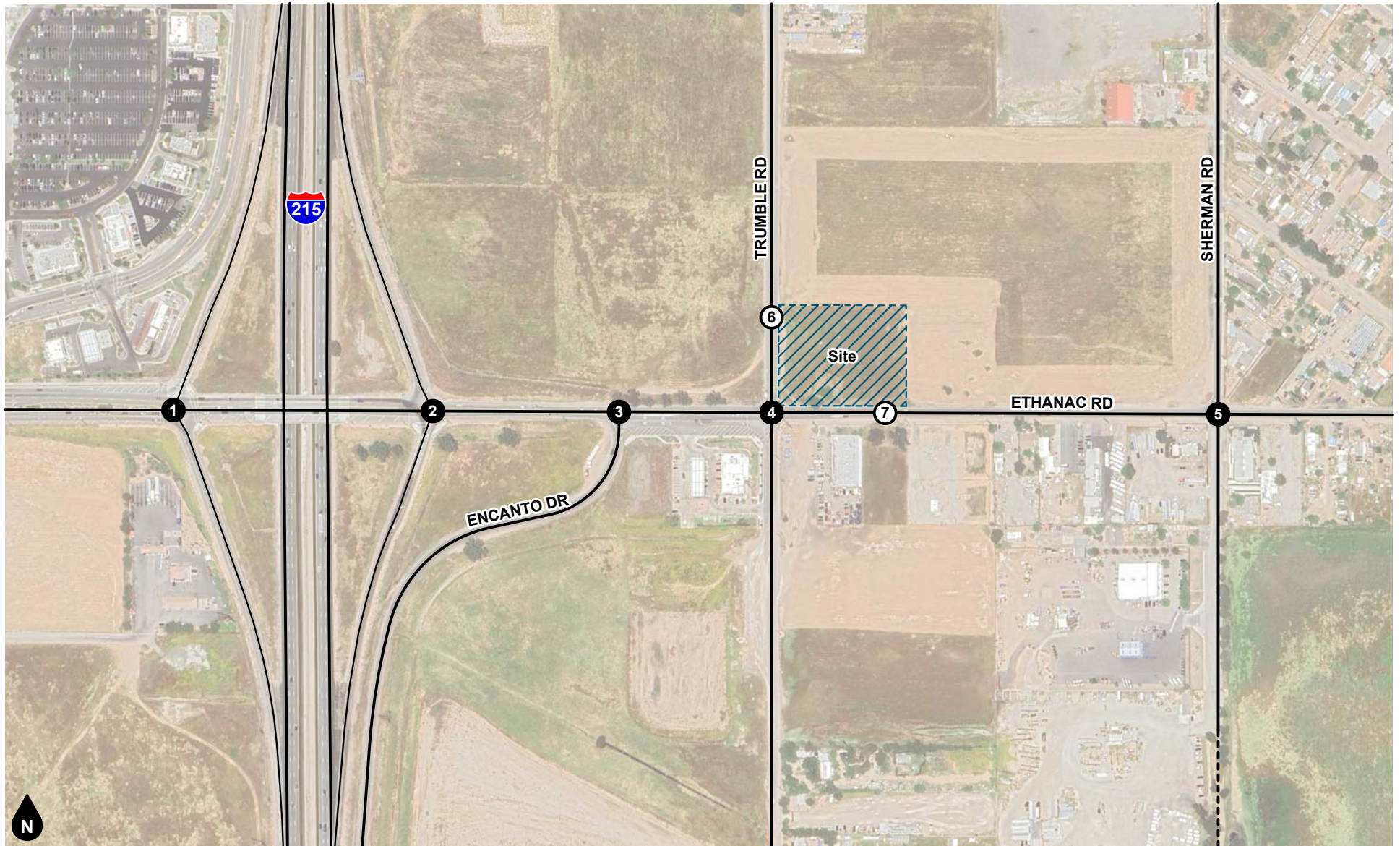


Figure 3
Site Plan



Legend

- # Study Intersection
- # Project Driveway

Figure 4
Study Area

2. METHODOLOGY

This section discusses the analysis methodologies used to assess transportation facility performance as adopted by the respective jurisdictional agencies. This traffic impact analysis is based on the City of Perris requirements.

LEVEL OF SERVICE/OPERATIONAL ANALYSIS METHODOLOGY (Non-CEQA)

Level of Service analysis is performed to assess conformance with General Plan and operational standards established by the applicable agencies.

Intersections Delay Methodology

City of Perris intersections are analyzed using the intersection delay methodology based on procedures contained in the *Highway Capacity Manual* (HCM) (Transportation Research Board, 7th Edition). The methodology considers the traffic volume and distribution of movements, traffic composition, geometric characteristics, and signalization details to calculate the average control delay per vehicle and corresponding Level of Service. Control delay is defined as the portion of delay attributed to the intersection traffic control (such as a traffic signal or stop sign) and includes initial deceleration, queue move-up time, stopped delay, and final acceleration delay. Intersection delay analysis was performed with default capacity values and adjustment factors recommended in the HCM. The intersection Level of Service is based on the thresholds contained within the HCM.

Level of Service	Delay Methodology	
	Signalized Intersection	Unsignalized Intersection
	Seconds per Vehicle	Seconds per Vehicle
A	≤ 10.0	≤ 10.0
B	> 10.0 to ≤ 20.0	> 10.0 to ≤ 15.0
C	> 20.0 to ≤ 35.0	> 15.0 to ≤ 25.0
D	> 35.0 to ≤ 55.0	> 25.0 to ≤ 35.0
E	> 55.0 to ≤ 80.0	> 35.0 to ≤ 50.0
F	> 80.0	> 50.0

Source: Transportation Research Board *Highway Capacity Manual* (7th Edition).

Level of Service is used to qualitatively describe the performance of a roadway facility, ranging from Level of Service A (free-flow conditions) to Level of Service F (extreme congestion and system failure). At intersections with either traffic signal or all way-stop-control, Level of Service is determined by the average control delay for the overall intersection. At intersections with cross street stop control (i.e., one- or two-way stop control), Level of Service is determined by the average control delay for the worst minor street approach or major street left turn movement. Intersection analysis was performed using the Vistro software.

Performance Standards

The City of Perris has established the following target Levels of Service:

- LOS “D” along all City maintained roads (including intersections) and LOS “D” along I-215 and SR 74 (including intersections with local streets and roads). An exception to the local road standard is LOS “E”, at intersections of any Arterials and Expressways with SR 74, the Ramona-Cajalco Expressway or at I-215 freeway ramps.

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

Substantial Operational Deficiency Criteria

In the City of Perris, a project is considered to result in a substantial operational deficiency at a study intersection if one or more of the following conditions are satisfied:

- A project-related traffic impact is considered direct when a study intersection operates at an acceptable Level of Service for existing conditions (without the project) and the addition of 50 or more a.m. or p.m. peak hour project trips causes the intersection delay to increase by 2 seconds or more and causes the intersection to operate at an unacceptable Level of Service for existing plus project conditions.
- A project-related traffic impact is considered direct when a study intersection operates at an unacceptable Level of Service for existing conditions (without the project) and the addition of 50 or more a.m. or p.m. peak hour project trips causes the intersection delay to increase by 2 seconds or more.
- A cumulative impact is considered direct when a study intersection is forecast to operate at an acceptable Level of Service without the project and with the addition of 50 or more a.m. or p.m. peak hour project trips causes the intersection delay to increase by 2 seconds or more and causes the intersection to operate at an unacceptable Level of Service.
- A cumulative impact is considered an indirect traffic impact when a study intersection is forecast to operate at an unacceptable Level of Service with the addition of cumulative/background traffic and the project contributes 50 or more a.m. or p.m. peak hour project trips and causes the intersection delay to increase by 2 seconds or more.

If a project is forecast to result in a substantial operational deficiency, recommended corrective measures are identified that would reduce the project’s effect to a level that does not exceed the specified deficiency criteria. Corrective measures can be in many forms, including the construction of physical improvements (e.g., addition of travel lanes, traffic control modifications, etc.) or the implementation of transportation demand management measures.

Where improvements are identified to address cumulative Level of Service deficiencies, a project fair share cost estimate is provided based on the volume of project traffic using the impacted facility divided by the total “new” traffic (i.e., ambient growth and other developments).

VEHICLE MILES TRAVELED ANALYTICAL METHODOLOGY (CEQA)

The metric used to evaluate the transportation impact of land use and transportation projects under current CEQA guidelines is known as vehicle miles traveled (VMT). In general terms, VMT quantifies the amount and distance of automobile travel attributable to a project or region. The *City of Perris Transportation Impact Analysis Guidelines for CEQA*, (May 2020) [“City VMT Guidelines”] establish methodologies and thresholds to determine qualitatively or quantitative whether projects will reduce the VMT in comparison to existing conditions or the approved land use of the project site. The Guidelines further establish screening criteria for projects anticipated to reduce VMT, or which are small enough to have a negligible impact on VMT. Additional information is provided in the Vehicle Miles Traveled section presented later in this report (see Section 9).

3. EXISTING CONDITIONS

This section describes the existing transportation setting of the project study area.

EXISTING ROADWAY SYSTEM

Figure 5 shows the lane geometry and intersection traffic controls for existing conditions based on a field survey of the study area. Regional access to the project site is provided by State Route 74 approximately 0.5 miles to the northeast and Interstate 215 approximately 0.28 miles to the west of the project site. Local north-south circulation is provided by Trumble Road and Sherman Road; and east-west circulation is provided by Ethanac Road.

Trumble Road: This two-lane divided to two-lane undivided roadway trends in a north-south direction and is unclassified on the City of Perris General Plan Circulation Element in the project vicinity; however, Trumble Road is classified as a Collector (2-lanes undivided; 74 feet right of way ROW/44 feet pavement) in the City of Menifee General Plan Circulation Element. On-street parking is not permissible in the study area based on the roadway width and lack of roadway shoulders. There are no designated bicycle facilities in the project vicinity; however, a Class III (signed) bike route is proposed in the Menifee General Plan. No sidewalks are provided in the project vicinity. The posted speed is 45 miles per hour in the project vicinity.

Sherman Road: This two-lane undivided roadway trends in a north-south direction and is unclassified on the City of Perris General Plan Circulation Element in the study area; however, Sherman Road is classified as a Major Arterial (4-lanes divided; 118 feet ROW/76 feet pavement) in the City of Menifee General Plan Circulation Element. On-street parking is not permissible in the study area based on the roadway width and lack of roadway shoulders. There are no designated bicycle facilities in the project vicinity; however, a Class II marked lane route is proposed in the Menifee General Plan. No sidewalks are provided in the project vicinity. The posted speed is 40 miles per hour in the project vicinity.

Ethanac Road: This two-lane divided to two-lane undivided roadway trends in an east-west direction and is classified as an Expressway (8-lane divided 184 feet ROW/134 feet pavement) on the City of Perris General Plan Circulation Element in the study area. Ethanac is classified as an Expressway (6 to 8-lane divided 200 to 216 feet ROW) in the City of Menifee General Plan Circulation Element. On-street parking is not permissible in the study area based on the roadway width and lack of roadway shoulders. There are no designated bicycle facilities in the project vicinity. No sidewalks are provided in the project vicinity, except at the southwest corner of Ethanac Road and Trumble Road. The posted speed is 45 miles per hour in the project vicinity.

PEDESTRIAN FACILITIES

Existing pedestrian facilities in the project vicinity are shown on Figure 6. As shown on Figure 6, currently sidewalks are not provided on Trumble Road and Ethanac Road along the project site frontage.

TRANSIT FACILITIES

Figure 7 shows the existing Riverside Transit Agency (RTA) system map in the project vicinity. No routes run on roadways in the study area. The closest bus stop to the project is at the southeast corner of the Sherman Road and State Route 74 intersection.

GENERAL PLAN CONTEXT

Figure 8 shows the City of Perris General Plan Circulation Element roadway classifications map. This figure shows the nature and extent of arterial and collector highways that are needed to adequately serve the

ultimate development depicted by the Land Use Element of the General Plan. The City of Perris standard roadway cross-sections are illustrated on Figure 9.

BICYCLE FACILITIES MASTER PLAN

The City of Perris Bicycle Master Plan is shown on Figure 10.. As shown on Figure 10, there are no existing bike facilities in the study area; however, a future bike lane (Class II) on Sherman Road and future bike route (Class III) is shown on the City of Menifee General Plan.

DESIGNATED TRUCK ROUTES

The City of Perris Truck Routes are shown on Figure 11.. As shown on Figure 11, designated truck routes in the study area includes Ethanac Road.

EXISTING ROADWAY VOLUMES

Figure 12 shows the existing average daily traffic volumes. The existing average daily traffic volumes have been factored from peak hour intersection turning movement volumes at locations using the following formula for each intersection leg:

$$\text{PM Peak Hour (Approach Volume + Exit Volume)} \times 12 = \text{Leg Volume}$$

Figure 13 and Figure 14 show the existing AM and PM peak hour intersection turning movement volumes. Existing peak hour intersection turning movement volumes are based upon AM peak period and PM peak period intersection turning movement counts obtained in October 2023 during typical weekday conditions. The weekday AM peak period was counted between 7:00 AM and 9:00 AM and the weekday PM peak period was counted between 4:00 PM and 6:00 PM; these periods generally capture the peak times for commuter traffic when the roadway system is typically experiencing peak demand. The actual peak hour within each two-hour count period is determined based on the sum of the four consecutive 15-minute periods with the highest total volume entering the intersection. Thus, the weekday PM peak hour at one intersection may be 4:45 PM to 5:45 PM and may vary at other intersections depending on the four consecutive 15-minute periods that have the highest total volume. Intersection turning movement count worksheets are provided in Appendix C.

EXISTING INTERSECTION LEVEL OF SERVICE

The study intersection Levels of Service for Existing conditions are shown in Table 1. Detailed Level of Service worksheets are provided in Appendix D.

As shown in Table 1, the study intersections currently operate within acceptable Levels of Service (D or better), except for the following study intersections that are projected to operate at unacceptable Level of Service E during the PM peak hour:

3. Encanto Drive (NS) at Ethanac Road (EW)

The unsignalized intersection of Encanto Drive/Ethanac Road, does not meet the peak hour traffic signal warrant for Existing conditions; therefore, no improvements are recommended.

Table 1
Existing Intersection Levels of Service

Study Intersection	Traffic Control ¹	AM Peak Hour		PM Peak Hour	
		Delay ²	LOS ³	Delay ²	LOS
1. I-215 SB Ramos at Ethanac Road	TS	19.5	B	27.9	C
2. I-215 NB Ramps at Ethanac Road	TS	28.8	C	35.2	D
3. Encanto Drive at Ethanac Road	CSS	27.5	D	36.1	E
4. Trumble Road at Ethanac Road	TS	17.3	B	19.0	B
5. Sherman Road at Ethanac Road	CSS	18.1	C	20.2	C

Notes:

1. TS = Traffic Signal; CSS = Cross Street Stop.
2. Delay is shown in seconds per vehicle. For intersections with traffic signal control, overall average intersection delay and LOS are shown. For intersections with cross street stop control, LOS is based on average delay of the worst minor street approach or major street left turn movement.
3. LOS = Level of Service

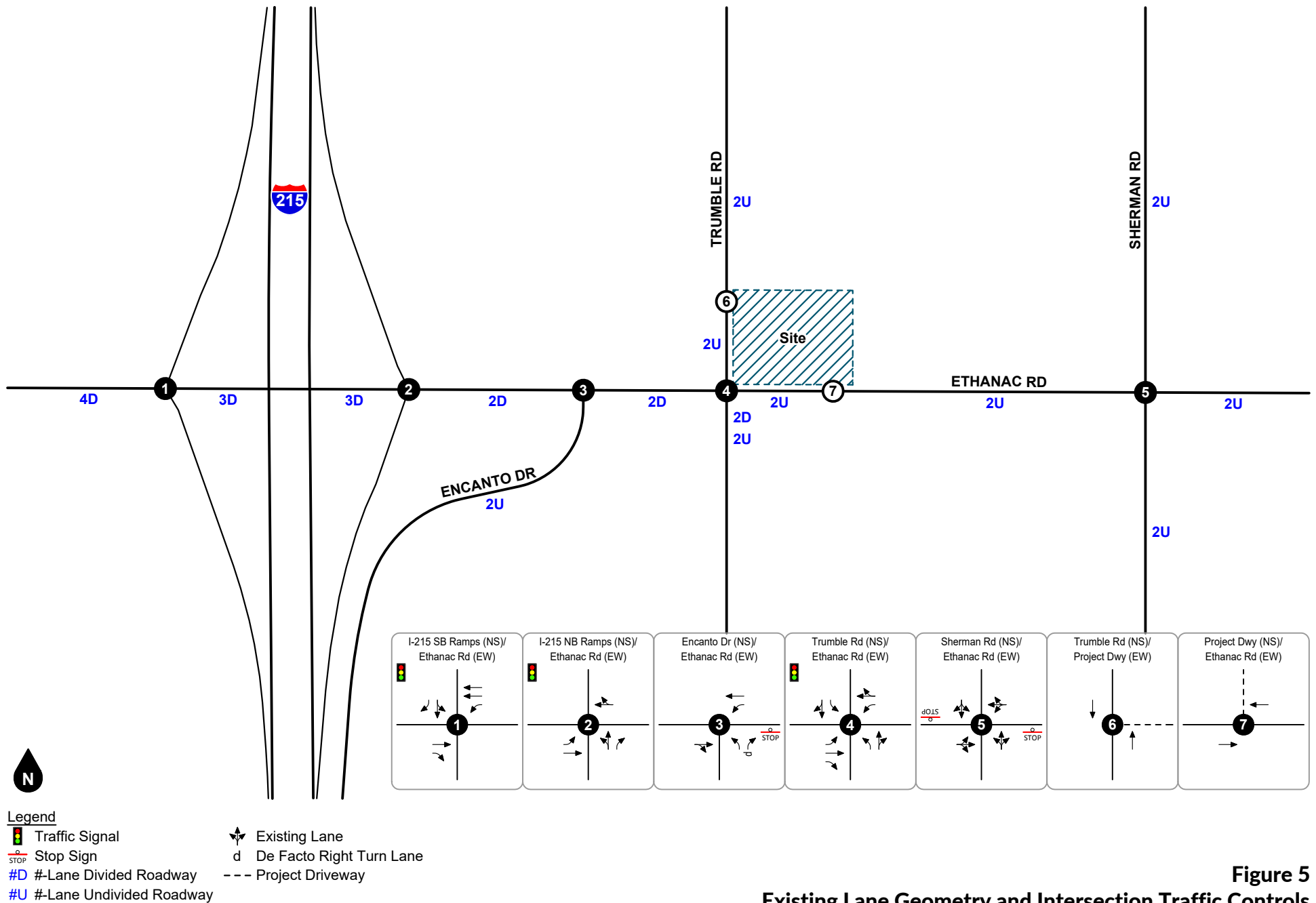
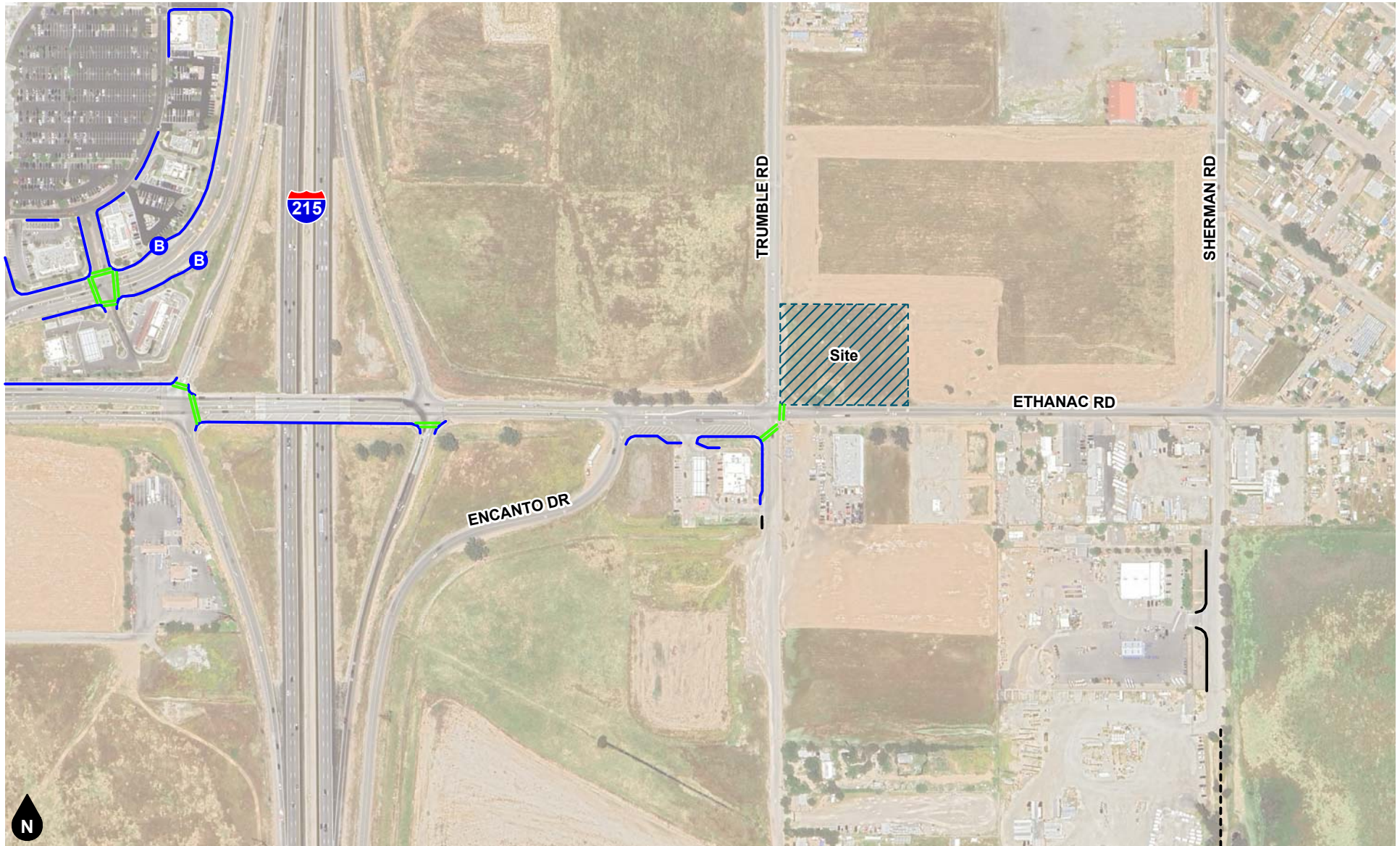


Figure 5
Existing Lane Geometry and Intersection Traffic Controls



- Legend
- Sidewalk
 - Cross Walk
 - B Bus Stop

Figure 6
Existing Pedestrian Facilities

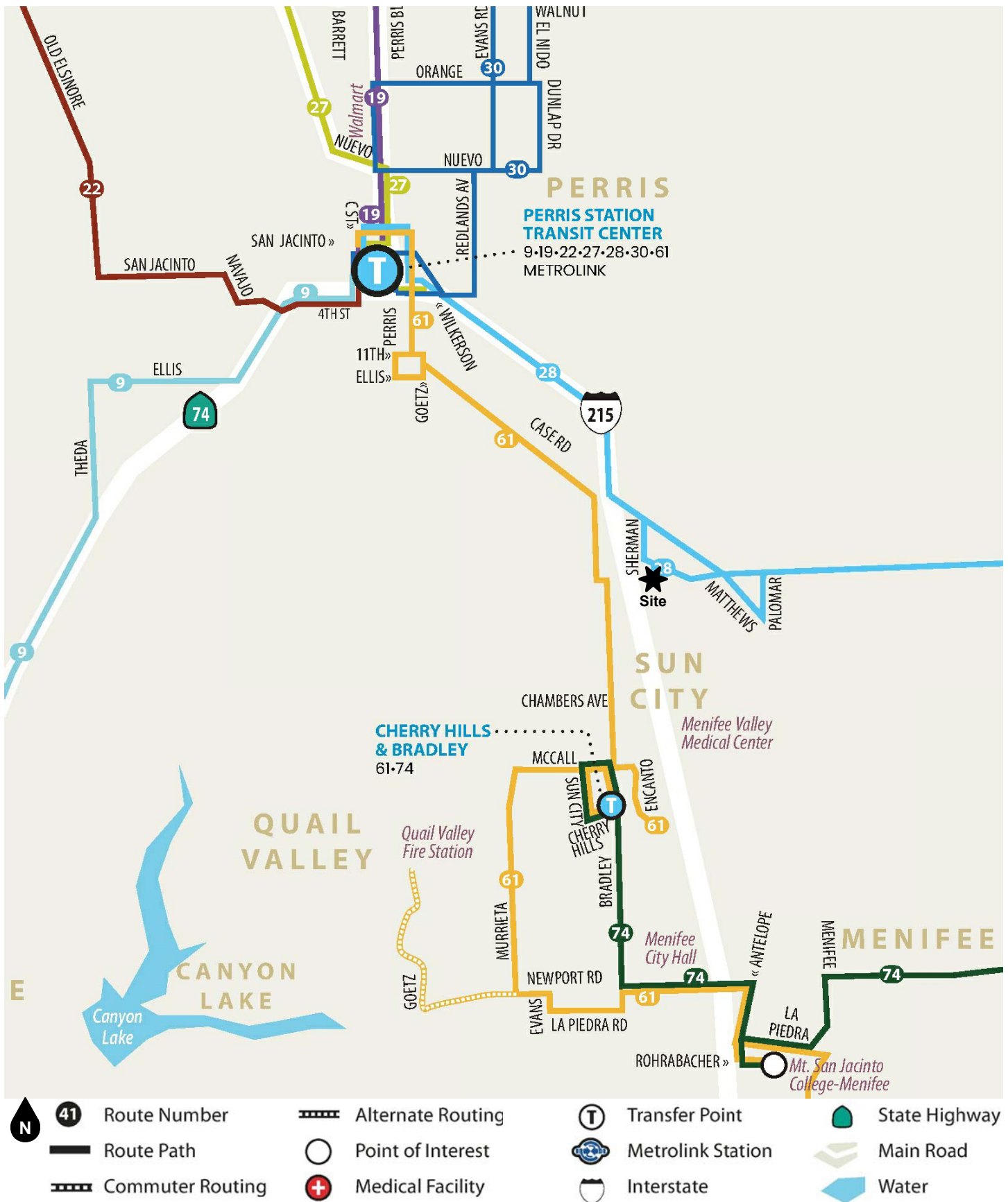
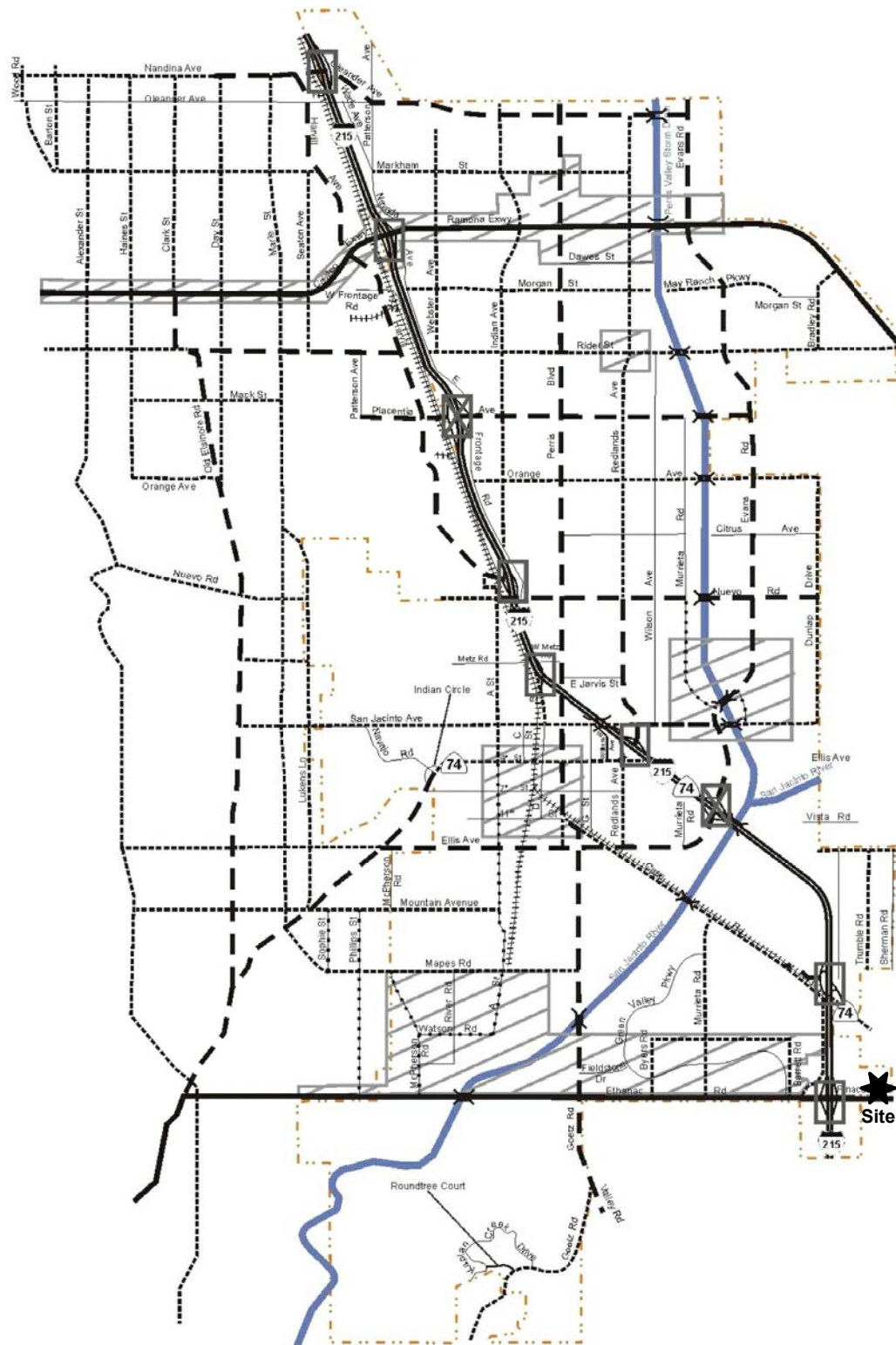


Figure 7
Existing Transit Routes

Source: Riverside Transit Agency



Legend:

- | | | |
|------------------------------|---------------------|--|
| Freeway | Collector (66' ROW) | Existing Interchange with Future Modifications |
| Expressway (184' ROW) | Railroad | Proposed Interchange |
| Arterial (128' ROW) | Bridge | |
| Secondary Arterial (94' ROW) | Water | |
| Major Collector (78' ROW) | City Boundary | Corridor Study Areas |

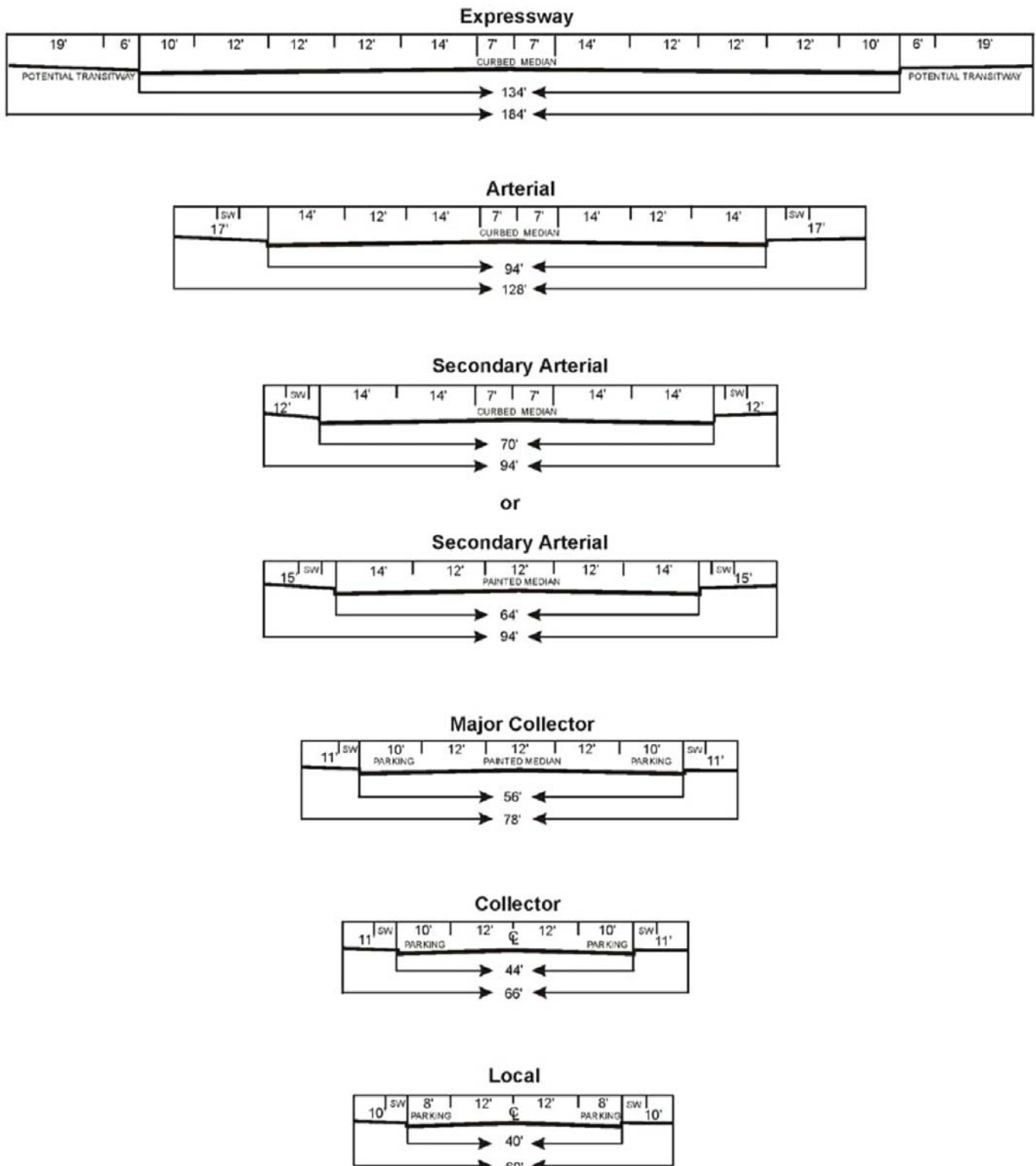
Figure 8

City of Perris General Plan Circulation Element

Source: City of Perris



Beyond Food Mart (NEC Trumble and Ethanac)
Traffic Impact Analysis
19674



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

Legend

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

Figure 9
City of Perris General Plan Roadway Cross-Sections

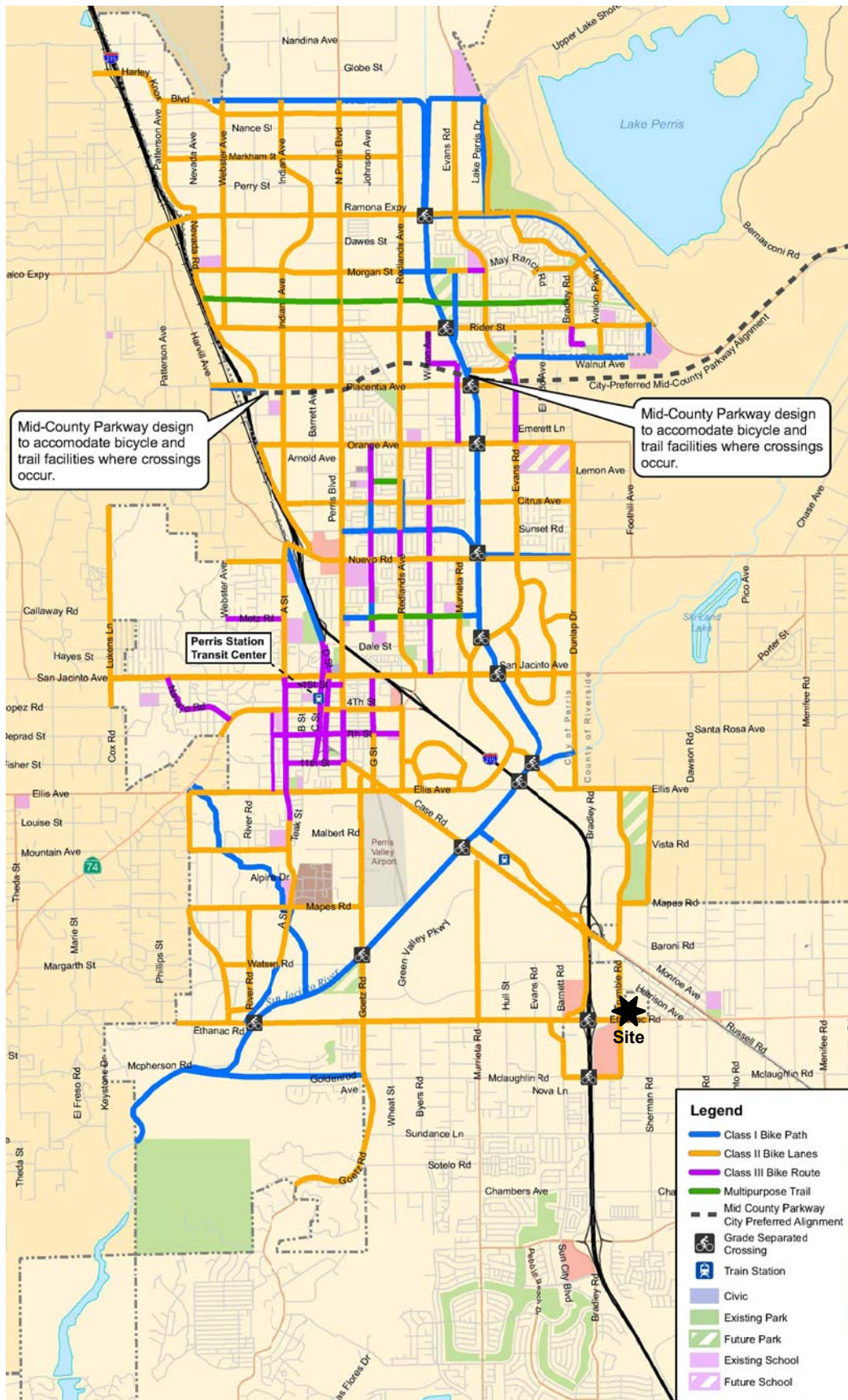


Figure 10
City of Perris Bicycle Facilities Master Plan

Source: City of Perris

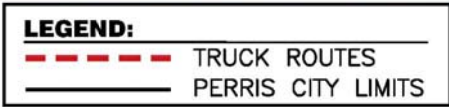
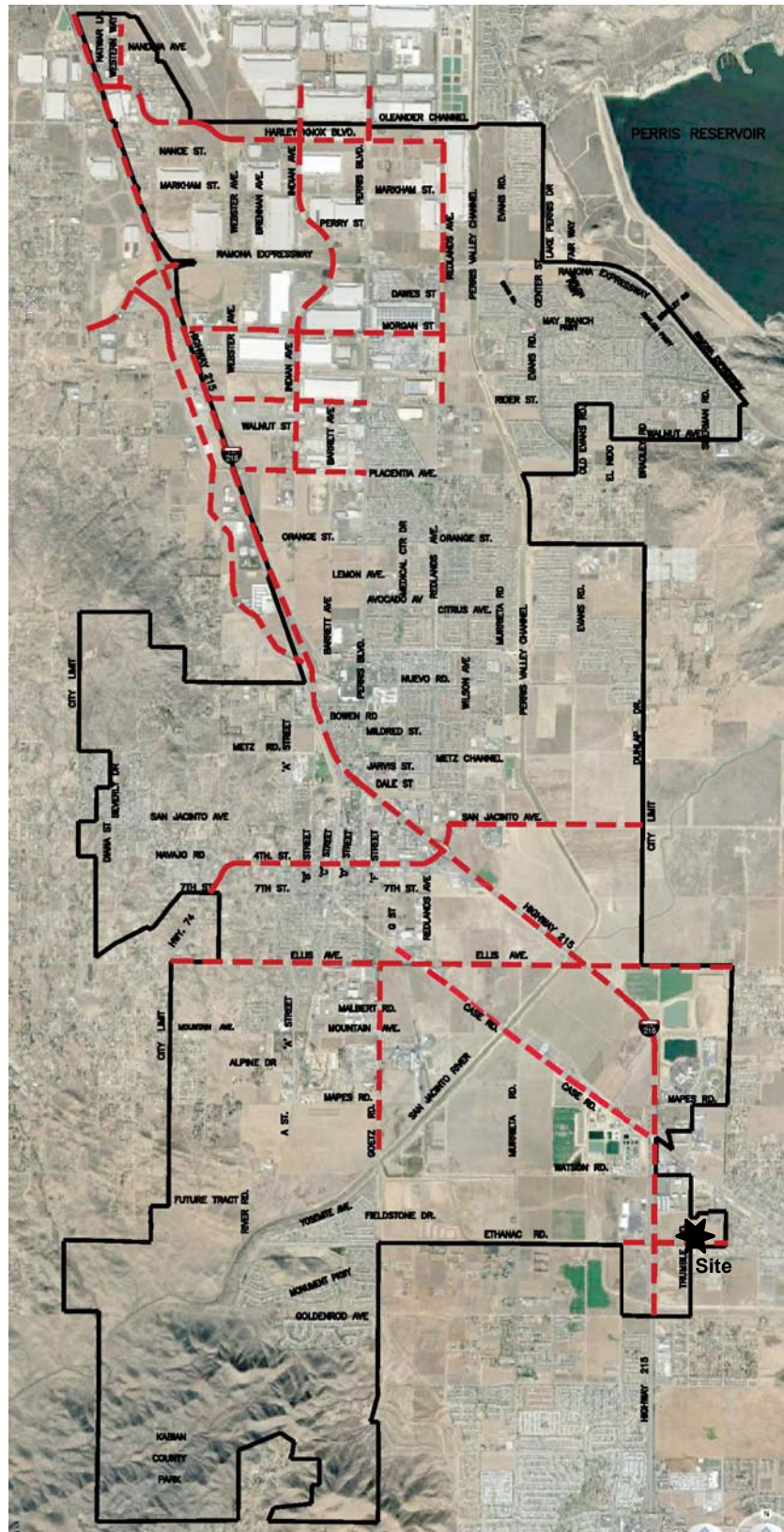


Figure 11
City of Perris Designated Truck Routes

Source: City of Perris



Beyond Food Mart (NEC Trumble and Ethanac)
 Traffic Impact Analysis
 19674

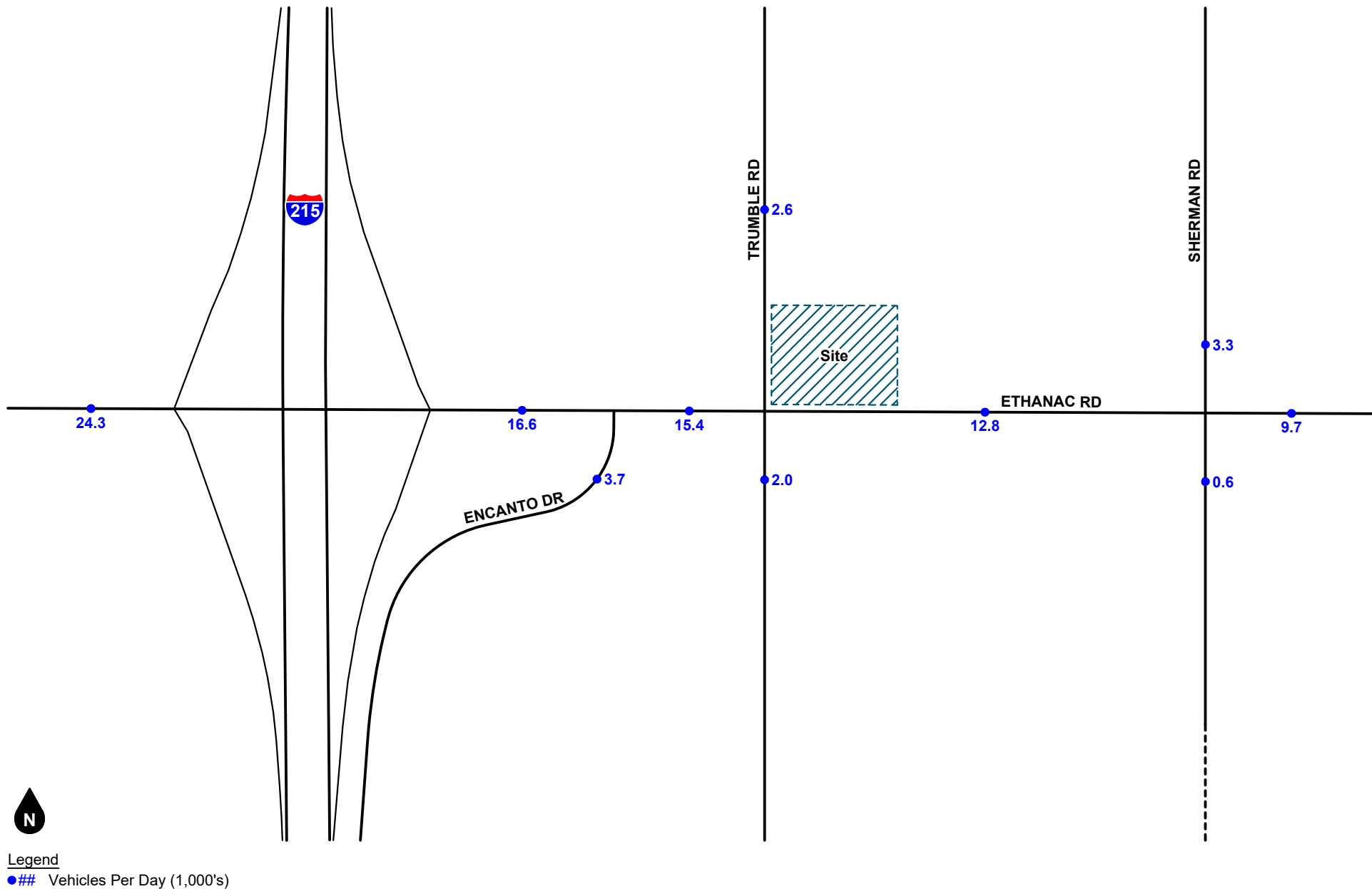
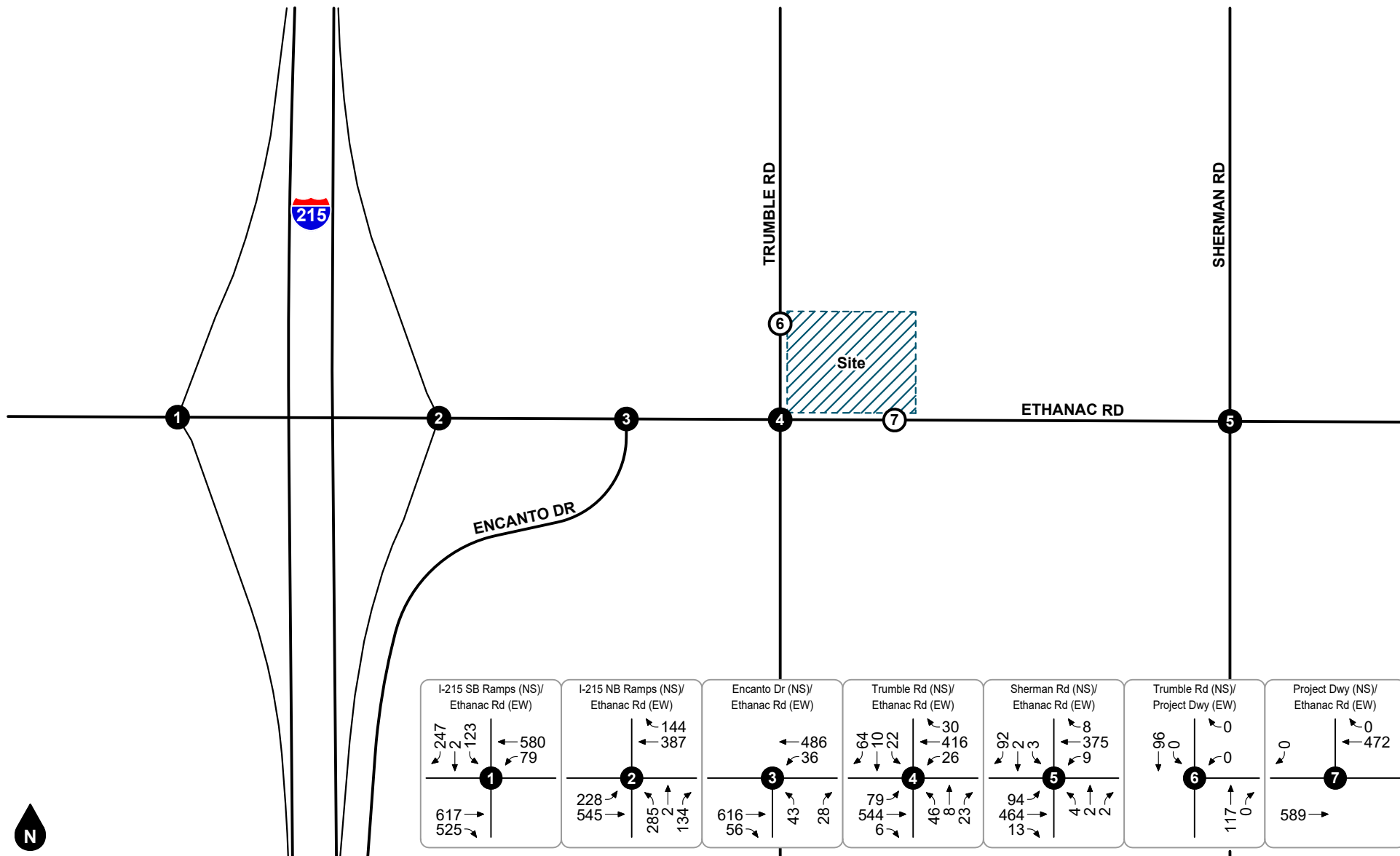


Figure 12
Existing Average Daily Traffic Volumes



Legend

Study Intersection

Project Driveway

Figure 13
Existing AM Peak Hour Intersection Turning Movement Volumes

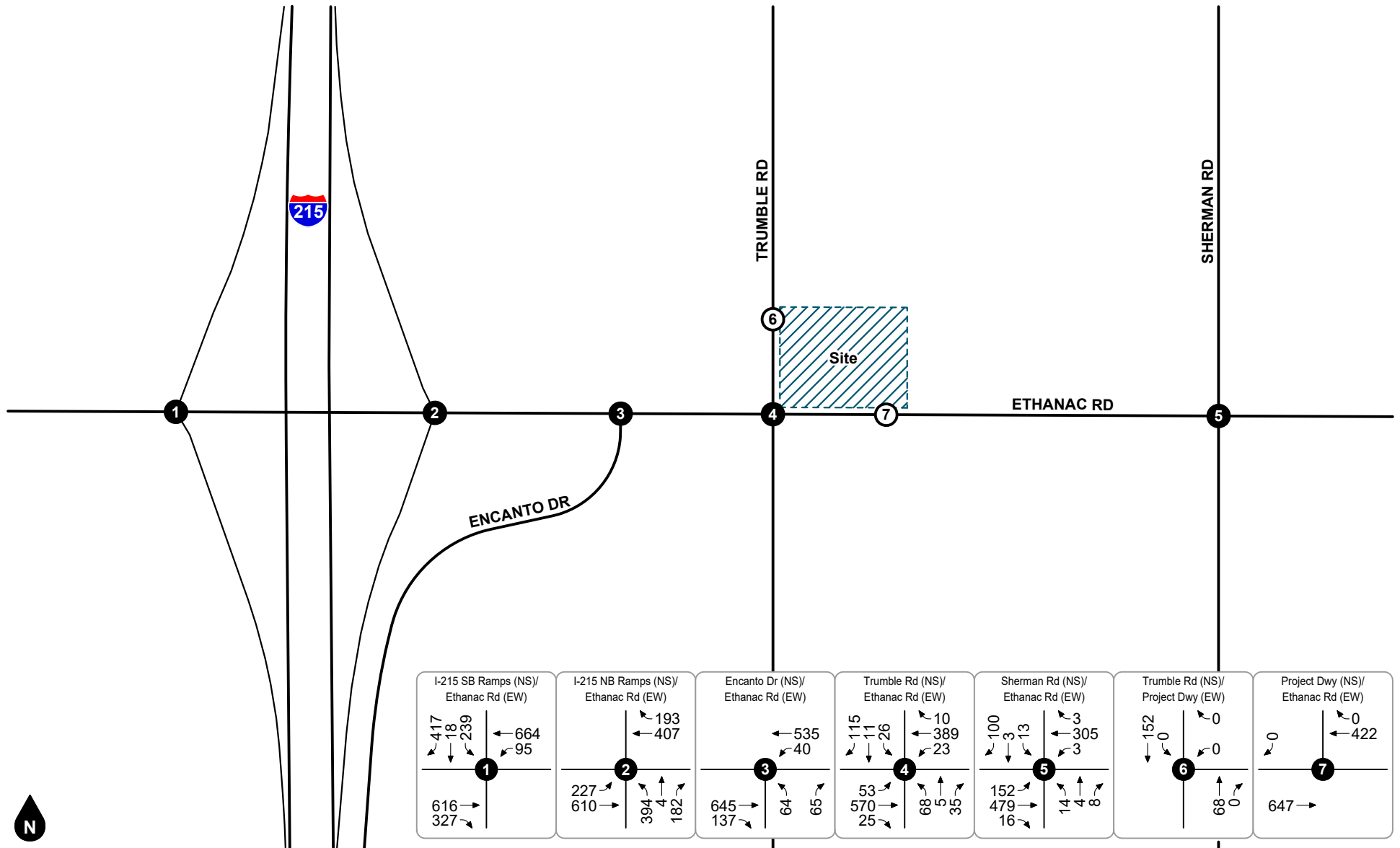


Figure 14
Existing PM Peak Hour Intersection Turning Movement Volumes

4. PROJECT TRIP FORECASTS

This section describes how project trip generation, trip distribution, and trip assignment forecasts were developed. The forecast project volumes are illustrated in the figures contained in this section.

TRIP GENERATION

Table 2 shows the proposed project trip generation forecast is based on average rates obtained from the Institute of Transportation Engineers (ITE) *Trip Generation Manual* (11th Edition, 2021) for Land Use Codes 945 (Convenience Store Gas Station) and 948 (Automated Car Wash) which were determined to adequately represent the land use for the proposed project and were selected for calculation of the project trip generation forecast.

Pass-by Trip Adjustments

The project trip generation includes pass-by trip adjustments based on average pass-by rates obtained from the ITE *Trip Generation Manual*. Land uses such as shopping centers, restaurants, gas stations, and convenience stores will often be located next to busy roadways to attract motorists already on the street. The trip generation rates contained in the ITE *Trip Generation Manual* represent vehicles entering and exiting at the site driveway(s); therefore, it is appropriate to reduce the initial trip generation forecast by the applicable pass-by trip rate when calculating the net new trips that will be added to the surrounding street system. When there is no daily pass-by data provided in ITE *Trip Generation Manual Appendices*, the daily pass-by value is determined by the lesser of the AM peak and PM peak pass-by rates. Pass-by trips are included at the project driveways and the adjacent intersection of Trumble Road and Ethanac Road.

Project Trips

As shown in Table 2, the proposed project is forecast to generate a total of approximately 3,187 daily trips, including 193 trips during the AM peak hour and 221 trips during the PM peak hour.

PROJECT TRIP DISTRIBUTION & ASSIGNMENT

Figure 15 and Figure 16 show the forecast outbound and inbound directional distribution patterns for the project generated trips, respectively. The project trip distribution patterns were developed using engineering judgment in consultation with the City engineering staff based on a review of existing traffic data, surrounding land uses, and the local and regional roadway facilities in the project vicinity.

Based on the identified project trip generation and distributions, the number of trips generated is determined by multiplying the trip generation rates and directional distributions by the land use quantity. The project-generated average daily traffic volumes are shown on Figure 17. The project-generated AM peak hour and PM peak hour intersection turning movement volumes are shown on Figure 18 and Figure 19.

Table 2
Project Trip Generation

Trip Generation Rates									
Land Use	Source ¹	Land Use Variable ²	AM Peak Hour			PM Peak Hour			Daily Rate
			% In	% Out	Rate	% In	% Out	Rate	
Convenience Store Gas Station (5.5-10 ksf GFA)	ITE 945	VFP	50%	50%	31.60	50%	50%	26.90	345.75
Convenience Store Gas Station (16-24 VFP)	ITE 945	TSF	50%	50%	91.35	50%	50%	78.95	1,283.38
Automated Car Wash	ITE 948 ³	CWT	50%	50%	34.44	50%	50%	77.50	861.11

Trip Generation Estimates for Convenience Store Gas Station per ITE ⁴									
Land Use	Source	Quantity	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Convenience Store (7.25 TSF, 16 VFP)									
Convenience Store Gas Station (5.5-10 ksf GFA)	ITE 945	16 VFP	253	253	506	215	215	430	5,532
Convenience Store Gas Station (16-24 VFP)	ITE 945	7.250 TSF	331	331	662	286	286	572	9,305
Variance					24%			25%	41%

Project Trip Generation for Analysis ⁵									
Land Use	Source	Quantity	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Convenience Store Gas Station (16-24 VFP)	ITE 945	7.250 TSF	331	331	662	286	286	572	9,305
Pass-by Trips (76%AM, 75%PM, 75%Daily)	ITE 945 ⁶		-252	-251	-503	-215	-214	-429	-6,979
Subtotal			79	80	159	71	72	143	2,326
Automated Car Wash	ITE 948	1 CWT	17	17	34	39	39	78	861
Subtotal Project Trips (Gross)			348	348	696	325	325	650	10,166
Total Pass-by Trips			-252	-251	-503	-215	-214	-429	-6,979
TOTAL NEW TRIPS GENERATED			96	97	193	110	111	221	3,187

Notes:

1. ITE = Institute of Transportation Engineers *Trip Generation Manual* (11th Edition, 2021); ### = Land Use Code.
All rates based on General Urban/Suburban setting.
2. TSF = Thousand Square Feet; CWT = Automated Car Wash Tunnel.
3. ITE rates with data from San Diego Association of Governments (SANDAG) Vehicular Traffic Generation Rates (April 2002). Where the daily or peak hour rate is not provided by ITE, the SANDAG percentage of peak hour to daily rate is used to calculate the missing data. Where the peak hour distribution is not provided by ITE, the SANDAG peak hour distribution is used.
4. ITE includes trip rates for two commonly used independent variables for the Convenience Store Gas Station land use: 1) trips per vehicle fueling position (VFP), and 2) trips per thousand square feet of convenience store gross floor area (GFA). Per the ITE Trip Generation Manual, the use of both VFP and GFA provides a significant improvement in the reliability of a trip generation estimate when compared to the single-variable data plots in prior editions. Each set of trip rates will produce two estimates of the site-generated trips and both values can be considered when determining a site trip generation estimate.
5. For ITE 945 (Convenience Store Gas Station) use of the VFP or GFA trip rates results in different trip estimates; therefore, the worst-case estimates are used in this analysis.
6. Pass-by trips calculated in accordance with ITE recommended practice and rates from the Trip Generation Manual (11th Edition, 2021) for peak hour trips. Daily pass-by rates are not available from ITE; therefore, the daily pass-by rate was determined as the lower of the AM or PM peak hour pass-by

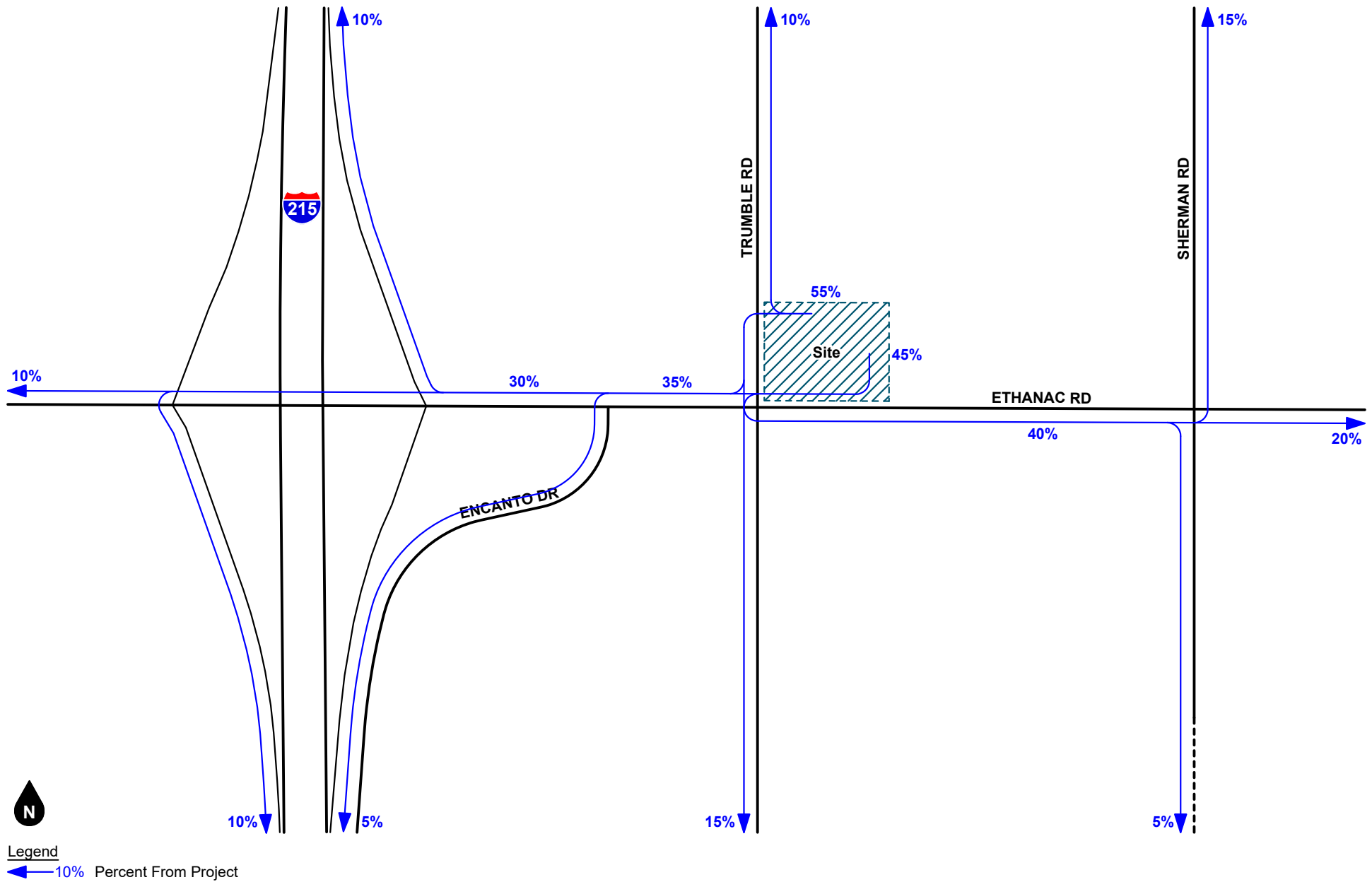


Figure 15
Project Trip Distribution (Outbound)

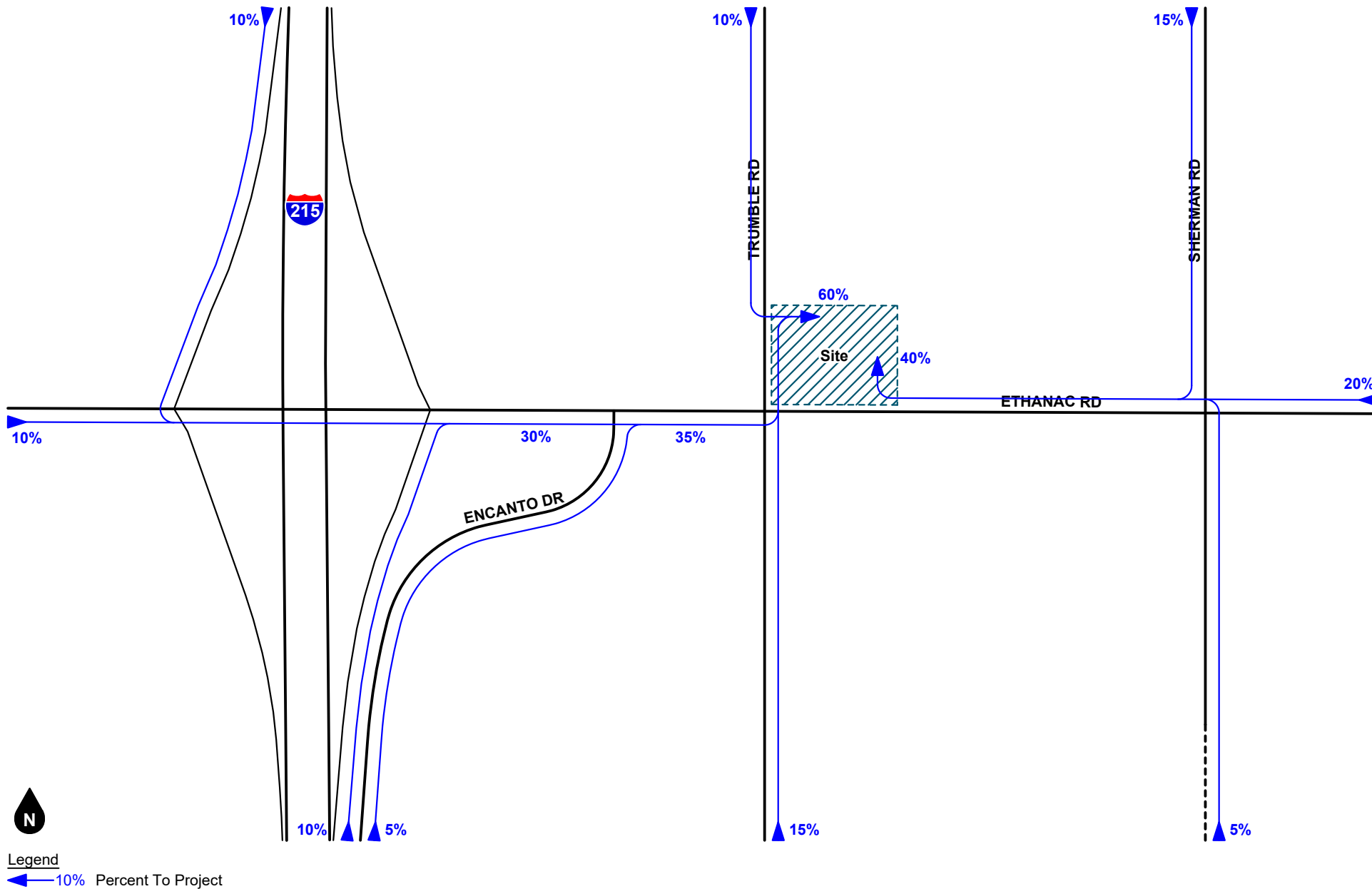


Figure 16
Project Trip Distribution (Inbound)

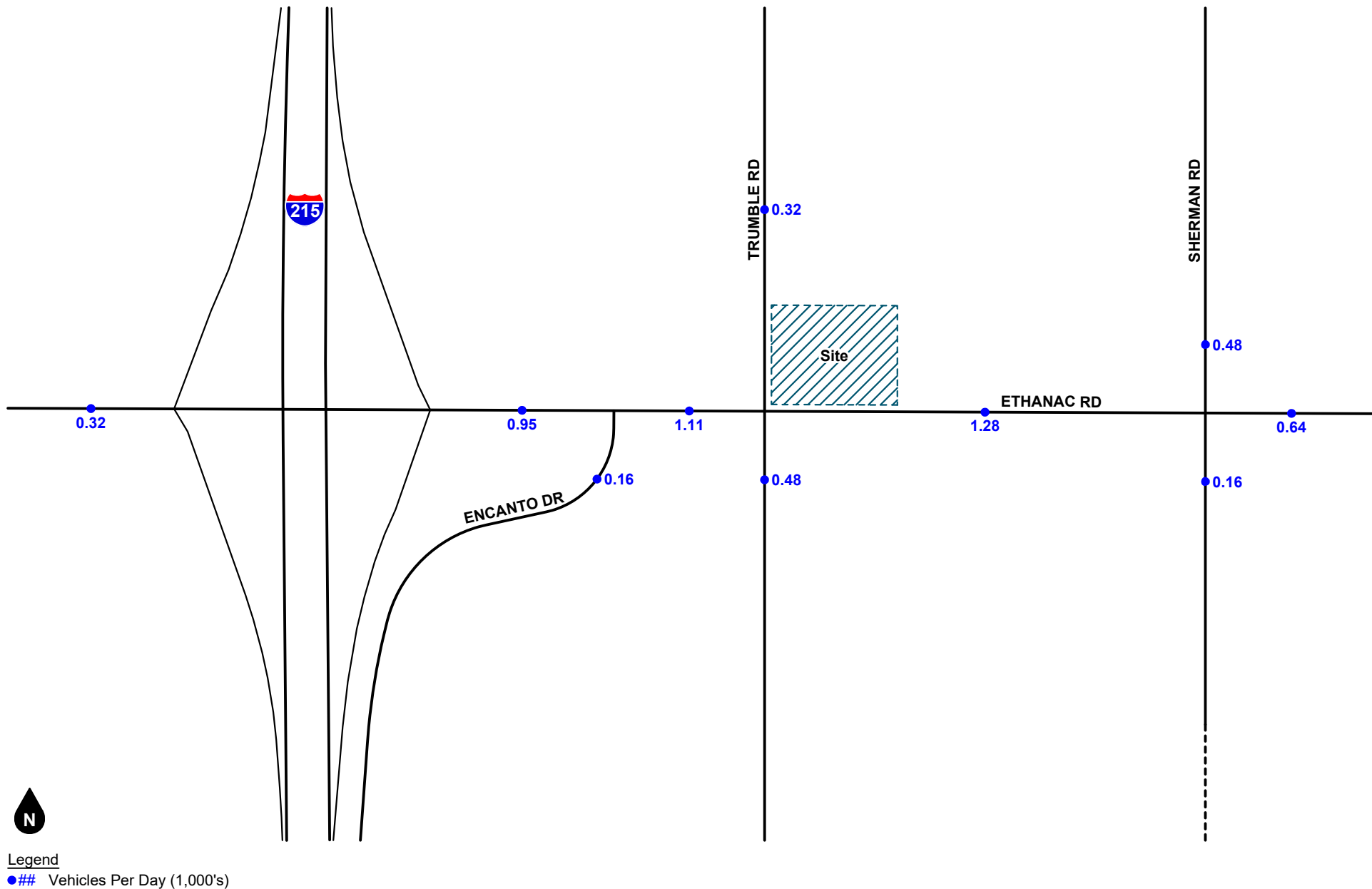
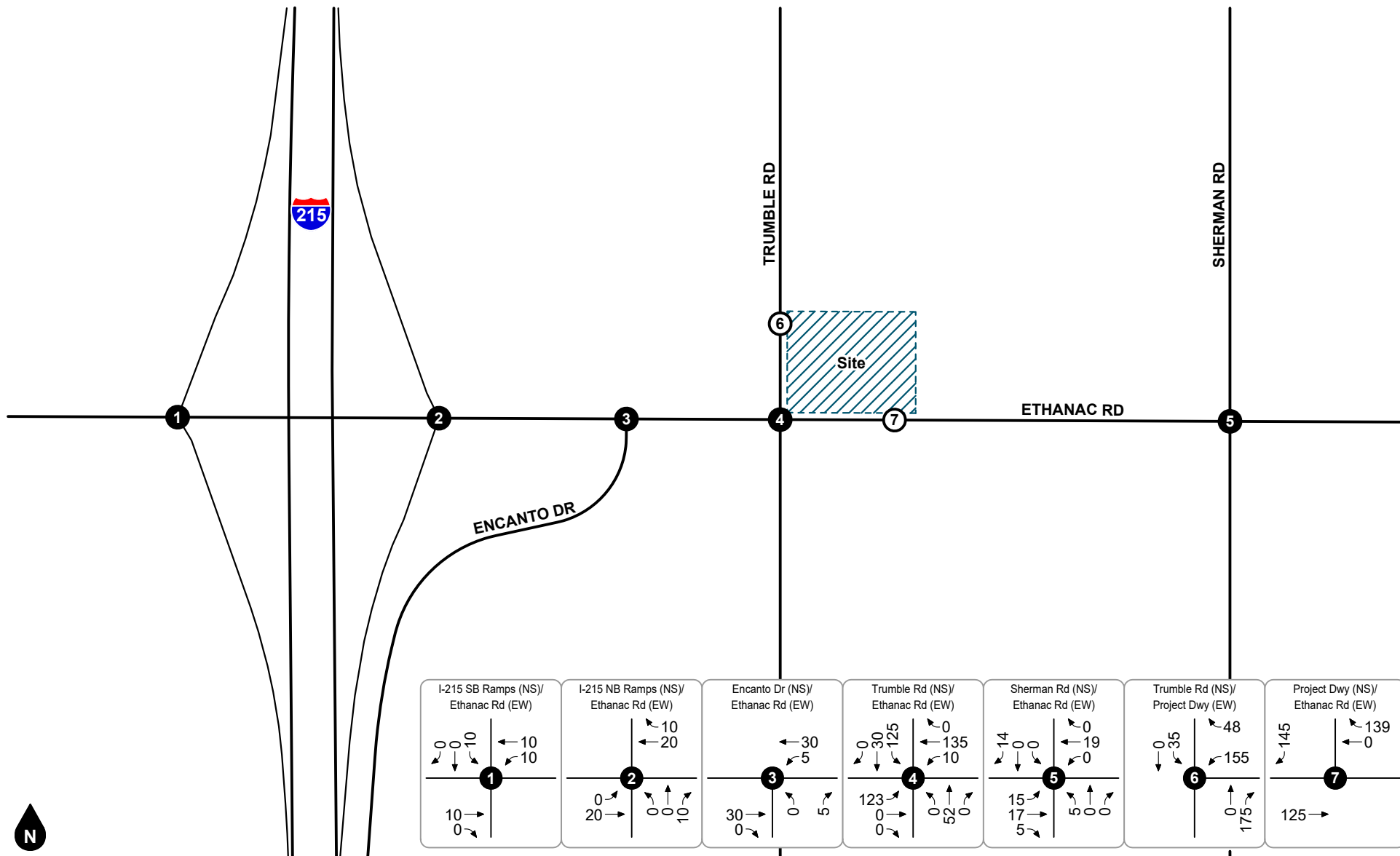


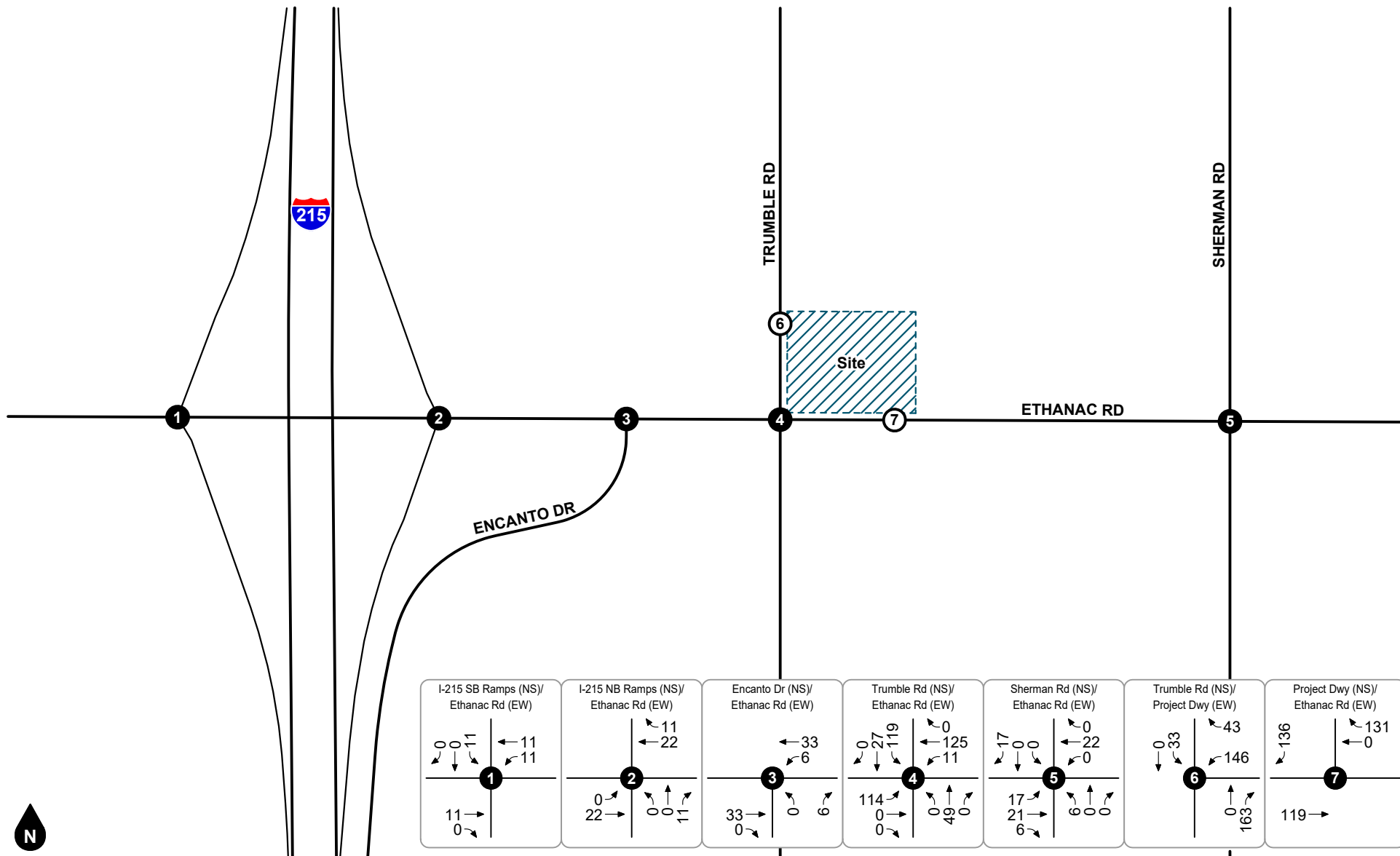
Figure 17
Project Average Daily Traffic Volumes



Legend

- # Study Intersection
- # Project Driveway

Figure 18
Project AM Peak Hour Intersection Turning Movement Volumes



- Legend**
- # Study Intersection
 - # Project Driveway

Figure 19
Project PM Peak Hour Intersection Turning Movement Volumes

5. FUTURE VOLUME FORECASTS

This section describes how future volume forecasts for each analysis scenario were developed. Forecast study area volumes are illustrated in the figures contained in this section.

METHOD OF PROJECTION

To assess future conditions, existing volumes were combined with project trips, ambient growth, and other development trips. The project completion date for analysis purposes in this report is 2025.

Ambient Growth

To account for ambient growth, Opening Year (2025) roadway volumes were developed by increasing existing (year 2023) volumes by a growth rate of two percent (3.0%) per year over a two (2) year period for a total growth factor of 1.06. The ambient growth was applied to all movements at the study intersections.

Other Developments

To account for growth associated with other development projects, trips generated by other pending or approved but unconstructed developments in the City of Perris and City of Menifee were reviewed and added to the study area as appropriate. The other development trip generation summary is shown in Table 3. The regional ambient growth is assumed to account for any additional trips generated by other developments not specifically listed in Table 3. Figure 20 shows the other development location map.

Average daily traffic volumes generated by other developments are shown on Figure 21. Figure 22 and Figure 23 show the forecast AM peak hour and PM peak hour intersection turning movement volumes for trips generated by other developments.

ANALYSIS SCENARIO VOLUMES

Existing Plus Project

The Existing Plus Project volume forecast was developed by adding project-generated trips to existing volumes. Existing Plus Project average daily traffic volumes are shown on Figure 24. Existing Plus Project AM peak hour and PM peak hour intersection turning movement volumes are shown on Figure 25 and Figure 26.

Opening Year (2025) Without Project

The Opening Year (2025) Without Project volume forecast was developed by applying the ambient growth factor to existing volumes and adding trips generated by other developments. Opening Year (2025) Without Project average daily traffic volumes are shown on Figure 27. Opening Year (2025) Without Project AM peak hour and PM peak hour intersection turning movement volumes are shown on Figure 28 and Figure 29.

Opening Year (2025) With Project

The Opening Year (2025) With Project volume forecast was developed by adding project-generated trips to the Opening Year (2025) Without Project volumes. Opening Year (2025) With Project average daily traffic volumes are shown on Figure 30. Opening Year (2025) With Project AM peak hour and PM peak hour intersection turning movement volumes are shown on Figure 31 and Figure 32.

Table 3 (Page 1/ 3)

Other Development Trip Generation

Trips Generated											
ID	Name/Address	Land Use	Source ¹	Quantity / Unit Variable ²	AM Peak Hour			PM Peak Hour			Daily
					In	Out	Total	In	Out	Total	
City of Perris											
1	Pilot J 14K & QSRs 8.2K	Convenience Store Gas Station (16-24 VF	ITE 945	14.000 TSF	639	640	1,279	553	552	1,105	17,967
		Pass-by Trips (76%AM, 75%PM, 75%Daily)	ITE 945		-486	-486	-972	-415	-414	-829	-13,475
		Fast-Food Restaurant with Drive-Throu	ITE 934	8.200 TSF	187	179	366	141	130	271	3,833
		Pass-by Trips (50%AM, 55%PM, 50%Daily)	ITE 934		-94	-89	-183	-78	-71	-149	-1,917
		Subtotal			246	244	490	201	197	398	6,408
2	Farmer Boys	High-Turnover (Sit-Down) Restaurant	ITE 932	3.300 TSF	17	15	32	18	12	30	354
		Pass-by Trips (43%PM, 21.5%Daily)	ITE 932					-8	-5	-13	-76
		Subtotal			17	15	32	10	7	17	278
3	Marijuana Manufactur	Marijuana Cultivation and Processing Fa	ITE 190	12.000 TSF	17	17	34	39	39	78	861
4	Hillwood Ethanac (NWC Sherman & Ethanac)	HCW Fulfillment Center	ITE 155	412.000 TSF	50	12	62	26	40	66	746
		Cars		PCE	46	8	54	25	37	62	651
		Trucks		PCE	10	11	21	3	7	10	241
		HCW Fulfillment Center Subtotal		PCE	56	19	75	28	44	72	892
5	Blue Industrial (SWC Trumble & Mapes)	HCW Fulfillment Center	ITE 155	329.500 TSF	40	9	49	21	32	53	596
		Cars		PCE	36	7	43	20	29	49	520
		Trucks		PCE	10	6	16	3	7	10	193
		HCW Fulfillment Center Subtotal		PCE	46	13	59	23	36	59	713
6	Septembers Restaurant & Bar	High-Turnover (Sit-Down) Restaurant	ITE 932	4.870 TSF	26	21	47	27	17	44	522
		Pass-by Trips (43%PM, 21.5%Daily)	ITE 932					-12	-7	-19	-112
		Subtotal			26	21	47	15	10	25	410
7	TTM37817	Multifamily Housing (Low-Rise, Not Close to	ITE 220	228 DU	22	69	91	73	43	116	1,537
8	TTM37818	Multifamily Housing (Low-Rise, Not Close to	ITE 220	236 DU	23	71	94	76	44	120	1,591
9	TTM36988	Single-Family Detached Housing	ITE 210	169 DU	30	88	118	100	59	159	1,594
10	TTM37223	Single-Family Detached Housing	ITE 210	235 DU	41	124	165	139	82	221	2,216
11	TTM37722	Single-Family Detached Housing	ITE 210	116 DU	20	61	81	69	40	109	1,094
12	Richland Industrial	HCW Fulfillment Center	ITE 155	500.000 TSF	61	14	75	31	49	80	905
		Cars		PCE	56	8	64	27	48	75	790
		Trucks		PCE	13	15	28	10	3	13	293
		HCW Fulfillment Center Subtotal		PCE	69	23	92	37	51	88	1,083
City of Menifee											
M1	DEV2022-009 SEC Trumble & Mapes	Warehousing	ITE 150	58.643 TSF	8	2	10	3	8	11	100
		Cars		PCE	5	2	7	2	5	7	63
		Trucks		PCE	7	0	7	3	7	10	94
		Warehousing Subtotal		PCE	12	2	14	5	12	17	157
M2	DEV2022-003 SE of Trumble & Mapes	Warehousing	ITE 150	277.578 TSF	36	11	47	14	36	50	475
		Cars		PCE	32	8	40	9	31	40	307
		Trucks		PCE	10	8	18	12	13	25	427
		Warehousing Subtotal		PCE	42	16	58	21	44	65	734

Table 3 (Page 2/ 3)

Other Development Trip Generation

Trips Generated											
ID	Name/Address	Land Use	Source ¹	Quantity / Unit Variable ²	AM Peak Hour			PM Peak Hour			Daily
					In	Out	Total	In	Out	Total	
M3	CUP 2016-290	Hotel	ITE 310	120 RM	31	24	55	36	35	71	959
M4	CUP 2018-126	Single Tenant Office Building	ITE 715	5.454 TSF	9	1	10	1	9	10	71
M5	DEV2022-019 SE of Trumble & Watson	HCW Fulfillment Center	ITE 155	327.631 TSF	40	9	49	20	32	52	593
		Cars		PCE	36	7	43	19	29	48	518
		Trucks		PCE	10	6	16	3	7	10	191
		HCW Fulfillment Center Subtotal		PCE	46	13	59	22	36	58	709
M6	TTM34118	Single-Family Attached Housing	ITE 215	85 DU	10	31	41	29	19	48	612
M7	TPM2018-320 Redevelopment of Motte Country Plaza	High-Turnover (Sit-Down) Restaurant	ITE 932	-6.380 TSF	-34	-27	-61	-35	-23	-58	-684
		Convenience Store Gas Station (4-5.5 ksf GFA)	ITE 945	12 VFP	162	162	324	137	136	273	3,086
		Pass-by Trips (76%AM, 75%PM, 75%Daily)	ITE 945		-123	-123	-246	-103	-102	-205	-2,315
		Automated Car Wash	ITE 948	1 CWT	17	17	34	39	39	78	861
		Subtotal			22	29	51	38	50	88	948
M8	DEV2022-014 SE of Dawesson & Ethanac	HCW Fulfillment Center	ITE 155	1138.638 TSF	138	33	171	71	111	182	2,061
		Cars		PCE	127	21	148	66	105	171	1,799
		Trucks		PCE	28	32	60	12	16	28	667
		HCW Fulfillment Center Subtotal		PCE	155	53	208	78	121	199	2,466
M9	DEV2022-014 SE of Dawesson & Ethanac	HCW Fulfillment Center	ITE 155	491.467 TSF	60	14	74	31	48	79	890
		Cars		PCE	55	10	65	30	44	74	776
		Trucks		PCE	13	11	24	3	10	13	290
		HCW Fulfillment Center Subtotal		PCE	68	21	89	33	54	87	1,066
M10	TTM36988	Single-Family Detached Housing	ITE 210	1022 DU	179	536	715	605	356	961	9,637
M11	TTM37223	Single-Family Detached Housing	ITE 210	235 DU	41	124	165	139	82	221	2,216
M12	TTM37722	Single-Family Attached Housing	ITE 215	162 DU	19	59	78	54	38	92	1,166
M13	PLN21-0104 SWC Ethanac & Barrett	Convenience Store Gas Station (4-5.5 ksf GFA)	ITE 945	8 VFP	108	108	216	91	91	182	2,057
		Pass-by Trips (60%AM, 56%PM, 56%Daily)	ITE 945		-65	-65	-130	-51	-51	-102	-1,152
		Subtotal			43	43	86	40	40	80	905
M14	PLN21-0290 SW of Ethanac & Barrett	Warehousing	ITE 150	125.000 TSF	16	5	21	6	17	23	214
		Cars		PCE	13	4	17	4	14	18	138
		Trucks		PCE	7	3	10	6	7	13	193
		Warehousing Subtotal		PCE	20	7	27	10	21	31	331
M15	PLN22-0180 SW of Ethanac & Barrett	Warehousing	ITE 150	137.896 TSF	18	5	23	7	18	25	236
		Cars		PCE	15	5	20	5	15	20	153
		Trucks		PCE	7	3	10	6	7	13	216
		Warehousing Subtotal		PCE	22	8	30	11	22	33	369
M16	PLN23-0040 SW of Ethanac & Barrett	HCW Fulfillment Center	ITE 155	411.829 TSF	50	12	62	26	40	66	745
		Cars		PCE	46	8	54	25	37	62	650
		Trucks		PCE	10	11	21	3	7	10	241
		HCW Fulfillment Center Subtotal		PCE	56	19	75	28	44	72	891

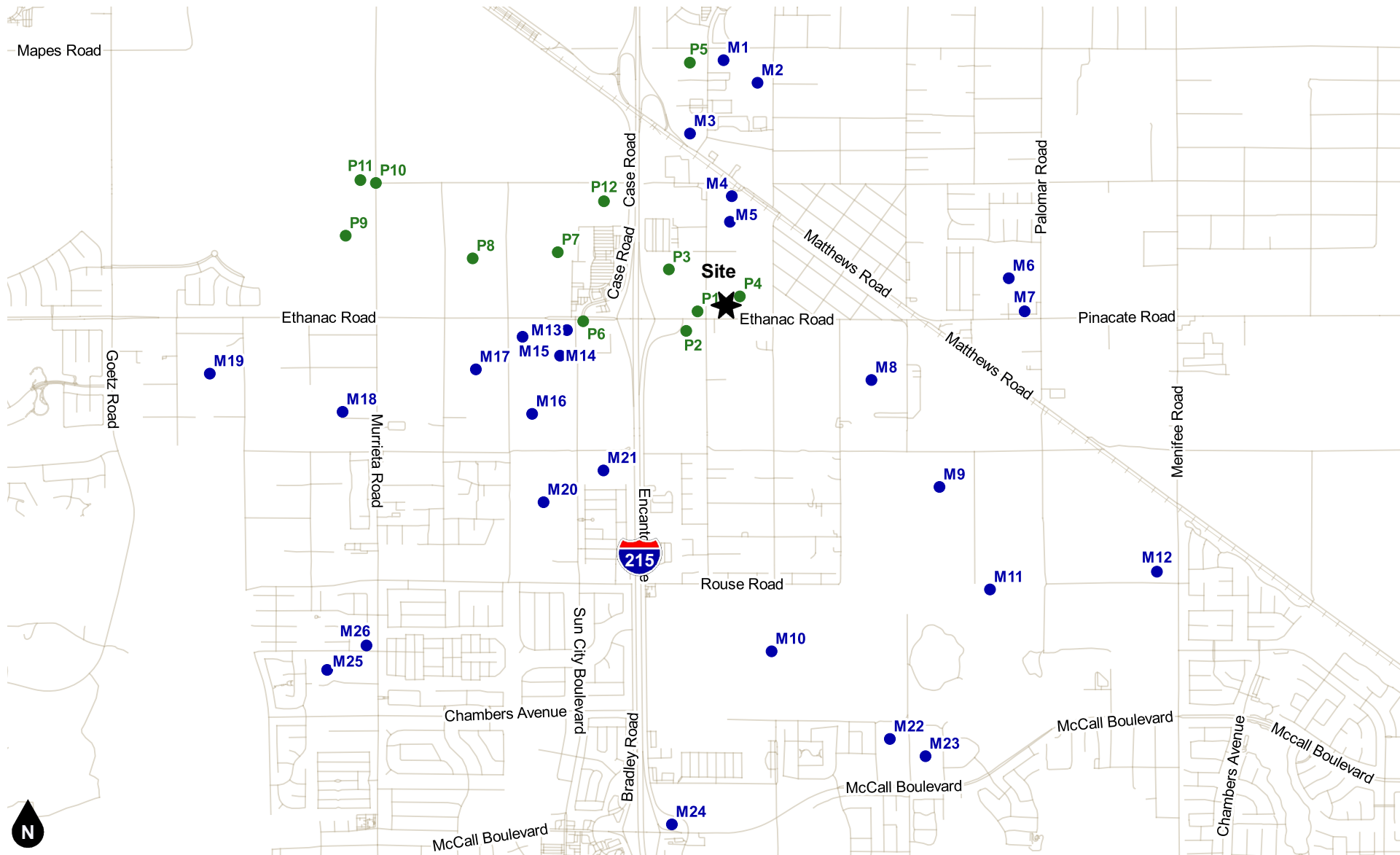
Table 3 (Page 3/ 3)

Other Development Trip Generation

Trips Generated											
ID	Name/Address	Land Use	Source ¹	Quantity / Unit Variable ²	AM Peak Hour			PM Peak Hour			Daily
					In	Out	Total	In	Out	Total	
M17	PLN21-0282 SW of Ethanac & Barrett	HCW Fulfillment Center	ITE 155	1286.607 TSF	156	37	193	80	126	206	2,329
		Cars		PCE	142	25	167	74	118	192	2,033
		Trucks		PCE	35	32	67	16	19	35	753
		HCW Fulfillment Center Subtotal		PCE	177	57	234	90	137	227	2,786
M18	DEV2022-017 SW of Ethanac & Murrieta	HCW Fulfillment Center	ITE 155	467.320 TSF	57	13	70	29	46	75	846
		Cars		PCE	52	9	61	28	42	70	739
		Trucks		PCE	13	11	24	3	10	13	272
		HCW Fulfillment Center Subtotal		PCE	65	20	85	31	52	83	1,011
M19	PLN21-0370 SE of Ethanac & Goetz	HCW Fulfillment Center	ITE 155	700.037 TSF	85	20	105	44	68	112	1,267
		Cars		PCE	79	12	91	40	66	106	1,105
		Trucks		PCE	16	20	36	10	6	16	412
		HCW Fulfillment Center Subtotal		PCE	95	32	127	50	72	122	1,517
M20	TTM37400	Single-Family Detached Housing	ITE 210	174 DU	30	92	122	103	61	164	1,641
M21	TM 2015-250	Single-Family Attached Housing	ITE 215	162 DU	19	59	78	54	38	92	1,166
M22	DEV2022-020	Multifamily Housing (Low-Rise, Not Close to	ITE 220	136 DU	13	41	54	44	25	69	917
M23	DEV2023-004	Multifamily Housing (Low-Rise, Not Close to	ITE 220	240 DU	23	73	96	77	45	122	1,618
M24	PLN20-0003 NEC McCall and I-215	Convenience Store Gas Station (16-24 VF	ITE 945	7.500 TSF	343	342	685	296	296	592	9,625
		Pass-by Trips (76%AM, 75%PM, 75%Daily)	ITE 945		-261	-260	-521	-222	-222	-444	-7,219
		Fast-Food Restaurant with Drive-Throu	ITE 934	3.500 TSF	80	76	156	60	56	116	1,636
		Pass-by Trips (50%AM, 55%PM, 50%Daily)	ITE 934		-40	-38	-78	-33	-31	-64	-818
		Automated Car Wash	ITE 948	1 CWT	17	17	34	39	39	78	861
		Subtotal			139	137	276	140	138	278	4,085
M25	DEV2022-023	Single-Family Attached Housing	ITE 215	73 DU	9	26	35	25	17	42	526
M26	TM 2018-159	Single-Family Attached Housing	ITE 215	30 DU	4	10	14	10	7	17	216
TOTAL OTHER DEVELOPMENT TRIPS GENERATED					2,002	2,307	4,309	2,605	2,259	4,864	57,993

Notes:

1. ITE = Institute of Transportation Engineers Trip Generation Manual (11th Edition, 2021); ### = Land Use Code.
All rates based on General Urban/Suburban setting.
2. TSF = Thousand Square Feet; DU = Dwelling Unit, VFP = Vehicle Fuel Position; CWT = Car Wash Tunnel.
3. Pass-by trips calculated in accordance with ITE recommended practice and rates from the Trip Generation Manual (11th Edition, 2021) for peak hour trips.
Daily pass-by rates are not available from ITE; therefore, the daily pass-by rate was determined as the lower of the AM or PM peak hour pass-by rate or one-half of PM rate when there is no AM rate.
4. PCE = passenger car equivalent. PCE factors are based on the County of Riverside Transportation Analysis Guidelines (December 2020), "Appendix C – Analysis Input Parameters"



Legend
 # Other Development ID in:
 ● City of Menifee
 ● City of Perris

Figure 20
Other Development Location Map

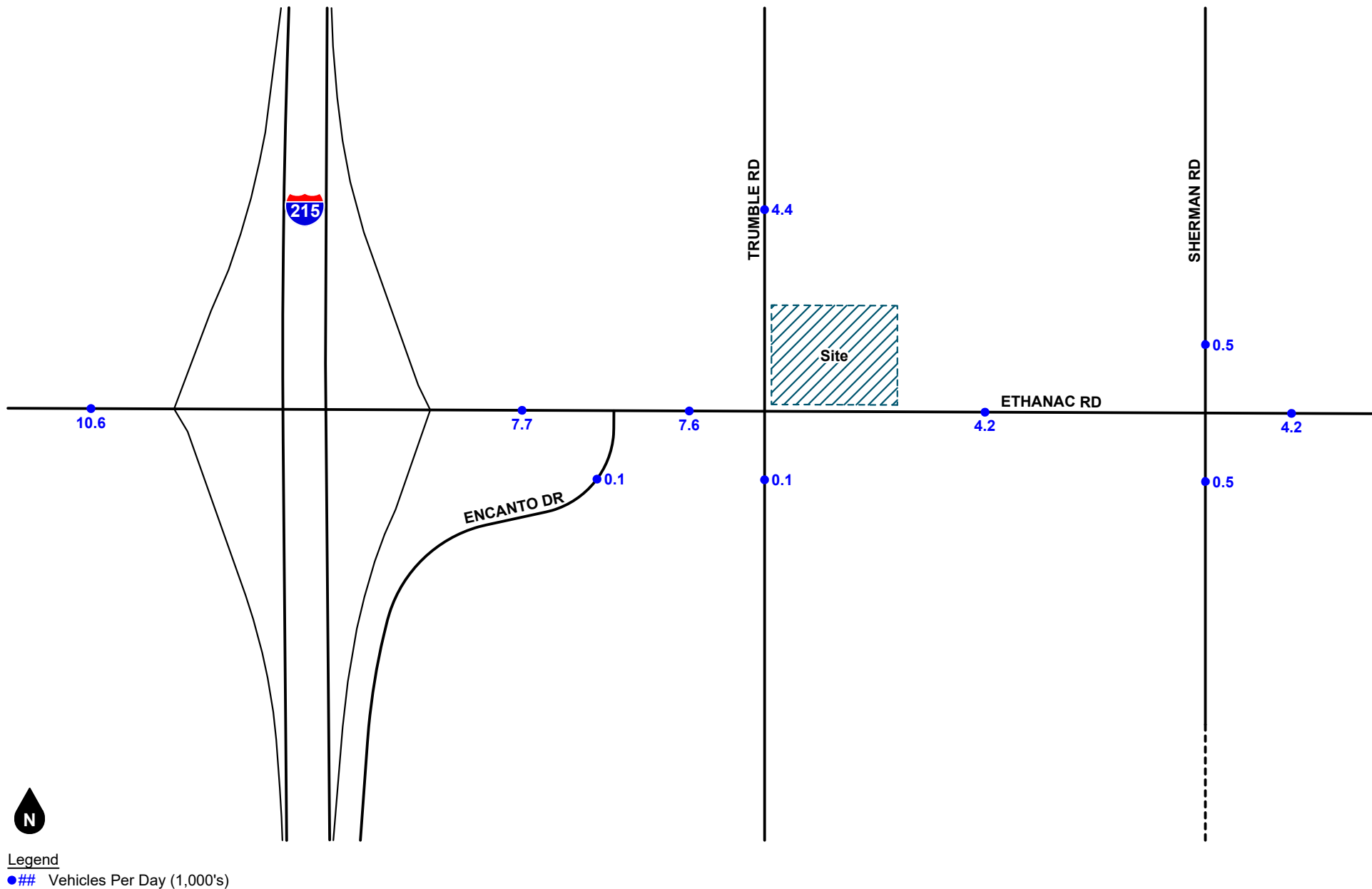


Figure 21
Other Development Average Daily Traffic Volumes

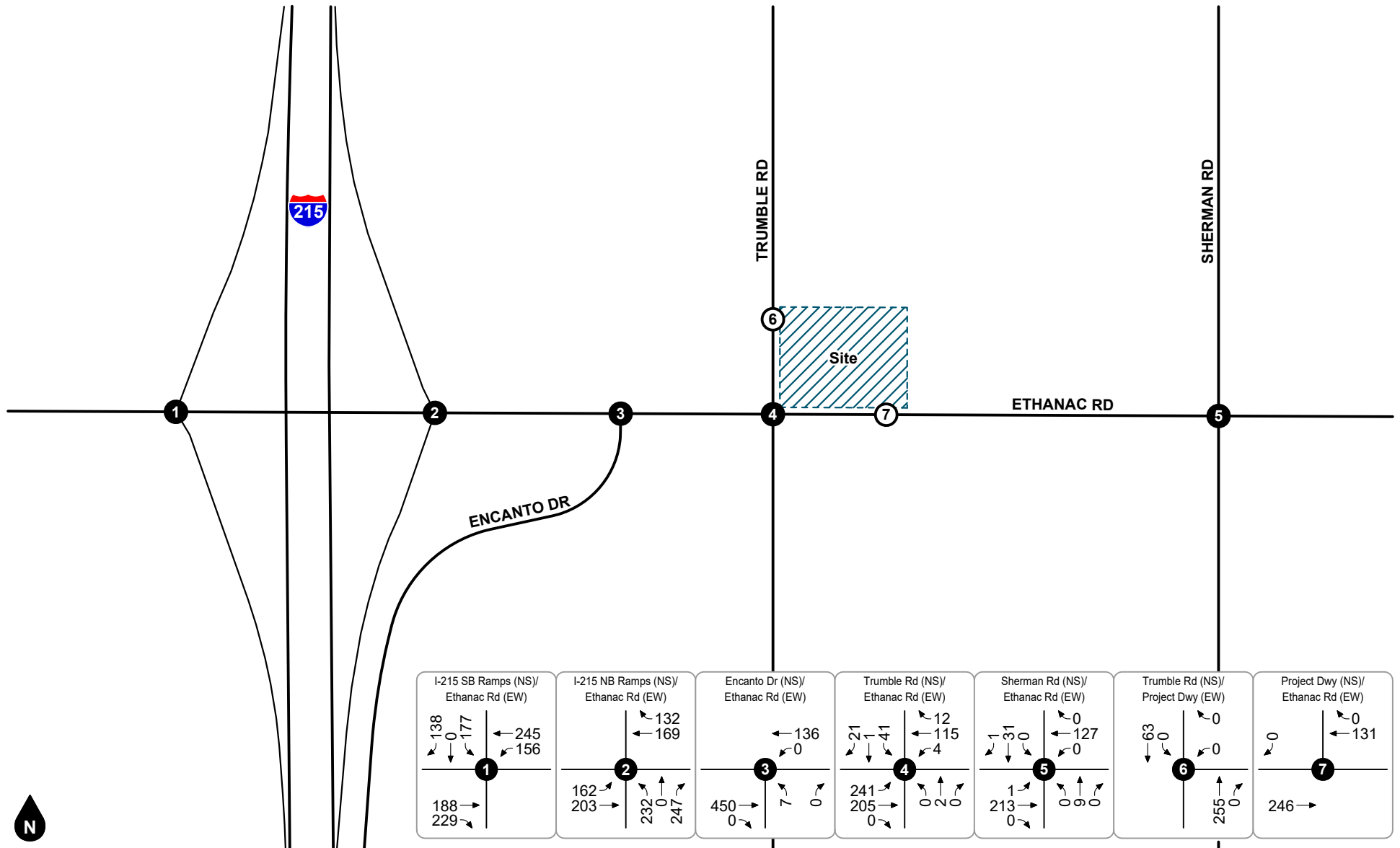


Figure 22
Other Development
AM Peak Hour Intersection Turning Movement Volumes

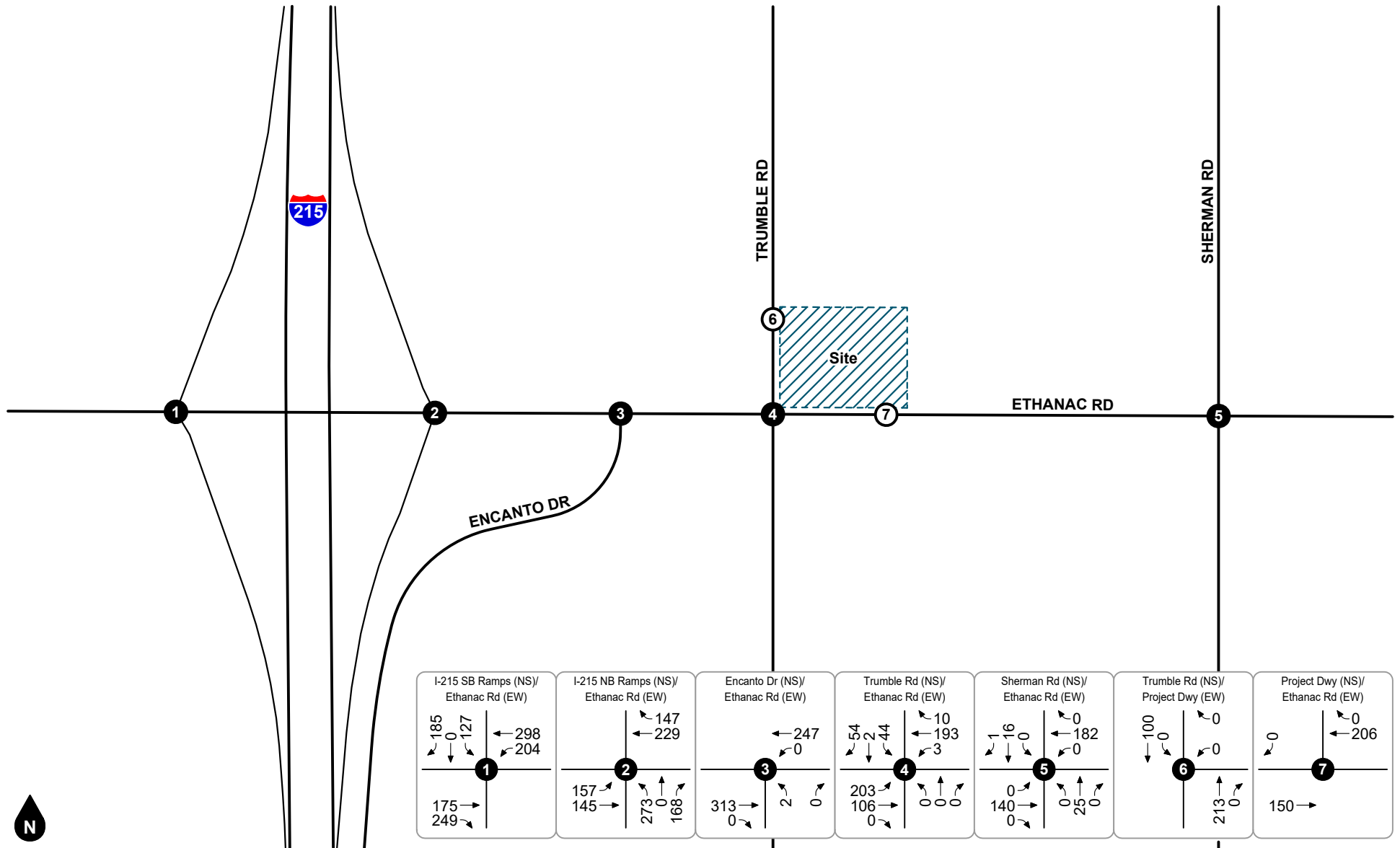


Figure 23
Other Development
PM Peak Hour Intersection Turning Movement Volumes

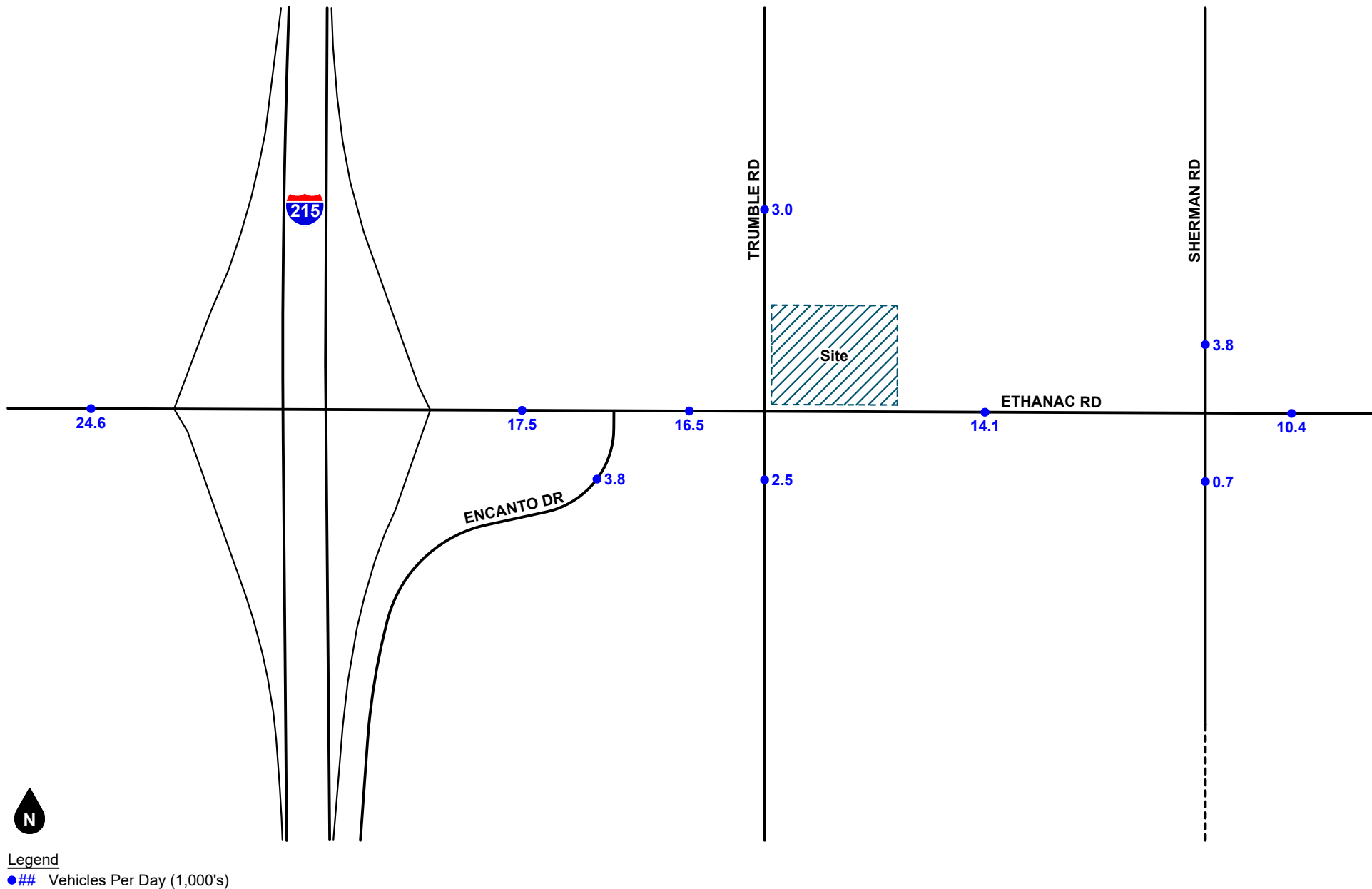
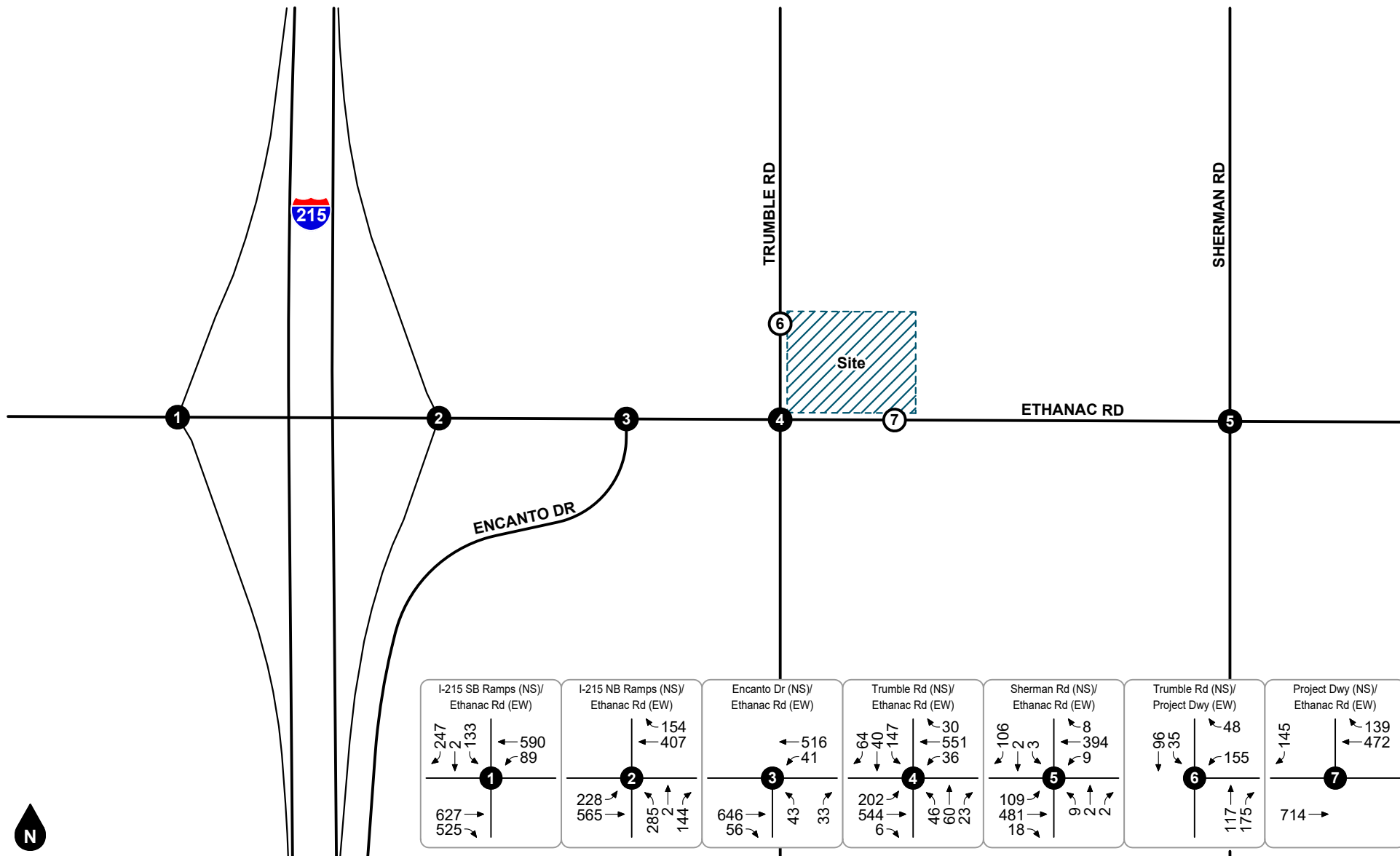


Figure 24
Existing Plus Project Average Daily Traffic Volumes



- Legend**
- # Study Intersection
 - # Project Driveway

Figure 25
Existing Plus Project
AM Peak Hour Intersection Turning Movement Volumes

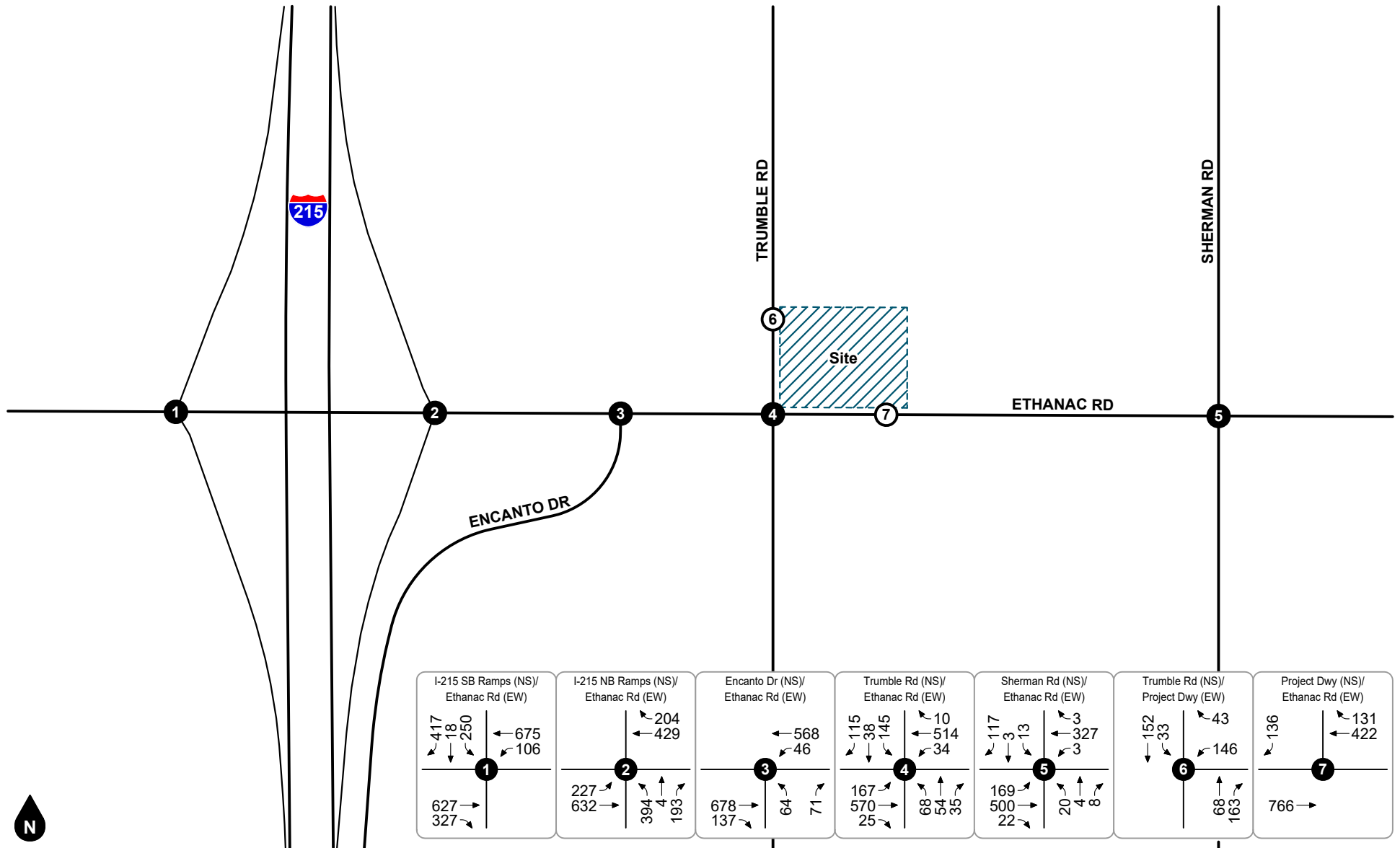


Figure 26
Existing Plus Project
PM Peak Hour Intersection Turning Movement Volumes

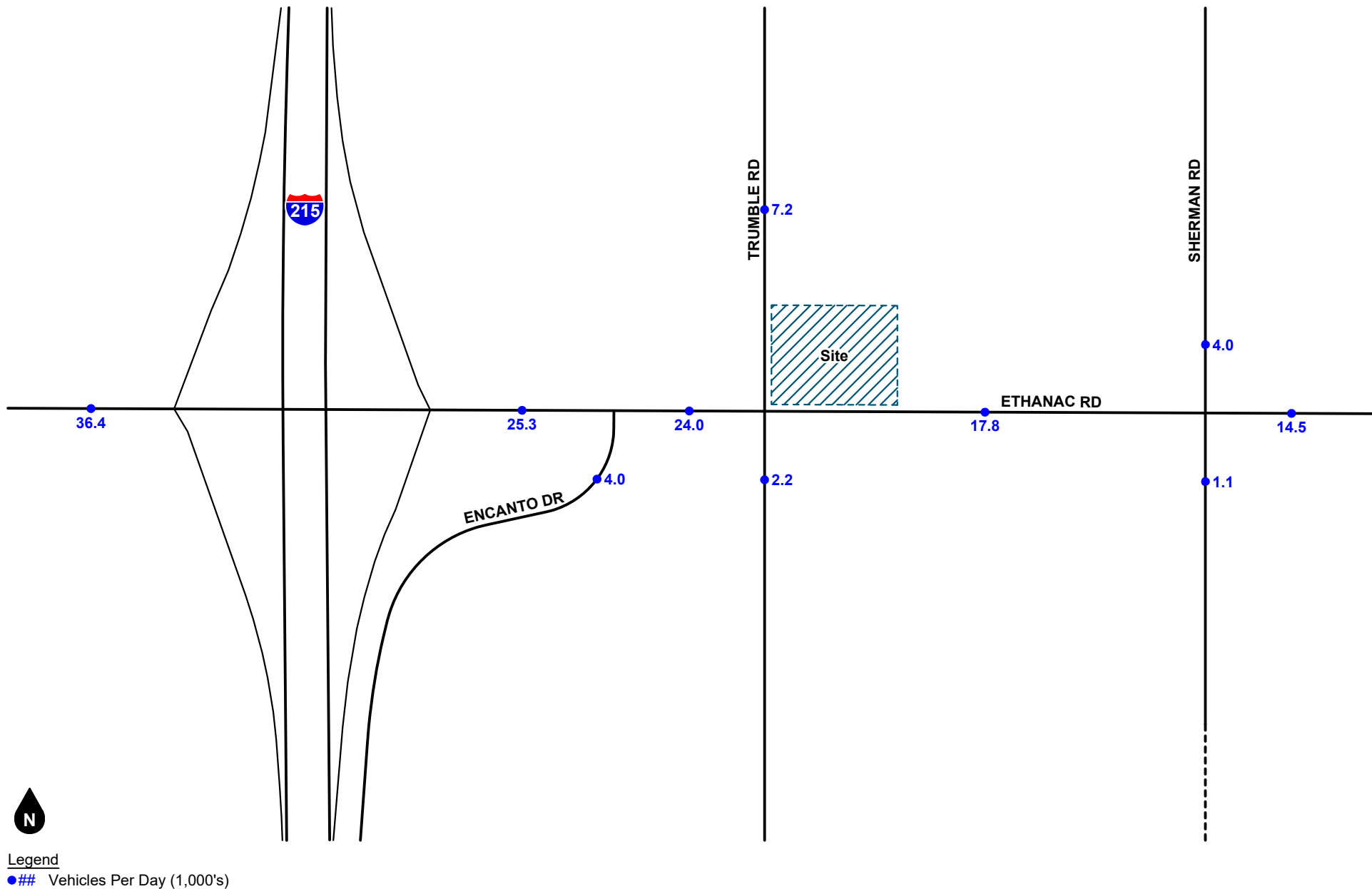
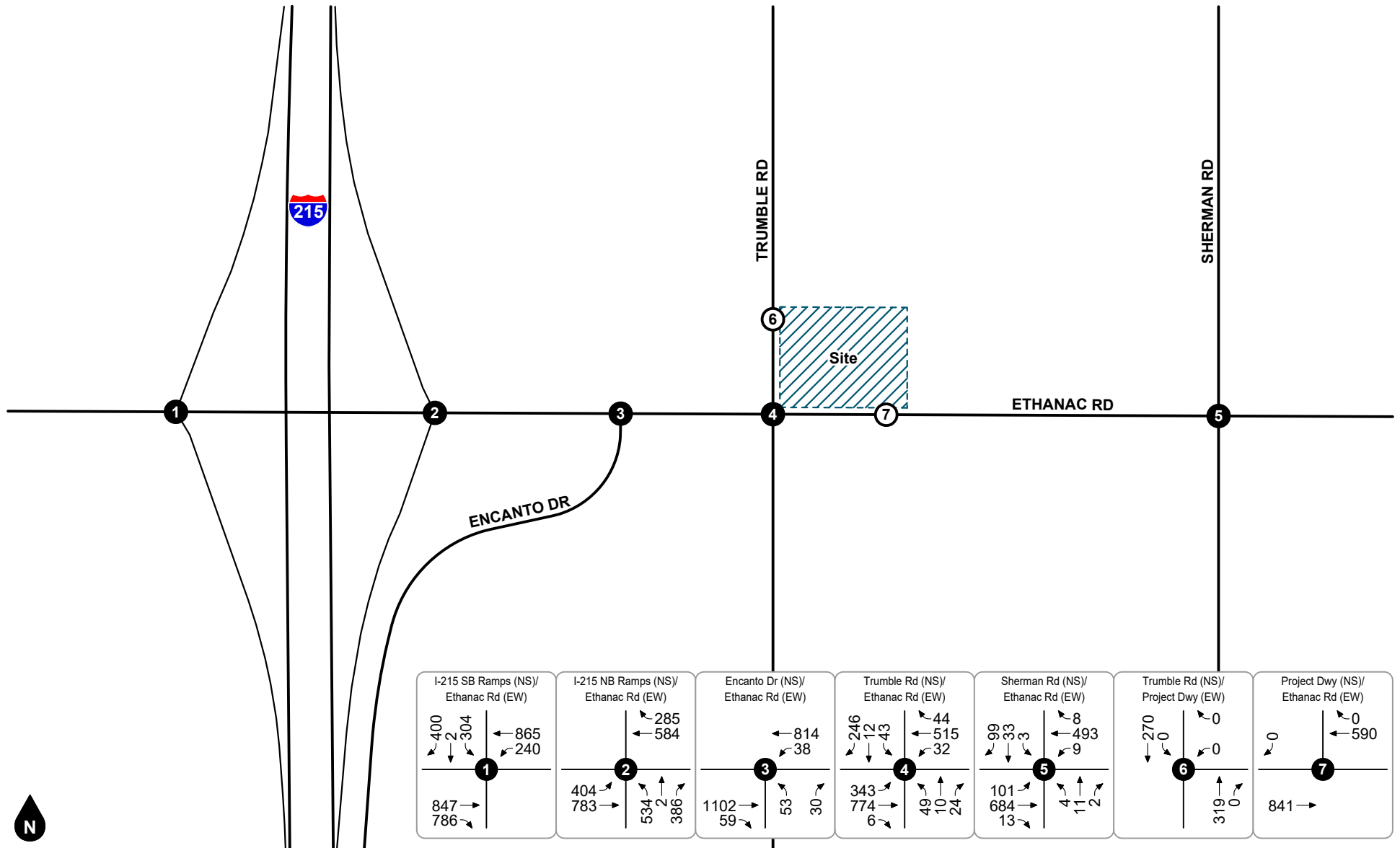


Figure 27
 Opening Year (2025) Without Project Average Daily Traffic Volumes



Legend

- # Study Intersection
- # Project Driveway

Figure 28
Opening Year (2025) Without Project
AM Peak Hour Intersection Turning Movement Volumes

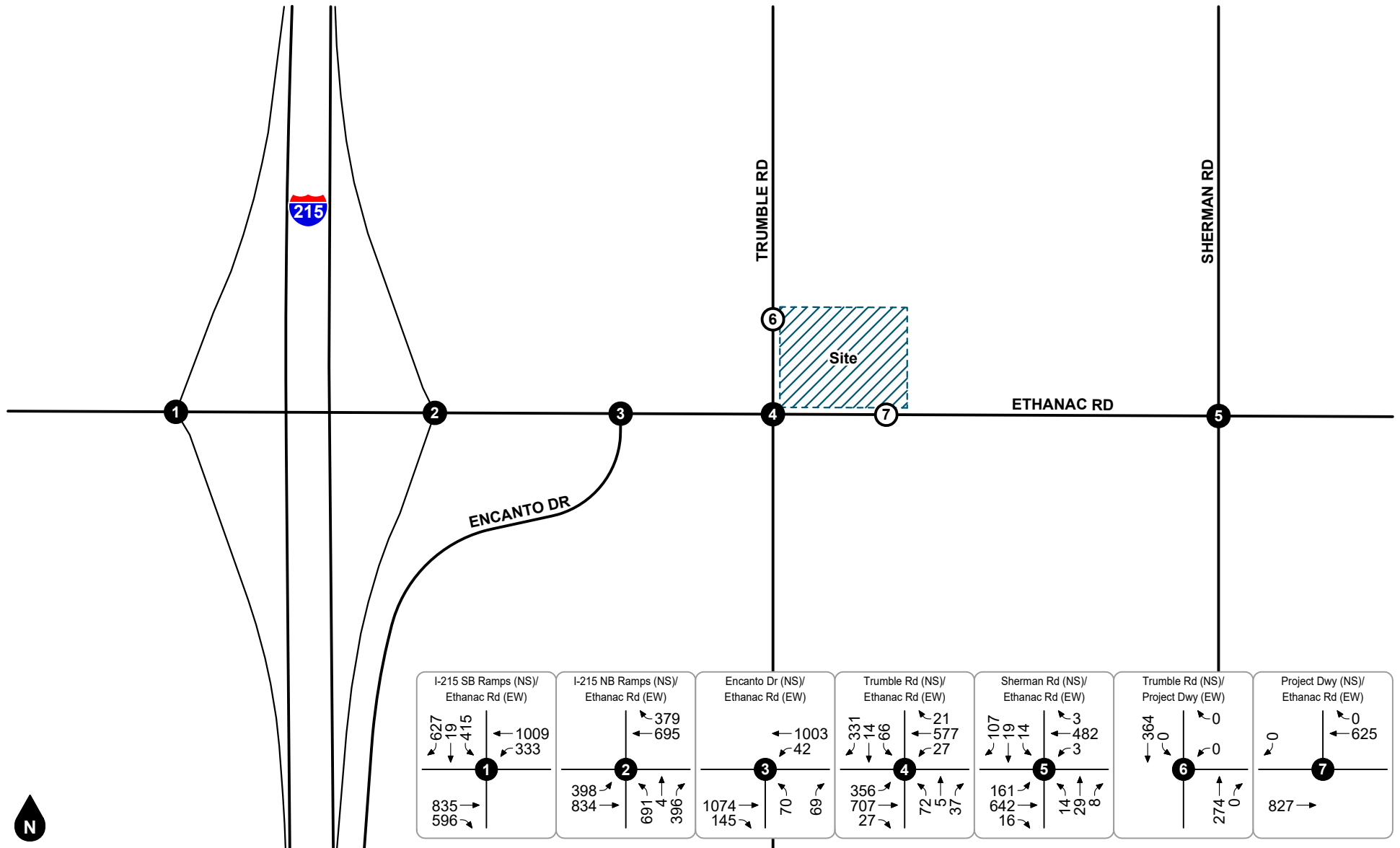


Figure 29
Opening Year (2025) Without Project
PM Peak Hour Intersection Turning Movement Volumes

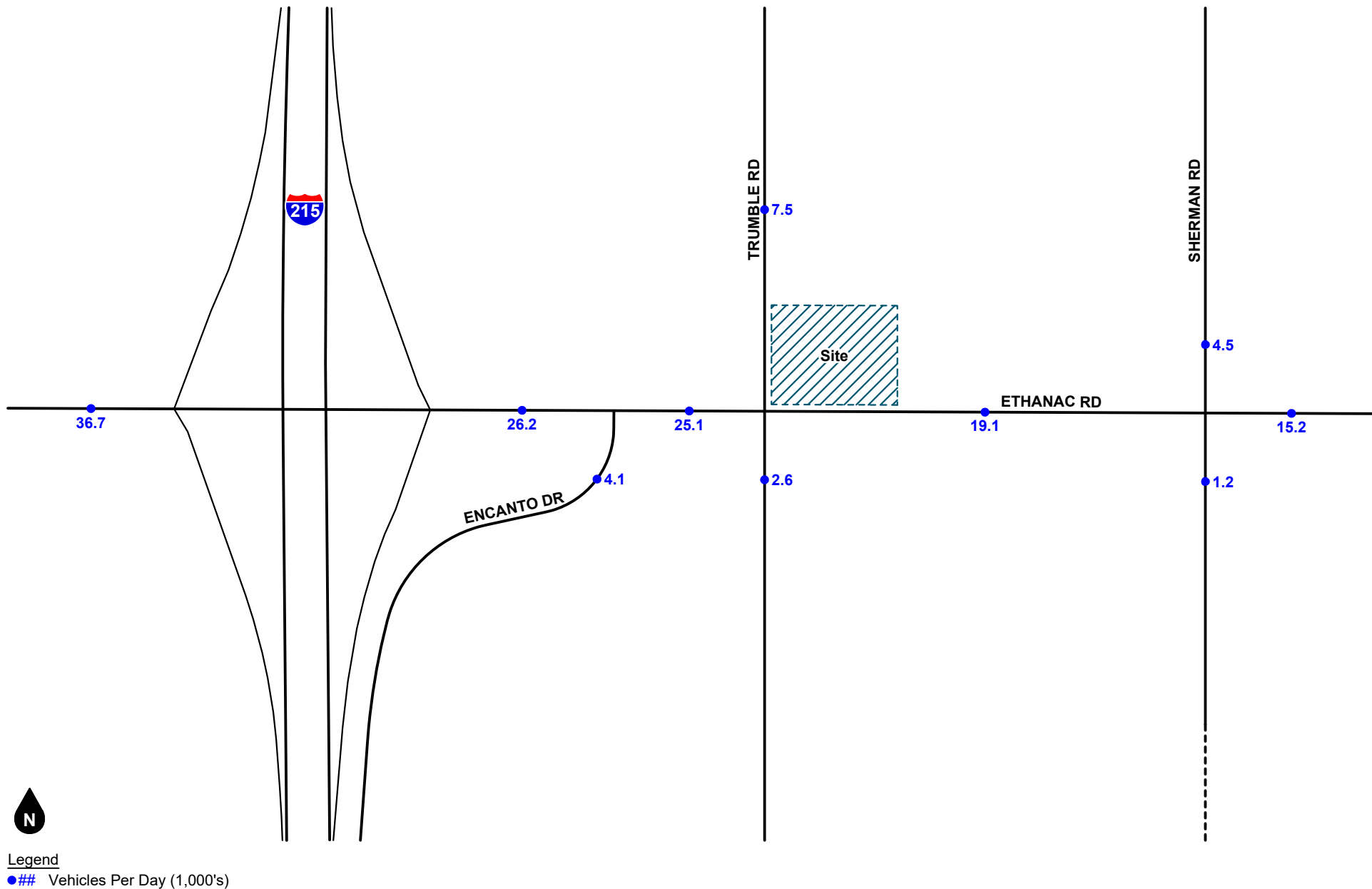
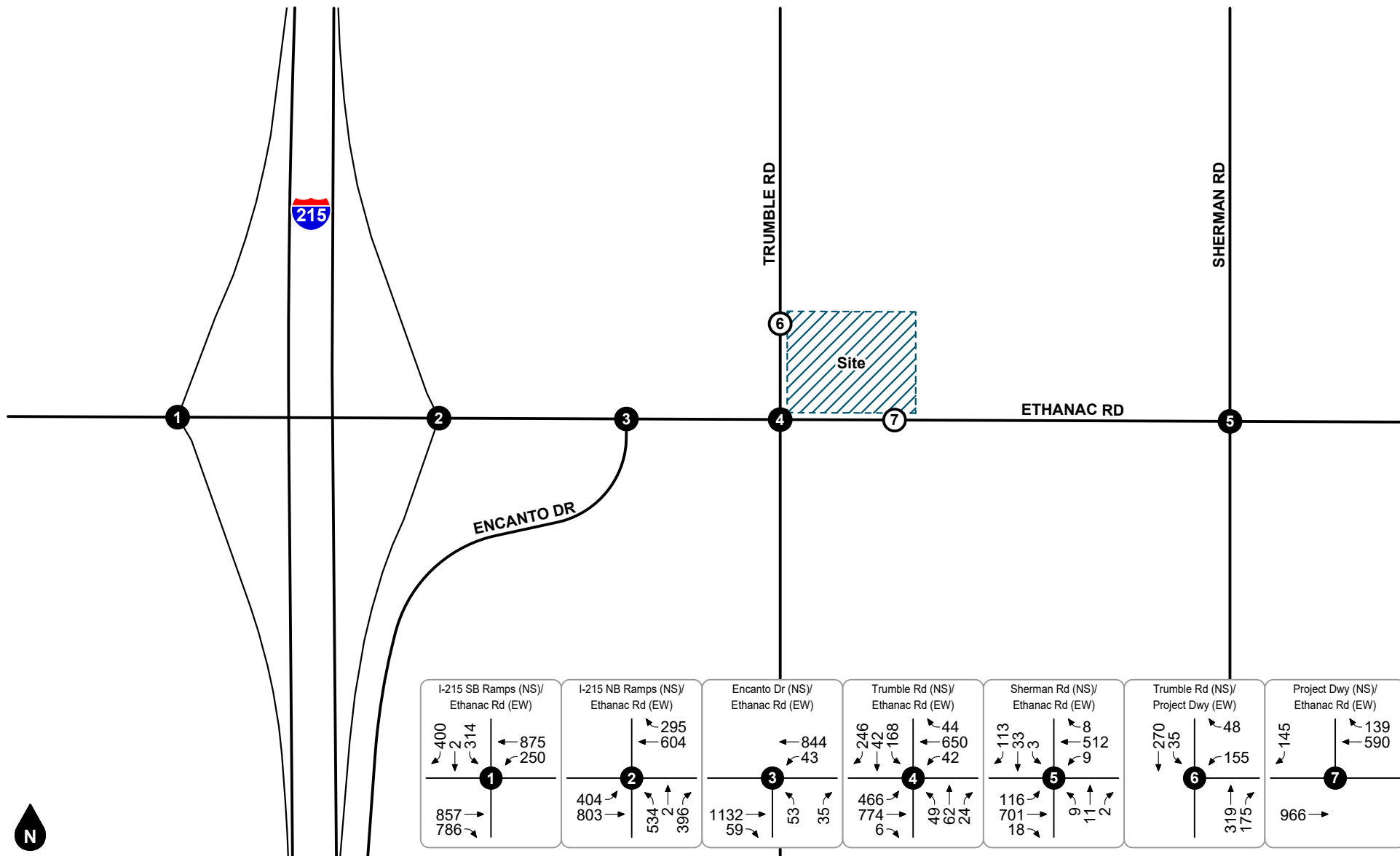
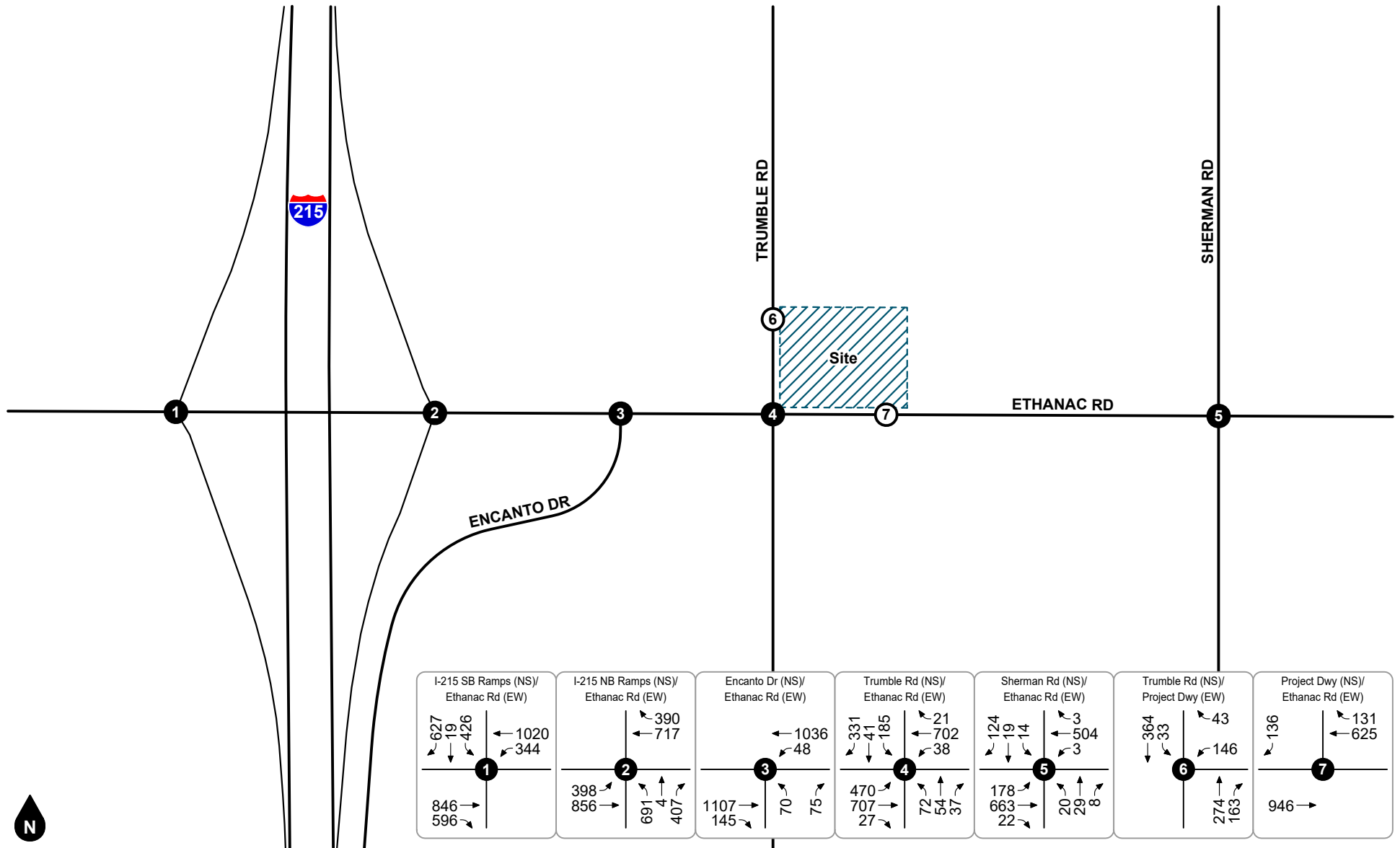


Figure 30
 Opening Year (2025) With Project Average Daily Traffic Volumes



- Legend**
- # Study Intersection
 - # Project Driveway

Figure 31
Opening Year (2025) With Project
AM Peak Hour Intersection Turning Movement Volumes



Legend

Study Intersection

Project Driveway

Figure 32
Opening Year (2025) With Project
PM Peak Hour Intersection Turning Movement Volumes

6. FUTURE LEVELS OF SERVICE ANALYSIS

Detailed intersection Level of Service calculation worksheets for each of the following analysis scenarios are provided in Appendix D.

Project design features, such as improvements necessary to provide project site access, are assumed to be constructed by the proposed project and are described in further detail in the Site Access & Circulation section presented later in this report.

EXISTING PLUS PROJECT

The study intersection Levels of Service for Existing Plus Project conditions are shown in Table 4. As shown in Table 4, the study intersections are forecast to operate within acceptable Levels of Service (D or better), except for the following study intersections that are projected to continue operating at unacceptable Level of Service E during the PM peak hour:

3. Encanto Drive (NS) at Ethanac Road (EW)

The following improvements are recommended to maintain acceptable Levels of Service at the study intersections for Existing Plus Project conditions:

3. Encanto Drive (NS) at Ethanac Road (EW)
 - Prohibit northbound left turns at Encanto Drive intersection from 7-9 AM and 4-6 PM.

To account for the recommended left turn restriction, the northbound left turn volume onto Ethanac Road from Encanto Drive was diverted to the Trumble Road/Ethanac Road intersection. As shown in Table 4, the proposed project is forecast to result in no substantial transportation effects at the study intersections for Existing Plus Project conditions with the recommended improvements.

OPENING YEAR (2025) WITHOUT PROJECT

The study intersection Levels of Service for Opening Year (2025) Without Project conditions are shown in Table 5. As shown in Table 5 the study intersections are forecast to operate within acceptable Levels of Service (D or better on local roads, or E or better at I-215 Ramps), except for the following study intersections that are projected to operate at unacceptable Levels of Service during the peak hours:

1. I-215 SB Ramps (NS) at Ethanac Road (EW)
3. Encanto Drive (NS) at Ethanac Road (EW)
4. Trumble Road (NS) at Ethanac Road (EW)
5. Sherman Road (NS) at Ethanac Road (EW)

The following improvements are recommended to maintain acceptable Levels of Service at the study intersections for Opening Year (2025) Without Project conditions:

1. I-215 SB Ramps (NS) at Ethanac Road (EW)
 - Construct additional right-turn lane.
 - Restripe the southbound approach to provide one left turn lane, one shared through/right turn lane and one right turn lane.
3. Encanto Drive (NS) at Ethanac Road (EW)
 - Install a raised median to restrict northbound and westbound left turns.

4. Trumble Road (NS) at Ethanac Road (EW)
 - Add one southbound right turn lane with right-turn overlap signal phasing and restripe the existing shared through/right turn lane to a through lane.
 - Restripe the eastbound right turn lane to a shared through/right turn lane. This improvement will require construction of one additional eastbound receiving lane.
 - Construct the westbound approach lane to consist of one left turn lane, two through lanes, and one right turn lane. This improvement will require construction of one additional westbound receiving lane.
5. Sherman Road (NS) at Ethanac Road (EW)
 - Install traffic signal.
 - Add eastbound left turn lane.

The improvements listed for the intersections of Encanto Drive/Ethanac Road [#3] and Trumble Road/Ethanac Road [#4] have been identified to be constructed by the proposed Ethanac Travel Center project (Other Development ID 1). The study area intersections are forecast to operate within acceptable Levels of Service with the recommended improvements.

OPENING YEAR (2025) WITH PROJECT

The study intersection Levels of Service for Opening Year (2025) With Project conditions is shown in Table 6. As shown in Table 6, the study intersections are forecast to operate within acceptable Levels of Service (D or better on local roads, or E or better at I-215 Ramps), except for the following study intersections that are projected to continue operating at unacceptable Levels of Service during the peak hours:

1. I-215 SB Ramps (NS) at Ethanac Road (EW)
3. Encanto Drive (NS) at Ethanac Road (EW)
4. Trumble Road (NS) at Ethanac Road (EW)
5. Sherman Road (NS) at Ethanac Road (EW)

As shown in Table 6, the proposed project is forecast to contribute to a substantial transportation effect relating to Level of Service operations for the Opening Year (2025) With Project conditions for the study area intersections listed above.

The study area intersections are forecast to operate within acceptable Levels of Service with implementation of the improvements identified for Opening Year (2025) Without Project conditions.

Table 4
Existing Plus Project Intersection Levels of Service & Project-Related Effect

Study Intersection	Traffic Control ¹	Existing				Existing Plus Project				AM Peak Hour		PM Peak Hour	
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		Change	Substantial Effect?	Change	Substantial Effect?
		Delay ²	LOS ³	Delay ²	LOS	Delay ²	LOS ³	Delay ²	LOS				
1. I-215 SB Ramos at Ethanac Road	TS	19.5	B	27.9	C	20.0	B	28.4	C	+0.5	NO	+0.5	NO
2. I-215 NB Ramps at Ethanac Road	TS	28.8	C	35.2	D	28.8	C	35.6	D	+0.0	NO	+0.4	NO
3. Encanto Drive at Ethanac Road	CSS	27.5	D	36.1	E	29.9	D	42.4	E	+2.4	NO	+6.3	YES
With Improvements	CSS	-	-	-	-	14.4	B	16.7	C	-13.1	NO	-19.4	NO
4. Trumble Road at Ethanac Road	TS	17.3	B	19.0	B	27.3	C	26.7	C	+10.0	NO	+7.7	NO
With Improvements	TS	-	-	-	-	22.2	C	30.9	C	+4.9	NO	+11.9	NO
5. Sherman Road at Ethanac Road	CSS	18.1	C	20.2	C	19.4	C	23.6	C	+1.3	NO	+3.4	NO
6. Trumble Road at Project South Driveway	CSS	-	-	-	-	13.8	B	13.3	B	+13.8	NO	+13.3	NO
7. Project Driveway at Ethanac Road	CSS	-	-	-	-	13.9	B	12.9	B	+13.9	NO	+12.9	NO

Notes:

1. TS = Traffic Signal; CSS = Cross Street Stop.
2. Delay is shown in seconds per vehicle. For intersections with traffic signal control, overall average intersection delay and LOS are shown. For intersections with cross street stop control, LOS is based on average delay of the worst minor street approach or major street left turn movement.
3. LOS = Level of Service
4. The unsignalized intersection of Encanto Drive/Ethanac Road does not satisfy the peak hour traffic signal warrant; therefore, the project-related effect is not considered substantial.

Table 5
Opening Year (2025) Without Project Intersection Levels of Service

Study Intersection	Traffic Control ¹	AM Peak Hour		PM Peak Hour	
		Delay ²	LOS ³	Delay ²	LOS
1. I-215 SB Ramos at Ethanac Road	TS	47.2	D	81.1	F
With Improvements	TS	33.8	C	41.8	D
2. I-215 NB Ramps at Ethanac Road	TS	32.7	C	55.4	E
3. Encanto Drive at Ethanac Road	CSS	275.3	F	469.3	F
With Improvements	CSS	25.3	D	31.2	D
4. Trumble Road at Ethanac Road	TS	40.4	D	58.5	E
With Improvements	TS	23.2	C	31.0	C
5. Sherman Road at Ethanac Road	CSS	76.0	F	284.3	F
With Improvements	TS	11.3	B	12.9	B

Notes:

1. TS = Traffic Signal; CSS = Cross Street Stop.
2. Delay is shown in seconds per vehicle. For intersections with traffic signal control, overall average intersection delay and LOS are shown. For intersections with cross street stop control, LOS is based on average delay of the worst minor street approach or major street left turn movement.
3. LOS = Level of Service

Table 6
Opening Year (2025) Intersection Levels of Service & Project-Related Effect

Study Intersection	Traffic Control ¹	Opening Year (2025) Without Project				Opening Year (2025) With Project				AM Peak Hour		PM Peak Hour	
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		Change	Substantial Effect?	Change	Substantial Effect?
		Delay ²	LOS ³	Delay ²	LOS	Delay ²	LOS ³	Delay ²	LOS				
1. I-215 SB Ramos at Ethanac Road	TS	47.2	D	81.1	F	48.5	D	84.1	F	+1.3	NO	+3.0	NO
With Improvements	TS	33.8	C	41.8	D	35.7	D	45.4	D	+1.9	NO	+3.6	NO
2. I-215 NB Ramps at Ethanac Road	TS	32.7	C	55.4	E	33.6	C	57.6	E	+0.9	NO	+2.2	YES
3. Encanto Drive at Ethanac Road	CSS	>100	F	>100	F	>100	F	>100	F	+45.6	YES	+75.4	YES
With Improvements	CSS	25.3	D	31.2	D	27.2	D	34.8	D	+1.9	NO	+3.6	NO
4. Trumble Road at Ethanac Road	TS	40.4	D	58.5	E	70.8	E	>100	F	+30.4	YES	+45.7	YES
With Improvements	TS	23.2	C	31.0	C	40.2	D	54.5	D	+17.0	NO	+23.5	NO
5. Sherman Road at Ethanac Road	CSS	76.0	F	>100	F	>100	F	>100	F	+107.0	YES	+375.2	YES
With Improvements	TS	11.3	B	12.9	B	12.0	B	13.7	B	+0.7	NO	+0.8	NO
6. Trumble Road at Project South Driveway	CSS	-	-	-	-	>100	D	>100	D	+33.3	NO	+30.8	NO
7. Project Driveway at Ethanac Road	CSS	-	-	-	-	16.3	C	16.8	C	+16.3	NO	+16.8	NO

Notes:

1. TS = Traffic Signal; CSS = Cross Street Stop.
2. Delay is shown in seconds per vehicle. For intersections with traffic signal or all way stop control, overall average intersection delay and LOS are shown. For intersections with cross street stop control, LOS is based on average delay of the worst minor street approach or major street left turn movement.
3. LOS = Level of Service

7. SITE ACCESS & ON-SITE CIRCULATION

This section evaluates the project site access and on-site circulation. Vehicular access for the project site is proposed via one full access driveway on Trumble Road and one restricted right-turn in/out driveway on Ethanac Road.

PROJECT DESIGN FEATURES

This analysis assumes the following improvements will be constructed by the project to provide project site access:

4. Trumble Road (NS) at Ethanac Road (EW)
 - Construct the westbound approach along the project frontage at its ultimate half-section width to consist of one left turn lane, two through lanes, and one right turn lane. As this improvement requires an additional westbound receiving lane to be constructed in conjunction with development on the northwest corner of Trumble Road/Ethanac Road, interim striping for one left turn lane, one through lanes, and one right turn lane may be necessary.
6. Trumble Road (NS) at Project Driveway (EW)
 - Construct the project driveway with one inbound lane and one outbound lane.
 - Install eastbound stop control for site egress.
 - Maintain existing southbound shared through/right turn lane.
7. Project Driveway (NS) at Ethanac Road (EW)
 - Construct the project driveway with one inbound lane and one outbound lane.
 - Install southbound stop control for site egress.
 - Construct one right turn lane for site ingress.

This analysis also assumes the project shall comply with the following conditions as part of the City of Perris standard development review process to ensure adequate geometric design and emergency access:

- Site-adjacent roadways shall be constructed or repaired at their ultimate half-section width, including landscaping and parkway improvements in conjunction with development, or as otherwise required by the City of Perris.
- All on-site and off-site roadway design, signing/striping, and traffic control improvements relating to the proposed project shall be submitted to the City for review and constructed following applicable State/Federal engineering standards to the satisfaction of the City of Perris.
- The final grading, landscaping, and street improvement plans shall demonstrate that applicable sight distance requirements are met.
- The project shall comply with the City of Perris municipal parking requirements which will be reviewed as a part of the standard development review process.
- Final project plans shall demonstrate adequate emergency vehicle access and circulation to the satisfaction of the City of Perris Public Works and Fire Departments.
- A construction worksite traffic control plan shall comply with applicable engineering standards outlined in the *California Manual of Uniform Traffic Control Devices* and shall be submitted to the City for review and approval before the issuance of a grading permit or start of construction. The plan shall identify any

roadway, sidewalk, bike route, or bus stop closures and detours as well as haul routes and hours of operation. All construction-related trips shall be restricted to off-peak hours to the extent possible.

SITE ACCESS QUEUING ANALYSIS

Table 7 summarizes the results of the queue analysis to check for potential conflicts between the project driveways. The forecasted queue lengths shown in Table 7, are based on the HCM 95th-percentile back-of-queue methodology. Queuing calculations for the project driveways and the adjacent intersection are shown in the Level of Service worksheets provided in Appendix D.

As shown in Table 7, vehicle queue lengths at the project driveways are forecast to operate within the available storage lengths during the peak hours for the Opening Year (2025) With Project conditions.

TRAFFIC SIGNAL WARRANT ANALYSIS

The potential need for installation of a traffic signal at the project driveways was evaluated based on the *California Manual on Uniform Traffic Control Devices* ("California MUTCD," November 2014), Section 4C-04, peak hour volume warrant (Warrant 3). The *California MUTCD* Section 4C-01 states "satisfaction of one or more traffic signal warrants shall not in itself require the installation of a traffic signal" as engineering judgement should be applied to the physical considerations of the location.

The peak hour volume warrant was evaluated for the project driveways. At the Ethanac Road and project driveway, installation of a traffic signal is not warranted based on the forecast Opening Year (2025) With Project volumes with right turn out only conditions. At the Trumble Road and project driveway, installation of a traffic signal is not warranted based the proximity of the driveway to the existing traffic signal on Ethanac Road and the level of service and queuing analysis results which show that the location will operate within accepted norms.

Table 7
Site Access Queuing Analysis

Study Intersection	Approach	Lane	Storage Length (Feet) ²	Peak Hour 95th-Percentile Queue Length (Feet) ¹				Adequate Storage Provided
				Existing Plus Project		Opening Year (2025)		
						With Project		Opening Year
				AM	PM	AM	PM	With Project
6. Trumble Road at Project South Driveway	Northbound	Thru-Right	300	<20	<20	<20	<20	YES
	Southbound	Left-Thru	1,000	<20	<20	<20	<20	YES
	Westbound	Left-right	115	40	<20	110	95	YES
7. Project Driveway at Ethanac Road	Southbound	Right	75	30	25	40	40	YES
	Westbound	Thru-Right	1000	<20	<20	<20	<20	YES

Notes:

1. The forecast 95th-percentile queue lengths shown in the delay calculation worksheets have been rounded up to nearest 5-foot increment.
2. Length of turning lane storage or distance to the adjacent driveway.

8. IMPROVEMENTS & FAIR SHARE ANALYSIS

This section summarizes the recommended improvements identified in the previous sections of this report and the project's fair share toward any improvements required for cumulative conditions.

Project design features (as detailed in the Site Access & On-Site Circulation Section) involve improvements necessary to provide project site, and the construction along the project site frontage.

To maintain an acceptable Level of Service at the study intersection, the following improvement is required for Opening Year (2025) Without Project conditions:

1. I-215 SB Ramps (NS) at Ethanac Road (EW)
 - Construct additional right-turn lane.
 - Restripe the southbound approach to provide one left turn lane, one shared through/right turn lane and one right turn lane.
3. Encanto Drive (NS) at Ethanac Road (EW)
 - Install a raised median to restrict northbound and westbound left turns.
4. Trumble Road (NS) at Ethanac Road (EW)
 - Add one southbound right turn lane with right-turn overlap signal phasing and restripe the existing shared through/right turn lane to a through lane.
 - Restripe the eastbound right turn lane to a shared through/right turn lane. This improvement will require construction of one additional eastbound receiving lane.
 - Construct the westbound approach lane to consist of one left turn lane, two through lanes, and one right turn lane. This improvement will require construction of one additional westbound receiving lane.
5. Sherman Road (NS) at Ethanac Road (EW)
 - Install traffic signal.
 - Add eastbound left turn lane.

The improvements listed for the intersections of Encanto Drive/Ethanac Road [#3] and Trumble Road/Ethanac Road [#4] have been identified to be constructed by the proposed Ethanac Travel Center project (Other Development ID 1). The proposed project is forecast to operate within acceptable Levels of Service (D or better on local roads, or E or better at I-215 Ramps) during the peak hours with the previously listed improvements for Opening Year (2025) conditions with implementation of the improvements to the Trumble Road at Ethanac Road intersection listed as a Project design features.

DEVELOPMENT IMPACT FEE

The proposed project shall contribute towards the City of Perris Development Impact Fee program (Ordinance No. 1182 Section 19.68.020) and regional Transportation Uniform Mitigation Fee (TUMF) (Ordinance No. 1352). The Development Impact Fee provides a funding mechanism for arterial streets, traffic signals, interchange improvements as well as emergency services. The purpose of such fees is to minimize, to the greatest extent practicable, the impact that new development has on the City's public services and public facilities. The City intends for new development project applicants to pay their fair share of the costs of providing such public services and public facilities. Unless otherwise approved by the City, all development projects are required to pay the Development Impact Fee as a condition of development.

FAIR SHARE ANALYSIS

A fair share analysis was prepared to identify the share of project trips contributed to substantially impacted locations for which improvements are identified that may not be currently included in the City's Development Impact Fee program. The project fair share is based on the proportion of project peak hour trips contributed to the improvement location relative to the total new peak hour traffic volume.

The fair share analysis is shown in Table 8. Cost estimates are sensitive to the quantity and location of work specified for a given installation. These values represent the relative magnitude of the cost and should be verified through the bidding process.

Table 8
Fair Share Analysis

ID	Study Intersection	Estimated Construction Cost ¹	Peak Hour	Peak Hour Volume				Project % at Intersection ²	Project Fair Share Cost
				Existing	Opening Year (2025) With Project	Project Trips	New Trips	Project % of New Trips	
1.	I-215 SB Ramos at Ethanac Road	\$270,250	AM PM	2,173 2,376	3,484 3,878	40 11	1,311 1,502	3.1% 0.7%	3.1%
3.	Encanto Drive at Ethanac Road	\$235,000	AM PM	1,265 1,486	2,166 2,481	70 78	901 995	7.8% 7.8%	7.8%
4.	Trumble Road at Ethanac Road	\$293,750	AM PM	1,274 1,330	2,573 2,685	475 445	1,299 1,355	36.6% 32.8%	36.6%
5.	Sherman Road at Ethanac Road	\$705,000	AM PM	1,068 1,100	1,535 1,587	75 89	467 487	16.1% 18.3%	18.3%
Total		\$1,504,000							\$236,254

Notes:

1. Cost estimate based on values from the San Bernardino County Transportation Authority Preliminary Construction Cost Estimates For Congestion Management Program (2003) and has been factored by 2.35 based on the California Construction Cost Index between January 2003 and January 2024. Costs estimates are sensitive to the quantity and location of work specified for a given installation. These values represent the relative magnitude of the cost and should be verified through the bidding process.
2. Project share of new trips shown are the greater of the AM or PM percent contribution.
3. Planned improvements to the I-215 Ramps at Ethanac covered under TUMF fees.
4. Installation of median at Ethanac Road and Encanto Drive is a component of the project on the NWC or Ethanac and Trumble Roads.
5. Improvements not included in the adjacent frontage of the proposed project or other projects in the study area.

9. VEHICLES MILES TRAVELED (VMT) ASSESSMENT

This section provides an overview of the VMT background, requirements, and summarizes the proposed project, VMT project assessment.

BACKGROUND

California Senate Bill 743 (SB 743) directs the State Office of Planning and Research (OPR) to amend the California Environmental Quality Act (CEQA) Guidelines for evaluating transportation impacts to provide alternatives to Level of Service that “promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses.” In December 2018, the California Natural Resources Agency certified and adopted the updated CEQA Guidelines package. The amended CEQA Guidelines, specifically Section 15064.3, recommend the use of Vehicle Miles Travelled (VMT) as the primary metric for the evaluation of transportation impacts associated with land use and transportation projects. In general terms, VMT quantifies the amount and distance of automobile travel attributable to a project or region. All agencies and projects State-wide are required to utilize the updated CEQA guidelines recommending use of VMT for evaluating transportation impacts as of July 1, 2020.

The updated CEQA Guidelines allow for lead agency discretion in establishing methodologies and thresholds provided there is substantial evidence to demonstrate that the established procedures promote the intended goals of the legislation. Where quantitative models or methods are unavailable, Section 15064.3 allows agencies to assess VMT qualitatively using factors such as availability of transit and proximity to other destinations. The Office of Planning and Research (OPR) *Technical Advisory on Evaluating Transportation Impacts in CEQA* (State of California, December 2018) [“OPR Technical Advisory”] provides technical considerations regarding methodologies and thresholds with a focus on office, residential, and retail developments as these projects tend to have the greatest influence on VMT.

VMT ASSESSMENT AND SCREENING

The project VMT impact has been assessed in accordance with guidance from the *City of Perris Transportation Impact Analysis Guidelines for CEQA* (May 12, 2020) [“the City VMT Guidelines”]. The transportation guidelines provide a framework for “screening thresholds” for certain projects that are expected to cause a less than significant impact without conducting a detailed VMT study.

The project requirements for evaluation of transportation impacts under CEQA for VMT was assessed using the *City of Perris VMT Scoping Form for Land Use Projects* as appended to the City of Perris TIA Guidelines and included in the Scoping Agreement (Appendix B) of this study. As documented in the VMT Scoping Form, the proposed project satisfies the following VMT screening criteria:

- | | |
|---|-----|
| B. Is the project within half-mile of qualifying transit? | No |
| C. Is the project a local serving land use? | Yes |
| D. Is the project in a low VMT area? | No |

Therefore, the proposed project is presumed to have a less than significant impact on VMT since it satisfies one or more of the VMT screening criteria established by the City of Perris (screening criteria C - the project consists of a local servicing gas station). No additional VMT modeling or mitigation measures are required.

10. CONCLUSIONS

This section summarizes the proposed project, operational findings, and identifies recommendations (if any) as specified in previous sections of this study. Figure 33 summarizes the recommended improvements.

PROJECT TRIP GENERATION

The proposed project is forecast to generate approximately 3,187 daily trips, including 193 trips during the AM peak hour and 221 trips during the PM peak hour.

LEVEL OF SERVICE ANALYSIS

The study intersections are forecast to operate within acceptable Levels of Service (D or better) during the peak hours for the Existing and Existing Plus Project analysis scenario conditions, except for the following study intersections that are projected to operate at unacceptable Level of Service E during the PM peak hour:

3. Encanto Drive (NS) at Ethanac Road (EW)

The study intersections are forecast to operate within acceptable Levels of Service (D or better on local roads, or E or better at I-215 Ramps) during the peak hours for the Opening Year (2025) analysis scenario conditions, except for the following study intersections that are projected to operate at unacceptable Levels of Service during the peak hours:

1. I-215 SB Ramps (NS) at Ethanac Road (EW)
3. Encanto Drive (NS) at Ethanac Road (EW)
4. Trumble Road (NS) at Ethanac Road (EW)
5. Sherman Road (NS) at Ethanac Road (EW)

The study area intersections are forecast to operate within acceptable Levels of Service with the recommended improvements summarized below.

SUMMARY OF IMPROVEMENTS

Project design features, necessary to provide project access, are outlined in the Site Access & On-Site Circulation (see Section 7).

The following improvements are recommended to maintain acceptable Levels of Service at the study intersections for Existing Plus Project conditions:

3. Encanto Drive (NS) at Ethanac Road (EW)
 - Prohibit northbound left turns at Encanto Drive intersection from 7-9 AM and 4-6 PM.

In addition, the following improvements are recommended to maintain acceptable Levels of Service at the study intersections for Opening Year (2025) conditions:

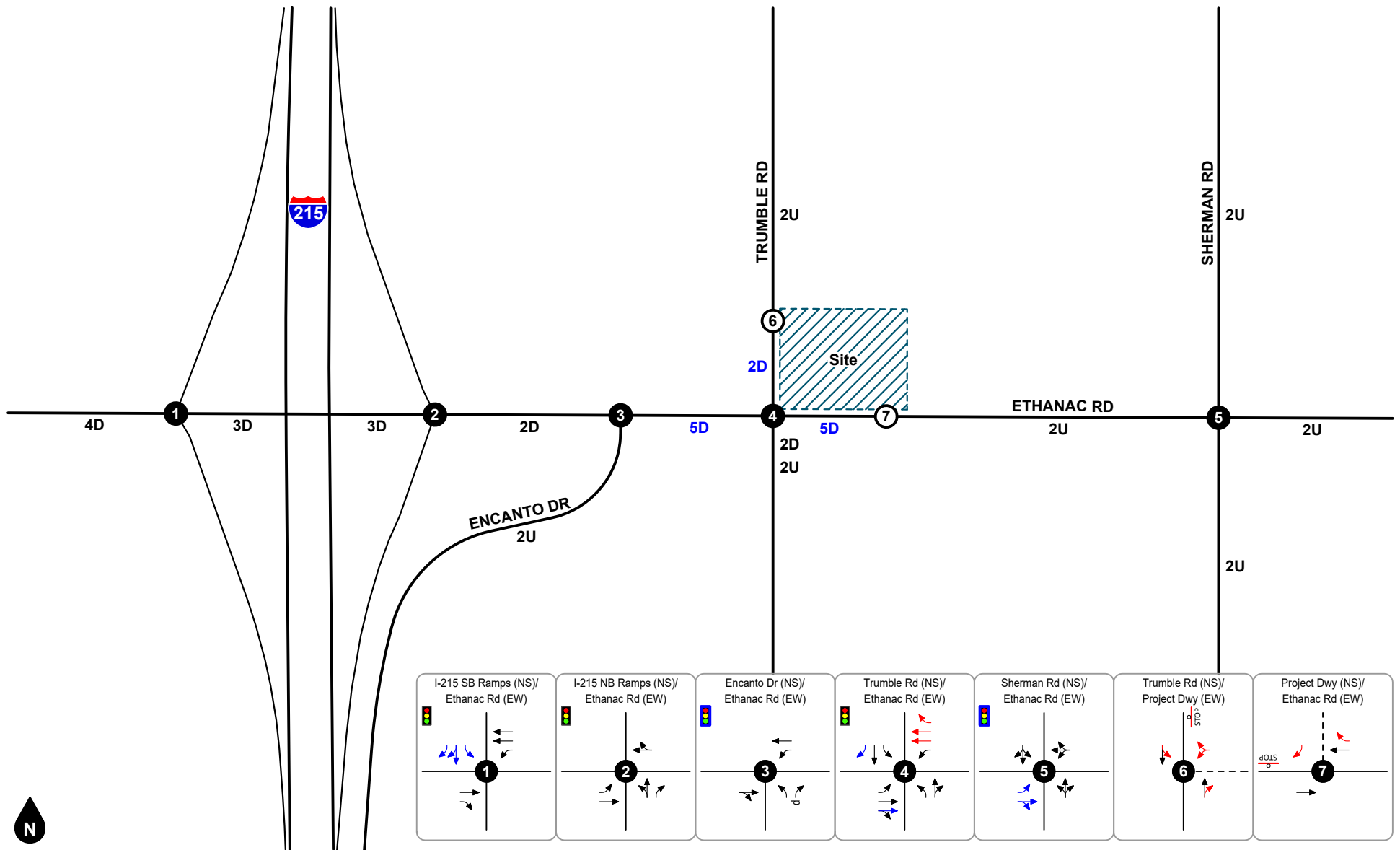
1. I-215 SB Ramps (NS) at Ethanac Road (EW)
 - Construct additional right-turn lane.
 - Restripe the southbound approach to provide one left turn lane, one shared through/right turn lane and one right turn lane.
3. Encanto Drive (NS) at Ethanac Road (EW)
 - Install a raised median to restrict northbound and westbound left turns.

4. Trumble Road (NS) at Ethanac Road (EW)
 - Add one southbound right turn lane with right-turn overlap signal phasing and restripe the existing shared through/right turn lane to a through lane.
 - Restripe the eastbound right turn lane to a shared through/right turn lane. This improvement will require construction of one additional eastbound receiving lane.
 - Construct the westbound approach lane to consist of one left turn lane, two through lanes, and one right turn lane. This improvement will require construction of one additional westbound receiving lane.
5. Sherman Road (NS) at Ethanac Road (EW)
 - Install traffic signal.
 - Add eastbound left turn lane.

The study area intersections are forecast to operate within acceptable Levels of Service with the recommended improvements.

VEHICLE MILES TRAVELED ANALYSIS

For compliance with CEQA requirements, the project satisfies the City-established VMT screening criteria for local serving land use; therefore, the proposed project may be presumed to result in a less than significant VMT impact. The project VMT assessment is documented in the Vehicle Miles Traveled Analysis (see Section 9) of this report.



- Legend**
- Traffic Signal
 - Stop Sign
 - #D #Lane Divided Roadway
 - #U #Lane Undivided Roadway
 - Existing Lane
 - Project Improvements
 - Cumulative Improvements
 - d De Facto Right Turn Lane
 - Project Driveway

Figure 33
Recommended Lane Geometry and Intersection Traffic Controls

APPENDICES

Appendix A Glossary

Appendix B Scoping Agreement

Appendix C Traffic Count Data

Appendix D Intersection Level of Service Worksheets

APPENDIX A

GLOSSARY

ACRONYMS

AC	Acres
ADT	Average Daily Traffic
Caltrans	California Department of Transportation
DU	Dwelling Unit
ICU	Intersection Capacity Utilization
GFA	Gross Floor Area
LOS	Level of Service
PCE	Passenger Car Equivalent
SF	Square Foot
SP	Service Population
TSF	Thousand Square Feet
V/C	Volume to Capacity Ratio
VMT	Vehicle Miles Traveled

TERMS

ACTUATED SIGNAL CONTROL: A type of traffic signal control in which display of each phase depends on whether the corresponding phase detector has registered a service call or the phase is on recall.

ACTUATION: Detection of a roadway user that is forwarded to the signal controller.

AVERAGE DAILY TRAFFIC: The average 24-hour volume for a stated period is divided by the number of days in that period. For example, Annual Average Daily Traffic is the total volume during a year divided by 365 days.

BANDWIDTH: The number of seconds of green time available for through traffic in a signal progression.

BOTTLENECK: A point of constriction along a roadway that limits the amount of traffic that can proceed downstream from its location.

CALL: An indication within a signal controller that a particular phase is waiting for service, either through actuation from a roadway user or phase recall.

CAPACITY: The maximum number of vehicles that can be reasonably expected to pass through a roadway facility during a specified period.

CHANNELIZATION: The separation of conflicting traffic movements by use of pavement markings, raised curbs, or other suitable means to facilitate free flow movement.

CLEARANCE INTERVAL: Equal to the yellow plus all-red time, if any, when a traffic signal changes between phases (i.e., the amount of time between the end of a green light from one movement to the beginning of a green light for the next).

COORDINATED SIGNAL CONTROL: A type of traffic signal control in which non-coordinated phases associated with minor movements are constrained such that the coordinated phases are served at a specific time during the signal cycle, thus maintaining the efficient progression of traffic flow along the major roadway.

CONTROL DELAY: The portion of delay attributed to the intersection traffic control (such as a traffic signal or stop sign). It includes initial deceleration, queue move-up time, stopped delay, and final acceleration delay.

CORDON: An imaginary boundary line around or across a study area across which vehicles, persons, or other information can be collected for survey and analytical purposes.

CORNER SIGHT DISTANCE: The minimum sight distance required by the driver of a vehicle to cross or enter the lanes of the major roadway without requiring approaching traffic traveling at a given speed to radically alter their speed or trajectory.

CYCLE: A complete sequence of signal indications for all phases. Also known as a signal cycle.

CYCLE LENGTH: The total time for a traffic signal to complete one full cycle.

DAILY CAPACITY: A theoretical value representing the daily traffic volume that will typically result in a peak hour volume equal to the capacity of the roadway.

DELAY: The total additional travel time experienced by a roadway user (driver, passenger, bicyclist, or pedestrian) beyond that required to travel at a desired speed.

DENSITY: The number of vehicles occupying in a unit length of the through traffic lanes of a roadway at any given instant. Usually expressed in vehicles per mile.

DETECTOR: A device used to count or determine the presence of a roadway user.

DESIGN SPEED: A speed used for purposes of designing horizontal and vertical alignments of a highway.

DIRECTIONAL SPLIT: The percent of two-way traffic traveling in a specified direction.

DIVERSION: The rerouting of traffic from a normal path of travel between two points, such as to avoid congestion or perform a secondary trip.

FREE FLOW: Traffic flow that is unaffected by a traffic control and/or or upstream or downstream conditions.

GAP: Time or distance between two vehicles measured from rear bumper of the front vehicle to front bumper of the second vehicle.

GAP ACCEPTANCE: The method by which a driver accepts an available gap in traffic to enter or cross the road.

HEADWAY: Time or distance between two successive vehicles measured from same point on both vehicles (i.e., front bumper to front bumper). Also known as gap.

LEVEL OF SERVICE: A grading scale of quantitative performance measures representing the quality of service of a transportation facility or service from an average traveler's perspective.

LOOP DETECTOR: A vehicle detector consisting of a loop of wire embedded in the roadway, energized by alternating current and producing an output circuit closure when passed over by a vehicle.

MULTI-MODAL: More than one mode, such as automobile, transit, bicycle, and pedestrian.

OFFSET: The time interval between the beginning of a traffic signal cycle at one intersection and the beginning of signal cycle an adjacent intersection.

PLATOON: A set of vehicles traveling at similar speed and moving as a general group with clear separation between other vehicles ahead and behind.

PASSENGER CAR EQUIVALENT: A metric used to assess the impact of larger vehicles, such as trucks, recreational vehicles, and buses, by converting the traffic volume of larger vehicles to an equivalent number of passenger cars.

PEDESTRIAN CLEARANCE INTERVAL: Also known as the “Flashing Don’t Walk” interval, it signals the end of pedestrian entry into the crosswalk following the “Walk” indication and provides time for pedestrians who have already entered the crosswalk to finishing crossing.

PEAK HOUR: The hour within a day in which the maximum volume occurs.

PEAK HOUR FACTOR: The peak hour volume divided by the four times the peak 15-minute flow rate.

PHASE: In traffic signals, the green, yellow, and red clearance intervals assigned to a specified traffic movement.

PRETIMED SIGNAL: A traffic signal operation in which the cycle length, phasing sequence, and phasing times are predetermined and fixed, regardless of actual demand for any given traffic movement. Also known as a fixed time signal.

PROGRESSION: The coordinated movement of vehicles through signalized intersections along a corridor.

QUEUE: The number of vehicles waiting at a service area such as a traffic signal, stop sign, or access gate.

QUEUE LENGTH: The length of vehicle queue, typically expressed in feet, waiting at a service area such as a traffic signal, stop sign, or access gate.

RECALL: A signal phasing operation in which a specified phase places a call to the signal controller each time a conflicting phase is served, thus ensuring the specified phase will be serviced again.

SEMI-ACTUATED CONTROL: A type of traffic signal control in which only the minor movements are provided detection.

SIGHT DISTANCE: The continuous length of roadway visible to a driver or roadway user.

STACKING DISTANCE: The length of area available behind a service area, such as a traffic signal or gate, for vehicle queuing to occur.

STOPPING SIGHT DISTANCE: The minimum distance required by the driver of a vehicle traveling at a given speed to bring the vehicle to a stop after an object on the road becomes visible, including reaction and response time.

TRAFFIC-ACTUATED SIGNAL: A type of traffic signal that directs traffic to stop and go in accordance with the demands of traffic, as registered by the actuation of detectors. Also known as a demand responsive signal.

TRIP OR TRIP END: The one-directional movement of a person or vehicle. Every trip has an origin and a destination at its respective ends (i.e., trip ends). In terms of site trip generation, the same vehicle entering and exiting a site generates two trips: one inbound trip and one outbound trip.

TRIP GENERATION RATE: The rate at which a land use generates trips per the specified land use variable, such per dwelling unit or per thousand square feet.

TURNING RADIUS: The circular arc formed by the smallest turning path radius of the front outside tire of a vehicle, such as that performed by a U-turn maneuver. This is based on the length and width of the wheelbase as well as the steering mechanism of the vehicle.

VEHICLE MILES TRAVELED: A measure of the amount and distance of automobile travel essentially calculated as the sum of each trip times the trip length.

APPENDIX B

SCOPING AGREEMENT

January 12, 2024

Mr. Alfredo Garcia
CITY OF PERRIS (Planning Division)
135 North "D" Street
Perris, CA 92570

Subject: Beyond Food Mart (NEC Trumble and Ethanac) (CUP 22 – 0592) Scoping Agreement and VMT Analysis Review #2, City of Perris

Dear Mr. Garcia,

Introduction

RK ENGINEERING GROUP, INC. (RK) has reviewed the Beyond Food Mart (NEC Trumble and Ethanac) (CUP 22 – 0592) Scoping Agreement & VMT Analysis #2. The 2.54-acre site is located at the northeast corner of Trumble Road and Ethanac Road in the City of Perris. The proposed project consists of the construction of a 7,250 square foot (SF) convenience store including a drive-thru window, a 16 vehicle fueling position gas station, and an automated car wash tunnel. Access to the project is proposed via one full access driveway located along Trumble Road and via one right-in/right-out only driveway located along Ethanac Road.

Based upon the review of the Scoping Agreement & VMT Analysis #1, the project will screen out from a VMT standpoint since it is a local serving land use. However, a full traffic impact study will be required due to the number of peak hour trips generated by the project.

RK has reviewed the Scoping Agreement and VMT Analysis #2, dated January 8, 2024, prepared by Ganddini Group. RK has reviewed the Scoping Agreement and VMT Analysis #2 pursuant to City of Perris requirements. Based upon this review, it is acceptable as currently written.

Comments

1. The Scoping Agreement and VMT Analysis #2 is acceptable as currently written.

Conclusions

RK has reviewed the Scoping Agreement and VMT Analysis #2 for the Beyond Food Mart (CUP 22 – 0592) (NEC Trumble and Ethanac) in the City of Perris. Based upon this review, the scoping agreement is acceptable. The traffic engineer can commence work on the traffic impact study and submit to the City when completed.

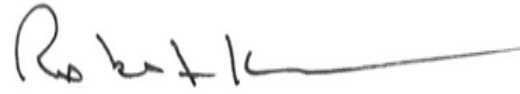
RK appreciates this opportunity to work with the City of Perris on this project. If you have any questions, please contact us at (949) 474-0809.

Sincerely,
RK ENGINEERING GROUP, INC.



Justin Tucker, P.E., T.E.
Associate Principal

Registered Civil Engineer 92866
Registered Traffic Engineer 3055

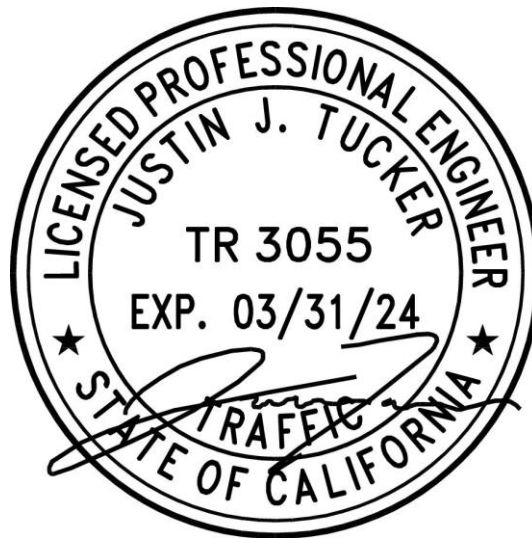


Robert Kahn, P.E.
Founding Principal

Registered Civil Engineer 20285
Registered Traffic Engineer No. 0555

XC: Kenneth Phung, City of Perris
Patricia Brenes, City of Perris
John Pourkazemi, City of Perris
Brad Brophy, City of Perris

RK19603.DOC
JN:2126-2023-11





MEMORANDUM OF UNDERSTANDING

TO: Mr. Alfredo Garcia | CITY OF PERRIS
Mr. Justin Tucker, RK Engineering Group, Inc.

FROM: Perrie Ilercil, Senior Engineer | GANDDINI GROUP, INC.

DATE: January 8, 2024

SUBJECT: Beyond Food Mart (NEC Trumble Road and Ethanac Road) Project (CUP 22-05292) Traffic Impact Analysis Scoping

The purpose of this traffic study scoping document is to outline the proposed traffic analysis parameters and assumptions for review/concurrence by City of Perris staff.

PROJECT DESCRIPTION

The 2.54-acre project site (APN: 329-240-021, 022) is located at the northeast corner of Trumble Road and Ethanac Road in the City of Perris, California. The project site is currently vacant and zoned Community Commercial (CC). The project location map is shown on Figure 1.

The proposed project (CUP 22-05292) involves construction of a 7,250 square foot convenience store/gas station including drive through window with eight (8) dual-sided gasoline fuel pumps (i.e., 16-vehicle fueling positions) and an automated car wash tunnel. Vehicular access to the project site is proposed via one full access driveway on Trumble Road and one restricted right-turn in/out driveway on Ethanac Road. The proposed site plan is illustrated in Figure 2.

TRIP GENERATION

Proposed Trip Generation

Table 1 shows the project trip generation forecast based on rates obtained from the Institute of Transportation Engineers (ITE) *Trip Generation Manual* (11th Edition, 2021). Based on review of the ITE land use description, trip generation rates for ITE Land Use Codes 945 (Convenience Store Gas Station) and Land Use Code 948 (Automated Car Wash) were determined to adequately represent the land use for the proposed project and were selected for calculation of the project trip generation forecast. Applicable project peak hour pass-by trip adjustments were determined based on average pass-by rates published by ITE.

As shown in Table 1, the proposed project is forecast to generate a total of approximately 3,187 daily new trips, including 193 new trips during the AM peak hour and 221 new trips during the PM peak hour with pass-by adjustment.

VMT SCOPING FORM

Attachment A shows the City of Perris VMT Scoping Form for Land Use Project based on the City of Perris TIA Guidelines, dated May 12, 2020. The project is presumed to have a less than significant impact on VMT

because the project satisfies at least one (1) of the VMT screening criteria. As shown in Attachment A, the project satisfies VMT screening criteria C because the project consists of a local servicing gas station).

PROJECT TRIP DISTRIBUTION AND ASSIGNMENT

Figure 3 and Figure 4 illustrate the forecast directional distribution patterns of project-generated trips based on review of the existing local and regional roadway facilities in the project vicinity and surrounding land uses. The net new trips in the study area are shown on Figure 5. The report analysis will include pass-by trips at the project driveways and the adjacent Trumble Road and Ethanac Road intersection.

STUDY AREA

According to the *City of Perris Transportation Impact Analysis Guidelines for CEQA* (May 12, 2020) [City VMT Guidelines], a Traffic Impact Study (TIS) for Level of Service (LOS) evaluation is required for projects which exceed 500 daily trips or 50 peak hour trips. Study intersections for analysis typically include classified intersections (Collector-to-Collector or higher) at which a project is forecast to contribute 50 or more trips during the AM or PM peak hours. Pass-by trips are included at the project driveways and the adjacent intersection of Trumble Road and Ethanac Road.

The classified study area intersections and project driveways are identified below.

Study Intersections (Figure 1)

1. I-215 SB Ramps (NS) at Ethanac Road (EW)
2. I-215 NB Ramps (NS) at Ethanac Road (EW)
3. Encanto Drive (NS) at Ethanac Road (EW)
4. Trumble Road (NS) at Ethanac Road (EW)
5. Sherman Road (NS) at Ethanac Road (EW)
6. Trumble Road (NS) at Project Driveway (EW)
7. Project Driveway (NS) at Ethanac Road (EW)

TRAFFIC COUNTS

New intersection turning movement counts will be obtained and used at the study intersections during the AM peak period (7:00 AM – 9:00 AM) and the PM peak period (4:00 PM – 6:00 PM) on a typical weekday (Tuesday, Wednesday, or Thursday).

ANALYSIS SCENARIOS

The traffic study shall evaluate the following analysis scenarios for weekday AM and PM peak hour conditions:

- Existing [2023]
- Existing Plus Project
- Opening Year Without Project [2025]
- Opening Year With Project [2025]

FORECASTING METHODOLOGY

Ambient Growth Rate

To account for area-wide ambient growth, the Opening Year 2025 will include a 3% annual growth for 2 years (total growth factor = 1.06) over the 2023 base volumes. The 3% annual growth rate is consistent with other traffic studies conducted in the area.

Other Cumulative Projects

A list of pending and approved cumulative development projects will be obtained from the City of Perris and City of Menifee. This list will be narrowed down to include projects within a 1.5-mile radius of the project site.

Trip forecasts for other development projects within the project study area will be determined based on the Institute of Transportation Engineers (ITE) *Trip Generation Manual* (11th Edition, 2021) and will be added to existing roadway volumes for the applicable analysis scenarios.

SITE ACCESS AND ON-SITE CIRCULATION ANALYSIS

The traffic analysis shall review site access considerations at the project driveways such as and access restrictions based on Riverside County Standard Plan #114, need for deceleration lanes at the project driveways and driveway queuing. The report will include queueing analysis for the on-site drive-through and intersection traffic controls and lane configurations for the adjacent study intersection of Trumble Road and Ethanac Road, including evaluation of the need to install a traffic signal based on the California Manual on Uniform Traffic Control Devices peak hour volume graphs (Warrant 3).

CONCLUSION

We appreciate the opportunity to provide this scoping document for your review. Should you have any questions or comments regarding the proposed scope, please contact Perrie Ilercil at (714) 795-3100 x 103 or perrie@ganddini.com.

Table 1
Project Trip Generation

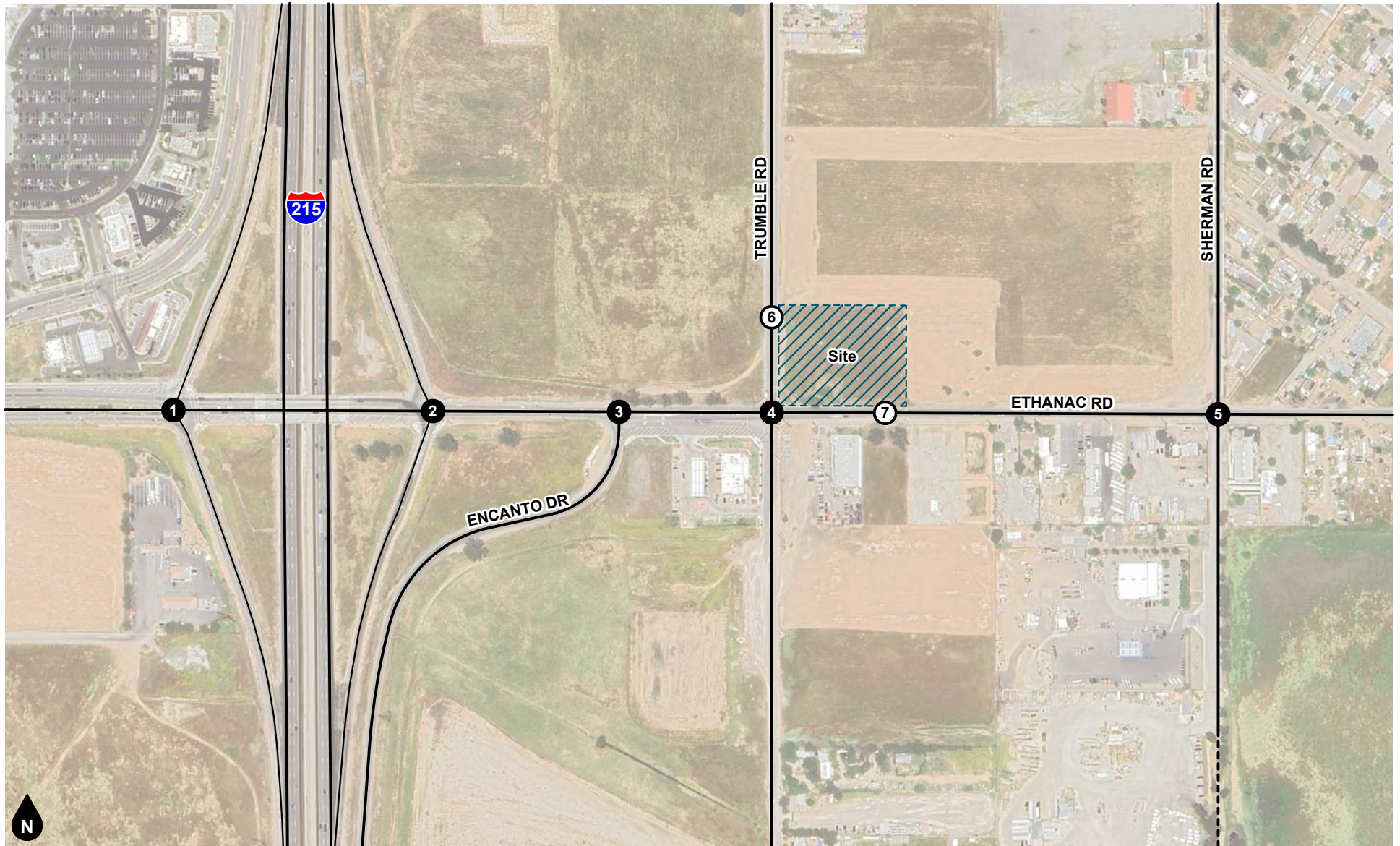
Trip Generation Rates									
Land Use	Source ¹	Land Use Variable ²	AM Peak Hour			PM Peak Hour			Daily Rate
			% In	% Out	Rate	% In	% Out	Rate	
Convenience Store Gas Station (5.5-10 ksf GFA)	ITE 945	VFP	50%	50%	31.60	50%	50%	26.90	345.75
Convenience Store Gas Station (16-24 VFP)	ITE 945	TSF	50%	50%	91.35	50%	50%	78.95	1,283.38
Automated Car Wash	ITE 948 ³	CWT	50%	50%	34.44	50%	50%	77.50	861.11

Trip Generation Estimate per for ITE ⁴									
Land Use	Source	Quantity	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Convenience Store (7.25 TSF, 16 VFP)									
Convenience Store Gas Station (5.5-10 ksf GFA)	ITE 945	16 VFP	253	253	506	215	215	430	5,532
Convenience Store Gas Station (16-24 VFP)	ITE 945	7.250 TSF	331	331	662	286	286	572	9,305
Variance					24%			25%	41%

Project Trip Generation for Analysis ⁵									
Trips Generated									
Land Use	Source	Quantity	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Convenience Store Gas Station (16-24 VFP)	ITE 945	7.250 TSF	331	331	662	286	286	572	9,305
Pass-by Trips (76%AM, 75%PM, 75%Daily)	ITE 945 ⁶		-252	-251	-503	-215	-214	-429	-6,979
Subtotal			79	80	159	71	72	143	2,326
Automated Car Wash	ITE 948	1 CWT	17	17	34	39	39	78	861
Subtotal Project Trips (Gross)			348	348	696	325	325	650	10,166
Total Pass-by Trips			-252	-251	-503	-215	-214	-429	-6,979
TOTAL NEW TRIPS GENERATED			96	97	193	110	111	221	3,187

Notes:

- ITE = Institute of Transportation Engineers *Trip Generation Manual* (11th Edition, 2021); ### = Land Use Code.
All rates based on General Urban/Suburban setting.
- TSF = Thousand Square Feet; CWT = Automated Car Wash Tunnel.
- ITE rates with data from San Diego Association of Governments (SANDAG) Vehicular Traffic Generation Rates (April 2002). Where the daily or peak hour rate is not provided by ITE, the SANDAG percentage of peak hour to daily rate is used to calculate the missing data. Where the peak hour distribution is not provided by ITE, the SANDAG peak hour distribution is used.
- ITE includes trip rates for two commonly used independent variables for the Convenience Store Gas Station land use: 1) trips per vehicle fueling position (VFP), and 2) trips per thousand square feet of convenience store gross floor area (GFA). Per the ITE Trip Generation Manual, the use of both VFP and GFA provides a significant improvement in the reliability of a trip generation estimate when compared to the single-variable data plots in prior editions. Each set of trip rates will produce two estimates of the site-generated trips and both values can be considered when determining a site trip generation estimate.
- For ITE 945 (Convenience Store Gas Station) use of the VFP or GFA trip rates results in different trip estimates; therefore, the worst-case estimates are used in this analysis.
- Pass-by trips calculated in accordance with ITE recommended practice and rates from the Trip Generation Manual (11th Edition, 2021) for peak hour trips. Daily pass-by rates are not available from ITE; therefore, the daily pass-by rate was determined as the lower of the AM or PM peak hour pass-by



Legend

- # Study Intersection
- # Project Driveway

Figure 1
Project Location Map

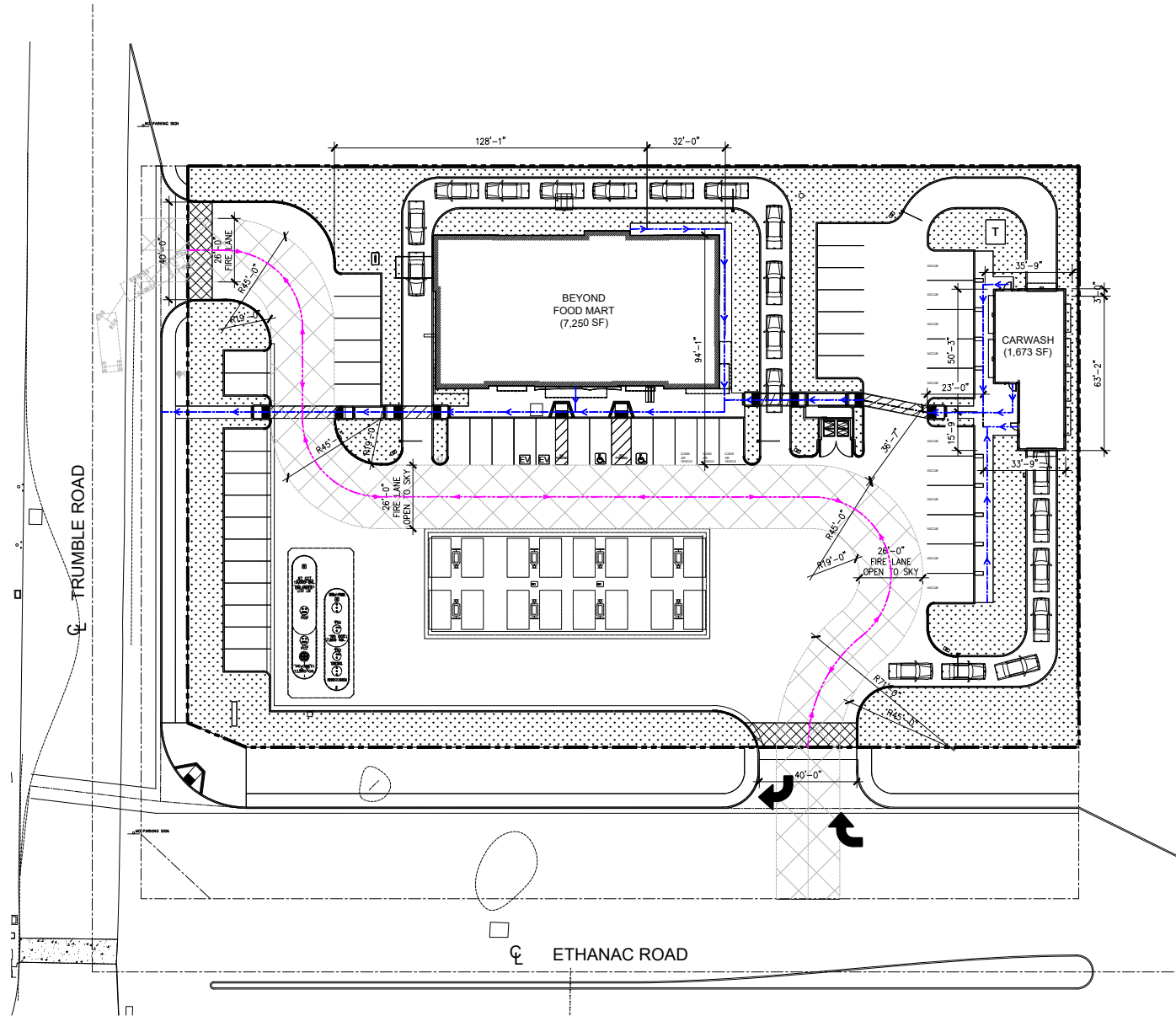


Figure 2
Site Plan

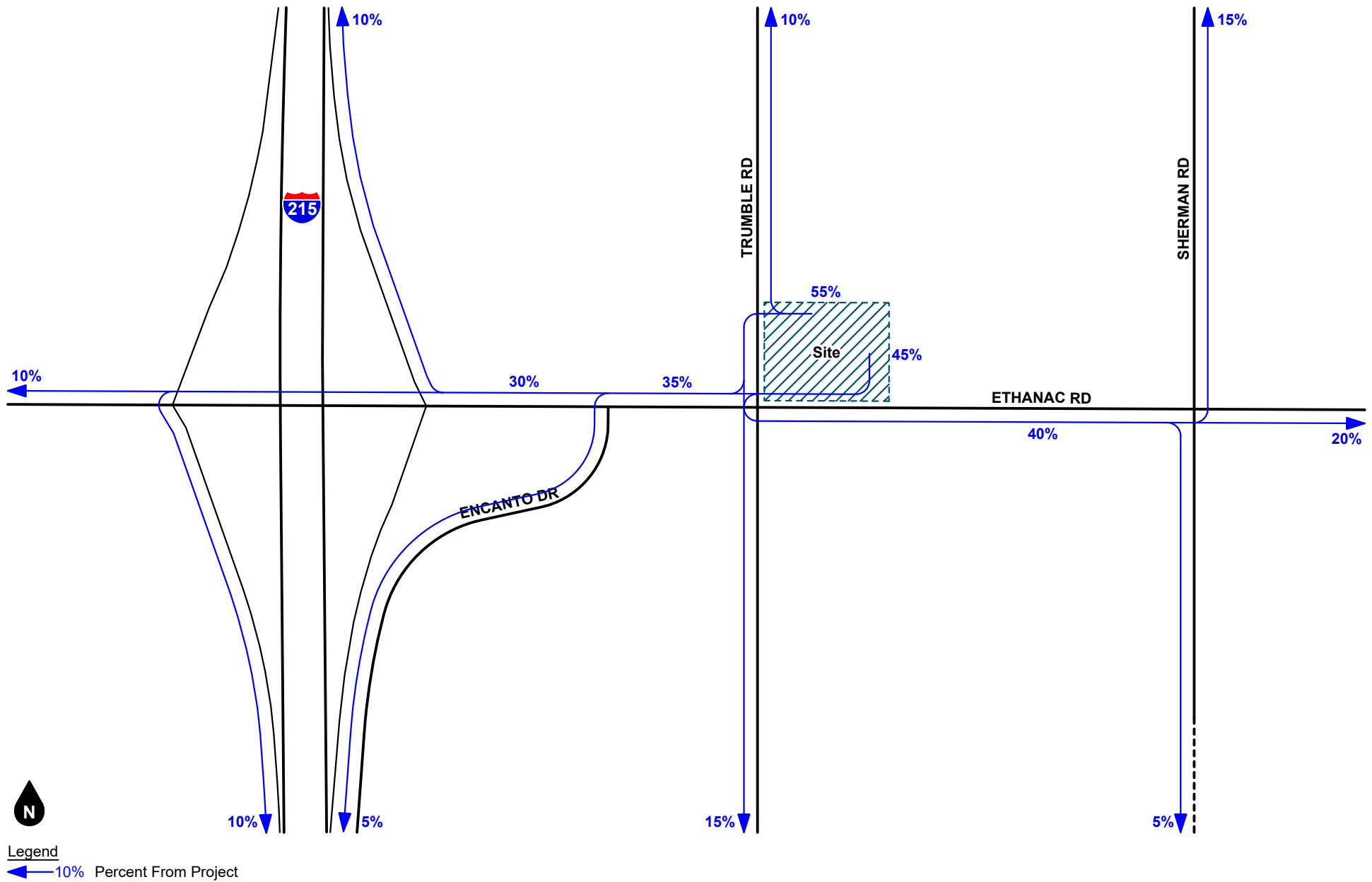


Figure 3
Project Outbound Trip Distribution

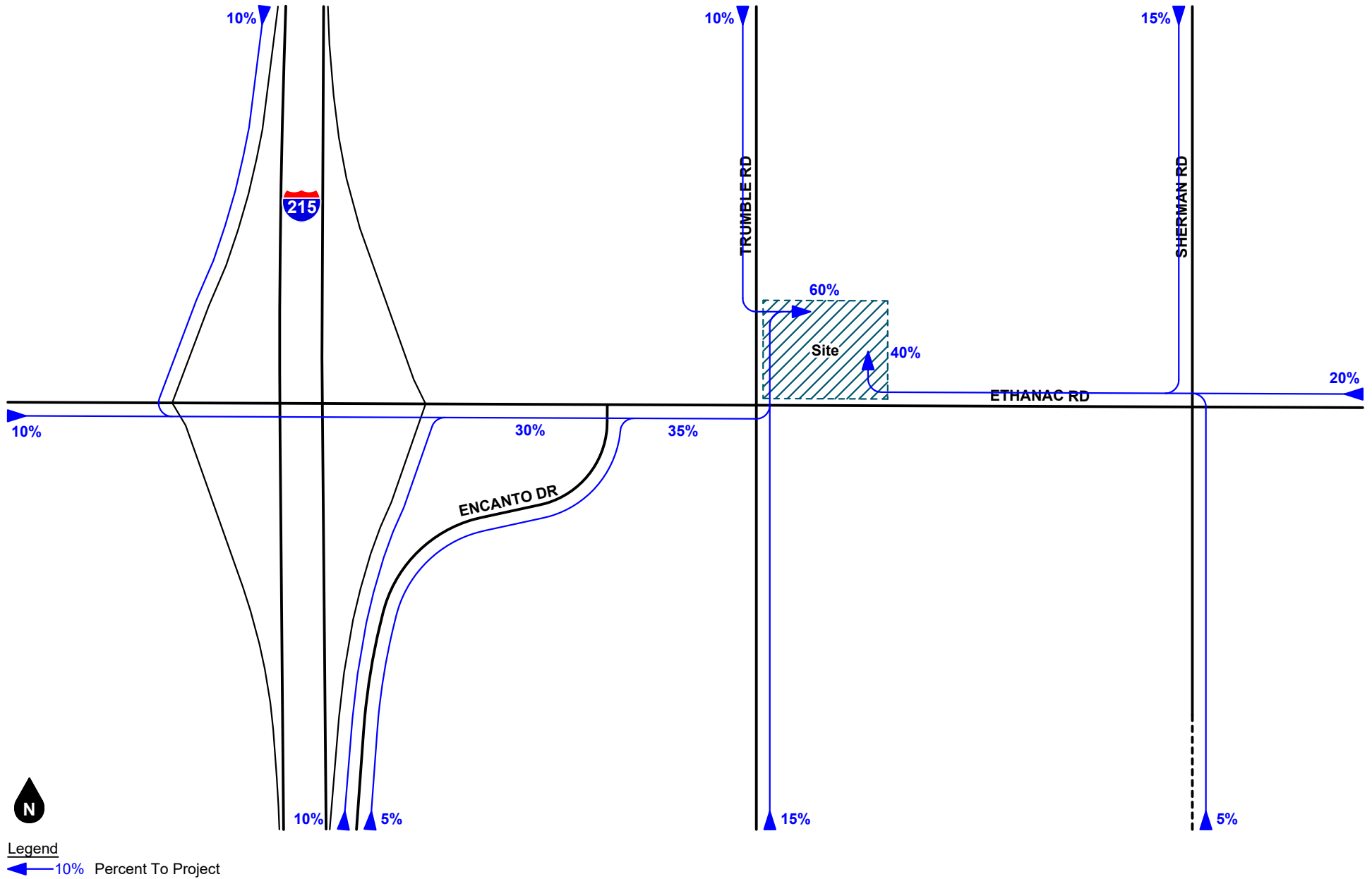


Figure 4
Project Inbound Trip Distribution

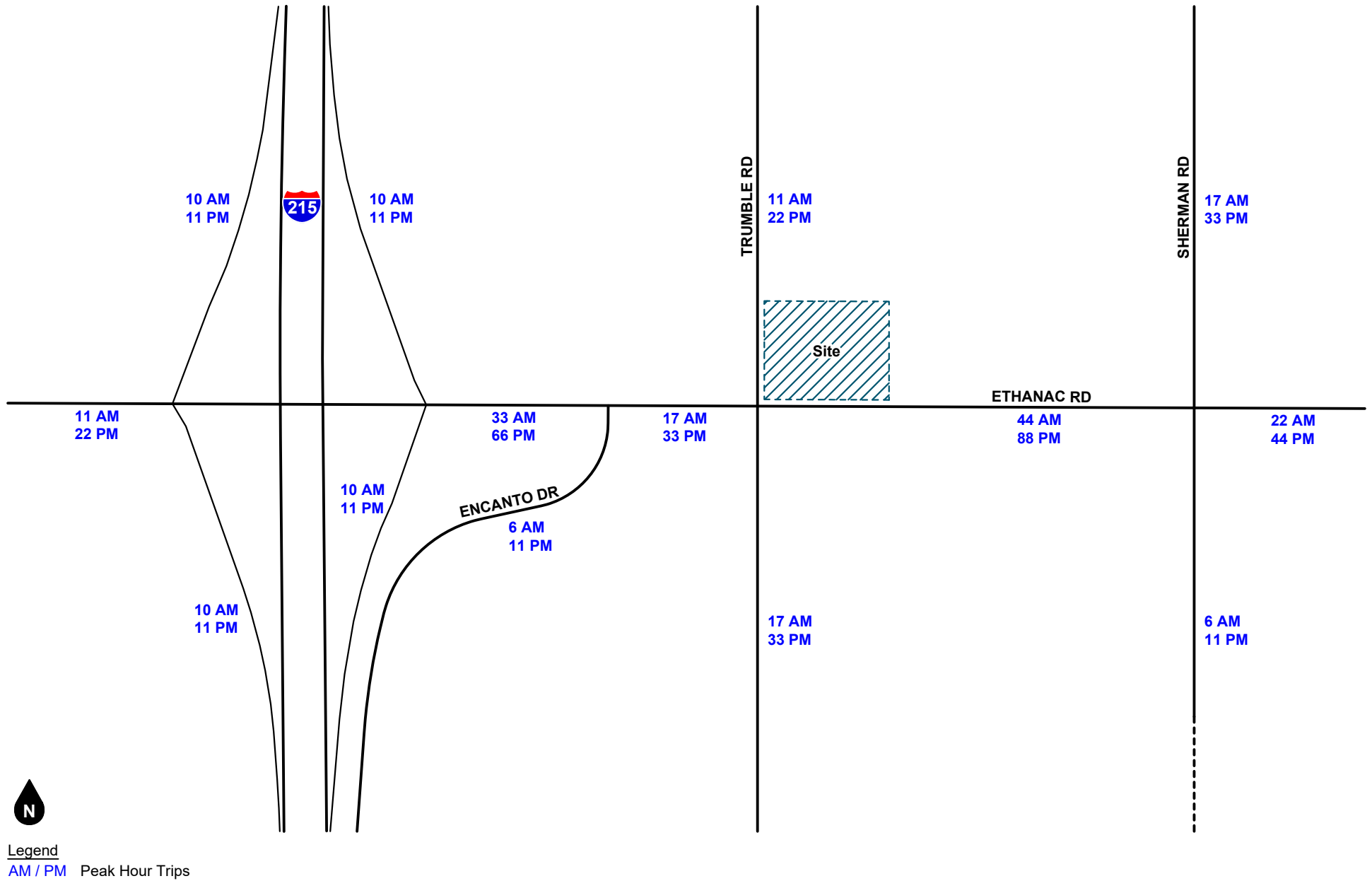


Figure 5
Project Trip Assignment

ATTACHMENT A

VMT SCOPING FORM FOR LAND USE PROJECTS



CITY OF PERRIS
VMT SCOPING FORM FOR LAND USE PROJECTS

This Scoping Form acknowledges the City of Perris requirements for the evaluation of transportation impacts under CEQA. The analysis provided in this form should follow the City of Perris TIA Guidelines, dated May 12, 2020.

I. Project Description

Tract/Case No. CUP 22-0592

Project Name: Beyond Food Mart (NEC Trumble and Ethanac)

Project Location: NEC Trumble Road and Ethanac Road

Project Description: 7,250 square feet convenience store/gas station with drive through window and 16 fueling positions and car wash tunnel

(Please attach a copy of the project Site Plan)

Current GP Land Use: Community Commercial (C)

Proposed GP Land Use: Community Commercial (C)

Current Zoning: Community Commercial (C)

Proposed Zoning: Community Commercial (C)

If a project requires a General Plan Amendment or Zone change, then additional information and analysis should be provided to ensure the project is consistent with RHNA and RTP/SCS Strategies.

II. VMT Screening Criteria

A. Is the Project 100% affordable housing?	YES		NO	✓	Attachments:	na
B. Is the Project within 1/2 mile of qualifying transit?	YES		NO	✓	Attachments:	na
C. Is the Project a local serving land use?	YES	✓	NO		Attachments:	Table 1
D. Is the Project in a low VMT area?	YES		NO	✓	Attachments:	
E. Are the Project's Net Daily Trips less than 500 ADT?	YES		NO	✓	Attachments:	

Low VMT Area Evaluation:

Citywide VMT Averages ¹	
Citywide Home-Based VMT =	VMT/Capita
Citywide Employment-Based VMT =	16.9 VMT/Employee

WRCOG VMT MAP

Project TAZ	VMT Rate for Project TAZ ¹	Type of Project
1808	VMT/Capita	Residential:
	17.3 VMT/Employee	Non-Residential: ✓

¹ Per latest WRCOG VMT Tool for baseline year (2023); see Attachment B

Trip Generation Evaluation:

Source of Trip Generation: ITE Trip Generation Manual 11th Edition, 2021. ITE 945 and ITE 948

Project Trip Generation:	10,166	Average Daily Trips (ADT)	
Internal Trip Credit:	YES	NO	✓
Pass-By Trip Credit:	YES	NO	✓
Affordable Housing Credit:	YES	NO	✓
Existing Land Use Trip Credit:	YES	NO	✓
% Trip Credit:			76%, 75%
% Trip Credit:			
% Trip Credit:			
Net Project Daily Trips:	3,187	Average Daily Trips (ADT)	
Attachments:			Table 1

Does project trip generation warrant an LOS evaluation outside of CEQA? YES ✓ NO

III. VMT Screening Summary

A. Is the Project presumed to have a less than significant impact on VMT?

A Project is presumed to have a less than significant impact on VMT if the Project satisfies at least one (1) of the VMT screening criteria.

Yes,
II VMT Screening Criteria C satisfied

B. Is mitigation required?

If the Project does not satisfy at least one (1) of the VMT screening criteria, then mitigation is required to reduce the Project's impact on VMT.

No
Retail project

C. Is additional VMT modeling required to evaluate Project impacts?

If the Project requires a zone change and/or General Plan Amendment AND generates 2,500 or more net daily trips, then additional VMT modeling using RIVTAM/RIVCOM is required. If the project generates less than 2,500 net daily trips, the Project TAZ VMT Rate can be used for mitigation purposes.

YES		NO	☒
-----	--	----	-------------------------------------

IV. MITIGATION

A. Citywide Average VMT Rate (Threshold of Significance) for Mitigation Purposes:

--	--

B. Unmitigated Project TAZ VMT Rate:

--	--

C. Percentage Reduction Required to Achieve the Citywide Average VMT:

	%
--	---

D. VMT Reduction Mitigation Measures:

Source of VMT Reduction Estimates:	
------------------------------------	--

Project Location Setting	TAZ 1808
--------------------------	----------

VMT Reduction Mitigation Measure:		Estimated VMT Reduction (%)
1.		0.00%
2.		0.00%
3.		0.00%
4.		0.00%
5.		0.00%
6.		0.00%
7.		0.00%
8.		0.00%
9.		0.00%
10.		0.00%
Total VMT Reduction (%)		0.00%

(Attach additional pages, if necessary, and a copy of all mitigation calculations.)

E. Mitigated Project TAZ VMT Rate:

--	--

F. Is the project presumed to have a less than significant impact with mitigation?

--

If the mitigated Project VMT rate is below the Citywide Average Rate, then the Project is presumed to have a less than significant impact with mitigation. If the answer is no, then additional VMT modeling may be required and a potentially significant and unavoidable impact may occur. All mitigation measures identified in Section IV.D. are subject to become Conditions of Approval of the project. Development review and processing fees should be submitted with, or prior to the submittal of this Form. The Planning Department staff will not process the Form prior to fees being paid to the City.

Prepared By			Developer/Applicant		
Company:	Ganddini Group, Inc.		Company:	PARADISE LAKE, LLC	
Contact:	Ms. Perrie Ilercil		Contact:	Mr. Mark Slater	
Address:	555 Parkcenter Dr, Ste 225, Santa Ana CA 92705		Address:	4300 Edison Avenue, Chino, CA 91710	
Phone:	714-795-3100*103		Phone:	c/o Micheal Ramirez 760-810-8548	
Email:	perrie@ganddini.com		Email:	mramirez@beyondfoodmart.com	
Date:	2024-0108		Date:		
Approved by:					
Perris Development Serivces Dept.	Date		Perris Public Works Dept.	Date	

APPENDIX C

TRAFFIC COUNT DATA

City of Perris
N/S: I-215 Southbound Ramps
E/W: Ethanac Road
Weather: Clear

File Name : 01_PER_215S_Eth AM
Site Code : 22523959
Start Date : 10/12/2023
Page No : 1

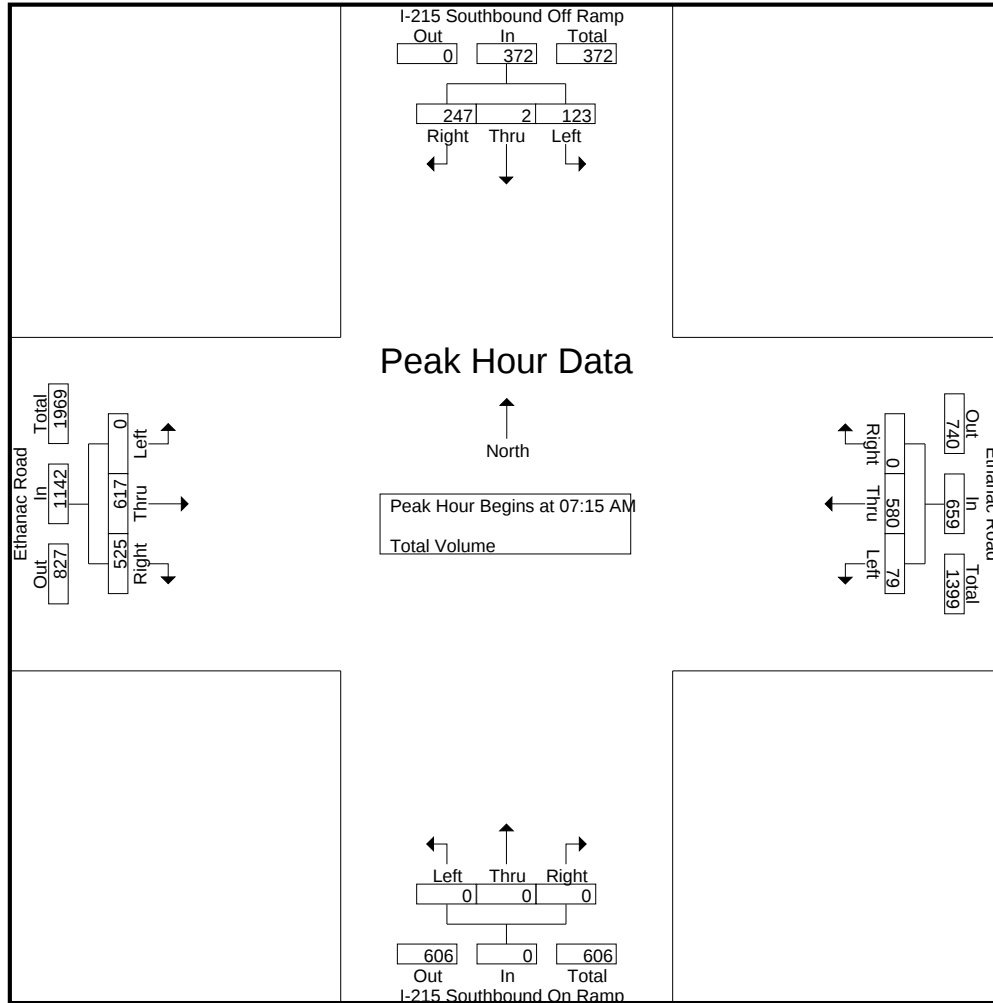
Groups Printed- Total Volume

	I-215 Southbound Off Ramp Southbound				Ethanac Road Westbound				I-215 Southbound On Ramp Northbound				Ethanac Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	37	0	64	101	16	105	0	121	0	0	0	0	0	128	105	233	455
07:15 AM	31	0	63	94	19	104	0	123	0	0	0	0	0	170	138	308	525
07:30 AM	19	1	55	75	22	147	0	169	0	0	0	0	0	177	154	331	575
07:45 AM	45	1	71	117	20	158	0	178	0	0	0	0	0	167	128	295	590
Total	132	2	253	387	77	514	0	591	0	0	0	0	0	642	525	1167	2145
08:00 AM	28	0	58	86	18	171	0	189	0	0	0	0	0	103	105	208	483
08:15 AM	16	0	69	85	21	111	0	132	0	0	0	0	0	113	82	195	412
08:30 AM	25	0	64	89	27	94	0	121	0	0	0	0	0	102	96	198	408
08:45 AM	31	0	60	91	22	98	0	120	0	0	0	0	0	98	72	170	381
Total	100	0	251	351	88	474	0	562	0	0	0	0	0	416	355	771	1684
Grand Total	232	2	504	738	165	988	0	1153	0	0	0	0	0	1058	880	1938	3829
Apprch %	31.4	0.3	68.3		14.3	85.7	0		0	0	0		0	54.6	45.4		
Total %	6.1	0.1	13.2	19.3	4.3	25.8	0	30.1	0	0	0	0	0	27.6	23	50.6	

	I-215 Southbound Off Ramp Southbound				Ethanac Road Westbound				I-215 Southbound On Ramp Northbound				Ethanac Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	31	0	63	94	19	104	0	123	0	0	0	0	0	170	138	308	525
07:30 AM	19	1	55	75	22	147	0	169	0	0	0	0	0	177	154	331	575
07:45 AM	45	1	71	117	20	158	0	178	0	0	0	0	0	167	128	295	590
08:00 AM	28	0	58	86	18	171	0	189	0	0	0	0	0	103	105	208	483
Total Volume	123	2	247	372	79	580	0	659	0	0	0	0	0	617	525	1142	2173
% App. Total	33.1	0.5	66.4		12	88	0		0	0	0		0	54	46		
PHF	.683	.500	.870	.795	.898	.848	.000	.872	.000	.000	.000	.000	.000	.871	.852	.863	.921

City of Perris
N/S: I-215 Southbound Ramps
E/W: Ethanac Road
Weather: Clear

File Name : 01_PER_215S_Eth AM
Site Code : 22523959
Start Date : 10/12/2023
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:30 AM				07:00 AM				07:00 AM			
+0 mins.	37	0	64	101	22	147	0	169	0	0	0	0	0	128	105	233
+15 mins.	31	0	63	94	20	158	0	178	0	0	0	0	0	170	138	308
+30 mins.	19	1	55	75	18	171	0	189	0	0	0	0	0	177	154	331
+45 mins.	45	1	71	117	21	111	0	132	0	0	0	0	0	167	128	295
Total Volume	132	2	253	387	81	587	0	668	0	0	0	0	0	642	525	1167
% App. Total	34.1	0.5	65.4		12.1	87.9	0		0	0	0		0	55	45	
PHF	.733	.500	.891	.827	.920	.858	.000	.884	.000	.000	.000	.000	.000	.907	.852	.881

City of Perris
N/S: I-215 Southbound Ramps
E/W: Ethanac Road
Weather: Clear

File Name : 01_PER_215S_Eth PM
Site Code : 22523959
Start Date : 10/12/2023
Page No : 1

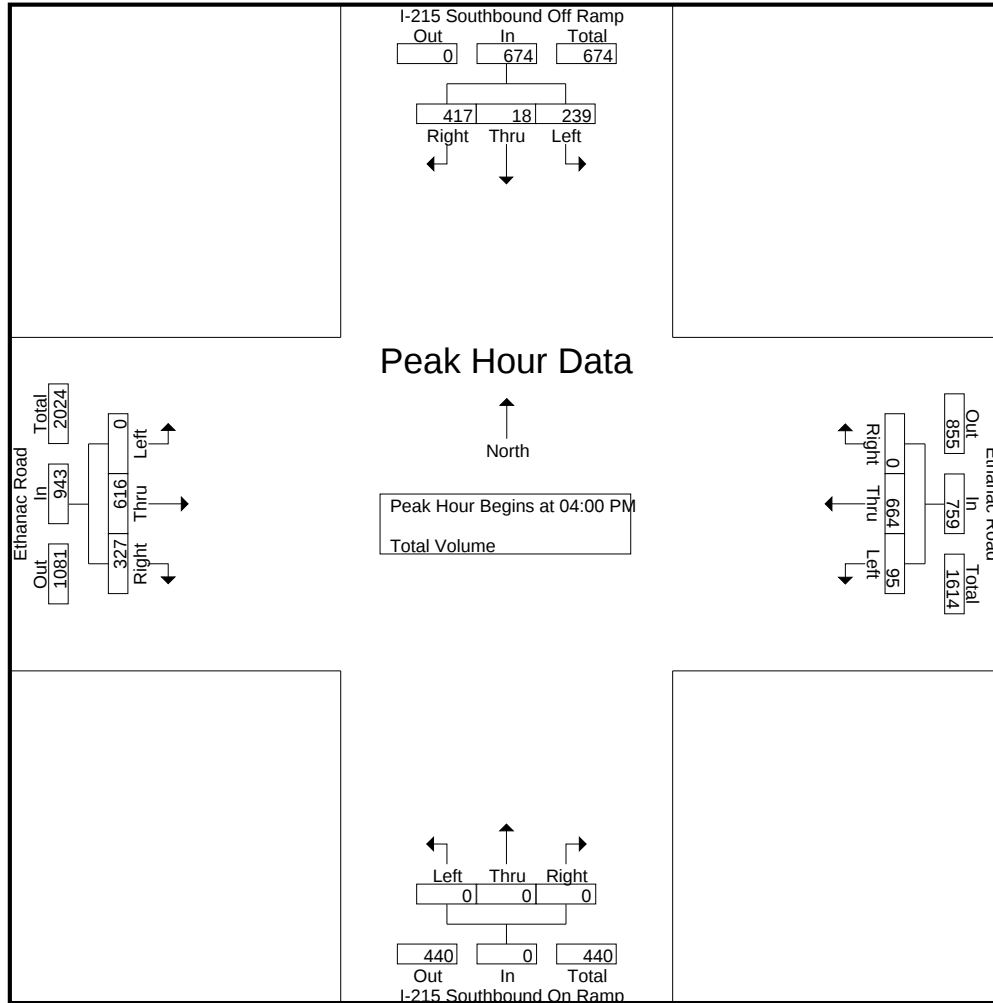
Groups Printed- Total Volume

	I-215 Southbound Off Ramp Southbound				Ethanac Road Westbound				I-215 Southbound On Ramp Northbound				Ethanac Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	75	9	117	201	25	141	0	166	0	0	0	0	0	145	96	241	608
04:15 PM	73	8	116	197	20	164	0	184	0	0	0	0	0	148	80	228	609
04:30 PM	40	1	81	122	23	179	0	202	0	0	0	0	0	151	81	232	556
04:45 PM	51	0	103	154	27	180	0	207	0	0	0	0	0	172	70	242	603
Total	239	18	417	674	95	664	0	759	0	0	0	0	0	616	327	943	2376
05:00 PM	52	0	89	141	17	184	0	201	0	0	0	0	0	126	79	205	547
05:15 PM	50	0	96	146	21	153	0	174	0	0	0	0	0	134	78	212	532
05:30 PM	43	0	88	131	18	147	0	165	0	0	0	0	0	102	68	170	466
05:45 PM	36	0	83	119	15	147	0	162	0	0	0	0	0	145	84	229	510
Total	181	0	356	537	71	631	0	702	0	0	0	0	0	507	309	816	2055
Grand Total	420	18	773	1211	166	1295	0	1461	0	0	0	0	0	1123	636	1759	4431
Apprch %	34.7	1.5	63.8		11.4	88.6	0		0	0	0		0	63.8	36.2		
Total %	9.5	0.4	17.4	27.3	3.7	29.2	0	33	0	0	0	0	0	25.3	14.4	39.7	

	I-215 Southbound Off Ramp Southbound				Ethanac Road Westbound				I-215 Southbound On Ramp Northbound				Ethanac Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	75	9	117	201	25	141	0	166	0	0	0	0	0	145	96	241	608
04:15 PM	73	8	116	197	20	164	0	184	0	0	0	0	0	148	80	228	609
04:30 PM	40	1	81	122	23	179	0	202	0	0	0	0	0	151	81	232	556
04:45 PM	51	0	103	154	27	180	0	207	0	0	0	0	0	172	70	242	603
Total Volume	239	18	417	674	95	664	0	759	0	0	0	0	0	616	327	943	2376
% App. Total	35.5	2.7	61.9		12.5	87.5	0		0	0	0		0	65.3	34.7		
PHF	.797	.500	.891	.838	.880	.922	.000	.917	.000	.000	.000	.000	.000	.895	.852	.974	.975

City of Perris
N/S: I-215 Southbound Ramps
E/W: Ethanac Road
Weather: Clear

File Name : 01_PER_215S_Eth PM
Site Code : 22523959
Start Date : 10/12/2023
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Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:00 PM				04:15 PM				04:00 PM				04:00 PM			
+0 mins.	75	9	117	201	20	164	0	184	0	0	0	0	0	145	96	241
+15 mins.	73	8	116	197	23	179	0	202	0	0	0	0	0	148	80	228
+30 mins.	40	1	81	122	27	180	0	207	0	0	0	0	0	151	81	232
+45 mins.	51	0	103	154	17	184	0	201	0	0	0	0	0	172	70	242
Total Volume	239	18	417	674	87	707	0	794	0	0	0	0	0	616	327	943
% App. Total	35.5	2.7	61.9		11	89	0		0	0	0	0	0	65.3	34.7	
PHF	.797	.500	.891	.838	.806	.961	.000	.959	.000	.000	.000	.000	.000	.895	.852	.974

Location: Perris
 N/S: I-215 SB Ramps
 E/W: Ethanac Road



Date: 10/12/2023
 Day: Thursday

PEDESTRIANS

	North Leg I-215 SB Ramps	East Leg Ethanac Road	South Leg I-215 SB Ramps	West Leg Ethanac Road	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	1	1	0	0	2
7:45 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0
TOTAL VOLUMES:	1	1	0	0	2

	North Leg I-215 SB Ramps	East Leg Ethanac Road	South Leg I-215 SB Ramps	West Leg Ethanac Road	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	0	1	0	0	1
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	1	0	1
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	0	1	1	0	2

Location: Perris
 N/S: I-215 SB Ramps
 E/W: Ethanac Road



Date: 10/12/2023
 Day: Thursday

BICYCLES

		Southbound I-215 SB Ramps			Westbound Ethanac Road			Northbound I-215 SB Ramps			Eastbound Ethanac Road			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:		0	0	0	0	0	0	0	0	0	0	1	0	1

		Southbound I-215 SB Ramps			Westbound Ethanac Road			Northbound I-215 SB Ramps			Eastbound Ethanac Road			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	1
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:		0	0	0	0	0	0	0	0	0	0	1	0	1

City of Perris
N/S: I-215 Northbound Ramps
E/W: Ethanac Road
Weather: Clear

File Name : 02_PER_215N_Eth AM
Site Code : 22523959
Start Date : 10/12/2023
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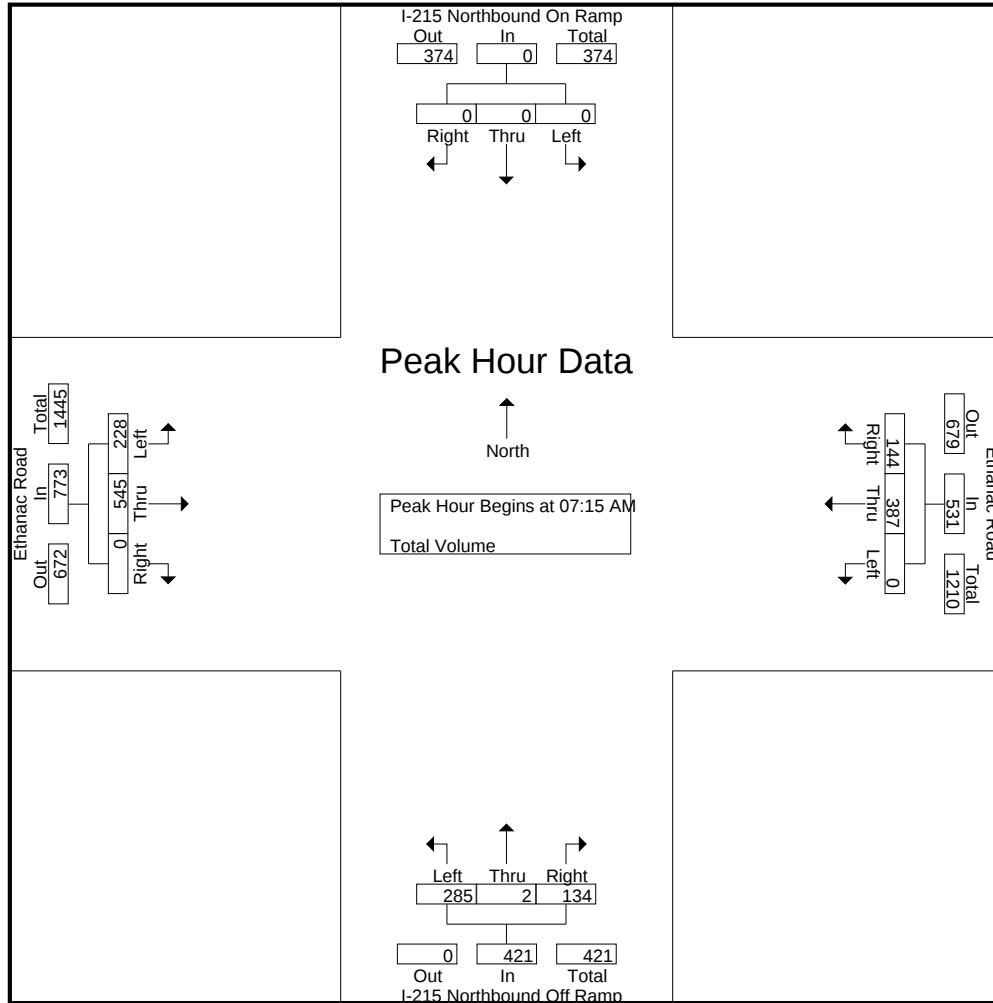
Groups Printed- Total Volume

	I-215 Northbound On Ramp Southbound				Ethanac Road Westbound				I-215 Northbound Off Ramp Northbound				Ethanac Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	67	45	112	54	0	32	86	52	104	0	156	354
07:15 AM	0	0	0	0	0	66	52	118	63	0	35	98	60	166	0	226	442
07:30 AM	0	0	0	0	0	96	38	134	75	0	32	107	53	153	0	206	447
07:45 AM	0	0	0	0	0	107	28	135	76	1	36	113	65	145	0	210	458
Total	0	0	0	0	0	336	163	499	268	1	135	404	230	568	0	798	1701
08:00 AM	0	0	0	0	0	118	26	144	71	1	31	103	50	81	0	131	378
08:15 AM	0	0	0	0	0	70	26	96	62	0	29	91	58	82	0	140	327
08:30 AM	0	0	0	0	0	63	17	80	64	0	31	95	62	59	0	121	296
08:45 AM	0	0	0	0	0	67	32	99	49	0	43	92	50	83	0	133	324
Total	0	0	0	0	0	318	101	419	246	1	134	381	220	305	0	525	1325
Grand Total	0	0	0	0	0	654	264	918	514	2	269	785	450	873	0	1323	3026
Apprch %	0	0	0		0	71.2	28.8		65.5	0.3	34.3		34	66	0		
Total %	0	0	0		0	21.6	8.7	30.3	17	0.1	8.9	25.9	14.9	28.8	0	43.7	

	I-215 Northbound On Ramp Southbound				Ethanac Road Westbound				I-215 Northbound Off Ramp Northbound				Ethanac Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	0	0	0	66	52	118	63	0	35	98	60	166	0	226	442
07:30 AM	0	0	0	0	0	96	38	134	75	0	32	107	53	153	0	206	447
07:45 AM	0	0	0	0	0	107	28	135	76	1	36	113	65	145	0	210	458
08:00 AM	0	0	0	0	0	118	26	144	71	1	31	103	50	81	0	131	378
Total Volume	0	0	0	0	0	387	144	531	285	2	134	421	228	545	0	773	1725
% App. Total	0	0	0		0	72.9	27.1		67.7	0.5	31.8		29.5	70.5	0		
PHF	.000	.000	.000	.000	.000	.820	.692	.922	.938	.500	.931	.931	.877	.821	.000	.855	.942

City of Perris
N/S: I-215 Northbound Ramps
E/W: Ethanac Road
Weather: Clear

File Name : 02_PER_215N_Eth AM
Site Code : 22523959
Start Date : 10/12/2023
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Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:15 AM				07:15 AM				07:00 AM			
+0 mins.	0	0	0	0	0	66	52	118	63	0	35	98	52	104	0	156
+15 mins.	0	0	0	0	0	96	38	134	75	0	32	107	60	166	0	226
+30 mins.	0	0	0	0	0	107	28	135	76	1	36	113	53	153	0	206
+45 mins.	0	0	0	0	0	118	26	144	71	1	31	103	65	145	0	210
Total Volume	0	0	0	0	0	387	144	531	285	2	134	421	230	568	0	798
% App. Total	0	0	0	0	0	72.9	27.1		67.7	0.5	31.8		28.8	71.2	0	
PHF	.000	.000	.000	.000	.000	.820	.692	.922	.938	.500	.931	.931	.885	.855	.000	.883

City of Perris
N/S: I-215 Northbound Ramps
E/W: Ethanac Road
Weather: Clear

File Name : 02_PER_215N_Eth PM
Site Code : 22523959
Start Date : 10/12/2023
Page No : 1

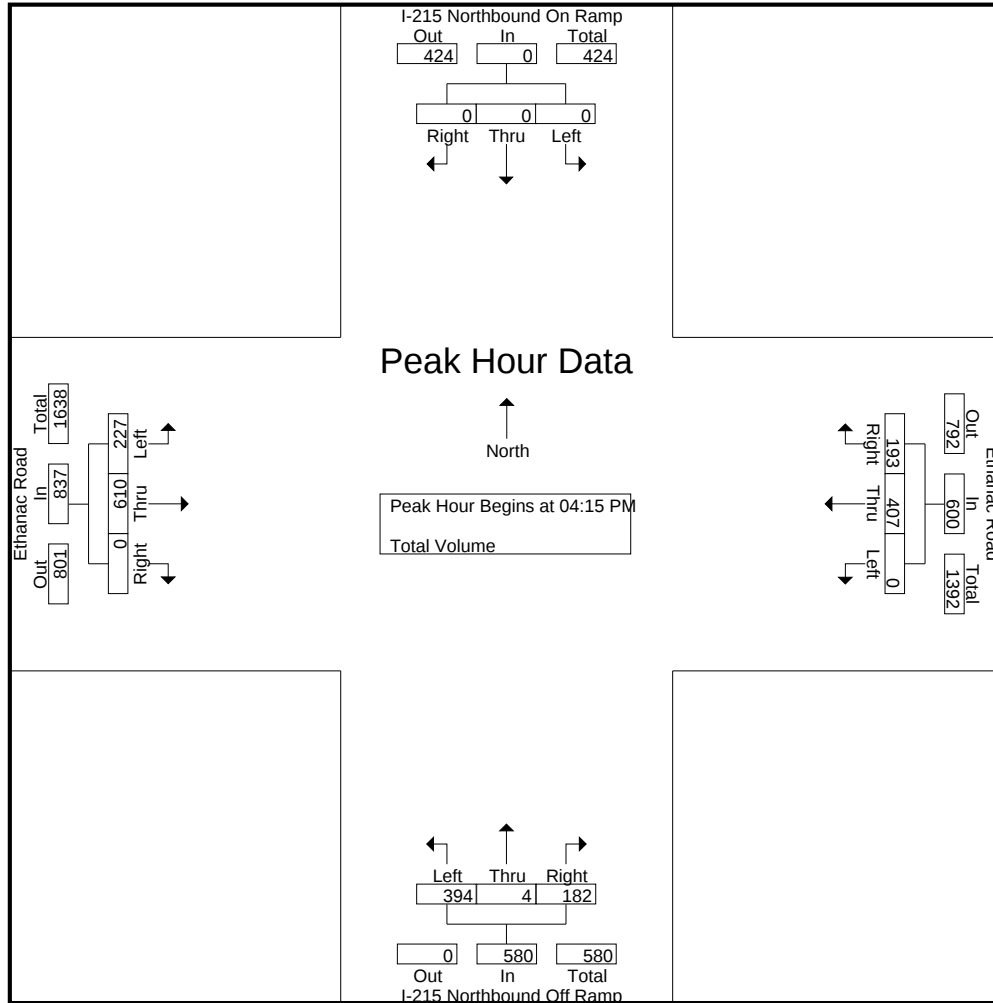
Groups Printed- Total Volume

	I-215 Northbound On Ramp Southbound				Ethanac Road Westbound				I-215 Northbound Off Ramp Northbound				Ethanac Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	104	45	149	68	0	46	114	46	175	0	221	484
04:15 PM	0	0	0	0	0	87	30	117	98	2	43	143	54	177	0	231	491
04:30 PM	0	0	0	0	0	102	38	140	105	2	36	143	50	140	0	190	473
04:45 PM	0	0	0	0	0	108	40	148	91	0	51	142	72	154	0	226	516
Total	0	0	0	0	0	401	153	554	362	4	176	542	222	646	0	868	1964
05:00 PM	0	0	0	0	0	110	85	195	100	0	52	152	51	139	0	190	537
05:15 PM	0	0	0	0	0	75	32	107	94	2	41	137	48	139	0	187	431
05:30 PM	0	0	0	0	0	81	35	116	95	0	47	142	41	110	0	151	409
05:45 PM	0	0	0	0	0	82	32	114	72	1	38	111	58	114	0	172	397
Total	0	0	0	0	0	348	184	532	361	3	178	542	198	502	0	700	1774
Grand Total	0	0	0	0	0	749	337	1086	723	7	354	1084	420	1148	0	1568	3738
Apprch %	0	0	0		0	69	31		66.7	0.6	32.7		26.8	73.2	0		
Total %	0	0	0		0	20	9	29.1	19.3	0.2	9.5	29	11.2	30.7	0	41.9	

	I-215 Northbound On Ramp Southbound				Ethanac Road Westbound				I-215 Northbound Off Ramp Northbound				Ethanac Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	0	0	0	0	87	30	117	98	2	43	143	54	177	0	231	491
04:30 PM	0	0	0	0	0	102	38	140	105	2	36	143	50	140	0	190	473
04:45 PM	0	0	0	0	0	108	40	148	91	0	51	142	72	154	0	226	516
05:00 PM	0	0	0	0	0	110	85	195	100	0	52	152	51	139	0	190	537
Total Volume	0	0	0	0	0	407	193	600	394	4	182	580	227	610	0	837	2017
% App. Total	0	0	0		0	67.8	32.2		67.9	0.7	31.4		27.1	72.9	0		
PHF	.000	.000	.000	.000	.000	.925	.568	.769	.938	.500	.875	.954	.788	.862	.000	.906	.939

City of Perris
N/S: I-215 Northbound Ramps
E/W: Ethanac Road
Weather: Clear

File Name : 02_PER_215N_Eth PM
Site Code : 22523959
Start Date : 10/12/2023
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Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:15 PM				04:15 PM				04:00 PM			
+0 mins.	0	0	0	0	0	87	30	117	98	2	43	143	46	175	0	221
+15 mins.	0	0	0	0	0	102	38	140	105	2	36	143	54	177	0	231
+30 mins.	0	0	0	0	0	108	40	148	91	0	51	142	50	140	0	190
+45 mins.	0	0	0	0	0	110	85	195	100	0	52	152	72	154	0	226
Total Volume	0	0	0	0	0	407	193	600	394	4	182	580	222	646	0	868
% App. Total	0	0	0	0	0	67.8	32.2		67.9	0.7	31.4		25.6	74.4	0	
PHF	.000	.000	.000	.000	.000	.925	.568	.769	.938	.500	.875	.954	.771	.912	.000	.939

Location: Perris
 N/S: I-215 NB Ramps
 E/W: Ethanac Road



Date: 10/12/2023
 Day: Thursday

PEDESTRIANS

	North Leg I-215 NB Ramps	East Leg Ethanac Road	South Leg I-215 NB Ramps	West Leg Ethanac Road	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0

	North Leg I-215 NB Ramps	East Leg Ethanac Road	South Leg I-215 NB Ramps	West Leg Ethanac Road	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	0	0	1	0	1
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	1	0	0	0	1
5:00 PM	0	0	0	0	0
5:15 PM	0	0	1	0	1
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	1	0	2	0	3

Location: Perris
 N/S: I-215 NB Ramps
 E/W: Ethanac Road



Date: 10/12/2023
 Day: Thursday

BICYCLES

	Southbound I-215 NB Ramps			Westbound Ethanac Road			Northbound I-215 NB Ramps			Eastbound Ethanac Road			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	0	2	0	2

	Southbound I-215 NB Ramps			Westbound Ethanac Road			Northbound I-215 NB Ramps			Eastbound Ethanac Road			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	0	1	0	1

City of Perris
N/S: Encanto Drive
E/W: Ethanac Road
Weather: Clear

File Name : 03_PER_Enc_Eth AM
Site Code : 22523959
Start Date : 10/12/2023
Page No : 1

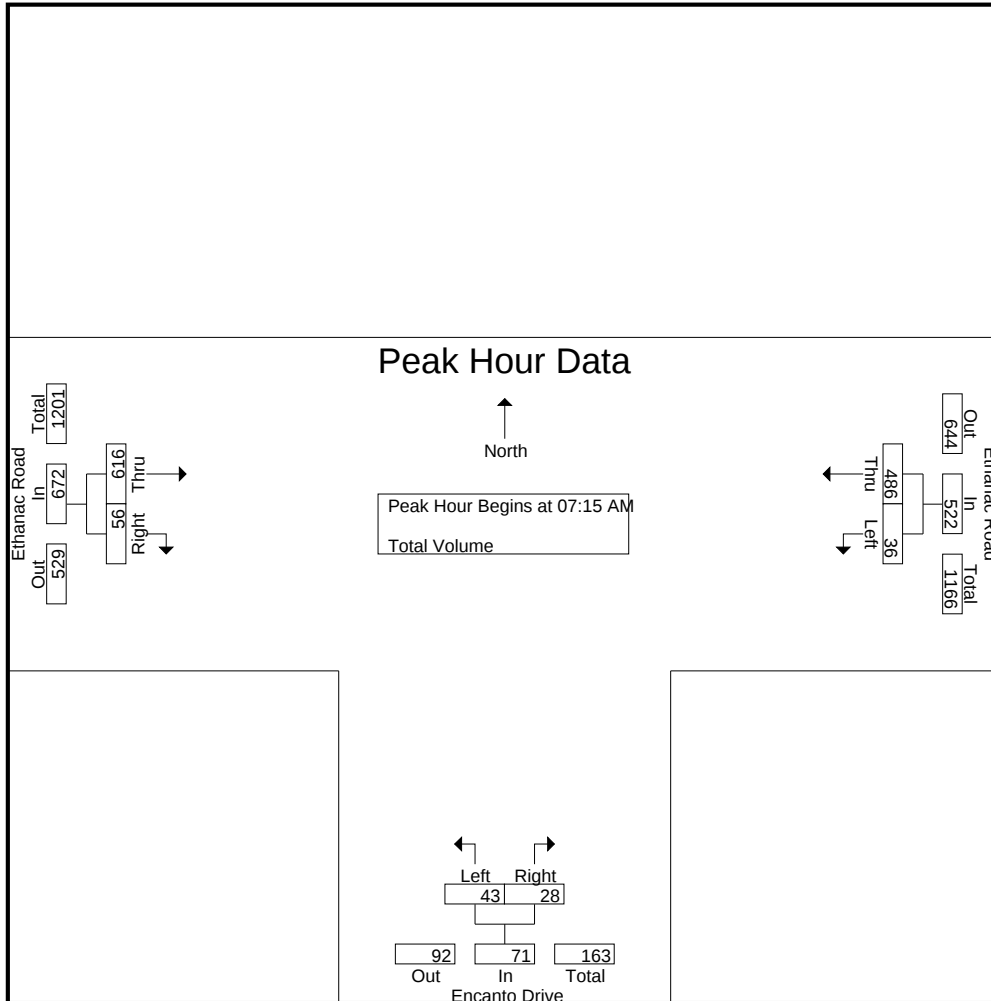
Groups Printed- Total Volume

	Ethanac Road Westbound			Encanto Drive Northbound			Ethanac Road Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	5	106	111	9	6	15	127	8	135	261
07:15 AM	6	99	105	10	10	20	187	8	195	320
07:30 AM	4	117	121	18	6	24	174	8	182	327
07:45 AM	17	133	150	7	10	17	159	24	183	350
Total	32	455	487	44	32	76	647	48	695	1258
08:00 AM	9	137	146	8	2	10	96	16	112	268
08:15 AM	5	90	95	7	13	20	98	11	109	224
08:30 AM	7	63	70	8	6	14	76	12	88	172
08:45 AM	3	92	95	10	2	12	106	15	121	228
Total	24	382	406	33	23	56	376	54	430	892
Grand Total	56	837	893	77	55	132	1023	102	1125	2150
Apprch %	6.3	93.7		58.3	41.7		90.9	9.1		
Total %	2.6	38.9	41.5	3.6	2.6	6.1	47.6	4.7	52.3	

	Ethanac Road Westbound			Encanto Drive Northbound			Ethanac Road Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	6	99	105	10	10	20	187	8	195	320
07:30 AM	4	117	121	18	6	24	174	8	182	327
07:45 AM	17	133	150	7	10	17	159	24	183	350
08:00 AM	9	137	146	8	2	10	96	16	112	268
Total Volume	36	486	522	43	28	71	616	56	672	1265
% App. Total	6.9	93.1		60.6	39.4		91.7	8.3		
PHF	.529	.887	.870	.597	.700	.740	.824	.583	.862	.904

City of Perris
N/S: Encanto Drive
E/W: Ethanac Road
Weather: Clear

File Name : 03_PER_Enc_Eth AM
Site Code : 22523959
Start Date : 10/12/2023
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:15 AM			07:00 AM			07:00 AM		
+0 mins.	6	99	105	9	6	15	127	8	135
+15 mins.	4	117	121	10	10	20	187	8	195
+30 mins.	17	133	150	18	6	24	174	8	182
+45 mins.	9	137	146	7	10	17	159	24	183
Total Volume	36	486	522	44	32	76	647	48	695
% App. Total	6.9	93.1		57.9	42.1		93.1	6.9	
PHF	.529	.887	.870	.611	.800	.792	.865	.500	.891

City of Perris
N/S: Encanto Drive
E/W: Ethanac Road
Weather: Clear

File Name : 03_PER_Enc_Eth PM
Site Code : 22523959
Start Date : 10/12/2023
Page No : 1

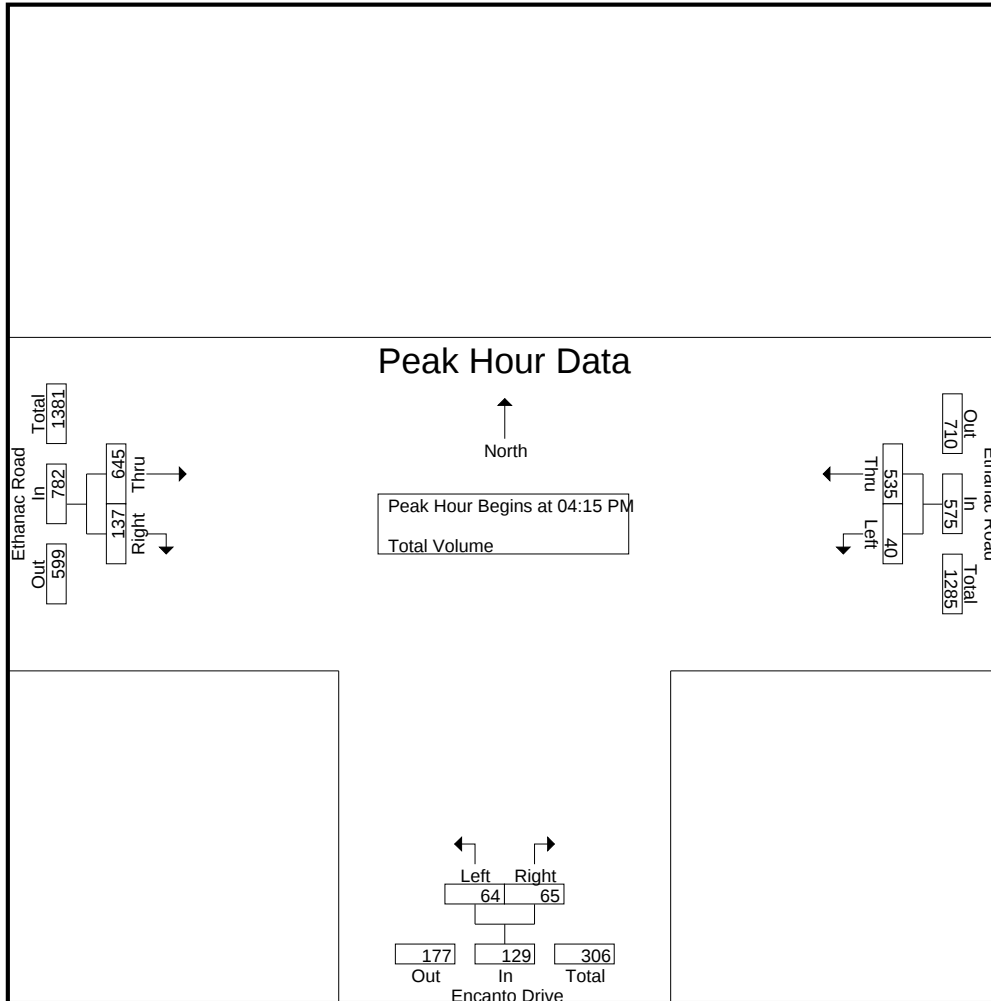
Groups Printed- Total Volume

	Ethanac Road Westbound			Encanto Drive Northbound			Ethanac Road Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	19	122	141	17	14	31	162	57	219	391
04:15 PM	7	100	107	16	12	28	167	46	213	348
04:30 PM	12	120	132	18	6	24	151	30	181	337
04:45 PM	11	155	166	10	30	40	169	30	199	405
Total	49	497	546	61	62	123	649	163	812	1481
05:00 PM	10	160	170	20	17	37	158	31	189	396
05:15 PM	7	94	101	14	16	30	157	25	182	313
05:30 PM	5	106	111	9	7	16	130	31	161	288
05:45 PM	10	106	116	11	10	21	138	16	154	291
Total	32	466	498	54	50	104	583	103	686	1288
Grand Total	81	963	1044	115	112	227	1232	266	1498	2769
Apprch %	7.8	92.2		50.7	49.3		82.2	17.8		
Total %	2.9	34.8	37.7	4.2	4	8.2	44.5	9.6	54.1	

	Ethanac Road Westbound			Encanto Drive Northbound			Ethanac Road Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:15 PM										
04:15 PM	7	100	107	16	12	28	167	46	213	348
04:30 PM	12	120	132	18	6	24	151	30	181	337
04:45 PM	11	155	166	10	30	40	169	30	199	405
05:00 PM	10	160	170	20	17	37	158	31	189	396
Total Volume	40	535	575	64	65	129	645	137	782	1486
% App. Total	7	93		49.6	50.4		82.5	17.5		
PHF	.833	.836	.846	.800	.542	.806	.954	.745	.918	.917

City of Perris
N/S: Encanto Drive
E/W: Ethanac Road
Weather: Clear

File Name : 03_PER_Enc_Eth PM
Site Code : 22523959
Start Date : 10/12/2023
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM			04:30 PM			04:00 PM		
+0 mins.	7	100	107	18	6	24	162	57	219
+15 mins.	12	120	132	10	30	40	167	46	213
+30 mins.	11	155	166	20	17	37	151	30	181
+45 mins.	10	160	170	14	16	30	169	30	199
Total Volume	40	535	575	62	69	131	649	163	812
% App. Total	7	93		47.3	52.7		79.9	20.1	
PHF	.833	.836	.846	.775	.575	.819	.960	.715	.927

Location: Perris
 N/S: Encanto Drive
 E/W: Ethanac Road



Date: 10/12/2023
 Day: Thursday

PEDESTRIANS

	North Leg Encanto Drive	East Leg Ethanac Road	South Leg Encanto Drive	West Leg Ethanac Road	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	0	0	0	0	0
7:15 AM	0	0	1	0	1
7:30 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0
TOTAL VOLUMES:	0	0	1	0	1

	North Leg Encanto Drive	East Leg Ethanac Road	South Leg Encanto Drive	West Leg Ethanac Road	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	0	0	1	0	1
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	1	1
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	0	0	1	1	2

Location: Perris
 N/S: Encanto Drive
 E/W: Ethanac Road



Date: 10/12/2023
 Day: Thursday

BICYCLES

		Southbound Encanto Drive			Westbound Ethanac Road			Northbound Encanto Drive			Eastbound Ethanac Road			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	1	1
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:		0	0	0	0	0	0	0	0	0	0	0	1	1

		Southbound Encanto Drive			Westbound Ethanac Road			Northbound Encanto Drive			Eastbound Ethanac Road			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	1
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:		0	0	0	0	0	0	0	0	0	0	1	0	1

City of Perris
N/S: Trumble Road
E/W: Ethanac Road
Weather: Clear

File Name : 04_PER_Tru_Eth AM
Site Code : 22523959
Start Date : 10/12/2023
Page No : 1

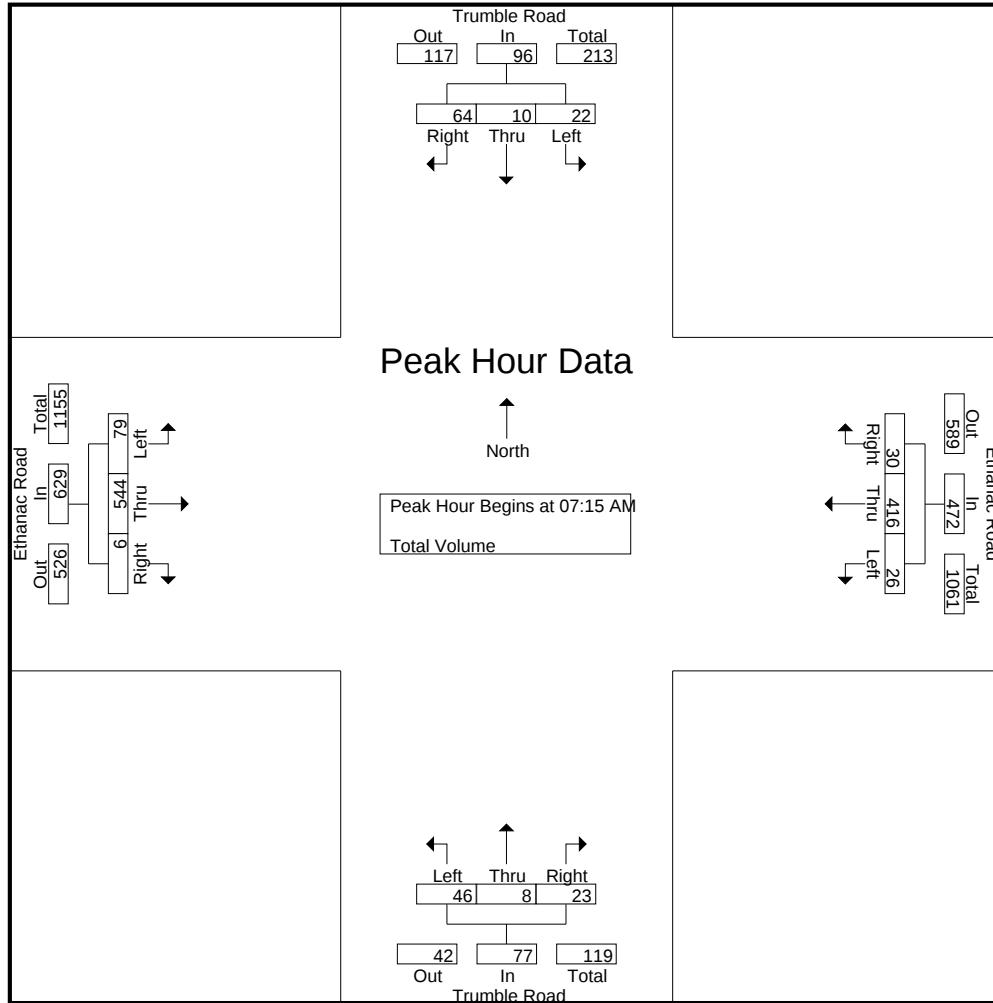
Groups Printed- Total Volume

	Trumble Road Southbound				Ethanac Road Westbound				Trumble Road Northbound				Ethanac Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	6	3	14	23	9	80	3	92	17	0	7	24	28	93	3	124	263
07:15 AM	4	1	11	16	7	82	4	93	15	1	3	19	19	158	2	179	307
07:30 AM	3	2	17	22	6	105	5	116	9	4	8	21	14	178	0	192	351
07:45 AM	5	5	19	29	4	111	11	126	13	3	6	22	24	133	1	158	335
Total	18	11	61	90	26	378	23	427	54	8	24	86	85	562	6	653	1256
08:00 AM	10	2	17	29	9	118	10	137	9	0	6	15	22	75	3	100	281
08:15 AM	6	2	15	23	5	69	5	79	10	1	8	19	23	77	2	102	223
08:30 AM	4	2	12	18	4	52	7	63	5	0	7	12	18	65	2	85	178
08:45 AM	6	2	24	32	7	69	7	83	5	1	2	8	15	92	1	108	231
Total	26	8	68	102	25	308	29	362	29	2	23	54	78	309	8	395	913
Grand Total	44	19	129	192	51	686	52	789	83	10	47	140	163	871	14	1048	2169
Apprch %	22.9	9.9	67.2		6.5	86.9	6.6		59.3	7.1	33.6		15.6	83.1	1.3		
Total %	2	0.9	5.9	8.9	2.4	31.6	2.4	36.4	3.8	0.5	2.2	6.5	7.5	40.2	0.6	48.3	

	Trumble Road Southbound				Ethanac Road Westbound				Trumble Road Northbound				Ethanac Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	4	1	11	16	7	82	4	93	15	1	3	19	19	158	2	179	307
07:30 AM	3	2	17	22	6	105	5	116	9	4	8	21	14	178	0	192	351
07:45 AM	5	5	19	29	4	111	11	126	13	3	6	22	24	133	1	158	335
08:00 AM	10	2	17	29	9	118	10	137	9	0	6	15	22	75	3	100	281
Total Volume	22	10	64	96	26	416	30	472	46	8	23	77	79	544	6	629	1274
% App. Total	22.9	10.4	66.7		5.5	88.1	6.4		59.7	10.4	29.9		12.6	86.5	1		
PHF	.550	.500	.842	.828	.722	.881	.682	.861	.767	.500	.719	.875	.823	.764	.500	.819	.907

City of Perris
N/S: Trumble Road
E/W: Ethanac Road
Weather: Clear

File Name : 04_PER_Tru_Eth AM
Site Code : 22523959
Start Date : 10/12/2023
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Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:15 AM				07:00 AM				07:00 AM			
+0 mins.	3	2	17	22	7	82	4	93	17	0	7	24	28	93	3	124
+15 mins.	5	5	19	29	6	105	5	116	15	1	3	19	19	158	2	179
+30 mins.	10	2	17	29	4	111	11	126	9	4	8	21	14	178	0	192
+45 mins.	6	2	15	23	9	118	10	137	13	3	6	22	24	133	1	158
Total Volume	24	11	68	103	26	416	30	472	54	8	24	86	85	562	6	653
% App. Total	23.3	10.7	66		5.5	88.1	6.4		62.8	9.3	27.9		13	86.1	0.9	
PHF	.600	.550	.895	.888	.722	.881	.682	.861	.794	.500	.750	.896	.759	.789	.500	.850

City of Perris
N/S: Trumble Road
E/W: Ethanac Road
Weather: Clear

File Name : 04_PER_Tru_Eth PM
Site Code : 22523959
Start Date : 10/12/2023
Page No : 1

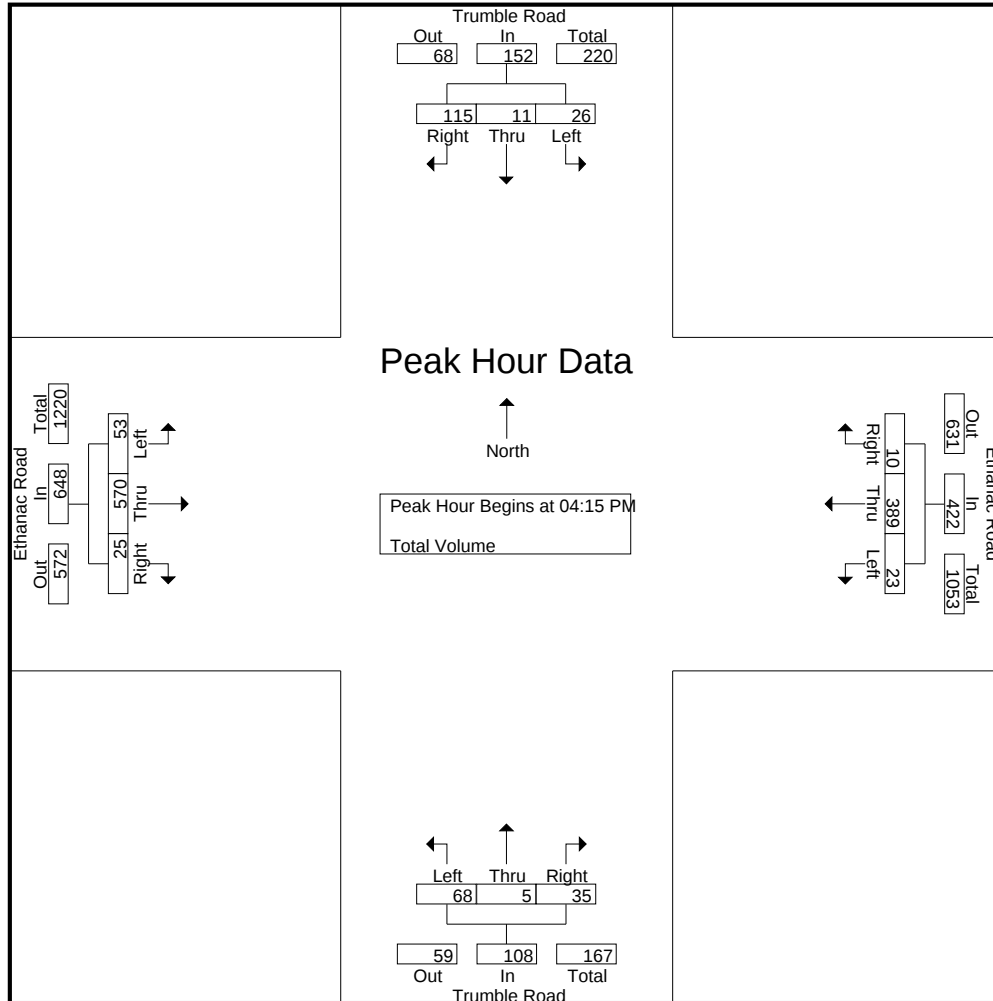
Groups Printed- Total Volume

	Trumble Road Southbound				Ethanac Road Westbound				Trumble Road Northbound				Ethanac Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	4	2	38	44	3	94	3	100	14	2	7	23	11	146	6	163	330
04:15 PM	9	0	16	25	3	83	3	89	7	3	6	16	19	156	2	177	307
04:30 PM	4	3	23	30	9	101	3	113	13	0	10	23	14	109	10	133	299
04:45 PM	5	4	21	30	1	118	3	122	19	1	9	29	12	167	6	185	366
Total	22	9	98	129	16	396	12	424	53	6	32	91	56	578	24	658	1302
05:00 PM	8	4	55	67	10	87	1	98	29	1	10	40	8	138	7	153	358
05:15 PM	7	1	16	24	4	80	5	89	10	1	8	19	6	156	4	166	298
05:30 PM	4	1	16	21	9	78	3	90	13	0	8	21	5	106	7	118	250
05:45 PM	11	0	13	24	5	83	1	89	19	0	2	21	11	122	6	139	273
Total	30	6	100	136	28	328	10	366	71	2	28	101	30	522	24	576	1179
Grand Total	52	15	198	265	44	724	22	790	124	8	60	192	86	1100	48	1234	2481
Apprch %	19.6	5.7	74.7		5.6	91.6	2.8		64.6	4.2	31.2		7	89.1	3.9		
Total %	2.1	0.6	8	10.7	1.8	29.2	0.9	31.8	5	0.3	2.4	7.7	3.5	44.3	1.9	49.7	

	Trumble Road Southbound				Ethanac Road Westbound				Trumble Road Northbound				Ethanac Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	9	0	16	25	3	83	3	89	7	3	6	16	19	156	2	177	307
04:30 PM	4	3	23	30	9	101	3	113	13	0	10	23	14	109	10	133	299
04:45 PM	5	4	21	30	1	118	3	122	19	1	9	29	12	167	6	185	366
05:00 PM	8	4	55	67	10	87	1	98	29	1	10	40	8	138	7	153	358
Total Volume	26	11	115	152	23	389	10	422	68	5	35	108	53	570	25	648	1330
% App. Total	17.1	7.2	75.7		5.5	92.2	2.4		63	4.6	32.4		8.2	88	3.9		
PHF	.722	.688	.523	.567	.575	.824	.833	.865	.586	.417	.875	.675	.697	.853	.625	.876	.908

City of Perris
N/S: Trumble Road
E/W: Ethanac Road
Weather: Clear

File Name : 04_PER_Tru_Eth PM
Site Code : 22523959
Start Date : 10/12/2023
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:00 PM				04:30 PM				04:00 PM			
+0 mins.	9	0	16	25	3	94	3	100	13	0	10	23	11	146	6	163
+15 mins.	4	3	23	30	3	83	3	89	19	1	9	29	19	156	2	177
+30 mins.	5	4	21	30	9	101	3	113	29	1	10	40	14	109	10	133
+45 mins.	8	4	55	67	1	118	3	122	10	1	8	19	12	167	6	185
Total Volume	26	11	115	152	16	396	12	424	71	3	37	111	56	578	24	658
% App. Total	17.1	7.2	75.7		3.8	93.4	2.8		64	2.7	33.3		8.5	87.8	3.6	
PHF	.722	.688	.523	.567	.444	.839	1.000	.869	.612	.750	.925	.694	.737	.865	.600	.889

Location: Perris
 N/S: Trumble Road
 E/W: Ethanac Road



Date: 10/12/2023
 Day: Thursday

PEDESTRIANS

	North Leg Trumble Road	East Leg Ethanac Road	South Leg Trumble Road	West Leg Ethanac Road	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	0	1	1	0	2
7:45 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0
TOTAL VOLUMES:	0	1	1	0	2

	North Leg Trumble Road	East Leg Ethanac Road	South Leg Trumble Road	West Leg Ethanac Road	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	0	1	1	0	2
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	0	1	1	0	2

Location: Perris
 N/S: Trumble Road
 E/W: Ethanac Road



Date: 10/12/2023
 Day: Thursday

BICYCLES

		Southbound Trumble Road			Westbound Ethanac Road			Northbound Trumble Road			Eastbound Ethanac Road			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:		0	0	0	0	0	0	0	0	0	0	0	0	0

		Southbound Trumble Road			Westbound Ethanac Road			Northbound Trumble Road			Eastbound Ethanac Road			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	1
	4:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	1
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:		0	0	0	0	0	1	0	0	0	0	1	0	2

City of Perris
N/S: Sherman Road
E/W: Ethanac Road
Weather: Clear

File Name : 05_PER_She_Eth AM
Site Code : 22523959
Start Date : 10/12/2023
Page No : 1

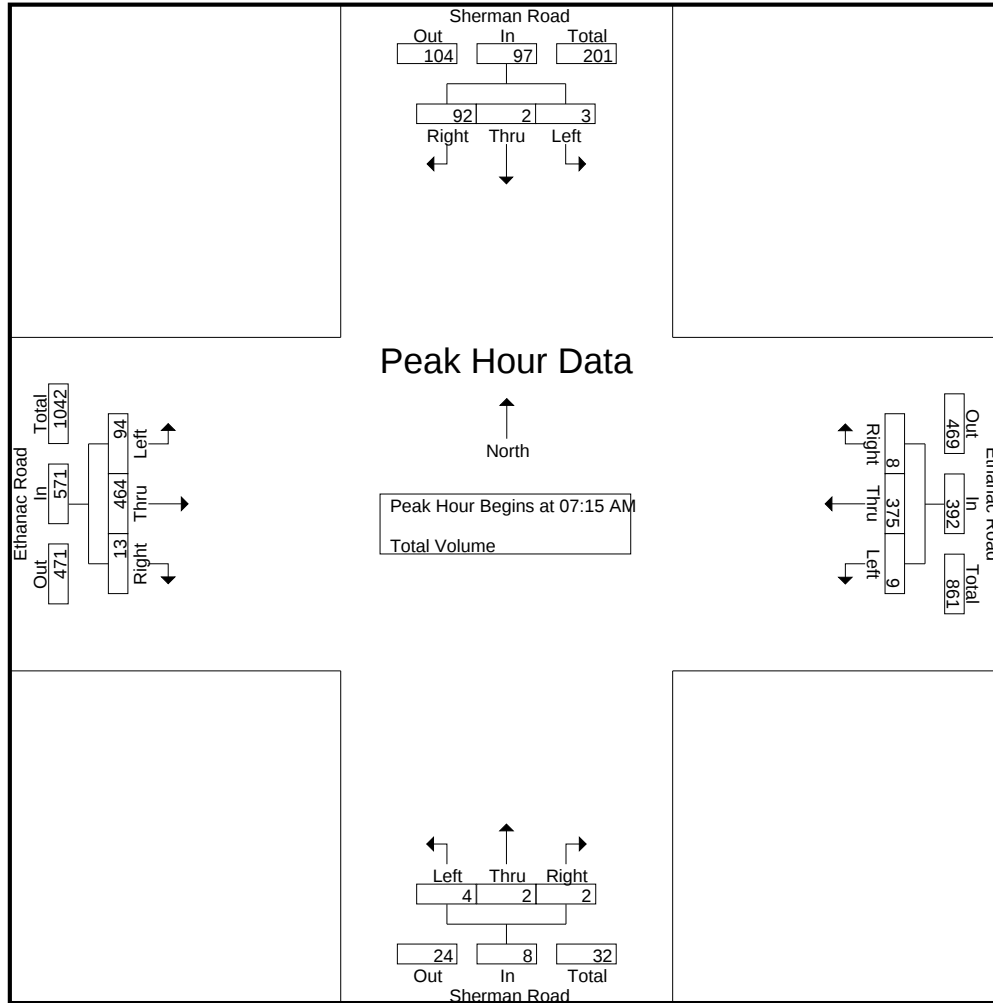
Groups Printed- Total Volume

	Sherman Road Southbound				Ethanac Road Westbound				Sherman Road Northbound				Ethanac Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	22	22	1	66	1	68	1	0	0	1	21	82	2	105	196
07:15 AM	0	0	21	21	4	71	1	76	0	0	0	0	23	140	3	166	263
07:30 AM	0	0	20	20	2	96	1	99	2	1	0	3	26	146	2	174	296
07:45 AM	3	1	27	31	1	113	4	118	1	1	1	3	27	109	3	139	291
Total	3	1	90	94	8	346	7	361	4	2	1	7	97	477	10	584	1046
08:00 AM	0	1	24	25	2	95	2	99	1	0	1	2	18	69	5	92	218
08:15 AM	2	0	19	21	0	54	1	55	0	1	0	1	22	71	1	94	171
08:30 AM	2	1	14	17	0	49	0	49	0	0	0	0	22	48	1	71	137
08:45 AM	1	0	18	19	0	58	1	59	3	0	1	4	29	71	2	102	184
Total	5	2	75	82	2	256	4	262	4	1	2	7	91	259	9	359	710
Grand Total	8	3	165	176	10	602	11	623	8	3	3	14	188	736	19	943	1756
Apprch %	4.5	1.7	93.8		1.6	96.6	1.8		57.1	21.4	21.4		19.9	78	2		
Total %	0.5	0.2	9.4	10	0.6	34.3	0.6	35.5	0.5	0.2	0.2	0.8	10.7	41.9	1.1	53.7	

	Sherman Road Southbound				Ethanac Road Westbound				Sherman Road Northbound				Ethanac Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	21	21	4	71	1	76	0	0	0	0	23	140	3	166	263
07:30 AM	0	0	20	20	2	96	1	99	2	1	0	3	26	146	2	174	296
07:45 AM	3	1	27	31	1	113	4	118	1	1	1	3	27	109	3	139	291
08:00 AM	0	1	24	25	2	95	2	99	1	0	1	2	18	69	5	92	218
Total Volume	3	2	92	97	9	375	8	392	4	2	2	8	94	464	13	571	1068
% App. Total	3.1	2.1	94.8		2.3	95.7	2		50	25	25		16.5	81.3	2.3		
PHF	.250	.500	.852	.782	.563	.830	.500	.831	.500	.500	.500	.667	.870	.795	.650	.820	.902

City of Perris
N/S: Sherman Road
E/W: Ethanac Road
Weather: Clear

File Name : 05_PER_She_Eth AM
Site Code : 22523959
Start Date : 10/12/2023
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Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:30 AM				07:00 AM			
+0 mins.	0	0	21	21	4	71	1	76	2	1	0	3	21	82	2	105
+15 mins.	0	0	20	20	2	96	1	99	1	1	1	3	23	140	3	166
+30 mins.	3	1	27	31	1	113	4	118	1	0	1	2	26	146	2	174
+45 mins.	0	1	24	25	2	95	2	99	0	1	0	1	27	109	3	139
Total Volume	3	2	92	97	9	375	8	392	4	3	2	9	97	477	10	584
% App. Total	3.1	2.1	94.8		2.3	95.7	2		44.4	33.3	22.2		16.6	81.7	1.7	
PHF	.250	.500	.852	.782	.563	.830	.500	.831	.500	.750	.500	.750	.898	.817	.833	.839

City of Perris
N/S: Sherman Road
E/W: Ethanac Road
Weather: Clear

File Name : 05_PER_She_Eth PM
Site Code : 22523959
Start Date : 10/12/2023
Page No : 1

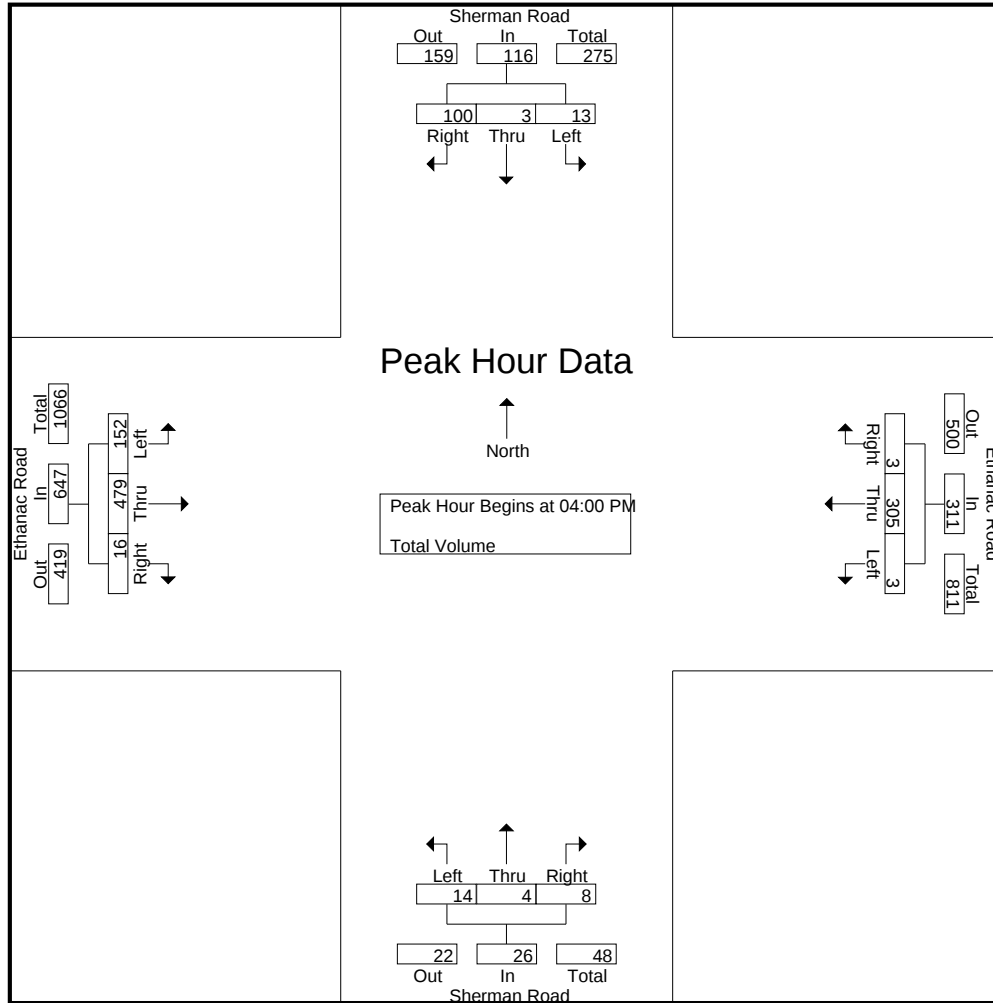
Groups Printed- Total Volume

	Sherman Road Southbound				Ethanac Road Westbound				Sherman Road Northbound				Ethanac Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	7	0	27	34	0	64	0	64	7	3	4	14	31	126	1	158	270
04:15 PM	4	0	24	28	0	61	1	62	2	0	2	4	40	125	4	169	263
04:30 PM	0	0	30	30	2	81	0	83	3	0	2	5	37	95	4	136	254
04:45 PM	2	3	19	24	1	99	2	102	2	1	0	3	44	133	7	184	313
Total	13	3	100	116	3	305	3	311	14	4	8	26	152	479	16	647	1100
05:00 PM	0	4	22	26	1	70	0	71	3	3	3	9	46	113	2	161	267
05:15 PM	1	0	16	17	0	61	0	61	6	1	0	7	45	119	2	166	251
05:30 PM	1	0	25	26	0	59	0	59	0	2	3	5	35	81	3	119	209
05:45 PM	0	0	24	24	0	61	0	61	6	0	1	7	24	105	8	137	229
Total	2	4	87	93	1	251	0	252	15	6	7	28	150	418	15	583	956
Grand Total	15	7	187	209	4	556	3	563	29	10	15	54	302	897	31	1230	2056
Apprch %	7.2	3.3	89.5		0.7	98.8	0.5		53.7	18.5	27.8		24.6	72.9	2.5		
Total %	0.7	0.3	9.1	10.2	0.2	27	0.1	27.4	1.4	0.5	0.7	2.6	14.7	43.6	1.5	59.8	

	Sherman Road Southbound				Ethanac Road Westbound				Sherman Road Northbound				Ethanac Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	7	0	27	34	0	64	0	64	7	3	4	14	31	126	1	158	270
04:15 PM	4	0	24	28	0	61	1	62	2	0	2	4	40	125	4	169	263
04:30 PM	0	0	30	30	2	81	0	83	3	0	2	5	37	95	4	136	254
04:45 PM	2	3	19	24	1	99	2	102	2	1	0	3	44	133	7	184	313
Total Volume	13	3	100	116	3	305	3	311	14	4	8	26	152	479	16	647	1100
% App. Total	11.2	2.6	86.2		1	98.1	1		53.8	15.4	30.8		23.5	74	2.5		
PHF	.464	.250	.833	.853	.375	.770	.375	.762	.500	.333	.500	.464	.864	.900	.571	.879	.879

City of Perris
N/S: Sherman Road
E/W: Ethanac Road
Weather: Clear

File Name : 05_PER_She_Eth PM
Site Code : 22523959
Start Date : 10/12/2023
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Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:15 PM				05:00 PM				04:15 PM			
+0 mins.	7	0	27	34	0	61	1	62	3	3	3	9	40	125	4	169
+15 mins.	4	0	24	28	2	81	0	83	6	1	0	7	37	95	4	136
+30 mins.	0	0	30	30	1	99	2	102	0	2	3	5	44	133	7	184
+45 mins.	2	3	19	24	1	70	0	71	6	0	1	7	46	113	2	161
Total Volume	13	3	100	116	4	311	3	318	15	6	7	28	167	466	17	650
% App. Total	11.2	2.6	86.2		1.3	97.8	0.9		53.6	21.4	25		25.7	71.7	2.6	
PHF	.464	.250	.833	.853	.500	.785	.375	.779	.625	.500	.583	.778	.908	.876	.607	.883

Location: Perris
 N/S: Sherman Road
 E/W: Ethanac Road



Date: 10/12/2023
 Day: Thursday

PEDESTRIANS

		North Leg Sherman Road	East Leg Ethanac Road	South Leg Sherman Road	West Leg Ethanac Road	
		Pedestrians	Pedestrians	Pedestrians	Pedestrians	
	7:00 AM	0	0	0	0	0
	7:15 AM	0	0	0	0	0
	7:30 AM	0	0	0	0	0
	7:45 AM	0	0	0	0	0
	8:00 AM	0	0	0	0	0
	8:15 AM	0	0	0	0	0
	8:30 AM	0	0	0	0	0
	8:45 AM	0	0	0	0	0
	TOTAL VOLUMES:	0	0	0	0	0

		North Leg Sherman Road	East Leg Ethanac Road	South Leg Sherman Road	West Leg Ethanac Road	
		Pedestrians	Pedestrians	Pedestrians	Pedestrians	
	4:00 PM	0	0	0	0	0
	4:15 PM	0	0	0	0	0
	4:30 PM	0	0	0	0	0
	4:45 PM	0	0	0	0	0
	5:00 PM	0	0	0	0	0
	5:15 PM	0	0	0	0	0
	5:30 PM	0	0	0	0	0
	5:45 PM	0	0	1	0	1
	TOTAL VOLUMES:	0	0	1	0	1

Location: Perris
 N/S: Sherman Road
 E/W: Ethanac Road



Date: 10/12/2023
 Day: Thursday

BICYCLES

		Southbound Sherman Road			Westbound Ethanac Road			Northbound Sherman Road			Eastbound Ethanac Road			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:		0	0	0	0	0	0	0	0	0	0	0	0	0

		Southbound Sherman Road			Westbound Ethanac Road			Northbound Sherman Road			Eastbound Ethanac Road			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	1
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:		0	0	0	0	0	0	0	0	0	0	1	0	1

APPENDIX D

INTERSECTION LEVEL OF SERVICE WORKSHEETS

EXISTING

AM PEAK HOUR

Intersection Level Of Service Report
Intersection 1: I-215 SB Ramps (NS) at Ethanac Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	19.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.604

Intersection Setup

Name	I-215 SB Ramps			I-215 SB Ramps			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↵			↵↵			↵↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	274.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			55.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			Yes		

Volumes

Name	I-215 SB Ramps			I-215 SB Ramps			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	0	0	0	123	2	247	0	617	525	79	580	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	123	2	247	0	617	525	79	580	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9754	0.9754	0.9754	0.9500	0.9754	0.9754	0.9754	0.9754	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	32	1	63	0	158	135	20	149	0
Total Analysis Volume [veh/h]	0	0	0	126	2	253	0	633	538	81	595	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			1			0			1		
Bicycle Volume [bicycles/h]	0			0			0			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	0	4	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	0	10	0	0	10	0	5	10	0
Maximum Green [s]	0	0	0	0	30	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	35	0	0	63	0	22	85	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	0	25	0	0	10	0	0	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk					No			No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall					No			No		No	No	
Maximum Recall					No			No		No	No	
Pedestrian Recall					No			No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		C	R	C	R	L	C
C, Cycle Length [s]		120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		21	21	80	80	7	91
g / C, Green / Cycle		0.18	0.18	0.66	0.66	0.06	0.75
(v / s)_i Volume / Saturation Flow Rate		0.07	0.16	0.34	0.34	0.05	0.17
s, saturation flow rate [veh/h]		1782	1589	1870	1589	1781	3560
c, Capacity [veh/h]		318	283	1240	1054	104	2688
d1, Uniform Delay [s]		43.63	48.16	10.28	10.28	55.69	4.32
k, delay calibration		0.11	0.17	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		0.82	13.95	1.50	1.77	11.73	0.19
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.40	0.89	0.51	0.51	0.78	0.22
d, Delay for Lane Group [s/veh]		44.45	62.11	11.78	12.04	67.42	4.51
Lane Group LOS		D	E	B	B	E	A
Critical Lane Group		No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]		3.45	8.47	7.40	6.37	2.70	1.71
50th-Percentile Queue Length [ft/ln]		86.27	211.71	185.11	159.25	67.49	42.86
95th-Percentile Queue Length [veh/ln]		6.21	13.24	11.87	10.51	4.86	3.09
95th-Percentile Queue Length [ft/ln]		155.28	331.02	296.68	262.73	121.48	77.14

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	44.45	44.45	62.11	0.00	11.78	12.04	67.42	4.51	0.00
Movement LOS				D	D	E		B	B	E	A	
d_A, Approach Delay [s/veh]	0.00			56.18			11.90			12.05		
Approach LOS	A			E			B			B		
d_I, Intersection Delay [s/veh]	19.52											
Intersection LOS	B											
Intersection V/C	0.604											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			9.0			0.0			9.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			51.32			0.00			51.32		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.079			0.000			2.671		
Crosswalk LOS	F			B			F			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	0			517			984			1350		
d_b, Bicycle Delay [s]	59.98			32.99			15.49			6.33		
I_b,int, Bicycle LOS Score for Intersection	4.132			2.188			3.492			2.117		
Bicycle LOS	D			B			C			B		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: I-215 NB Ramps (NS) at Ethanac Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	28.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.698

Intersection Setup

Name	I-215 NB Ramps			I-215 NB Ramps			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	243.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name	I-215 NB Ramps			I-215 NB Ramps			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	285	2	134	0	0	0	228	545	0	0	387	144
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	285	2	134	0	0	0	228	545	0	0	387	144
Peak Hour Factor	0.9416	0.9416	0.9416	0.9500	0.9500	0.9500	0.9416	0.9416	0.9500	0.9500	0.9416	0.9416
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	76	1	36	0	0	0	61	145	0	0	103	38
Total Analysis Volume [veh/h]	303	2	142	0	0	0	242	579	0	0	411	153
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			2		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	10	0	0	0	0	5	10	0	0	10	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	34	0	0	0	0	27	81	0	0	54	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	18	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R		L	C	C
C, Cycle Length [s]	115	115		115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	22	22		18	85	63
g / C, Green / Cycle	0.19	0.19		0.15	0.74	0.55
(v / s)_i Volume / Saturation Flow Rate	0.17	0.09		0.14	0.31	0.32
s, saturation flow rate [veh/h]	1781	1589		1781	1870	1773
c, Capacity [veh/h]	341	304		272	1382	978
d1, Uniform Delay [s]	45.35	41.28		47.74	5.67	16.95
k, delay calibration	0.20	0.11		0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	13.81	1.12		9.64	0.94	2.48
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.47		0.89	0.42	0.58
d, Delay for Lane Group [s/veh]	59.17	42.39		57.38	6.60	19.43
Lane Group LOS	E	D		E	A	B
Critical Lane Group	Yes	No		Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	9.75	3.67		7.31	4.36	9.57
50th-Percentile Queue Length [ft/ln]	243.75	91.79		182.69	108.97	239.33
95th-Percentile Queue Length [veh/ln]	14.87	6.61		11.74	7.78	14.65
95th-Percentile Queue Length [ft/ln]	371.77	165.22		293.53	194.58	366.18

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	59.17	59.17	42.39	0.00	0.00	0.00	57.38	6.60	0.00	0.00	19.43	19.43
Movement LOS	E	E	D				E	A			B	B
d_A, Approach Delay [s/veh]	53.84			0.00			21.57			19.43		
Approach LOS	D			A			C			B		
d_I, Intersection Delay [s/veh]	28.78											
Intersection LOS	C											
Intersection V/C	0.698											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	48.84	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.099	0.000	0.000	0.000
Crosswalk LOS	B	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	522	0	1339	870
d_b, Bicycle Delay [s]	31.40	57.49	6.27	18.38
I_b,int, Bicycle LOS Score for Intersection	2.297	4.132	2.914	2.490
Bicycle LOS	B	D	C	B

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Encanto Dr (NS) at Ethanac Rd (EW)

Control Type:	Two-way stop	Delay (sec / veh):	36.2
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.295

Intersection Setup

Name	Encanto Dr		Ethanac Rd		Ethanac Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Encanto Dr		Ethanac Rd		Ethanac Rd	
Base Volume Input [veh/h]	43	28	616	56	36	486
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	43	28	616	56	36	486
Peak Hour Factor	0.9036	0.9036	0.9036	0.9036	0.9036	0.9036
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	8	170	15	10	134
Total Analysis Volume [veh/h]	48	31	682	62	40	538
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.30	0.07	0.01	0.00	0.05	0.01
d_M, Delay for Movement [s/veh]	36.19	13.98	0.00	0.00	9.37	0.00
Movement LOS	E	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1.16	0.23	0.00	0.00	0.15	0.00
95th-Percentile Queue Length [ft/ln]	29.08	5.77	0.00	0.00	3.64	0.00
d_A, Approach Delay [s/veh]	27.47		0.00		0.65	
Approach LOS	D		A		A	
d_I, Intersection Delay [s/veh]	1.82					
Intersection LOS	E					

Intersection Level Of Service Report
Intersection 4: Trumble Rd (NS) at Ethanac Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	17.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.520

Intersection Setup

Name	Trumble Rd			Trumble Rd			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	105.00	100.00	100.00	100.00	100.00	100.00	135.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			Yes		

Volumes

Name	Trumble Rd			Trumble Rd			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	46	8	23	22	10	64	79	544	6	26	416	30
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	46	8	23	22	10	64	79	544	6	26	416	30
Peak Hour Factor	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	2	6	6	3	18	22	150	2	7	115	8
Total Analysis Volume [veh/h]	51	9	25	24	11	71	87	600	7	29	458	33
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	1			0			0			1		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	27	0	9	20	0	30	35	0	9	14	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	18	0	0	10	0	0	23	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	10	2	8	5	50	50	2	47
g / C, Green / Cycle	0.04	0.12	0.03	0.11	0.06	0.62	0.62	0.03	0.59
(v / s)_i Volume / Saturation Flow Rate	0.03	0.02	0.01	0.05	0.05	0.32	0.00	0.02	0.27
s, saturation flow rate [veh/h]	1781	1655	1781	1622	1781	1870	1589	1781	1848
c, Capacity [veh/h]	78	202	49	172	117	1158	985	56	1081
d1, Uniform Delay [s]	37.74	31.55	38.45	33.78	36.81	8.55	5.83	38.26	9.41
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.78	0.39	7.40	2.06	8.92	1.66	0.01	7.29	1.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.65	0.17	0.49	0.48	0.74	0.52	0.01	0.52	0.45
d, Delay for Lane Group [s/veh]	46.52	31.94	45.85	35.83	45.72	10.21	5.85	45.54	10.78
Lane Group LOS	D	C	D	D	D	B	A	D	B
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.12	0.58	0.54	1.51	1.87	4.83	0.04	0.64	4.18
50th-Percentile Queue Length [ft/ln]	28.04	14.41	13.52	37.74	46.68	120.78	0.94	16.10	104.45
95th-Percentile Queue Length [veh/ln]	2.02	1.04	0.97	2.72	3.36	8.44	0.07	1.16	7.52
95th-Percentile Queue Length [ft/ln]	50.48	25.94	24.34	67.93	84.02	210.90	1.70	28.97	188.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	46.52	31.94	31.94	45.85	35.83	35.83	45.72	10.21	5.85	45.54	10.78	10.78
Movement LOS	D	C	C	D	D	D	D	B	A	D	B	B
d_A, Approach Delay [s/veh]	40.69			38.10			14.62			12.72		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	17.27											
Intersection LOS	B											
Intersection V/C	0.520											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.56	0.00	0.00	31.56
I_p,int, Pedestrian LOS Score for Intersection	2.000	0.000	0.000	2.506
Crosswalk LOS	B	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	574	399	774	250
d_b, Bicycle Delay [s]	20.36	25.65	15.05	30.68
I_b,int, Bicycle LOS Score for Intersection	1.700	1.735	2.705	2.418
Bicycle LOS	A	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Sherman Rd (NS) at Ethanac Rd (EW)

Control Type:	Two-way stop	Delay (sec / veh):	31.7
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.021

Intersection Setup

Name	Sherman Rd			Sherman Rd			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Sherman Rd			Sherman Rd			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	4	2	2	3	2	92	94	464	13	9	375	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	2	2	3	2	92	94	464	13	9	375	8
Peak Hour Factor	0.9020	0.9020	0.9020	0.9020	0.9020	0.9020	0.9020	0.9020	0.9020	0.9020	0.9020	0.9020
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	1	1	1	25	26	129	4	2	104	2
Total Analysis Volume [veh/h]	4	2	2	3	2	102	104	514	14	10	416	9
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.01	0.00	0.02	0.01	0.16	0.09	0.01	0.00	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	16.56	27.22	11.85	31.66	28.50	12.26	8.30	0.00	0.00	8.48	0.00	0.00
Movement LOS	C	D	B	D	D	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.09	0.09	0.09	0.71	0.71	0.71	0.18	0.18	0.18	0.02	0.02	0.02
95th-Percentile Queue Length [ft/ln]	2.17	2.17	2.17	17.85	17.85	17.85	4.62	4.62	4.62	0.42	0.42	0.42
d_A, Approach Delay [s/veh]	18.05			13.10			1.37			0.19		
Approach LOS	C			B			A			A		
d_I, Intersection Delay [s/veh]	2.11											
Intersection LOS	D											

PM PEAK HOUR

Intersection Level Of Service Report
Intersection 1: I-215 SB Ramps (NS) at Ethanac Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	27.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.735

Intersection Setup

Name	I-215 SB Ramps			I-215 SB Ramps			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↵			↵↵			↵↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	274.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			55.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			Yes		

Volumes

Name	I-215 SB Ramps			I-215 SB Ramps			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	0	0	0	239	18	417	0	616	327	95	664	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	239	18	417	0	616	327	95	664	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9754	0.9754	0.9754	0.9500	0.9754	0.9754	0.9754	0.9754	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	61	5	107	0	158	84	24	170	0
Total Analysis Volume [veh/h]	0	0	0	245	18	428	0	632	335	97	681	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	1			0			0			1		
Bicycle Volume [bicycles/h]	0			0			0			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	0	4	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	0	10	0	0	10	0	5	10	0
Maximum Green [s]	0	0	0	0	30	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	46	0	0	51	0	23	74	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	0	25	0	0	10	0	0	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk					No			No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall					No			No		No	No	
Maximum Recall					No			No		No	No	
Pedestrian Recall					No			No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		C	R	C	R	L	C
C, Cycle Length [s]		120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		35	35	65	65	8	77
g / C, Green / Cycle		0.29	0.29	0.54	0.54	0.07	0.64
(v / s)_i Volume / Saturation Flow Rate		0.15	0.27	0.34	0.21	0.05	0.19
s, saturation flow rate [veh/h]		1787	1589	1870	1589	1781	3560
c, Capacity [veh/h]		518	461	1013	861	122	2291
d1, Uniform Delay [s]		35.47	41.40	19.04	15.97	55.00	9.42
k, delay calibration		0.11	0.29	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		0.77	18.83	2.90	1.33	10.87	0.33
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.51	0.93	0.62	0.39	0.79	0.30
d, Delay for Lane Group [s/veh]		36.25	60.23	21.94	17.30	65.87	9.75
Lane Group LOS		D	E	C	B	E	A
Critical Lane Group		No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]		6.52	14.58	11.56	5.10	3.19	3.61
50th-Percentile Queue Length [ft/ln]		162.98	364.48	289.10	127.40	79.70	90.20
95th-Percentile Queue Length [veh/ln]		10.71	20.84	17.14	8.80	5.74	6.49
95th-Percentile Queue Length [ft/ln]		267.66	521.02	428.53	219.95	143.46	162.35

Movement, Approach, & Intersection Results

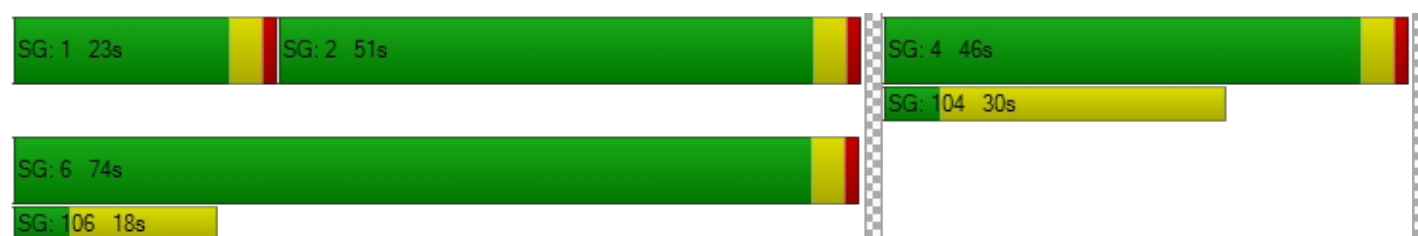
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	36.25	36.25	60.23	0.00	21.94	17.30	65.87	9.75	0.00
Movement LOS				D	D	E		C	B	E	A	
d_A, Approach Delay [s/veh]	0.00			51.10			20.34			16.75		
Approach LOS	A			D			C			B		
d_I, Intersection Delay [s/veh]	27.92											
Intersection LOS	C											
Intersection V/C	0.735											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			9.0			0.0			9.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			51.32			0.00			51.32		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.180			0.000			2.751		
Crosswalk LOS	F			B			F			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	0			700			784			1167		
d_b, Bicycle Delay [s]	59.98			25.33			22.19			10.41		
I_b,int, Bicycle LOS Score for Intersection	4.132			2.700			3.155			2.201		
Bicycle LOS	D			B			C			B		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: I-215 NB Ramps (NS) at Ethanac Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	35.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.820

Intersection Setup

Name	I-215 NB Ramps			I-215 NB Ramps			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	243.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name	I-215 NB Ramps			I-215 NB Ramps			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	394	4	182	0	0	0	227	610	0	0	407	193
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	394	4	182	0	0	0	227	610	0	0	407	193
Peak Hour Factor	0.9390	0.9390	0.9390	0.9500	0.9500	0.9500	0.9390	0.9390	0.9500	0.9500	0.9390	0.9390
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	105	1	48	0	0	0	60	162	0	0	108	51
Total Analysis Volume [veh/h]	420	4	194	0	0	0	242	650	0	0	433	206
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	2			1			0			0		
Bicycle Volume [bicycles/h]	0			0			0			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	10	0	0	0	0	5	10	0	0	10	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	39	0	0	0	0	24	81	0	0	57	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	18	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R		L	C	C
C, Cycle Length [s]	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	31	31		18	81	59
g / C, Green / Cycle	0.26	0.26		0.15	0.68	0.49
(v / s)_i Volume / Saturation Flow Rate	0.24	0.12		0.14	0.35	0.36
s, saturation flow rate [veh/h]	1782	1589		1781	1870	1756
c, Capacity [veh/h]	456	407		269	1267	866
d1, Uniform Delay [s]	43.56	37.81		50.03	9.57	24.22
k, delay calibration	0.32	0.11		0.12	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	20.37	0.87		11.19	1.49	5.59
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.93	0.48		0.90	0.51	0.74
d, Delay for Lane Group [s/veh]	63.94	38.68		61.23	11.06	29.81
Lane Group LOS	E	D		E	B	C
Critical Lane Group	Yes	No		Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	14.77	4.94		7.76	7.69	14.74
50th-Percentile Queue Length [ft/ln]	369.21	123.45		194.02	192.24	368.48
95th-Percentile Queue Length [veh/ln]	21.07	8.58		12.33	12.24	21.04
95th-Percentile Queue Length [ft/ln]	526.77	214.57		308.24	305.94	525.89

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	63.94	63.94	38.68	0.00	0.00	0.00	61.23	11.06	0.00	0.00	29.81	29.81
Movement LOS	E	E	D				E	B			C	C
d_A, Approach Delay [s/veh]	56.01			0.00			24.67			29.81		
Approach LOS	E			A			C			C		
d_I, Intersection Delay [s/veh]	35.21											
Intersection LOS	D											
Intersection V/C	0.820											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.32	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.156	0.000	0.000	0.000
Crosswalk LOS	B	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	584	0	1284	884
d_b, Bicycle Delay [s]	30.09	59.98	7.69	18.70
I_b,int, Bicycle LOS Score for Intersection	2.579	4.132	3.031	2.614
Bicycle LOS	B	D	C	B

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Encanto Dr (NS) at Ethanac Rd (EW)

Control Type:	Two-way stop	Delay (sec / veh):	56.4
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.513

Intersection Setup

Name	Encanto Dr		Ethanac Rd		Ethanac Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Encanto Dr		Ethanac Rd		Ethanac Rd	
Base Volume Input [veh/h]	64	65	645	137	40	535
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	64	65	645	137	40	535
Peak Hour Factor	0.9173	0.9173	0.9173	0.9173	0.9173	0.9173
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	18	176	37	11	146
Total Analysis Volume [veh/h]	70	71	703	149	44	583
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.51	0.18	0.01	0.00	0.06	0.01
d_M, Delay for Movement [s/veh]	56.36	16.05	0.00	0.00	9.85	0.00
Movement LOS	F	C	A	A	A	A
95th-Percentile Queue Length [veh/ln]	2.44	0.64	0.00	0.00	0.18	0.00
95th-Percentile Queue Length [ft/ln]	61.08	16.10	0.00	0.00	4.43	0.00
d_A, Approach Delay [s/veh]	36.06		0.00		0.69	
Approach LOS	E		A		A	
d_I, Intersection Delay [s/veh]	3.41					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 4: Trumble Rd (NS) at Ethanac Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	19.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.597

Intersection Setup

Name	Trumble Rd			Trumble Rd			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	105.00	100.00	100.00	100.00	100.00	100.00	135.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			Yes		

Volumes

Name	Trumble Rd			Trumble Rd			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	68	5	35	26	11	115	53	570	25	23	389	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	68	5	35	26	11	115	53	570	25	23	389	10
Peak Hour Factor	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	1	10	7	3	32	15	157	7	6	107	3
Total Analysis Volume [veh/h]	75	6	39	29	12	127	58	627	28	25	428	11
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	1			0			0			1		
Bicycle Volume [bicycles/h]	0			0			1			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	25	29	0	10	14	0	27	32	0	9	14	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	18	0	0	10	0	0	23	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	12	2	10	4	48	48	2	46
g / C, Green / Cycle	0.06	0.15	0.03	0.12	0.05	0.60	0.60	0.03	0.58
(v / s)_i Volume / Saturation Flow Rate	0.04	0.03	0.02	0.09	0.03	0.34	0.02	0.01	0.24
s, saturation flow rate [veh/h]	1781	1622	1781	1610	1781	1870	1557	1781	1861
c, Capacity [veh/h]	101	236	56	193	83	1114	927	50	1074
d1, Uniform Delay [s]	37.25	30.13	38.26	34.00	37.67	9.87	6.68	38.41	9.39
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.18	0.39	7.29	4.97	9.91	2.06	0.06	7.36	1.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.74	0.19	0.52	0.72	0.70	0.56	0.03	0.50	0.41
d, Delay for Lane Group [s/veh]	47.43	30.52	45.54	38.97	47.58	11.93	6.74	45.77	10.55
Lane Group LOS	D	C	D	D	D	B	A	D	B
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.65	0.74	0.64	2.70	1.29	5.73	0.17	0.56	3.68
50th-Percentile Queue Length [ft/ln]	41.29	18.53	16.10	67.62	32.22	143.23	4.24	14.03	92.09
95th-Percentile Queue Length [veh/ln]	2.97	1.33	1.16	4.87	2.32	9.65	0.30	1.01	6.63
95th-Percentile Queue Length [ft/ln]	74.32	33.35	28.97	121.72	57.99	241.36	7.62	25.26	165.76

Movement, Approach, & Intersection Results

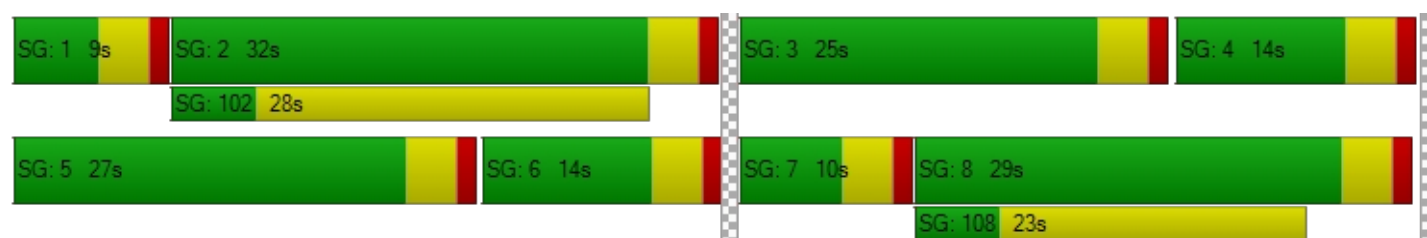
d_M, Delay for Movement [s/veh]	47.43	30.52	30.52	45.54	38.97	38.97	47.58	11.93	6.74	45.77	10.55	10.55
Movement LOS	D	C	C	D	D	D	D	B	A	D	B	B
d_A, Approach Delay [s/veh]	41.09			40.11			14.63			12.45		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	19.03											
Intersection LOS	B											
Intersection V/C	0.597											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0			0.0			0.0			9.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	31.56			0.00			0.00			31.56		
I_p,int, Pedestrian LOS Score for Intersection	2.026			0.000			0.000			2.501		
Crosswalk LOS	B			F			F			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	624			250			699			250		
d_b, Bicycle Delay [s]	18.96			30.68			16.96			30.69		
I_b,int, Bicycle LOS Score for Intersection	1.758			1.837			2.736			2.325		
Bicycle LOS	A			A			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Sherman Rd (NS) at Ethanac Rd (EW)

Control Type:	Two-way stop	Delay (sec / veh):	41.7
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.136

Intersection Setup

Name	Sherman Rd			Sherman Rd			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Sherman Rd			Sherman Rd			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	14	4	8	13	3	100	152	479	16	3	305	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	4	8	13	3	100	152	479	16	3	305	3
Peak Hour Factor	0.8786	0.8786	0.8786	0.8786	0.8786	0.8786	0.8786	0.8786	0.8786	0.8786	0.8786	0.8786
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	1	2	4	1	28	43	136	5	1	87	1
Total Analysis Volume [veh/h]	16	5	9	15	3	114	173	545	18	3	347	3
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.04	0.02	0.14	0.02	0.16	0.14	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	19.88	33.36	13.47	41.71	36.06	14.31	8.19	0.00	0.00	8.57	0.00	0.00
Movement LOS	C	D	B	E	E	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.38	0.38	0.38	1.37	1.37	1.37	0.32	0.32	0.32	0.01	0.01	0.01
95th-Percentile Queue Length [ft/ln]	9.39	9.39	9.39	34.31	34.31	34.31	8.02	8.02	8.02	0.13	0.13	0.13
d_A, Approach Delay [s/veh]	20.20			17.92			1.93			0.07		
Approach LOS	C			C			A			A		
d_I, Intersection Delay [s/veh]	3.53											
Intersection LOS	E											

EXISTING PLUS PROJECT

AM PEAK HOUR

Intersection Level Of Service Report
Intersection 1: I-215 SB Ramps (NS) at Ethanac Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	20.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.616

Intersection Setup

Name	I-215 SB Ramps			I-215 SB Ramps			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↵			↵↵			↵↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	274.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			55.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			Yes		

Volumes

Name	I-215 SB Ramps			I-215 SB Ramps			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	0	0	0	123	2	247	0	617	525	79	580	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	10	0	0	0	10	0	10	10	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	133	2	247	0	627	525	89	590	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9754	0.9754	0.9754	0.9500	0.9754	0.9754	0.9754	0.9754	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	34	1	63	0	161	135	23	151	0
Total Analysis Volume [veh/h]	0	0	0	136	2	253	0	643	538	91	605	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			1			0			1		
Bicycle Volume [bicycles/h]	0			0			0			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	0	4	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	0	10	0	0	10	0	5	10	0
Maximum Green [s]	0	0	0	0	30	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	35	0	0	63	0	22	85	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	0	25	0	0	10	0	0	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk					No			No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall					No			No		No	No	
Maximum Recall					No			No		No	No	
Pedestrian Recall					No			No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		C	R	C	R	L	C
C, Cycle Length [s]		120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		21	21	79	79	8	91
g / C, Green / Cycle		0.18	0.18	0.66	0.66	0.06	0.75
(v / s)_i Volume / Saturation Flow Rate		0.08	0.16	0.34	0.34	0.05	0.17
s, saturation flow rate [veh/h]		1782	1589	1870	1589	1781	3560
c, Capacity [veh/h]		318	284	1228	1044	116	2688
d1, Uniform Delay [s]		43.88	48.14	10.77	10.69	55.26	4.34
k, delay calibration		0.11	0.17	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		0.93	13.87	1.60	1.82	11.16	0.19
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.43	0.89	0.52	0.52	0.79	0.23
d, Delay for Lane Group [s/veh]		44.81	62.01	12.37	12.51	66.41	4.53
Lane Group LOS		D	E	B	B	E	A
Critical Lane Group		No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]		3.75	8.46	7.81	6.56	3.01	1.75
50th-Percentile Queue Length [ft/ln]		93.65	211.53	195.37	164.00	75.13	43.78
95th-Percentile Queue Length [veh/ln]		6.74	13.23	12.40	10.76	5.41	3.15
95th-Percentile Queue Length [ft/ln]		168.57	330.79	309.98	269.02	135.23	78.80

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	44.81	44.81	62.01	0.00	12.37	12.51	66.41	4.53	0.00
Movement LOS				D	D	E		B	B	E	A	
d_A, Approach Delay [s/veh]	0.00			55.94			12.43			12.62		
Approach LOS	A			E			B			B		
d_I, Intersection Delay [s/veh]	19.99											
Intersection LOS	B											
Intersection V/C	0.616											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			9.0			0.0			9.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			51.32			0.00			51.32		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.083			0.000			2.686		
Crosswalk LOS	F			B			F			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	0			517			984			1350		
d_b, Bicycle Delay [s]	59.98			32.99			15.49			6.33		
I_b,int, Bicycle LOS Score for Intersection	4.132			2.205			3.508			2.134		
Bicycle LOS	D			B			D			B		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: I-215 NB Ramps (NS) at Ethanac Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	28.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.719

Intersection Setup

Name	I-215 NB Ramps			I-215 NB Ramps			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	243.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name	I-215 NB Ramps			I-215 NB Ramps			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	285	2	134	0	0	0	228	545	0	0	387	144
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	10	0	0	0	0	20	0	0	20	10
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	285	2	144	0	0	0	228	565	0	0	407	154
Peak Hour Factor	0.9416	0.9416	0.9416	0.9500	0.9500	0.9500	0.9416	0.9416	0.9500	0.9500	0.9416	0.9416
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	76	1	38	0	0	0	61	150	0	0	108	41
Total Analysis Volume [veh/h]	303	2	153	0	0	0	242	600	0	0	432	164
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			2		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	10	0	0	0	0	5	10	0	0	10	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	34	0	0	0	0	27	81	0	0	54	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	18	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R		L	C	C
C, Cycle Length [s]	115	115		115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	22	22		18	85	63
g / C, Green / Cycle	0.19	0.19		0.15	0.74	0.55
(v / s)_i Volume / Saturation Flow Rate	0.17	0.10		0.14	0.32	0.34
s, saturation flow rate [veh/h]	1781	1589		1781	1870	1771
c, Capacity [veh/h]	341	304		272	1382	977
d1, Uniform Delay [s]	45.33	41.57		47.74	5.77	17.43
k, delay calibration	0.20	0.11		0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	13.72	1.28		9.64	1.00	2.84
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	0.50		0.89	0.43	0.61
d, Delay for Lane Group [s/veh]	59.05	42.86		57.38	6.76	20.27
Lane Group LOS	E	D		E	A	C
Critical Lane Group	Yes	No		Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	9.74	3.99		7.31	4.60	10.44
50th-Percentile Queue Length [ft/ln]	243.50	99.79		182.69	115.02	261.01
95th-Percentile Queue Length [veh/ln]	14.86	7.18		11.74	8.12	15.74
95th-Percentile Queue Length [ft/ln]	371.46	179.61		293.53	202.97	393.49

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	59.05	59.05	42.86	0.00	0.00	0.00	57.38	6.76	0.00	0.00	20.27	20.27
Movement LOS	E	E	D				E	A			C	C
d_A, Approach Delay [s/veh]	53.64			0.00			21.31			20.27		
Approach LOS	D			A			C			C		
d_I, Intersection Delay [s/veh]	28.80											
Intersection LOS	C											
Intersection V/C	0.719											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	48.84	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.102	0.000	0.000	0.000
Crosswalk LOS	B	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	522	0	1339	870
d_b, Bicycle Delay [s]	31.40	57.49	6.27	18.38
I_b,int, Bicycle LOS Score for Intersection	2.315	4.132	2.949	2.543
Bicycle LOS	B	D	C	B

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Encanto Dr (NS) at Ethanac Rd (EW)

Control Type:	Two-way stop	Delay (sec / veh):	41.7
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.331

Intersection Setup

Name	Encanto Dr		Ethanac Rd		Ethanac Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Encanto Dr		Ethanac Rd		Ethanac Rd	
Base Volume Input [veh/h]	43	28	616	56	36	486
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	5	30	0	5	30
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	43	33	646	56	41	516
Peak Hour Factor	0.9036	0.9036	0.9036	0.9036	0.9036	0.9036
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	9	179	15	11	143
Total Analysis Volume [veh/h]	48	37	715	62	45	571
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.33	0.09	0.01	0.00	0.05	0.01
d_M, Delay for Movement [s/veh]	41.66	14.56	0.00	0.00	9.53	0.00
Movement LOS	E	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1.34	0.29	0.00	0.00	0.17	0.00
95th-Percentile Queue Length [ft/ln]	33.44	7.33	0.00	0.00	4.24	0.00
d_A, Approach Delay [s/veh]	29.87		0.00		0.70	
Approach LOS	D		A		A	
d_I, Intersection Delay [s/veh]	2.01					
Intersection LOS	E					

Intersection Level Of Service Report
Intersection 4: Trumble Rd (NS) at Ethanac Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	27.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.729

Intersection Setup

Name	Trumble Rd			Trumble Rd			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	105.00	100.00	100.00	100.00	100.00	100.00	135.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			Yes		

Volumes

Name	Trumble Rd			Trumble Rd			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	46	8	23	22	10	64	79	544	6	26	416	30
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	52	0	125	30	0	123	0	0	10	135	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	46	60	23	147	40	64	202	544	6	36	551	30
Peak Hour Factor	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	17	6	41	11	18	56	150	2	10	152	8
Total Analysis Volume [veh/h]	51	66	25	162	44	71	223	600	7	40	607	33
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	1			0			0			1		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	85
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	27	0	14	30	0	30	35	0	9	14	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	18	0	0	10	0	0	23	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	85	85	85	85	85	85	85	85	85	85
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	9	9	15	13	48	48	3	38	38
g / C, Green / Cycle	0.04	0.10	0.11	0.17	0.15	0.56	0.56	0.04	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.03	0.05	0.09	0.07	0.13	0.32	0.00	0.02	0.32	0.02
s, saturation flow rate [veh/h]	1781	1784	1781	1686	1781	1870	1589	1781	1870	1589
c, Capacity [veh/h]	76	187	199	293	268	1044	887	67	832	707
d1, Uniform Delay [s]	40.20	35.97	36.98	31.20	35.13	12.24	8.35	40.38	19.43	13.40
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.83	1.96	7.84	0.85	6.56	2.30	0.02	8.36	5.58	0.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.67	0.49	0.81	0.39	0.83	0.57	0.01	0.60	0.73	0.05
d, Delay for Lane Group [s/veh]	50.03	37.93	44.82	32.05	41.69	14.54	8.37	48.73	25.00	13.52
Lane Group LOS	D	D	D	C	D	B	A	D	C	B
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.21	1.79	3.54	2.04	4.70	6.71	0.05	0.94	9.84	0.35
50th-Percentile Queue Length [ft/ln]	30.23	44.75	88.57	51.02	117.56	167.77	1.30	23.52	246.07	8.63
95th-Percentile Queue Length [veh/ln]	2.18	3.22	6.38	3.67	8.26	10.96	0.09	1.69	14.99	0.62
95th-Percentile Queue Length [ft/ln]	54.41	80.54	159.43	91.83	206.47	273.98	2.34	42.33	374.70	15.53

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	50.03	37.93	37.93	44.82	32.05	32.05	41.69	14.54	8.37	48.73	25.00	13.52
Movement LOS	D	D	D	D	C	C	D	B	A	D	C	B
d_A, Approach Delay [s/veh]	42.27			39.52			21.78			25.84		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	27.27											
Intersection LOS	C											
Intersection V/C	0.729											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.03	0.00	0.00	34.03
I_p,int, Pedestrian LOS Score for Intersection	2.053	0.000	0.000	2.666
Crosswalk LOS	B	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	541	611	729	235
d_b, Bicycle Delay [s]	22.66	20.52	17.20	33.14
I_b,int, Bicycle LOS Score for Intersection	1.794	2.017	2.929	2.682
Bicycle LOS	A	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Sherman Rd (NS) at Ethanac Rd (EW)

Control Type:	Two-way stop	Delay (sec / veh):	36.3
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.024

Intersection Setup

Name	Sherman Rd			Sherman Rd			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⬆			⬆			⬆			⬆		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Sherman Rd			Sherman Rd			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	4	2	2	3	2	92	94	464	13	9	375	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	5	0	0	0	0	14	15	17	5	0	19	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	2	2	3	2	106	109	481	18	9	394	8
Peak Hour Factor	0.9020	0.9020	0.9020	0.9020	0.9020	0.9020	0.9020	0.9020	0.9020	0.9020	0.9020	0.9020
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	1	1	1	1	29	30	133	5	2	109	2
Total Analysis Volume [veh/h]	10	2	2	3	2	118	121	533	20	10	437	9
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.01	0.00	0.02	0.01	0.19	0.11	0.01	0.00	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	18.53	30.86	12.44	36.31	32.28	12.85	8.38	0.00	0.00	8.55	0.00	0.00
Movement LOS	C	D	B	E	D	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.17	0.17	0.17	0.88	0.88	0.88	0.22	0.22	0.22	0.02	0.02	0.02
95th-Percentile Queue Length [ft/ln]	4.18	4.18	4.18	22.03	22.03	22.03	5.44	5.44	5.44	0.42	0.42	0.42
d_A, Approach Delay [s/veh]	19.42			13.73			1.50			0.19		
Approach LOS	C			B			A			A		
d_I, Intersection Delay [s/veh]	2.42											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 6: Trumble Rd (NS) at Project Dwy (EW)

Control Type:	Two-way stop	Delay (sec / veh):	14.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.287

Intersection Setup

Name	Trumble Rd		Trumble Rd		Project Dwy	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Trumble Rd		Trumble Rd		Project Dwy	
Base Volume Input [veh/h]	117	0	0	96	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	175	35	0	155	48
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	117	175	35	96	155	48
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	48	10	26	42	13
Total Analysis Volume [veh/h]	127	190	38	104	168	52
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.03	0.00	0.29	0.06
d_M, Delay for Movement [s/veh]	0.00	0.00	7.94	0.00	14.23	12.48
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.06	0.06	1.57	1.57
95th-Percentile Queue Length [ft/ln]	0.00	0.00	1.62	1.62	39.34	39.34
d_A, Approach Delay [s/veh]	0.00		2.12		13.82	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	4.92					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 7: Project Dwy (NS) at Ethanac Rd (EW)

Control Type:	Two-way stop	Delay (sec / veh):	13.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.282

Intersection Setup

Name	Project Dwy		Ethanac Rd		Ethanac Rd	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Project Dwy		Ethanac Rd		Ethanac Rd	
Base Volume Input [veh/h]	0	0	0	589	472	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	145	0	125	0	139
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	145	0	714	472	139
Peak Hour Factor	0.9500	0.9200	0.9500	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	39	0	194	128	38
Total Analysis Volume [veh/h]	0	158	0	776	513	151
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.28	0.00	0.01	0.01	0.00
d_M, Delay for Movement [s/veh]	0.00	13.91	0.00	0.00	0.00	0.00
Movement LOS		B		A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	1.15	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	28.73	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	13.91		0.00		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	1.38					
Intersection LOS	B					

PM PEAK HOUR

Intersection Level Of Service Report**Intersection 1: I-215 SB Ramps (NS) at Ethanac Rd (EW)**

Control Type:	Signalized	Delay (sec / veh):	28.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.749

Intersection Setup

Name	I-215 SB Ramps			I-215 SB Ramps			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↵			↵↵			↵↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	274.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			55.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			Yes		

Volumes

Name	I-215 SB Ramps			I-215 SB Ramps			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	0	0	0	239	18	417	0	616	327	95	664	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	11	0	0	0	11	0	11	11	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	250	18	417	0	627	327	106	675	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9754	0.9754	0.9754	0.9500	0.9754	0.9754	0.9754	0.9754	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	64	5	107	0	161	84	27	173	0
Total Analysis Volume [veh/h]	0	0	0	256	18	428	0	643	335	109	692	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	1			0			0			1		
Bicycle Volume [bicycles/h]	0			0			0			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	0	4	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	0	10	0	0	10	0	5	10	0
Maximum Green [s]	0	0	0	0	30	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	46	0	0	51	0	23	74	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	0	25	0	0	10	0	0	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk					No			No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall					No			No		No	No	
Maximum Recall					No			No		No	No	
Pedestrian Recall					No			No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		C	R	C	R	L	C
C, Cycle Length [s]		120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		35	35	64	64	9	77
g / C, Green / Cycle		0.29	0.29	0.53	0.53	0.08	0.64
(v / s)_i Volume / Saturation Flow Rate		0.15	0.27	0.34	0.21	0.06	0.19
s, saturation flow rate [veh/h]		1787	1589	1870	1589	1781	3560
c, Capacity [veh/h]		518	461	998	849	136	2291
d1, Uniform Delay [s]		35.72	41.38	19.85	16.50	54.52	9.46
k, delay calibration		0.11	0.29	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		0.84	18.76	3.20	1.38	10.52	0.34
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.53	0.93	0.64	0.39	0.80	0.30
d, Delay for Lane Group [s/veh]		36.56	60.14	23.05	17.88	65.04	9.80
Lane Group LOS		D	E	C	B	E	A
Critical Lane Group		No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]		6.84	14.57	12.17	5.21	3.56	3.68
50th-Percentile Queue Length [ft/ln]		171.10	364.20	304.17	130.26	88.93	92.07
95th-Percentile Queue Length [veh/ln]		11.13	20.83	17.89	8.95	6.40	6.63
95th-Percentile Queue Length [ft/ln]		278.36	520.69	447.18	223.84	160.07	165.72

Movement, Approach, & Intersection Results

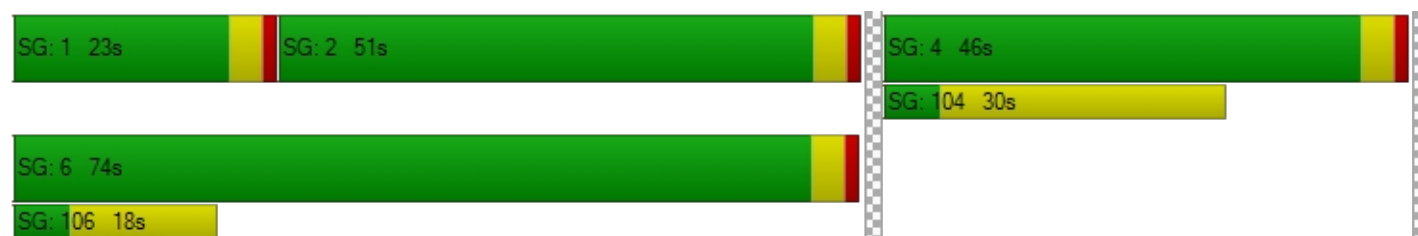
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	36.56	36.56	60.14	0.00	23.05	17.88	65.04	9.80	0.00
Movement LOS				D	D	E		C	B	E	A	
d_A, Approach Delay [s/veh]	0.00			50.94			21.28			17.32		
Approach LOS	A			D			C			B		
d_I, Intersection Delay [s/veh]	28.39											
Intersection LOS	C											
Intersection V/C	0.749											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			9.0			0.0			9.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			51.32			0.00			51.32		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.184			0.000			2.768		
Crosswalk LOS	F			B			F			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	0			700			784			1167		
d_b, Bicycle Delay [s]	59.98			25.33			22.19			10.41		
I_b,int, Bicycle LOS Score for Intersection	4.132			2.718			3.173			2.220		
Bicycle LOS	D			B			C			B		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: I-215 NB Ramps (NS) at Ethanac Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	35.6
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.842

Intersection Setup

Name	I-215 NB Ramps			I-215 NB Ramps			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	243.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name	I-215 NB Ramps			I-215 NB Ramps			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	394	4	182	0	0	0	227	610	0	0	407	193
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	11	0	0	0	0	22	0	0	22	11
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	394	4	193	0	0	0	227	632	0	0	429	204
Peak Hour Factor	0.9390	0.9390	0.9390	0.9500	0.9500	0.9500	0.9390	0.9390	0.9500	0.9500	0.9390	0.9390
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	105	1	51	0	0	0	60	168	0	0	114	54
Total Analysis Volume [veh/h]	420	4	206	0	0	0	242	673	0	0	457	217
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	2			1			0			0		
Bicycle Volume [bicycles/h]	0			0			0			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	10	0	0	0	0	5	10	0	0	10	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	39	0	0	0	0	24	81	0	0	57	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	18	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R		L	C	C
C, Cycle Length [s]	120	120		120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00
g_i, Effective Green Time [s]	31	31		18	81	59
g / C, Green / Cycle	0.26	0.26		0.15	0.68	0.49
(v / s)_i Volume / Saturation Flow Rate	0.24	0.13		0.14	0.36	0.38
s, saturation flow rate [veh/h]	1782	1589		1781	1870	1756
c, Capacity [veh/h]	456	407		269	1266	866
d1, Uniform Delay [s]	43.55	38.13		50.03	9.76	25.02
k, delay calibration	0.32	0.11		0.12	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00
d2, Incremental Delay [s]	20.29	0.97		11.19	1.60	6.84
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.93	0.51		0.90	0.53	0.78
d, Delay for Lane Group [s/veh]	63.84	39.10		61.23	11.36	31.86
Lane Group LOS	E	D		E	B	C
Critical Lane Group	Yes	No		Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	14.76	5.29		7.76	8.13	16.24
50th-Percentile Queue Length [ft/ln]	368.92	132.33		194.02	203.25	405.88
95th-Percentile Queue Length [veh/ln]	21.06	9.07		12.33	12.81	22.84
95th-Percentile Queue Length [ft/ln]	526.43	226.66		308.24	320.16	571.08

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	63.84	63.84	39.10	0.00	0.00	0.00	61.23	11.36	0.00	0.00	31.86	31.86
Movement LOS	E	E	D				E	B			C	C
d_A, Approach Delay [s/veh]	55.75			0.00			24.55			31.86		
Approach LOS	E			A			C			C		
d_I, Intersection Delay [s/veh]	35.63											
Intersection LOS	D											
Intersection V/C	0.842											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.32	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.160	0.000	0.000	0.000
Crosswalk LOS	B	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	584	0	1284	884
d_b, Bicycle Delay [s]	30.09	59.98	7.69	18.70
I_b,int, Bicycle LOS Score for Intersection	2.599	4.132	3.069	2.672
Bicycle LOS	B	D	C	B

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Encanto Dr (NS) at Ethanac Rd (EW)

Control Type:	Two-way stop	Delay (sec / veh):	70.4
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.584

Intersection Setup

Name	Encanto Dr		Ethanac Rd		Ethanac Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Encanto Dr		Ethanac Rd		Ethanac Rd	
Base Volume Input [veh/h]	64	65	645	137	40	535
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	6	33	0	6	33
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	64	71	678	137	46	568
Peak Hour Factor	0.9173	0.9173	0.9173	0.9173	0.9173	0.9173
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	19	185	37	13	155
Total Analysis Volume [veh/h]	70	77	739	149	50	619
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.58	0.20	0.01	0.00	0.07	0.01
d_M, Delay for Movement [s/veh]	70.40	16.94	0.00	0.00	10.05	0.00
Movement LOS	F	C	A	A	B	A
95th-Percentile Queue Length [veh/ln]	2.88	0.75	0.00	0.00	0.21	0.00
95th-Percentile Queue Length [ft/ln]	71.95	18.80	0.00	0.00	5.25	0.00
d_A, Approach Delay [s/veh]	42.39		0.00		0.75	
Approach LOS	E		A		A	
d_I, Intersection Delay [s/veh]	3.95					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 4: Trumble Rd (NS) at Ethanac Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	26.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.680

Intersection Setup

Name	Trumble Rd			Trumble Rd			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	105.00	100.00	100.00	100.00	100.00	100.00	135.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			Yes		

Volumes

Name	Trumble Rd			Trumble Rd			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	68	5	35	26	11	115	53	570	25	23	389	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	49	0	119	27	0	114	0	0	11	125	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	68	54	35	145	38	115	167	570	25	34	514	10
Peak Hour Factor	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	15	10	40	10	32	46	157	7	9	141	3
Total Analysis Volume [veh/h]	75	59	39	160	42	127	184	627	28	37	566	11
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	1			0			0			1		
Bicycle Volume [bicycles/h]	0			0			1			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	85
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	29	27	0	16	14	0	28	33	0	9	14	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	18	0	0	10	0	0	23	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	85	85	85	85	85	85	85	85	85	85
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	9	9	14	11	48	48	3	40	40
g / C, Green / Cycle	0.06	0.11	0.11	0.16	0.13	0.56	0.56	0.04	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.04	0.06	0.09	0.10	0.10	0.34	0.02	0.02	0.30	0.01
s, saturation flow rate [veh/h]	1781	1747	1781	1651	1781	1870	1557	1781	1870	1556
c, Capacity [veh/h]	101	187	198	267	227	1044	869	64	872	726
d1, Uniform Delay [s]	39.58	35.99	36.97	33.37	36.15	12.51	8.46	40.45	17.39	12.21
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.25	2.27	7.58	2.49	6.74	2.56	0.07	8.11	3.73	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.74	0.52	0.81	0.63	0.81	0.60	0.03	0.58	0.65	0.02
d, Delay for Lane Group [s/veh]	49.83	38.26	44.56	35.85	42.89	15.06	8.53	48.56	21.12	12.25
Lane Group LOS	D	D	D	D	D	B	A	D	C	B
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.76	1.94	3.49	3.25	3.93	7.19	0.21	0.87	8.22	0.11
50th-Percentile Queue Length [ft/ln]	43.89	48.51	87.17	81.16	98.22	179.79	5.29	21.77	205.42	2.69
95th-Percentile Queue Length [veh/ln]	3.16	3.49	6.28	5.84	7.07	11.59	0.38	1.57	12.92	0.19
95th-Percentile Queue Length [ft/ln]	79.00	87.33	156.91	146.09	176.79	289.74	9.52	39.18	322.95	4.84

Movement, Approach, & Intersection Results

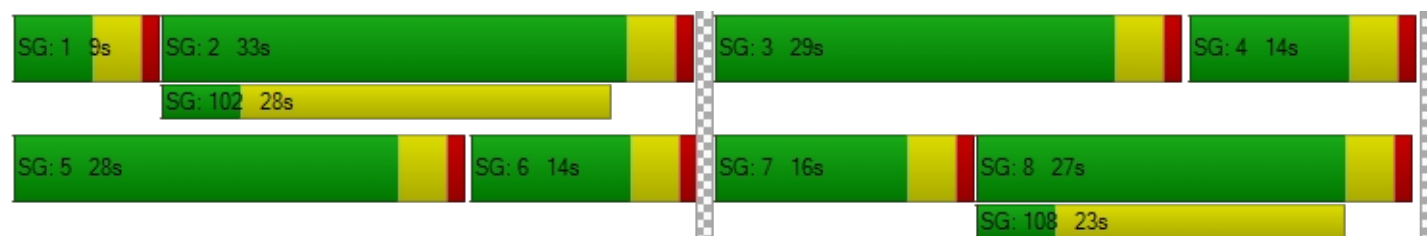
d_M, Delay for Movement [s/veh]	49.83	38.26	38.26	44.56	35.85	35.85	42.89	15.06	8.53	48.56	21.12	12.25
Movement LOS	D	D	D	D	D	D	D	B	A	D	C	B
d_A, Approach Delay [s/veh]	43.28			40.09			20.95			22.62		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	26.67											
Intersection LOS	C											
Intersection V/C	0.680											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.03	0.00	0.00	34.03
I_p,int, Pedestrian LOS Score for Intersection	2.075	0.000	0.000	2.656
Crosswalk LOS	B	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	541	235	682	235
d_b, Bicycle Delay [s]	22.66	33.14	18.50	33.15
I_b,int, Bicycle LOS Score for Intersection	1.845	2.102	2.944	2.573
Bicycle LOS	A	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Sherman Rd (NS) at Ethanac Rd (EW)

Control Type: Two-way stop
 Analysis Method: HCM 7th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 50.3
 Level Of Service: F
 Volume to Capacity (v/c): 0.165

Intersection Setup

Name	Sherman Rd			Sherman Rd			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Sherman Rd			Sherman Rd			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	14	4	8	13	3	100	152	479	16	3	305	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	6	0	0	0	0	17	17	21	6	0	22	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	20	4	8	13	3	117	169	500	22	3	327	3
Peak Hour Factor	0.8786	0.8786	0.8786	0.8786	0.8786	0.8786	0.8786	0.8786	0.8786	0.8786	0.8786	0.8786
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	1	2	4	1	33	48	142	6	1	93	1
Total Analysis Volume [veh/h]	23	5	9	15	3	133	192	569	25	3	372	3
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.10	0.04	0.02	0.16	0.03	0.20	0.16	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	23.42	39.54	14.97	50.32	42.87	16.14	8.28	0.00	0.00	8.67	0.00	0.00
Movement LOS	C	E	B	F	E	C	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.56	0.56	0.56	1.80	1.80	1.80	0.36	0.36	0.36	0.01	0.01	0.01
95th-Percentile Queue Length [ft/ln]	13.99	13.99	13.99	45.05	45.05	45.05	9.02	9.02	9.02	0.13	0.13	0.13
d_A, Approach Delay [s/veh]	23.55			20.07			2.02			0.07		
Approach LOS	C			C			A			A		
d_I, Intersection Delay [s/veh]	4.08											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 6: Trumble Rd (NS) at Project Dwy (EW)

Control Type:	Two-way stop	Delay (sec / veh):	13.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.270

Intersection Setup

Name	Trumble Rd		Trumble Rd		Project Dwy	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Trumble Rd		Trumble Rd		Project Dwy	
Base Volume Input [veh/h]	68	0	0	152	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	163	33	0	146	43
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	68	163	33	152	146	43
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	44	9	41	40	12
Total Analysis Volume [veh/h]	74	177	36	165	159	47
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.03	0.00	0.27	0.05
d_M, Delay for Movement [s/veh]	0.00	0.00	7.78	0.00	13.81	11.76
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.06	0.06	1.40	1.40
95th-Percentile Queue Length [ft/ln]	0.00	0.00	1.53	1.53	34.99	34.99
d_A, Approach Delay [s/veh]	0.00		1.39		13.34	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	4.60					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 7: Project Dwy (NS) at Ethanac Rd (EW)

Control Type:	Two-way stop	Delay (sec / veh):	12.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.246

Intersection Setup

Name	Project Dwy		Ethanac Rd		Ethanac Rd	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Project Dwy		Ethanac Rd		Ethanac Rd	
Base Volume Input [veh/h]	0	0	0	647	422	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	136	0	119	0	131
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	136	0	766	422	131
Peak Hour Factor	0.9500	0.9200	0.9500	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	37	0	208	115	36
Total Analysis Volume [veh/h]	0	148	0	833	459	142
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.25	0.00	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	12.92	0.00	0.00	0.00	0.00
Movement LOS		B		A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.96	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	24.04	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	12.92		0.00		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	1.21					
Intersection LOS	B					

OPENING YEAR (2025) WITHOUT PROJECT

AM PEAK HOUR

Intersection Level Of Service Report**Intersection 1: I-215 SB Ramps (NS) at Ethanac Rd (EW)**

Control Type:	Signalized	Delay (sec / veh):	47.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.004

Intersection Setup

Name	I-215 SB Ramps			I-215 SB Ramps			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	274.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			55.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			Yes		

Volumes

Name	I-215 SB Ramps			I-215 SB Ramps			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	0	0	0	123	2	247	0	617	525	79	580	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0600	1.0600	1.0600	1.0000	1.0600	1.0600	1.0600	1.0600	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	79	0	138	0	188	229	59	245	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	95	0	0	0	5	0	97	5	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	304	2	400	0	847	786	240	865	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9754	0.9754	0.9754	0.9500	0.9754	0.9754	0.9754	0.9754	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	78	1	103	0	217	201	62	222	0
Total Analysis Volume [veh/h]	0	0	0	312	2	410	0	868	806	246	887	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			1			0			1		
Bicycle Volume [bicycles/h]	0			0			0			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	0	4	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	0	10	0	0	10	0	5	10	0
Maximum Green [s]	0	0	0	0	30	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	35	0	0	64	0	21	85	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	0	25	0	0	10	0	0	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk					No			No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall					No			No		No	No	
Maximum Recall					No			No		No	No	
Pedestrian Recall					No			No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		C	R	C	R	L	C
C, Cycle Length [s]		120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		31	31	60	60	17	81
g / C, Green / Cycle		0.26	0.26	0.50	0.50	0.14	0.67
(v / s)_i Volume / Saturation Flow Rate		0.18	0.26	0.46	0.51	0.14	0.25
s, saturation flow rate [veh/h]		1781	1589	1870	1589	1781	3560
c, Capacity [veh/h]		460	411	934	794	253	2403
d1, Uniform Delay [s]		40.03	44.44	28.04	30.02	51.21	8.44
k, delay calibration		0.22	0.45	0.50	0.50	0.12	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		3.57	41.74	16.65	35.82	21.94	0.44
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.68	1.00	0.93	1.02	0.97	0.37
d, Delay for Lane Group [s/veh]		43.61	86.18	44.69	65.84	73.15	8.88
Lane Group LOS		D	F	D	F	E	A
Critical Lane Group		No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]		8.78	16.82	24.81	27.96	8.69	4.44
50th-Percentile Queue Length [ft/ln]		219.45	420.58	620.32	699.02	217.18	110.96
95th-Percentile Queue Length [veh/ln]		13.64	23.55	32.98	37.09	13.52	7.89
95th-Percentile Queue Length [ft/ln]		340.92	588.75	824.55	927.17	338.02	197.33

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	43.61	43.61	86.18	0.00	44.69	65.84	73.15	8.88	0.00
Movement LOS				D	D	F		D	F	E	A	
d_A, Approach Delay [s/veh]	0.00			67.72			54.88			22.83		
Approach LOS	A			E			D			C		
d_I, Intersection Delay [s/veh]	47.23											
Intersection LOS	D											
Intersection V/C	1.004											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			9.0			0.0			9.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			51.32			0.00			51.32		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.191			0.000			2.992		
Crosswalk LOS	F			B			F			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	0			517			1000			1350		
d_b, Bicycle Delay [s]	59.98			32.99			14.99			6.33		
I_b,int, Bicycle LOS Score for Intersection	4.132			2.754			4.322			2.494		
Bicycle LOS	D			C			E			B		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 2: I-215 NB Ramps (NS) at Ethanac Rd (EW)**

Control Type:	Signalized	Delay (sec / veh):	32.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.899

Intersection Setup

Name	I-215 NB Ramps			I-215 NB Ramps			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	243.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name	I-215 NB Ramps			I-215 NB Ramps			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	285	2	134	0	0	0	228	545	0	0	387	144
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0600	1.0600	1.0600	1.0000	1.0000	1.0000	1.0600	1.0600	1.0000	1.0000	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	232	0	149	0	0	0	162	105	0	0	72	34
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	95	0	0	0	0	100	0	0	102	98
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	534	2	386	0	0	0	404	783	0	0	584	285
Peak Hour Factor	0.9416	0.9416	0.9416	0.9500	0.9500	0.9500	0.9416	0.9416	0.9500	0.9500	0.9416	0.9416
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	142	1	102	0	0	0	107	208	0	0	155	76
Total Analysis Volume [veh/h]	567	2	410	0	0	0	429	832	0	0	620	303
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			2		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	10	0	0	0	0	5	10	0	0	10	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	37	0	0	0	0	29	43	0	0	14	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	18	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R		L	C	C	R
C, Cycle Length [s]	80	80		80	80	80	80
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	28	28		21	44	19	19
g / C, Green / Cycle	0.35	0.35		0.26	0.55	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.32	0.26		0.24	0.44	0.17	0.20
s, saturation flow rate [veh/h]	1781	1589		1781	1870	3560	1553
c, Capacity [veh/h]	628	561		472	1024	827	361
d1, Uniform Delay [s]	24.66	22.61		28.48	14.77	28.58	29.16
k, delay calibration	0.29	0.18		0.19	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.34	3.05		11.20	7.04	6.18	20.42
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.73		0.91	0.81	0.75	0.84
d, Delay for Lane Group [s/veh]	37.00	25.66		39.68	21.81	34.75	49.58
Lane Group LOS	D	C		D	C	C	D
Critical Lane Group	Yes	No		No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	11.78	6.84		8.69	11.73	5.77	7.10
50th-Percentile Queue Length [ft/ln]	294.56	170.95		217.30	293.28	144.33	177.41
95th-Percentile Queue Length [veh/ln]	17.41	11.13		13.53	17.35	9.71	11.46
95th-Percentile Queue Length [ft/ln]	435.30	278.16		338.17	433.70	242.85	286.62

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	37.00	37.00	25.66	0.00	0.00	0.00	39.68	21.81	0.00	0.00	34.75	49.58
Movement LOS	D	D	C				D	C			C	D
d_A, Approach Delay [s/veh]	32.25			0.00			27.89			39.62		
Approach LOS	C			A			C			D		
d_I, Intersection Delay [s/veh]	32.66											
Intersection LOS	C											
Intersection V/C	0.899											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.53	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.254	0.000	0.000	0.000
Crosswalk LOS	B	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	825	0	974	250
d_b, Bicycle Delay [s]	13.82	40.02	10.52	30.68
I_b,int, Bicycle LOS Score for Intersection	3.175	4.132	3.640	2.321
Bicycle LOS	C	D	D	B

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Encanto Dr (NS) at Ethanac Rd (EW)

Control Type:	Two-way stop	Delay (sec / veh):	415.1
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.373

Intersection Setup

Name	Encanto Dr		Ethanac Rd		Ethanac Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Encanto Dr		Ethanac Rd		Ethanac Rd	
Base Volume Input [veh/h]	43	28	616	56	36	486
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	7	0	254	0	0	99
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	195	0	0	200
Total Hourly Volume [veh/h]	53	30	1102	59	38	814
Peak Hour Factor	0.9036	0.9036	0.9036	0.9036	0.9036	0.9036
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	8	305	16	11	225
Total Analysis Volume [veh/h]	59	33	1220	65	42	901
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	1.37	0.16	0.01	0.00	0.08	0.01
d_M, Delay for Movement [s/veh]	415.13	25.30	0.00	0.00	12.23	0.00
Movement LOS	F	D	A	A	B	A
95th-Percentile Queue Length [veh/ln]	5.81	0.55	0.00	0.00	0.25	0.00
95th-Percentile Queue Length [ft/ln]	145.27	13.64	0.00	0.00	6.30	0.00
d_A, Approach Delay [s/veh]	275.30		0.00		0.54	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	11.14					
Intersection LOS	F					

Intersection Level Of Service Report**Intersection 4: Trumble Rd (NS) at Ethanac Rd (EW)**

Control Type:	Signalized	Delay (sec / veh):	40.4
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.917

Intersection Setup

Name	Trumble Rd			Trumble Rd			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	105.00	100.00	100.00	100.00	100.00	100.00	135.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			Yes		

Volumes

Name	Trumble Rd			Trumble Rd			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	46	8	23	22	10	64	79	544	6	26	416	30
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	2	0	4	1	30	53	197	0	4	69	12
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	16	0	148	206	0	0	0	5	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	49	10	24	43	12	246	343	774	6	32	515	44
Peak Hour Factor	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	3	7	12	3	68	95	213	2	9	142	12
Total Analysis Volume [veh/h]	54	11	26	47	13	271	378	853	7	35	568	48
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	1			0			0			1		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	27	0	9	27	0	25	39	0	15	29	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	18	0	0	10	0	0	23	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	18	4	18	21	49	49	3	32
g / C, Green / Cycle	0.04	0.20	0.04	0.20	0.23	0.55	0.55	0.03	0.35
(v / s)_i Volume / Saturation Flow Rate	0.03	0.02	0.03	0.18	0.21	0.46	0.00	0.02	0.33
s, saturation flow rate [veh/h]	1781	1664	1781	1600	1781	1870	1589	1781	1845
c, Capacity [veh/h]	76	336	71	318	412	1024	870	60	646
d1, Uniform Delay [s]	42.63	29.39	42.70	35.17	33.84	16.99	9.28	42.94	28.60
k, delay calibration	0.11	0.11	0.11	0.11	0.18	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.76	0.14	10.18	8.56	13.36	7.95	0.02	8.60	25.77
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.71	0.11	0.66	0.89	0.92	0.83	0.01	0.58	0.95
d, Delay for Lane Group [s/veh]	54.39	29.53	52.88	43.74	47.20	24.94	9.30	51.54	54.36
Lane Group LOS	D	C	D	D	D	C	A	D	D
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.38	0.63	1.19	6.44	9.05	14.41	0.06	0.88	16.36
50th-Percentile Queue Length [ft/ln]	34.60	15.85	29.72	161.09	226.37	360.25	1.46	22.01	408.93
95th-Percentile Queue Length [veh/ln]	2.49	1.14	2.14	10.61	13.99	20.64	0.11	1.58	22.99
95th-Percentile Queue Length [ft/ln]	62.27	28.53	53.50	265.17	349.75	515.89	2.63	39.61	574.75

Movement, Approach, & Intersection Results

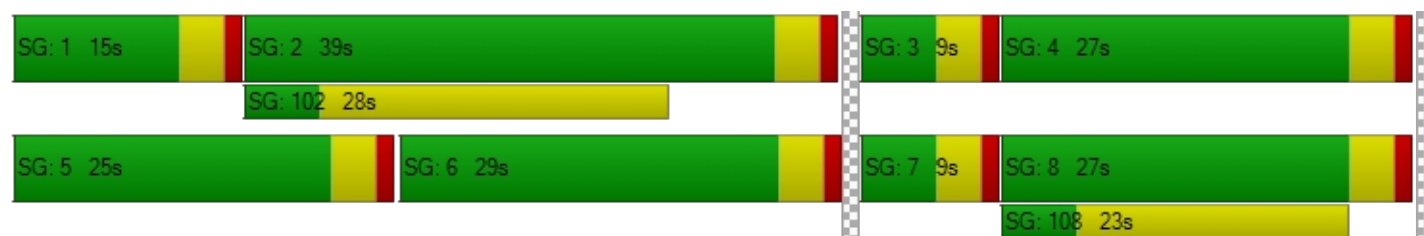
d_M, Delay for Movement [s/veh]	54.39	29.53	29.53	52.88	43.74	43.74	47.20	24.94	9.30	51.54	54.36	54.36
Movement LOS	D	C	C	D	D	D	D	C	A	D	D	D
d_A, Approach Delay [s/veh]	44.28			45.03			31.65			54.21		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	40.42											
Intersection LOS	D											
Intersection V/C	0.917											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.49	0.00	0.00	36.49
I_p,int, Pedestrian LOS Score for Intersection	2.013	0.000	0.000	2.711
Crosswalk LOS	B	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	511	511	777	555
d_b, Bicycle Delay [s]	24.98	24.98	16.84	23.51
I_b,int, Bicycle LOS Score for Intersection	1.710	2.106	3.602	2.634
Bicycle LOS	A	B	D	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Sherman Rd (NS) at Ethanac Rd (EW)

Control Type:	Two-way stop	Delay (sec / veh):	134.5
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.124

Intersection Setup

Name	Sherman Rd			Sherman Rd			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Sherman Rd			Sherman Rd			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	4	2	2	3	2	92	94	464	13	9	375	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0600	1.0000	1.0600	1.0600	1.0600	1.0000	1.0000	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	9	0	0	31	1	1	176	0	0	90	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	16	0	0	5	0
Total Hourly Volume [veh/h]	4	11	2	3	33	99	101	684	13	9	493	8
Peak Hour Factor	0.9020	0.9020	0.9020	0.9020	0.9020	0.9020	0.9020	0.9020	0.9020	0.9020	0.9020	0.9020
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	3	1	1	9	27	28	190	4	2	137	2
Total Analysis Volume [veh/h]	4	12	2	3	37	110	112	758	14	10	547	9
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.12	0.14	0.00	0.05	0.42	0.21	0.11	0.01	0.00	0.01	0.01	0.00
d_M, Delay for Movement [s/veh]	134.53	63.88	32.01	94.68	78.61	13.49	8.68	0.00	0.00	9.28	0.00	0.00
Movement LOS	F	F	D	F	F	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.94	0.94	0.94	1.96	1.96	0.77	0.20	0.20	0.20	0.02	0.02	0.02
95th-Percentile Queue Length [ft/ln]	23.48	23.48	23.48	49.08	49.08	19.19	4.99	4.99	4.99	0.42	0.42	0.42
d_A, Approach Delay [s/veh]	76.04			31.17			1.10			0.16		
Approach LOS	F			D			A			A		
d_I, Intersection Delay [s/veh]	4.39											
Intersection LOS	F											

PM PEAK HOUR

Intersection Level Of Service Report**Intersection 1: I-215 SB Ramps (NS) at Ethanac Rd (EW)**

Control Type:	Signalized	Delay (sec / veh):	81.1
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.183

Intersection Setup

Name	I-215 SB Ramps			I-215 SB Ramps			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	274.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			55.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			Yes		

Volumes

Name	I-215 SB Ramps			I-215 SB Ramps			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	0	0	0	239	18	417	0	616	327	95	664	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0600	1.0600	1.0600	1.0000	1.0600	1.0600	1.0600	1.0600	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	47	0	185	0	175	249	126	298	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	115	0	0	0	7	0	106	7	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	415	19	627	0	835	596	333	1009	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9754	0.9754	0.9754	0.9500	0.9754	0.9754	0.9754	0.9754	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	106	5	161	0	214	153	85	259	0
Total Analysis Volume [veh/h]	0	0	0	425	19	643	0	856	611	341	1034	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	1			0			0			1		
Bicycle Volume [bicycles/h]	0			0			0			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	0	4	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	0	10	0	0	10	0	5	10	0
Maximum Green [s]	0	0	0	0	30	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	42	0	0	47	0	21	68	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	0	13	0	0	10	0	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk					No			No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall					No			No		No	No	
Maximum Recall					No			No		No	No	
Pedestrian Recall					No			No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		C	R	C	R	L	C
C, Cycle Length [s]		110	110	110	110	110	110
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		38	38	43	43	17	64
g / C, Green / Cycle		0.35	0.35	0.39	0.39	0.15	0.58
(v / s)_i Volume / Saturation Flow Rate		0.25	0.40	0.46	0.38	0.19	0.29
s, saturation flow rate [veh/h]		1785	1589	1870	1589	1781	3560
c, Capacity [veh/h]		616	549	731	621	276	2073
d1, Uniform Delay [s]		31.39	36.01	33.50	33.16	46.46	13.53
k, delay calibration		0.25	0.50	0.50	0.50	0.23	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		3.70	95.55	91.46	32.39	119.74	0.86
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.72	1.17	1.17	0.98	1.23	0.50
d, Delay for Lane Group [s/veh]		35.09	131.55	124.97	65.55	166.19	14.39
Lane Group LOS		D	F	F	E	F	B
Critical Lane Group		No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]		10.75	28.90	36.06	20.07	16.46	6.96
50th-Percentile Queue Length [ft/ln]		268.76	722.51	901.40	501.73	411.45	173.89
95th-Percentile Queue Length [veh/ln]		16.13	41.72	51.10	27.42	25.36	11.28
95th-Percentile Queue Length [ft/ln]		403.19	1042.99	1277.40	685.40	634.08	282.02

Movement, Approach, & Intersection Results

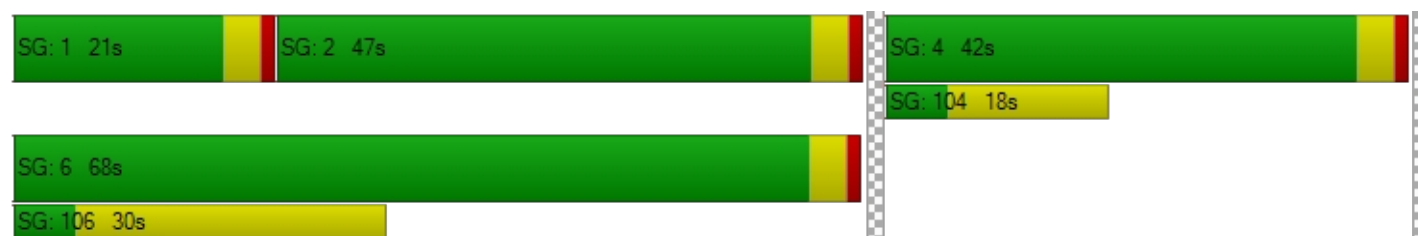
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	35.09	35.09	131.55	0.00	124.97	65.55	166.19	14.39	0.00
Movement LOS				D	D	F		F	E	F	B	
d_A, Approach Delay [s/veh]	0.00			92.15			100.22			52.04		
Approach LOS	A			F			F			D		
d_I, Intersection Delay [s/veh]	81.13											
Intersection LOS	F											
Intersection V/C	1.183											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			9.0			0.0			9.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			46.36			0.00			46.36		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.305			0.000			3.113		
Crosswalk LOS	F			B			F			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	0			691			782			1164		
d_b, Bicycle Delay [s]	54.99			23.56			20.40			9.62		
I_b,int, Bicycle LOS Score for Intersection	4.132			3.353			3.980			2.694		
Bicycle LOS	D			C			D			B		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 2: I-215 NB Ramps (NS) at Ethanac Rd (EW)**

Control Type:	Signalized	Delay (sec / veh):	55.4
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.063

Intersection Setup

Name	I-215 NB Ramps			I-215 NB Ramps			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	243.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name	I-215 NB Ramps			I-215 NB Ramps			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	394	4	182	0	0	0	227	610	0	0	407	193
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0600	1.0600	1.0600	1.0000	1.0000	1.0000	1.0600	1.0600	1.0000	1.0000	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	273	0	88	0	0	0	157	65	0	0	151	68
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	115	0	0	0	0	122	0	0	113	106
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	691	4	396	0	0	0	398	834	0	0	695	379
Peak Hour Factor	0.9390	0.9390	0.9390	0.9500	0.9500	0.9500	0.9390	0.9390	0.9500	0.9500	0.9390	0.9390
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	184	1	105	0	0	0	106	222	0	0	185	101
Total Analysis Volume [veh/h]	736	4	422	0	0	0	424	888	0	0	740	404
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	2			1			0			0		
Bicycle Volume [bicycles/h]	0			0			0			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	85
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	10	0	0	0	0	5	10	0	0	10	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	37	0	0	0	0	23	48	0	0	25	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	18	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R		L	C	C	R
C, Cycle Length [s]	85	85		85	85	85	85
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	33	33		19	44	21	21
g / C, Green / Cycle	0.39	0.39		0.22	0.52	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.42	0.27		0.24	0.47	0.21	0.26
s, saturation flow rate [veh/h]	1781	1589		1781	1870	3560	1555
c, Capacity [veh/h]	690	616		399	970	881	385
d1, Uniform Delay [s]	26.08	21.75		33.02	18.78	30.43	31.81
k, delay calibration	0.50	0.22		0.21	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	55.34	2.78		47.26	14.55	9.46	59.44
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.07	0.69		1.06	0.92	0.84	1.05
d, Delay for Lane Group [s/veh]	81.42	24.53		80.28	33.33	39.89	91.24
Lane Group LOS	F	C		F	C	D	F
Critical Lane Group	Yes	No		Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	23.65	7.13		12.85	17.14	7.80	13.58
50th-Percentile Queue Length [ft/ln]	591.29	178.23		321.13	428.61	195.02	339.48
95th-Percentile Queue Length [veh/ln]	33.20	11.51		19.34	23.94	12.38	20.17
95th-Percentile Queue Length [ft/ln]	830.09	287.71		483.50	598.38	309.53	504.21

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	81.42	81.42	24.53	0.00	0.00	0.00	80.28	33.33	0.00	0.00	39.89	91.24
Movement LOS	F	F	C				F	C			D	F
d_A, Approach Delay [s/veh]	60.76			0.00			48.50			58.03		
Approach LOS	E			A			D			E		
d_I, Intersection Delay [s/veh]	55.45											
Intersection LOS	E											
Intersection V/C	1.063											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.01	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.317	0.000	0.000	0.000
Crosswalk LOS	B	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	776	0	1034	494
d_b, Bicycle Delay [s]	15.93	42.53	9.91	24.14
I_b,int, Bicycle LOS Score for Intersection	3.477	4.132	3.724	2.503
Bicycle LOS	C	D	D	B

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Encanto Dr (NS) at Ethanac Rd (EW)

Control Type:	Two-way stop	Delay (sec / veh):	901.6
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.394

Intersection Setup

Name	Encanto Dr		Ethanac Rd		Ethanac Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Encanto Dr		Ethanac Rd		Ethanac Rd	
Base Volume Input [veh/h]	64	65	645	137	40	535
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	0	153	0	0	217
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	237	0	0	219
Total Hourly Volume [veh/h]	70	69	1074	145	42	1003
Peak Hour Factor	0.9173	0.9173	0.9173	0.9173	0.9173	0.9173
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	19	293	40	11	273
Total Analysis Volume [veh/h]	76	75	1171	158	46	1093
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	2.39	0.36	0.01	0.00	0.09	0.01
d_M, Delay for Movement [s/veh]	901.56	31.22	0.00	0.00	12.60	0.00
Movement LOS	F	D	A	A	B	A
95th-Percentile Queue Length [veh/ln]	8.78	1.52	0.00	0.00	0.29	0.00
95th-Percentile Queue Length [ft/ln]	219.45	38.01	0.00	0.00	7.25	0.00
d_A, Approach Delay [s/veh]	469.27		0.00		0.51	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	27.28					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 4: Trumble Rd (NS) at Ethanac Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	58.5
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.002

Intersection Setup

Name	Trumble Rd			Trumble Rd			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	105.00	100.00	100.00	100.00	100.00	100.00	135.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			Yes		

Volumes

Name	Trumble Rd			Trumble Rd			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	68	5	35	26	11	115	53	570	25	23	389	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	14	2	59	46	103	0	3	158	10
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	24	0	150	254	0	0	0	7	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	72	5	37	66	14	331	356	707	27	27	577	21
Peak Hour Factor	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	1	10	18	4	91	98	195	7	7	159	6
Total Analysis Volume [veh/h]	79	6	41	73	15	364	392	778	30	30	635	23
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	1			0			0			1		
Bicycle Volume [bicycles/h]	0			0			1			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	27	0	12	30	0	28	50	0	21	43	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	18	0	0	10	0	0	23	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	25	6	26	24	60	60	3	39
g / C, Green / Cycle	0.05	0.23	0.05	0.24	0.22	0.55	0.55	0.03	0.36
(v / s)_i Volume / Saturation Flow Rate	0.04	0.03	0.04	0.24	0.22	0.42	0.02	0.02	0.35
s, saturation flow rate [veh/h]	1781	1621	1781	1599	1781	1870	1557	1781	1857
c, Capacity [veh/h]	81	370	94	376	389	1022	851	49	660
d1, Uniform Delay [s]	52.44	33.74	51.49	42.06	43.00	19.37	11.53	52.93	35.37
k, delay calibration	0.11	0.11	0.11	0.35	0.31	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	40.76	0.15	13.08	40.93	38.11	5.35	0.08	12.05	34.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.98	0.13	0.78	1.01	1.01	0.76	0.04	0.62	1.00
d, Delay for Lane Group [s/veh]	93.20	33.89	64.57	83.00	81.11	24.72	11.61	64.98	69.55
Lane Group LOS	F	C	E	F	F	C	B	E	E
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.03	0.98	2.27	14.01	14.21	15.25	0.33	0.96	22.72
50th-Percentile Queue Length [ft/ln]	75.83	24.59	56.80	350.28	355.35	381.30	8.34	24.02	567.96
95th-Percentile Queue Length [veh/ln]	5.46	1.77	4.09	20.24	20.50	21.66	0.60	1.73	30.54
95th-Percentile Queue Length [ft/ln]	136.49	44.27	102.24	505.92	512.47	541.42	15.01	43.24	763.38

Movement, Approach, & Intersection Results

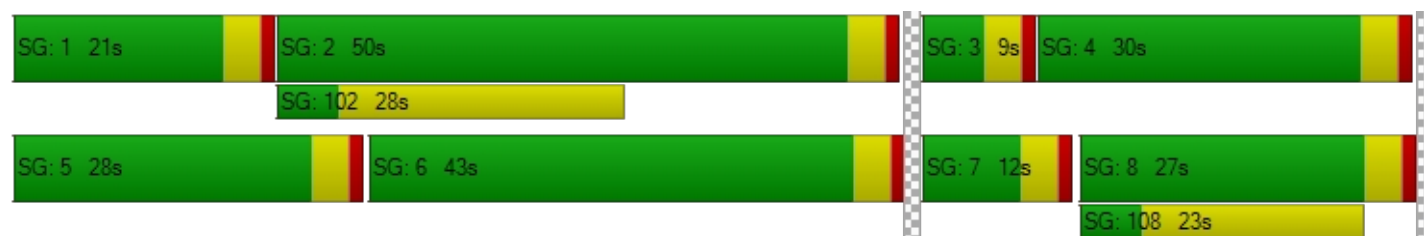
d_M, Delay for Movement [s/veh]	93.20	33.89	33.89	64.57	83.00	83.00	81.11	24.72	11.61	64.98	69.55	69.55
Movement LOS	F	C	C	E	F	F	F	C	B	E	E	E
d_A, Approach Delay [s/veh]	71.07			80.02			42.81			69.35		
Approach LOS	E			F			D			E		
d_I, Intersection Delay [s/veh]	58.48											
Intersection LOS	E											
Intersection V/C	1.002											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	46.37	0.00	0.00	46.37
I_p,int, Pedestrian LOS Score for Intersection	2.049	0.000	0.000	2.722
Crosswalk LOS	B	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	418	473	836	709
d_b, Bicycle Delay [s]	34.40	32.07	18.63	22.93
I_b,int, Bicycle LOS Score for Intersection	1.768	2.305	3.540	2.695
Bicycle LOS	A	B	D	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Sherman Rd (NS) at Ethanac Rd (EW)

Control Type:	Two-way stop	Delay (sec / veh):	348.2
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.590

Intersection Setup

Name	Sherman Rd			Sherman Rd			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Sherman Rd			Sherman Rd			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	14	4	8	13	3	100	152	479	16	3	305	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0600	1.0000	1.0600	1.0600	1.0600	1.0000	1.0000	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	25	0	0	16	1	0	110	0	0	152	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	24	0	0	7	0
Total Hourly Volume [veh/h]	14	29	8	14	19	107	161	642	16	3	482	3
Peak Hour Factor	0.8786	0.8786	0.8786	0.8786	0.8786	0.8786	0.8786	0.8786	0.8786	0.8786	0.8786	0.8786
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	8	2	4	5	30	46	183	5	1	137	1
Total Analysis Volume [veh/h]	16	33	9	16	22	122	183	731	18	3	549	3
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.59	0.50	0.02	0.53	0.33	0.23	0.18	0.01	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	348.20	269.62	224.19	276.80	211.40	13.72	8.76	0.00	0.00	9.19	0.00	0.00
Movement LOS	F	F	F	F	F	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	5.03	5.03	5.03	3.43	3.43	0.87	0.34	0.34	0.34	0.01	0.01	0.01
95th-Percentile Queue Length [ft/ln]	125.66	125.66	125.66	85.74	85.74	21.82	8.52	8.52	8.52	0.13	0.13	0.13
d_A, Approach Delay [s/veh]	284.25			67.21			1.72			0.05		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	16.93											
Intersection LOS	F											

OPENING YEAR (2025) WITH PROJECT

AM PEAK HOUR

Intersection Level Of Service Report
Intersection 1: I-215 SB Ramps (NS) at Ethanac Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	48.5
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.010

Intersection Setup

Name	I-215 SB Ramps			I-215 SB Ramps			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	274.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			55.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			Yes		

Volumes

Name	I-215 SB Ramps			I-215 SB Ramps			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	0	0	0	123	2	247	0	617	525	79	580	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0600	1.0600	1.0600	1.0000	1.0600	1.0600	1.0600	1.0600	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	89	0	138	0	198	229	69	255	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	95	0	0	0	5	0	97	5	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	314	2	400	0	857	786	250	875	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9754	0.9754	0.9754	0.9500	0.9754	0.9754	0.9754	0.9754	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	80	1	103	0	220	201	64	224	0
Total Analysis Volume [veh/h]	0	0	0	322	2	410	0	879	806	256	897	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			1			0			1		
Bicycle Volume [bicycles/h]	0			0			0			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	0	4	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	0	10	0	0	10	0	5	10	0
Maximum Green [s]	0	0	0	0	30	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	35	0	0	64	0	21	85	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	0	25	0	0	10	0	0	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk					No			No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall					No			No		No	No	
Maximum Recall					No			No		No	No	
Pedestrian Recall					No			No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		C	R	C	R	L	C
C, Cycle Length [s]		120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		31	31	60	60	17	81
g / C, Green / Cycle		0.26	0.26	0.50	0.50	0.14	0.67
(v / s)_i Volume / Saturation Flow Rate		0.18	0.26	0.47	0.51	0.14	0.25
s, saturation flow rate [veh/h]		1781	1589	1870	1589	1781	3560
c, Capacity [veh/h]		460	411	934	794	253	2403
d1, Uniform Delay [s]		40.31	44.44	28.36	30.02	51.44	8.47
k, delay calibration		0.23	0.45	0.50	0.50	0.14	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		4.22	41.74	18.27	35.85	32.55	0.45
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.70	1.00	0.94	1.02	1.01	0.37
d, Delay for Lane Group [s/veh]		44.53	86.18	46.63	65.87	83.99	8.92
Lane Group LOS		D	F	D	F	F	A
Critical Lane Group		No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]		9.18	16.82	25.72	27.96	9.68	4.51
50th-Percentile Queue Length [ft/ln]		229.62	420.58	643.08	699.08	241.89	112.64
95th-Percentile Queue Length [veh/ln]		14.15	23.55	34.04	37.09	14.85	7.99
95th-Percentile Queue Length [ft/ln]		353.87	588.75	851.02	927.30	371.32	199.67

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	44.53	44.53	86.18	0.00	46.63	65.87	83.99	8.92	0.00
Movement LOS				D	D	F		D	F	F	A	
d_A, Approach Delay [s/veh]	0.00			67.79			55.83			25.59		
Approach LOS	A			E			E			C		
d_I, Intersection Delay [s/veh]	48.53											
Intersection LOS	D											
Intersection V/C	1.010											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			9.0			0.0			9.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			51.32			0.00			51.32		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.194			0.000			3.007		
Crosswalk LOS	F			B			F			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	0			517			1000			1350		
d_b, Bicycle Delay [s]	59.98			32.99			14.99			6.33		
I_b,int, Bicycle LOS Score for Intersection	4.132			2.771			4.340			2.511		
Bicycle LOS	D			C			E			B		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: I-215 NB Ramps (NS) at Ethanac Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	33.6
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.912

Intersection Setup

Name	I-215 NB Ramps			I-215 NB Ramps			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	243.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name	I-215 NB Ramps			I-215 NB Ramps			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	285	2	134	0	0	0	228	545	0	0	387	144
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0600	1.0600	1.0600	1.0000	1.0000	1.0000	1.0600	1.0600	1.0000	1.0000	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	232	0	159	0	0	0	162	125	0	0	92	44
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	95	0	0	0	0	100	0	0	102	98
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	534	2	396	0	0	0	404	803	0	0	604	295
Peak Hour Factor	0.9416	0.9416	0.9416	0.9500	0.9500	0.9500	0.9416	0.9416	0.9500	0.9500	0.9416	0.9416
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	142	1	105	0	0	0	107	213	0	0	160	78
Total Analysis Volume [veh/h]	567	2	421	0	0	0	429	853	0	0	641	313
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			2		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	10	0	0	0	0	5	10	0	0	10	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	37	0	0	0	0	29	43	0	0	14	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	18	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R		L	C	C	R
C, Cycle Length [s]	80	80		80	80	80	80
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	28	28		21	44	19	19
g / C, Green / Cycle	0.35	0.35		0.26	0.55	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.32	0.26		0.24	0.46	0.18	0.20
s, saturation flow rate [veh/h]	1781	1589		1781	1870	3560	1553
c, Capacity [veh/h]	629	561		472	1023	826	360
d1, Uniform Delay [s]	24.64	22.81		28.48	15.09	28.80	29.40
k, delay calibration	0.29	0.19		0.19	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.29	3.58		11.20	7.96	7.04	23.60
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.75		0.91	0.83	0.78	0.87
d, Delay for Lane Group [s/veh]	36.93	26.39		39.68	23.05	35.84	53.00
Lane Group LOS	D	C		D	C	D	D
Critical Lane Group	Yes	No		No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	11.77	7.15		8.69	12.45	6.08	7.62
50th-Percentile Queue Length [ft/ln]	294.24	178.75		217.30	311.28	152.08	190.56
95th-Percentile Queue Length [veh/ln]	17.40	11.54		13.53	18.24	10.13	12.15
95th-Percentile Queue Length [ft/ln]	434.89	288.39		338.17	455.96	253.20	303.75

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.93	36.93	26.39	0.00	0.00	0.00	39.68	23.05	0.00	0.00	35.84	53.00
Movement LOS	D	D	C				D	C			D	D
d_A, Approach Delay [s/veh]	32.45			0.00			28.62			41.47		
Approach LOS	C			A			C			D		
d_I, Intersection Delay [s/veh]	33.59											
Intersection LOS	C											
Intersection V/C	0.912											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.53	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.258	0.000	0.000	0.000
Crosswalk LOS	B	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	825	0	974	250
d_b, Bicycle Delay [s]	13.82	40.02	10.52	30.68
I_b,int, Bicycle LOS Score for Intersection	3.193	4.132	3.675	2.347
Bicycle LOS	C	D	D	B

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Encanto Dr (NS) at Ethanac Rd (EW)

Control Type:	Two-way stop	Delay (sec / veh):	515.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.562

Intersection Setup

Name	Encanto Dr		Ethanac Rd		Ethanac Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Encanto Dr		Ethanac Rd		Ethanac Rd	
Base Volume Input [veh/h]	43	28	616	56	36	486
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	7	5	284	0	5	129
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	195	0	0	200
Total Hourly Volume [veh/h]	53	35	1132	59	43	844
Peak Hour Factor	0.9036	0.9036	0.9036	0.9036	0.9036	0.9036
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	10	313	16	12	234
Total Analysis Volume [veh/h]	59	39	1253	65	48	934
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	1.56	0.19	0.01	0.00	0.09	0.01
d_M, Delay for Movement [s/veh]	515.01	27.18	0.00	0.00	12.55	0.00
Movement LOS	F	D	A	A	B	A
95th-Percentile Queue Length [veh/ln]	6.21	0.70	0.00	0.00	0.30	0.00
95th-Percentile Queue Length [ft/ln]	155.37	17.46	0.00	0.00	7.52	0.00
d_A, Approach Delay [s/veh]	320.88		0.00		0.61	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	13.36					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 4: Trumble Rd (NS) at Ethanac Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	70.8
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.035

Intersection Setup

Name	Trumble Rd			Trumble Rd			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	105.00	100.00	100.00	100.00	100.00	100.00	135.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			Yes		

Volumes

Name	Trumble Rd			Trumble Rd			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	46	8	23	22	10	64	79	544	6	26	416	30
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	54	0	129	31	30	176	197	0	14	204	12
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	16	0	148	206	0	0	0	5	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	49	62	24	168	42	246	466	774	6	42	650	44
Peak Hour Factor	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	17	7	46	12	68	128	213	2	12	179	12
Total Analysis Volume [veh/h]	54	68	26	185	46	271	514	853	7	46	716	48
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	1			0			0			1		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	31	27	0	18	14	0	37	41	0	34	38	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	18	0	0	10	0	0	23	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	16	14	25	33	70	70	4	41	41
g / C, Green / Cycle	0.04	0.13	0.12	0.21	0.27	0.58	0.58	0.03	0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.03	0.05	0.10	0.20	0.29	0.46	0.00	0.03	0.38	0.03
s, saturation flow rate [veh/h]	1781	1783	1781	1625	1781	1870	1589	1781	1870	1589
c, Capacity [veh/h]	72	241	209	344	489	1085	922	61	636	540
d1, Uniform Delay [s]	57.02	47.42	52.22	46.33	43.54	19.45	10.63	57.45	39.63	26.97
k, delay calibration	0.11	0.11	0.11	0.26	0.49	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.59	1.03	11.86	19.93	54.24	5.76	0.01	16.62	75.88	0.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	0.39	0.89	0.92	1.05	0.79	0.01	0.75	1.13	0.09
d, Delay for Lane Group [s/veh]	71.61	48.45	64.07	66.27	97.78	25.21	10.64	74.08	115.51	27.30
Lane Group LOS	E	D	E	E	F	C	B	E	F	C
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.87	2.58	6.03	10.85	21.28	18.06	0.08	1.64	31.15	0.96
50th-Percentile Queue Length [ft/ln]	46.87	64.43	150.74	271.25	532.00	451.55	1.93	40.89	778.78	24.04
95th-Percentile Queue Length [veh/ln]	3.37	4.64	10.06	16.25	29.75	25.03	0.14	2.94	43.60	1.73
95th-Percentile Queue Length [ft/ln]	84.37	115.98	251.42	406.30	743.65	625.80	3.47	73.60	1090.05	43.27

Movement, Approach, & Intersection Results

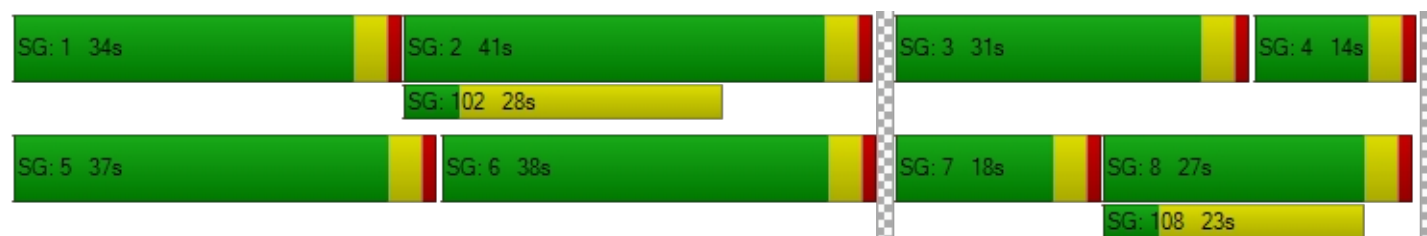
d_M, Delay for Movement [s/veh]	71.61	48.45	48.45	64.07	66.27	66.27	97.78	25.21	10.64	74.08	115.51	27.30
Movement LOS	E	D	D	E	E	E	F	C	B	E	F	C
d_A, Approach Delay [s/veh]	56.90			65.46			52.28			107.93		
Approach LOS	E			E			D			F		
d_I, Intersection Delay [s/veh]	70.76											
Intersection LOS	E											
Intersection V/C	1.035											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0			0.0			0.0			9.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	51.35			0.00			0.00			51.35		
I_p,int, Pedestrian LOS Score for Intersection	2.076			0.000			0.000			2.832		
Crosswalk LOS	B			F			F			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	383			167			617			567		
d_b, Bicycle Delay [s]	39.22			50.43			28.72			30.83		
I_b,int, Bicycle LOS Score for Intersection	1.804			2.388			3.827			2.896		
Bicycle LOS	A			B			D			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Sherman Rd (NS) at Ethanac Rd (EW)

Control Type:	Two-way stop	Delay (sec / veh):	248.8
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.431

Intersection Setup

Name	Sherman Rd			Sherman Rd			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Sherman Rd			Sherman Rd			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	4	2	2	3	2	92	94	464	13	9	375	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0600	1.0000	1.0600	1.0600	1.0600	1.0000	1.0000	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	5	9	0	0	31	15	16	193	5	0	109	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	16	0	0	5	0
Total Hourly Volume [veh/h]	9	11	2	3	33	113	116	701	18	9	512	8
Peak Hour Factor	0.9020	0.9020	0.9020	0.9020	0.9020	0.9020	0.9020	0.9020	0.9020	0.9020	0.9020	0.9020
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	3	1	1	9	31	32	194	5	2	142	2
Total Analysis Volume [veh/h]	10	12	2	3	37	125	129	777	20	10	568	9
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.43	0.16	0.01	0.06	0.50	0.24	0.13	0.01	0.00	0.01	0.01	0.00
d_M, Delay for Movement [s/veh]	248.81	141.44	102.78	123.50	102.70	14.12	8.77	0.00	0.00	9.37	0.00	0.00
Movement LOS	F	F	F	F	F	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	2.15	2.15	2.15	2.35	2.35	0.93	0.23	0.23	0.23	0.02	0.02	0.02
95th-Percentile Queue Length [ft/ln]	53.76	53.76	53.76	58.71	58.71	23.34	5.81	5.81	5.81	0.42	0.42	0.42
d_A, Approach Delay [s/veh]	182.95			35.97			1.22			0.16		
Approach LOS	F			E			A			A		
d_I, Intersection Delay [s/veh]	6.79											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 6: Trumble Rd (NS) at Project Dwy (EW)

Control Type:	Two-way stop	Delay (sec / veh):	34.8
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.565

Intersection Setup

Name	Trumble Rd			Trumble Rd			Eastbound			Project Dwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⬆			⬆			➡			➡		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			No		

Volumes

Name	Trumble Rd			Trumble Rd			Eastbound			Project Dwy		
Base Volume Input [veh/h]	0	117	0	0	96	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0600	1.0600	1.0600	1.0600	1.0000	1.0000	1.0000	1.0000	1.0600	1.0000	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	67	175	35	35	0	0	0	0	155	0	48
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	78	128	0	0	133	0	0	0	31	0	0	0
Total Hourly Volume [veh/h]	78	319	175	35	270	0	0	0	31	155	0	48
Peak Hour Factor	0.9500	0.9200	0.9200	0.9200	0.9200	0.9500	0.9500	0.9500	0.9500	0.9200	0.9500	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	87	48	10	73	0	0	0	8	42	0	13
Total Analysis Volume [veh/h]	82	347	190	38	293	0	0	0	33	168	0	52
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	Yes
Number of Storage Spaces in Median	0	0	0	1

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.04	0.56	0.00	0.08
d_M, Delay for Movement [s/veh]	7.95	0.00	0.00	8.53	0.00	0.00	25.74	0.00	10.05	34.78	0.00	28.53
Movement LOS	A	A	A	A	A	A	D		B	D		D
95th-Percentile Queue Length [veh/ln]	0.15	0.15	0.15	0.06	0.06	0.06	0.14	0.00	0.14	4.30	0.00	4.30
95th-Percentile Queue Length [ft/ln]	3.84	3.84	3.84	1.62	1.62	1.62	3.46	0.00	3.46	107.62	0.00	107.62
d_A, Approach Delay [s/veh]	1.05			0.98			10.05			33.30		
Approach LOS	A			A			B			D		
d_I, Intersection Delay [s/veh]	7.18											
Intersection LOS	D											

Intersection Level Of Service Report
Intersection 7: Project Dwy (NS) at Ethanac Rd (EW)

Control Type:	Two-way stop	Delay (sec / veh):	16.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.333

Intersection Setup

Name	Project Dwy		Ethanac Rd		Ethanac Rd	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	↱		↑		↰	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Project Dwy		Ethanac Rd		Ethanac Rd	
Base Volume Input [veh/h]	0	0	0	589	472	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0600	1.0000	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	145	0	326	85	139
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	16	5	0
Total Hourly Volume [veh/h]	0	145	0	966	590	139
Peak Hour Factor	0.9500	0.9200	0.9500	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	39	0	263	160	38
Total Analysis Volume [veh/h]	0	158	0	1050	641	151
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.33	0.00	0.01	0.01	0.00
d_M, Delay for Movement [s/veh]	0.00	16.32	0.00	0.00	0.00	0.00
Movement LOS		C		A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	1.44	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	36.10	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	16.32		0.00		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	1.29					
Intersection LOS	C					

PM PEAK HOUR

Intersection Level Of Service Report
Intersection 1: I-215 SB Ramps (NS) at Ethanac Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	84.1
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.185

Intersection Setup

Name	I-215 SB Ramps			I-215 SB Ramps			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	274.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			55.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			Yes		

Volumes

Name	I-215 SB Ramps			I-215 SB Ramps			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	0	0	0	239	18	417	0	616	327	95	664	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0600	1.0600	1.0600	1.0000	1.0600	1.0600	1.0600	1.0600	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	58	0	185	0	186	249	137	309	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	115	0	0	0	7	0	106	7	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	426	19	627	0	846	596	344	1020	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9754	0.9754	0.9754	0.9500	0.9754	0.9754	0.9754	0.9754	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	109	5	161	0	217	153	88	261	0
Total Analysis Volume [veh/h]	0	0	0	437	19	643	0	867	611	353	1046	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	1			0			0			1		
Bicycle Volume [bicycles/h]	0			0			0			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	0	4	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	0	10	0	0	10	0	5	10	0
Maximum Green [s]	0	0	0	0	30	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	45	0	0	51	0	24	75	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	0	13	0	0	10	0	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk					No			No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall					No			No		No	No	
Maximum Recall					No			No		No	No	
Pedestrian Recall					No			No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		C	R	C	R	L	C
C, Cycle Length [s]		120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		41	41	47	47	20	71
g / C, Green / Cycle		0.34	0.34	0.39	0.39	0.17	0.59
(v / s)_i Volume / Saturation Flow Rate		0.26	0.40	0.46	0.38	0.20	0.29
s, saturation flow rate [veh/h]		1784	1589	1870	1589	1781	3560
c, Capacity [veh/h]		609	542	732	623	298	2108
d1, Uniform Delay [s]		34.96	39.51	36.48	36.05	49.95	14.13
k, delay calibration		0.27	0.50	0.50	0.50	0.30	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		4.66	101.08	96.28	31.80	102.60	0.84
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.75	1.19	1.18	0.98	1.19	0.50
d, Delay for Lane Group [s/veh]		39.62	140.59	132.76	67.85	152.54	14.96
Lane Group LOS		D	F	F	E	F	B
Critical Lane Group		No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]		12.46	30.92	39.15	21.63	17.13	7.68
50th-Percentile Queue Length [ft/ln]		311.58	772.93	978.87	540.73	428.14	191.91
95th-Percentile Queue Length [veh/ln]		18.25	44.58	55.39	29.26	25.91	12.22
95th-Percentile Queue Length [ft/ln]		456.33	1114.54	1384.71	731.41	647.64	305.51

Movement, Approach, & Intersection Results

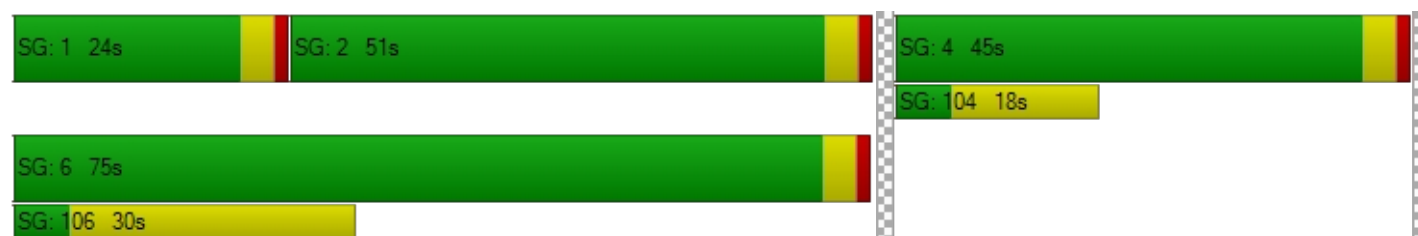
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	39.62	39.62	140.59	0.00	132.76	67.85	152.54	14.96	0.00
Movement LOS				D	D	F		F	E	F	B	
d_A, Approach Delay [s/veh]	0.00			98.69			105.93			49.68		
Approach LOS	A			F			F			D		
d_I, Intersection Delay [s/veh]	84.14											
Intersection LOS	F											
Intersection V/C	1.185											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			9.0			0.0			9.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			51.32			0.00			51.32		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.313			0.000			3.135		
Crosswalk LOS	F			B			F			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	0			684			784			1184		
d_b, Bicycle Delay [s]	59.98			25.99			22.19			10.00		
I_b,int, Bicycle LOS Score for Intersection	4.132			3.373			3.998			2.714		
Bicycle LOS	D			C			D			B		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: I-215 NB Ramps (NS) at Ethanac Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	57.6
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.071

Intersection Setup

Name	I-215 NB Ramps			I-215 NB Ramps			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	243.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name	I-215 NB Ramps			I-215 NB Ramps			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	394	4	182	0	0	0	227	610	0	0	407	193
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0600	1.0600	1.0600	1.0000	1.0000	1.0000	1.0600	1.0600	1.0000	1.0000	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	273	0	99	0	0	0	157	87	0	0	173	79
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	115	0	0	0	0	122	0	0	113	106
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	691	4	407	0	0	0	398	856	0	0	717	390
Peak Hour Factor	0.9390	0.9390	0.9390	0.9500	0.9500	0.9500	0.9390	0.9390	0.9500	0.9500	0.9390	0.9390
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	184	1	108	0	0	0	106	228	0	0	191	104
Total Analysis Volume [veh/h]	736	4	433	0	0	0	424	912	0	0	764	415
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	2			1			0			0		
Bicycle Volume [bicycles/h]	0			0			0			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	85
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	10	0	0	0	0	5	10	0	0	10	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	37	0	0	0	0	23	48	0	0	25	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	18	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R		L	C	C	R
C, Cycle Length [s]	85	85		85	85	85	85
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	33	33		19	44	21	21
g / C, Green / Cycle	0.39	0.39		0.22	0.52	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.42	0.27		0.24	0.49	0.21	0.27
s, saturation flow rate [veh/h]	1781	1589		1781	1870	3560	1555
c, Capacity [veh/h]	690	616		399	970	881	385
d1, Uniform Delay [s]	26.08	21.96		33.02	19.25	30.69	31.81
k, delay calibration	0.50	0.24		0.21	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	55.34	3.19		47.26	17.64	11.21	68.34
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.07	0.70		1.06	0.94	0.87	1.08
d, Delay for Lane Group [s/veh]	81.42	25.15		80.28	36.89	41.90	100.14
Lane Group LOS	F	C		F	D	D	F
Critical Lane Group	Yes	No		Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	23.65	7.44		12.85	18.68	8.29	14.53
50th-Percentile Queue Length [ft/ln]	591.29	185.95		321.13	466.89	207.23	363.27
95th-Percentile Queue Length [veh/ln]	33.20	11.91		19.34	25.76	13.01	21.68
95th-Percentile Queue Length [ft/ln]	830.09	297.76		483.50	644.07	325.27	541.95

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	81.42	81.42	25.15	0.00	0.00	0.00	80.28	36.89	0.00	0.00	41.90	100.14
Movement LOS	F	F	C				F	D			D	F
d_A, Approach Delay [s/veh]	60.64			0.00			50.66			62.40		
Approach LOS	E			A			D			E		
d_I, Intersection Delay [s/veh]	57.59											
Intersection LOS	E											
Intersection V/C	1.071											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.01	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.320	0.000	0.000	0.000
Crosswalk LOS	B	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	776	0	1034	494
d_b, Bicycle Delay [s]	15.93	42.53	9.91	24.14
I_b,int, Bicycle LOS Score for Intersection	3.495	4.132	3.764	2.532
Bicycle LOS	C	D	D	B

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Encanto Dr (NS) at Ethanac Rd (EW)

Control Type:	Two-way stop	Delay (sec / veh):	1,095.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.757

Intersection Setup

Name	Encanto Dr		Ethanac Rd		Ethanac Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Encanto Dr		Ethanac Rd		Ethanac Rd	
Base Volume Input [veh/h]	64	65	645	137	40	535
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	6	186	0	6	250
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	237	0	0	219
Total Hourly Volume [veh/h]	70	75	1107	145	48	1036
Peak Hour Factor	0.9173	0.9173	0.9173	0.9173	0.9173	0.9173
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	20	302	40	13	282
Total Analysis Volume [veh/h]	76	82	1207	158	52	1129
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	2.76	0.41	0.01	0.00	0.10	0.01
d_M, Delay for Movement [s/veh]	1094.96	34.78	0.00	0.00	12.98	0.00
Movement LOS	F	D	A	A	B	A
95th-Percentile Queue Length [veh/ln]	9.16	1.84	0.00	0.00	0.34	0.00
95th-Percentile Queue Length [ft/ln]	229.10	46.06	0.00	0.00	8.59	0.00
d_A, Approach Delay [s/veh]	544.74		0.00		0.57	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	32.08					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 4: Trumble Rd (NS) at Ethanac Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	104.2
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.155

Intersection Setup

Name	Trumble Rd			Trumble Rd			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	0	0	0	1
Entry Pocket Length [ft]	105.00	100.00	100.00	100.00	100.00	100.00	135.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			Yes		

Volumes

Name	Trumble Rd			Trumble Rd			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	68	5	35	26	11	115	53	570	25	23	389	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	49	0	133	29	59	160	103	0	14	283	10
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	24	0	150	254	0	0	0	7	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	72	54	37	185	41	331	470	707	27	38	702	21
Peak Hour Factor	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	15	10	51	11	91	129	195	7	10	193	6
Total Analysis Volume [veh/h]	79	59	41	204	45	364	517	778	30	42	773	23
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	1			0			0			1		
Bicycle Volume [bicycles/h]	0			0			1			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	27	0	16	34	0	33	45	0	32	44	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	18	0	0	10	0	0	23	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	23	12	30	29	65	65	4	40	40
g / C, Green / Cycle	0.04	0.19	0.10	0.25	0.24	0.54	0.54	0.03	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.04	0.06	0.11	0.25	0.29	0.42	0.02	0.02	0.41	0.01
s, saturation flow rate [veh/h]	1781	1744	1781	1616	1781	1870	1557	1781	1870	1556
c, Capacity [veh/h]	74	332	178	402	430	1019	848	56	626	521
d1, Uniform Delay [s]	57.50	41.74	54.00	45.09	45.50	21.27	12.66	57.65	39.92	26.94
k, delay calibration	0.11	0.11	0.11	0.46	0.50	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	66.50	0.51	79.52	47.73	110.94	5.42	0.08	18.02	119.10	0.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.06	0.30	1.15	1.02	1.20	0.76	0.04	0.75	1.23	0.04
d, Delay for Lane Group [s/veh]	124.00	42.24	133.52	92.82	156.44	26.69	12.74	75.67	159.02	27.10
Lane Group LOS	F	D	F	F	F	C	B	E	F	C
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.57	2.53	9.17	16.80	25.59	17.02	0.37	1.52	38.24	0.46
50th-Percentile Queue Length [ft/ln]	89.26	63.23	229.17	419.96	639.65	425.56	9.34	37.89	956.09	11.45
95th-Percentile Queue Length [veh/ln]	6.43	4.55	14.86	23.78	37.47	23.79	0.67	2.73	55.13	0.82
95th-Percentile Queue Length [ft/ln]	160.67	113.82	371.56	594.40	936.65	594.72	16.82	68.20	1378.26	20.61

Movement, Approach, & Intersection Results

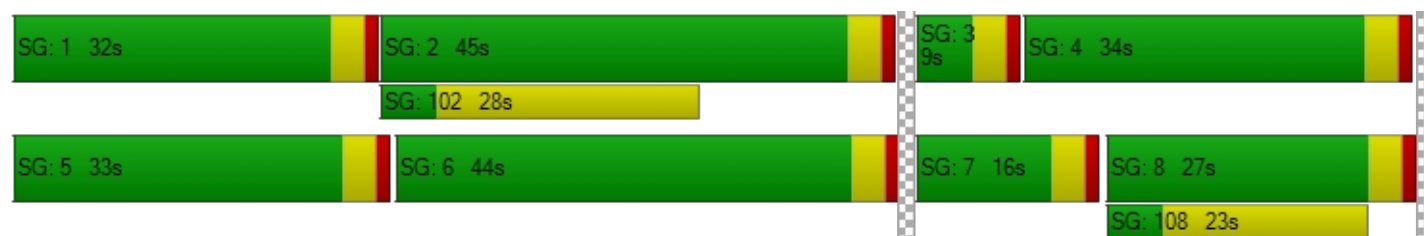
d_M, Delay for Movement [s/veh]	124.00	42.24	42.24	133.52	92.82	92.82	156.44	26.69	12.74	75.67	159.02	27.10
Movement LOS	F	D	D	F	F	F	F	C	B	E	F	C
d_A, Approach Delay [s/veh]	78.33			106.37			77.00			151.22		
Approach LOS	E			F			E			F		
d_I, Intersection Delay [s/veh]	104.22											
Intersection LOS	F											
Intersection V/C	1.155											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	0.00	0.00	51.34
I_p,int, Pedestrian LOS Score for Intersection	2.100	0.000	0.000	2.827
Crosswalk LOS	B	F	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	383	500	683	667
d_b, Bicycle Delay [s]	39.20	33.75	26.02	26.68
I_b,int, Bicycle LOS Score for Intersection	1.855	2.571	3.746	2.942
Bicycle LOS	A	B	D	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Sherman Rd (NS) at Ethanac Rd (EW)

Control Type:	Two-way stop	Delay (sec / veh):	749.6
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.238

Intersection Setup

Name	Sherman Rd			Sherman Rd			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Sherman Rd			Sherman Rd			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	14	4	8	13	3	100	152	479	16	3	305	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0600	1.0000	1.0600	1.0600	1.0600	1.0000	1.0000	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	6	25	0	0	16	18	17	131	6	0	174	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	24	0	0	7	0
Total Hourly Volume [veh/h]	20	29	8	14	19	124	178	663	22	3	504	3
Peak Hour Factor	0.8786	0.8786	0.8786	0.8786	0.8786	0.8786	0.8786	0.8786	0.8786	0.8786	0.8786	0.8786
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	8	2	4	5	35	51	189	6	1	143	1
Total Analysis Volume [veh/h]	23	33	9	16	22	141	203	755	25	3	574	3
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	1.24	0.61	0.02	0.80	0.41	0.27	0.20	0.01	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	749.56	622.56	564.79	489.60	377.03	14.55	8.87	0.00	0.00	9.30	0.00	0.00
Movement LOS	F	F	F	F	F	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	7.18	7.18	7.18	4.22	4.22	1.10	0.38	0.38	0.38	0.01	0.01	0.01
95th-Percentile Queue Length [ft/ln]	179.48	179.48	179.48	105.50	105.50	27.47	9.58	9.58	9.58	0.13	0.13	0.13
d_A, Approach Delay [s/veh]	659.50			101.56			1.83			0.05		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	34.80											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 6: Trumble Rd (NS) at Project Dwy (EW)

Control Type: Two-way stop
 Analysis Method: HCM 7th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 32.3
 Level Of Service: D
 Volume to Capacity (v/c): 0.537

Intersection Setup

Name	Trumble Rd			Trumble Rd			Eastbound			Project Dwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⬆			⬆			➡			➡		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Trumble Rd			Trumble Rd			Eastbound			Project Dwy		
Base Volume Input [veh/h]	0	68	0	0	152	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0600	1.0600	1.0600	1.0600	1.0000	1.0000	1.0000	1.0000	1.0600	1.0000	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	56	163	33	75	0	0	0	0	146	0	43
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	108	146	0	0	128	0	0	0	46	0	0	0
Total Hourly Volume [veh/h]	108	274	163	33	364	0	0	0	46	146	0	43
Peak Hour Factor	0.9500	0.9200	0.9200	0.9200	0.9200	0.9500	0.9500	0.9500	0.9500	0.9200	0.9500	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	74	44	9	99	0	0	0	12	40	0	12
Total Analysis Volume [veh/h]	114	298	177	36	396	0	0	0	48	159	0	47
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	Yes
Number of Storage Spaces in Median	0	0	0	2

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.10	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.07	0.54	0.00	0.07
d_M, Delay for Movement [s/veh]	8.25	0.00	0.00	8.35	0.00	0.00	30.40	0.00	10.95	32.34	0.00	25.63
Movement LOS	A	A	A	A	A	A	D		B	D		D
95th-Percentile Queue Length [veh/ln]	0.22	0.22	0.22	0.06	0.06	0.06	0.24	0.00	0.24	3.79	0.00	3.79
95th-Percentile Queue Length [ft/ln]	5.47	5.47	5.47	1.53	1.53	1.53	5.93	0.00	5.93	94.74	0.00	94.74
d_A, Approach Delay [s/veh]	1.60			0.70			10.95			30.81		
Approach LOS	A			A			B			D		
d_I, Intersection Delay [s/veh]	6.36											
Intersection LOS	D											

Intersection Level Of Service Report
Intersection 7: Project Dwy (NS) at Ethanac Rd (EW)

Control Type:	Two-way stop	Delay (sec / veh):	16.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.328

Intersection Setup

Name	Project Dwy		Ethanac Rd		Ethanac Rd	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Project Dwy		Ethanac Rd		Ethanac Rd	
Base Volume Input [veh/h]	0	0	0	647	422	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0600	1.0000	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	136	0	236	171	131
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	24	7	0
Total Hourly Volume [veh/h]	0	136	0	946	625	131
Peak Hour Factor	0.9500	0.9200	0.9500	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	37	0	257	170	36
Total Analysis Volume [veh/h]	0	148	0	1028	679	142
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.33	0.00	0.01	0.01	0.00
d_M, Delay for Movement [s/veh]	0.00	16.81	0.00	0.00	0.00	0.00
Movement LOS		C		A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	1.41	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	35.25	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	16.81		0.00		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	1.25					
Intersection LOS	C					

**EXISTING PLUS PROJECT
WITH IMPROVEMENTS**

AM PEAK HOUR

Intersection Level Of Service Report
Intersection 3: Encanto Dr (NS) at Ethanac Rd (EW)

Control Type:	Two-way stop	Delay (sec / veh):	14.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.075

Intersection Setup

Name	Encanto Dr		Ethanac Rd		Ethanac Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Encanto Dr		Ethanac Rd		Ethanac Rd	
Base Volume Input [veh/h]	0	28	616	56	36	486
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	30	0	5	30
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	28	646	56	41	516
Peak Hour Factor	0.9036	0.9036	0.9036	0.9036	0.9036	0.9036
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	8	179	15	11	143
Total Analysis Volume [veh/h]	0	31	715	62	45	571
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.07	0.01	0.00	0.05	0.01
d_M, Delay for Movement [s/veh]	0.00	14.41	0.00	0.00	9.53	0.00
Movement LOS		B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.24	0.00	0.00	0.17	0.00
95th-Percentile Queue Length [ft/ln]	0.00	6.05	0.00	0.00	4.24	0.00
d_A, Approach Delay [s/veh]	14.41		0.00		0.70	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.61					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 4: Trumble Rd (NS) at Ethanac Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	22.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.647

Intersection Setup

Name	Trumble Rd			Trumble Rd			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	105.00	100.00	100.00	100.00	100.00	100.00	135.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			Yes		

Volumes

Name	Trumble Rd			Trumble Rd			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	89	8	23	22	10	64	79	544	6	26	416	30
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	57	0	125	30	0	118	0	0	10	135	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	89	65	23	147	40	64	197	544	6	36	551	30
Peak Hour Factor	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	18	6	41	11	18	54	150	2	10	152	8
Total Analysis Volume [veh/h]	98	72	25	162	44	71	217	600	7	40	607	33
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	1			0			0			1		
Bicycle Volume [bicycles/h]	0			0			1			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	85
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	10	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	30	27	0	17	14	0	10	32	0	9	31	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	18	0	0	10	0	0	23	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		Yes	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	85	85	85	85	85	85	85	85	85	85
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	9	10	12	55	47	47	3	45	45
g / C, Green / Cycle	0.07	0.11	0.11	0.15	0.64	0.56	0.56	0.04	0.52	0.52
(v / s)_i Volume / Saturation Flow Rate	0.06	0.05	0.09	0.07	0.23	0.32	0.00	0.02	0.32	0.02
s, saturation flow rate [veh/h]	1781	1789	1781	1686	935	1870	1557	1781	1870	1557
c, Capacity [veh/h]	130	191	201	247	536	1039	865	67	977	813
d1, Uniform Delay [s]	38.73	35.94	36.90	33.32	9.63	12.40	8.46	40.38	14.40	9.93
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.43	2.09	7.48	1.37	2.26	2.34	0.02	8.36	2.98	0.09
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	0.51	0.81	0.47	0.40	0.58	0.01	0.60	0.62	0.04
d, Delay for Lane Group [s/veh]	47.15	38.03	44.38	34.69	11.89	14.74	8.48	48.73	17.37	10.02
Lane Group LOS	D	D	D	C	B	B	A	D	B	B
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.21	1.91	3.52	2.15	1.55	6.78	0.05	0.94	7.73	0.28
50th-Percentile Queue Length [ft/ln]	55.23	47.79	88.06	53.65	38.86	169.42	1.32	23.52	193.34	7.02
95th-Percentile Queue Length [veh/ln]	3.98	3.44	6.34	3.86	2.80	11.05	0.09	1.69	12.29	0.51
95th-Percentile Queue Length [ft/ln]	99.41	86.03	158.51	96.57	69.94	276.16	2.37	42.33	307.36	12.64

Movement, Approach, & Intersection Results

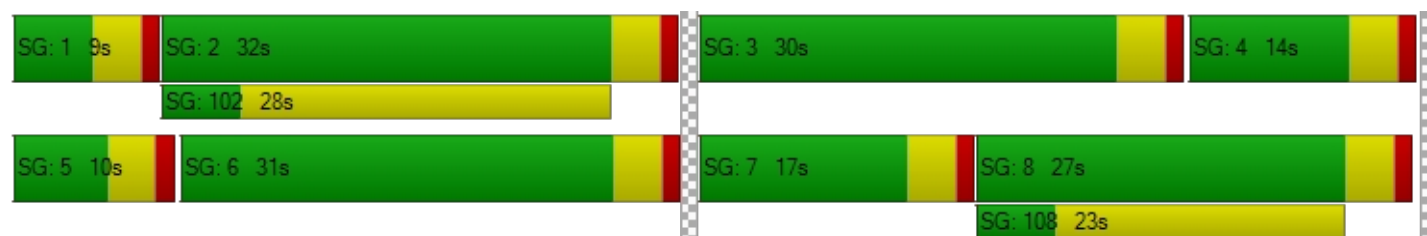
d_M, Delay for Movement [s/veh]	47.15	38.03	38.03	44.38	34.69	34.69	11.89	14.74	8.48	48.73	17.37	10.02
Movement LOS	D	D	D	D	C	C	B	B	A	D	B	B
d_A, Approach Delay [s/veh]	42.61			40.36			13.94			18.86		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	22.17											
Intersection LOS	C											
Intersection V/C	0.647											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.03	0.00	0.00	34.03
I_p,int, Pedestrian LOS Score for Intersection	2.078	0.000	0.000	2.666
Crosswalk LOS	B	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	541	235	658	635
d_b, Bicycle Delay [s]	22.66	33.14	19.17	19.84
I_b,int, Bicycle LOS Score for Intersection	1.881	2.017	2.919	2.682
Bicycle LOS	A	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



PM PEAK HOUR

Intersection Level Of Service Report
Intersection 3: Encanto Dr (NS) at Ethanac Rd (EW)

Control Type:	Two-way stop	Delay (sec / veh):	16.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.188

Intersection Setup

Name	Encanto Dr		Ethanac Rd		Ethanac Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↩		↩		↩	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Encanto Dr		Ethanac Rd		Ethanac Rd	
Base Volume Input [veh/h]	0	65	645	137	40	535
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	33	0	6	33
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	65	678	137	46	568
Peak Hour Factor	0.9173	0.9173	0.9173	0.9173	0.9173	0.9173
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	18	185	37	13	155
Total Analysis Volume [veh/h]	0	71	739	149	50	619
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.19	0.01	0.00	0.07	0.01
d_M, Delay for Movement [s/veh]	0.00	16.71	0.00	0.00	10.05	0.00
Movement LOS		C	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.68	0.00	0.00	0.21	0.00
95th-Percentile Queue Length [ft/ln]	0.00	17.03	0.00	0.00	5.25	0.00
d_A, Approach Delay [s/veh]	16.71		0.00		0.75	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	1.04					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 4: Trumble Rd (NS) at Ethanac Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	30.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.697

Intersection Setup

Name	Trumble Rd			Trumble Rd			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	105.00	100.00	100.00	100.00	100.00	100.00	135.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	100.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			Yes		

Volumes

Name	Trumble Rd			Trumble Rd			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	132	5	35	26	11	115	53	570	25	23	389	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	55	0	119	27	0	108	0	0	11	125	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	132	60	35	145	38	115	161	570	25	34	514	10
Peak Hour Factor	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	17	10	40	10	32	44	157	7	9	141	3
Total Analysis Volume [veh/h]	145	66	39	160	42	127	177	627	28	37	566	11
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	1			0			0			1		
Bicycle Volume [bicycles/h]	0			0			1			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	26	27	0	15	16	0	20	49	0	9	38	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	18	0	0	10	0	0	23	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	12	11	12	12	58	58	3	50	50
g / C, Green / Cycle	0.10	0.12	0.11	0.12	0.12	0.58	0.58	0.03	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.08	0.06	0.09	0.10	0.10	0.34	0.02	0.02	0.30	0.01
s, saturation flow rate [veh/h]	1781	1755	1781	1651	1781	1870	1557	1781	1870	1557
c, Capacity [veh/h]	180	203	192	203	212	1091	908	59	931	775
d1, Uniform Delay [s]	44.05	41.63	43.78	42.93	43.17	13.08	8.85	47.79	18.12	12.72
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.20	2.03	9.01	8.67	8.44	2.21	0.06	10.27	2.95	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.52	0.83	0.83	0.84	0.57	0.03	0.62	0.61	0.01
d, Delay for Lane Group [s/veh]	52.25	43.66	52.79	51.60	51.61	15.29	8.92	58.06	21.07	12.75
Lane Group LOS	D	D	D	D	D	B	A	E	C	B
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.79	2.46	4.22	4.41	4.61	8.20	0.24	1.05	9.18	0.12
50th-Percentile Queue Length [ft/ln]	94.84	61.56	105.39	110.25	115.30	204.99	6.09	26.26	229.39	3.05
95th-Percentile Queue Length [veh/ln]	6.83	4.43	7.58	7.85	8.13	12.90	0.44	1.89	14.14	0.22
95th-Percentile Queue Length [ft/ln]	170.71	110.80	189.57	196.35	203.35	322.39	10.96	47.27	353.59	5.49

Movement, Approach, & Intersection Results

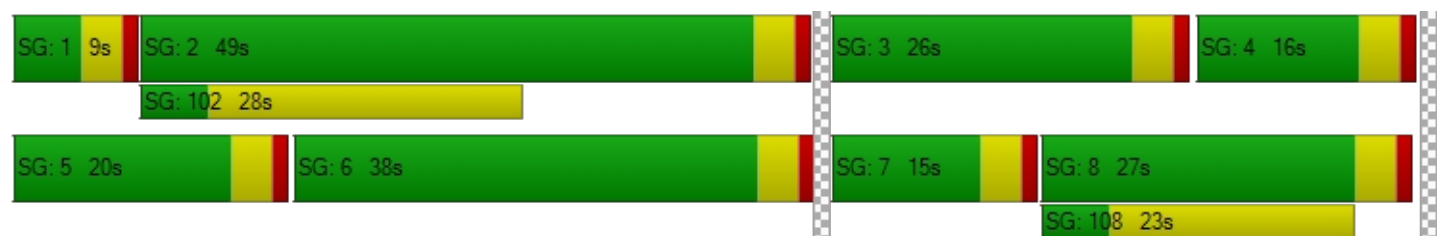
d_M, Delay for Movement [s/veh]	52.25	43.66	43.66	52.79	51.60	51.60	51.61	15.29	8.92	58.06	21.07	12.75
Movement LOS	D	D	D	D	D	D	D	B	A	E	C	B
d_A, Approach Delay [s/veh]	48.64			52.18			22.80			23.15		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	30.87											
Intersection LOS	C											
Intersection V/C	0.697											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.44	0.00	0.00	41.44
I_p,int, Pedestrian LOS Score for Intersection	2.121	0.000	0.000	2.728
Crosswalk LOS	B	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	460	240	899	680
d_b, Bicycle Delay [s]	29.68	38.75	15.16	21.82
I_b,int, Bicycle LOS Score for Intersection	1.972	2.102	2.932	2.573
Bicycle LOS	A	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**OPENING YEAR (2025) WITHOUT PROJECT
WITH IMPROVEMENTS**

AM PEAK HOUR

Intersection Level Of Service Report**Intersection 1: I-215 SB Ramps (NS) at Ethanac Rd (EW)**

Control Type:	Signalized	Delay (sec / veh):	33.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.939

Intersection Setup

Name	I-215 SB Ramps			I-215 SB Ramps			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↵↵			↵			↵↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	274.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			55.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			Yes		

Volumes

Name	I-215 SB Ramps			I-215 SB Ramps			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	0	0	0	123	2	247	0	617	525	79	580	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0600	1.0600	1.0600	1.0000	1.0600	1.0600	1.0600	1.0600	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	79	0	138	0	188	229	59	245	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	95	0	0	0	5	0	97	5	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	304	2	400	0	847	786	240	865	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9754	0.9754	0.9754	0.9500	0.9754	0.9754	0.9754	0.9754	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	78	1	103	0	217	201	62	222	0
Total Analysis Volume [veh/h]	0	0	0	312	2	410	0	868	806	246	887	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	1			0			0			1		
Bicycle Volume [bicycles/h]	0			0			0			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	0	4	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	0	10	0	0	10	0	5	10	0
Maximum Green [s]	0	0	0	0	30	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	34	0	0	40	0	21	61	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	0	13	0	0	10	0	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk					No			No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall					No			No		No	No	
Maximum Recall					No			No		No	No	
Pedestrian Recall					No			No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	R	L	C
C, Cycle Length [s]		95	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		20	20	20	48	48	15	67
g / C, Green / Cycle		0.21	0.21	0.21	0.51	0.51	0.16	0.71
(v / s)_i Volume / Saturation Flow Rate		0.18	0.13	0.13	0.46	0.51	0.14	0.25
s, saturation flow rate [veh/h]		1781	1592	1589	1870	1589	1781	3560
c, Capacity [veh/h]		369	330	329	952	809	281	2523
d1, Uniform Delay [s]		36.21	34.31	34.31	21.38	23.24	39.12	5.37
k, delay calibration		0.12	0.11	0.11	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		6.10	1.94	1.95	14.37	30.73	8.54	0.39
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.85	0.63	0.63	0.91	1.00	0.88	0.35
d, Delay for Lane Group [s/veh]		42.31	36.26	36.26	35.74	53.97	47.66	5.76
Lane Group LOS		D	D	D	D	D	D	A
Critical Lane Group		Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]		7.45	4.45	4.45	18.26	21.51	6.00	2.57
50th-Percentile Queue Length [ft/ln]		186.27	111.27	111.16	456.61	537.72	149.88	64.23
95th-Percentile Queue Length [veh/ln]		11.93	7.91	7.90	25.27	29.11	10.01	4.62
95th-Percentile Queue Length [ft/ln]		298.18	197.77	197.61	631.83	727.87	250.27	115.61

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	42.31	36.26	36.26	0.00	35.74	53.97	47.66	5.76	0.00
Movement LOS				D	D	D		D	D	D	A	
d_A, Approach Delay [s/veh]	0.00			38.87			44.52			14.85		
Approach LOS	A			D			D			B		
d_I, Intersection Delay [s/veh]	33.84											
Intersection LOS	C											
Intersection V/C	0.939											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			9.0			0.0			9.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			38.93			0.00			38.93		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.312			0.000			2.981		
Crosswalk LOS	F			B			F			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	0			631			758			1200		
d_b, Bicycle Delay [s]	47.51			22.24			18.33			7.61		
I_b,int, Bicycle LOS Score for Intersection	4.132			2.754			4.322			2.494		
Bicycle LOS	D			C			E			B		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Encanto Dr (NS) at Ethanac Rd (EW)Control Type: Two-way stop
Analysis Method: HCM 7th Edition
Analysis Period: 15 minutesDelay (sec / veh): 25.3
Level Of Service: D
Volume to Capacity (v/c): 0.157**Intersection Setup**

Name	Encanto Dr		Ethanac Rd		Ethanac Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↩		↩		↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Encanto Dr		Ethanac Rd		Ethanac Rd	
Base Volume Input [veh/h]	0	28	616	56	0	529
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	7	0	254	0	0	99
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	195	0	0	200
Total Hourly Volume [veh/h]	7	30	1102	59	0	860
Peak Hour Factor	0.9036	0.9036	0.9036	0.9036	0.9036	0.9036
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	8	305	16	0	238
Total Analysis Volume [veh/h]	8	33	1220	65	0	952
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.16	0.01	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	0.00	25.30	0.00	0.00	0.00	0.00
Movement LOS		D	A	A		A
95th-Percentile Queue Length [veh/ln]	0.00	0.55	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	13.64	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	25.30		0.00		0.00	
Approach LOS	D		A		A	
d_I, Intersection Delay [s/veh]	0.37					
Intersection LOS	D					

Intersection Level Of Service Report**Intersection 4: Trumble Rd (NS) at Ethanac Rd (EW)**

Control Type:	Signalized	Delay (sec / veh):	23.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.694

Intersection Setup

Name	Trumble Rd			Trumble Rd			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	105.00	100.00	100.00	100.00	100.00	100.00	135.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	100.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			Yes		

Volumes

Name	Trumble Rd			Trumble Rd			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	89	8	23	22	10	64	79	544	6	62	416	30
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	2	0	4	1	30	53	197	0	4	69	12
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	16	0	148	206	0	0	0	5	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	94	10	24	43	12	246	343	774	6	70	515	44
Peak Hour Factor	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	3	7	12	3	68	95	213	2	19	142	12
Total Analysis Volume [veh/h]	104	11	26	47	13	271	378	853	7	77	568	48
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	1			0			0			1		
Bicycle Volume [bicycles/h]	0			0			1			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	85
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	10	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	30	10	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	27	0	9	26	26	35	35	0	14	14	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	18	0	0	10	10	0	23	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No	No	Yes	No		No	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	85	85	85	85	85	85	85	85	85	85	85
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	13	3	10	35	21	48	48	5	32	32
g / C, Green / Cycle	0.07	0.15	0.04	0.12	0.41	0.24	0.57	0.57	0.06	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.06	0.02	0.03	0.01	0.17	0.21	0.23	0.23	0.04	0.17	0.17
s, saturation flow rate [veh/h]	1781	1664	1781	1870	1589	1781	1870	1864	1781	1870	1812
c, Capacity [veh/h]	127	247	73	220	651	436	1058	1054	102	707	685
d1, Uniform Delay [s]	39.00	31.60	40.25	33.39	17.91	30.85	10.44	10.45	39.56	19.76	19.79
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.15	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.87	0.28	9.18	0.11	0.43	7.03	1.16	1.17	10.59	1.99	2.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.15	0.65	0.06	0.42	0.87	0.41	0.41	0.75	0.44	0.44
d, Delay for Lane Group [s/veh]	50.88	31.88	49.43	33.50	18.34	37.88	11.61	11.62	50.15	21.76	21.87
Lane Group LOS	D	C	D	C	B	D	B	B	D	C	C
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.45	0.65	1.11	0.23	3.48	7.71	4.08	4.07	1.81	4.55	4.46
50th-Percentile Queue Length [ft/ln]	61.29	16.15	27.72	5.83	86.91	192.79	101.94	101.72	45.21	113.80	111.44
95th-Percentile Queue Length [veh/ln]	4.41	1.16	2.00	0.42	6.26	12.27	7.34	7.32	3.26	8.05	7.92
95th-Percentile Queue Length [ft/ln]	110.33	29.06	49.90	10.49	156.44	306.64	183.49	183.09	81.39	201.28	198.01

Movement, Approach, & Intersection Results

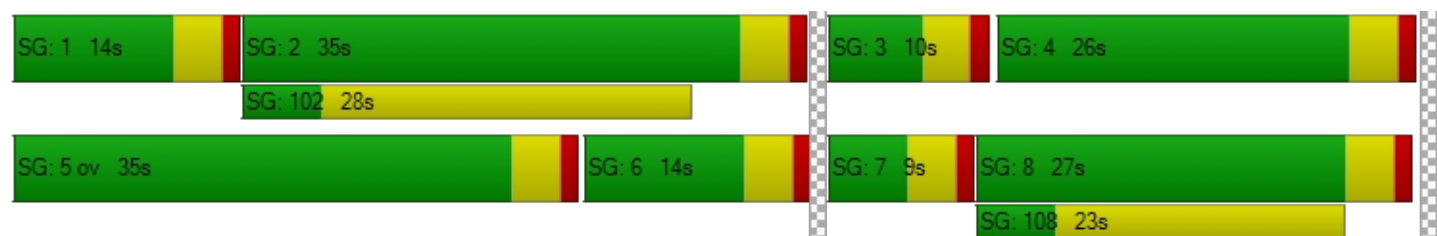
d_M, Delay for Movement [s/veh]	50.88	31.88	31.88	49.43	33.50	18.34	37.88	11.61	11.62	50.15	21.81	21.87
Movement LOS	D	C	C	D	C	B	D	B	B	D	C	C
d_A, Approach Delay [s/veh]	45.89			23.35			19.63			24.96		
Approach LOS	D			C			B			C		
d_I, Intersection Delay [s/veh]	23.22											
Intersection LOS	C											
Intersection V/C	0.694											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0			0.0			0.0			9.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.03			0.00			0.00			34.03		
I_p,int, Pedestrian LOS Score for Intersection	2.055			0.000			0.000			2.772		
Crosswalk LOS	B			F			F			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	541			517			729			235		
d_b, Bicycle Delay [s]	22.66			23.39			17.20			33.15		
I_b,int, Bicycle LOS Score for Intersection	1.792			2.106			2.581			2.131		
Bicycle LOS	A			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 5: Sherman Rd (NS) at Ethanac Rd (EW)**

Control Type:	Signalized	Delay (sec / veh):	11.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.593

Intersection Setup

Name	Sherman Rd			Sherman Rd			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			Yes		

Volumes

Name	Sherman Rd			Sherman Rd			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	4	2	2	3	2	92	94	464	13	9	375	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0600	1.0000	1.0600	1.0600	1.0600	1.0000	1.0000	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	9	0	0	31	1	1	176	0	0	90	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	16	0	0	5	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	11	2	3	33	99	101	684	13	9	493	8
Peak Hour Factor	0.9020	0.9020	0.9020	0.9020	0.9020	0.9020	0.9020	0.9020	0.9020	0.9020	0.9020	0.9020
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	3	1	1	9	27	28	190	4	2	137	2
Total Analysis Volume [veh/h]	4	12	2	3	37	110	112	758	14	10	547	9
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	65
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	5	10	0	0	10	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	27	0	0	27	0	19	38	0	0	19	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	18	0	0	10	0	0	24	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No		No	No			No	
Maximum Recall		No			No		No	No			No	
Pedestrian Recall		No			No		No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R	L	C	C
C, Cycle Length [s]	65	65	65	65	65	65
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	9	9	5	48	38
g / C, Green / Cycle	0.14	0.14	0.14	0.08	0.73	0.59
(v / s)_i Volume / Saturation Flow Rate	0.01	0.02	0.07	0.06	0.41	0.31
s, saturation flow rate [veh/h]	1745	1855	1589	1781	1864	1848
c, Capacity [veh/h]	320	328	230	149	1365	1142
d1, Uniform Delay [s]	24.05	24.34	25.59	29.19	3.98	7.97
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.07	0.16	1.53	7.42	1.70	1.54
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.06	0.12	0.48	0.75	0.57	0.50
d, Delay for Lane Group [s/veh]	24.12	24.50	27.12	36.60	5.69	9.51
Lane Group LOS	C	C	C	D	A	A
Critical Lane Group	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.23	0.52	1.56	1.86	2.31	3.64
50th-Percentile Queue Length [ft/ln]	5.78	13.00	38.96	46.56	57.81	90.88
95th-Percentile Queue Length [veh/ln]	0.42	0.94	2.81	3.35	4.16	6.54
95th-Percentile Queue Length [ft/ln]	10.40	23.40	70.13	83.81	104.06	163.58

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	24.12	24.12	24.12	24.50	24.50	27.12	36.60	5.69	5.69	9.51	9.51	9.51
Movement LOS	C	C	C	C	C	C	D	A	A	A	A	A
d_A, Approach Delay [s/veh]	24.12			26.42			9.60			9.51		
Approach LOS	C			C			A			A		
d_I, Intersection Delay [s/veh]	11.29											
Intersection LOS	B											
Intersection V/C	0.593											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0			0.0			0.0			9.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	24.16			0.00			0.00			24.16		
I_p,int, Pedestrian LOS Score for Intersection	1.759			0.000			0.000			2.676		
Crosswalk LOS	A			F			F			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	707			707			1045			461		
d_b, Bicycle Delay [s]	13.60			13.60			7.42			19.26		
I_b,int, Bicycle LOS Score for Intersection	1.589			1.807			3.018			2.494		
Bicycle LOS	A			A			C			B		

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



PM PEAK HOUR

Intersection Level Of Service Report
Intersection 1: I-215 SB Ramps (NS) at Ethanac Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	41.8
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.044

Intersection Setup

Name	I-215 SB Ramps			I-215 SB Ramps			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↵↵			↵			↵↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	274.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			55.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			Yes		

Volumes

Name	I-215 SB Ramps			I-215 SB Ramps			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	0	0	0	239	18	417	0	616	327	95	664	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0600	1.0600	1.0600	1.0000	1.0600	1.0600	1.0600	1.0600	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	47	0	185	0	175	249	126	298	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	115	0	0	0	7	0	106	7	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	415	19	627	0	835	596	333	1009	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9754	0.9754	0.9754	0.9500	0.9754	0.9754	0.9754	0.9754	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	106	5	161	0	214	153	85	259	0
Total Analysis Volume [veh/h]	0	0	0	425	19	643	0	856	611	341	1034	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	1			0			0			1		
Bicycle Volume [bicycles/h]	0			0			0			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	0	4	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	0	10	0	0	10	0	5	10	0
Maximum Green [s]	0	0	0	0	30	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	22	0	0	40	0	18	58	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	0	13	0	0	10	0	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk					No			No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall					No			No		No	No	
Maximum Recall					No			No		No	No	
Pedestrian Recall					No			No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	R	L	C
C, Cycle Length [s]		80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		18	18	18	36	36	14	54
g / C, Green / Cycle		0.23	0.23	0.23	0.45	0.45	0.18	0.67
(v / s)_i Volume / Saturation Flow Rate		0.24	0.21	0.21	0.46	0.38	0.19	0.29
s, saturation flow rate [veh/h]		1781	1603	1589	1870	1589	1781	3560
c, Capacity [veh/h]		402	362	359	839	713	314	2402
d1, Uniform Delay [s]		31.04	30.29	30.36	22.11	19.81	33.02	5.98
k, delay calibration		0.18	0.12	0.13	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		43.80	10.24	11.31	36.42	12.66	50.95	0.57
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		1.06	0.91	0.92	1.02	0.86	1.09	0.43
d, Delay for Lane Group [s/veh]		74.84	40.53	41.66	58.52	32.47	83.97	6.55
Lane Group LOS		F	D	D	F	C	F	A
Critical Lane Group		Yes	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]		12.34	7.01	7.13	21.00	10.68	10.07	2.86
50th-Percentile Queue Length [ft/ln]		308.47	175.37	178.14	524.97	266.93	251.70	71.57
95th-Percentile Queue Length [veh/ln]		18.65	11.36	11.50	28.96	16.04	15.88	5.15
95th-Percentile Queue Length [ft/ln]		466.31	283.95	287.58	723.92	400.91	397.05	128.82

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	74.84	40.53	41.11	0.00	58.52	32.47	83.97	6.55	0.00
Movement LOS				F	D	D		F	C	F	A	
d_A, Approach Delay [s/veh]	0.00			54.29			47.67			25.75		
Approach LOS	A			D			D			C		
d_I, Intersection Delay [s/veh]	41.83											
Intersection LOS	D											
Intersection V/C	1.044											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			9.0			0.0			9.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			31.55			0.00			31.55		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.392			0.000			3.098		
Crosswalk LOS	F			B			F			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	0			450			899			1349		
d_b, Bicycle Delay [s]	40.04			24.07			12.13			4.25		
I_b,int, Bicycle LOS Score for Intersection	4.132			3.353			3.980			2.694		
Bicycle LOS	D			C			D			B		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Encanto Dr (NS) at Ethanac Rd (EW)Control Type: Two-way stop
Analysis Method: HCM 7th Edition
Analysis Period: 15 minutesDelay (sec / veh): 31.2
Level Of Service: D
Volume to Capacity (v/c): 0.356**Intersection Setup**

Name	Encanto Dr		Ethanac Rd		Ethanac Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Encanto Dr		Ethanac Rd		Ethanac Rd	
Base Volume Input [veh/h]	0	65	645	137	0	575
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	0	153	0	0	217
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	237	0	0	219
Total Hourly Volume [veh/h]	2	69	1074	145	0	1046
Peak Hour Factor	0.9173	0.9173	0.9173	0.9173	0.9173	0.9173
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	19	293	40	0	285
Total Analysis Volume [veh/h]	2	75	1171	158	0	1140
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.36	0.01	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	0.00	31.22	0.00	0.00	0.00	0.00
Movement LOS		D	A	A		A
95th-Percentile Queue Length [veh/ln]	0.00	1.52	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	38.01	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	31.22		0.00		0.00	
Approach LOS	D		A		A	
d_I, Intersection Delay [s/veh]	0.92					
Intersection LOS	D					

Intersection Level Of Service Report**Intersection 4: Trumble Rd (NS) at Ethanac Rd (EW)**

Control Type:	Signalized	Delay (sec / veh):	31.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.777

Intersection Setup

Name	Trumble Rd			Trumble Rd			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	0	0	1
Entry Pocket Length [ft]	105.00	100.00	100.00	100.00	100.00	100.00	135.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	100.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			Yes		

Volumes

Name	Trumble Rd			Trumble Rd			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	132	5	35	26	11	115	53	570	25	63	389	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	14	2	59	46	103	0	3	158	10
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	24	0	150	254	0	0	0	7	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	140	5	37	66	14	331	356	707	27	70	577	21
Peak Hour Factor	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	1	10	18	4	91	98	195	7	19	159	6
Total Analysis Volume [veh/h]	154	6	41	73	15	364	392	778	30	77	635	23
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	1			0			0			1		
Bicycle Volume [bicycles/h]	0			0			1			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	ProtPer	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	10	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	27	0	22	36	36	18	32	0	9	23	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	18	0	0	10	10	0	23	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No	No	No	No		No	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	27	5	23	23	46	37	37	5	28	28
g / C, Green / Cycle	0.10	0.30	0.05	0.25	0.25	0.51	0.41	0.41	0.06	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.09	0.03	0.04	0.01	0.23	0.35	0.22	0.22	0.04	0.18	0.18
s, saturation flow rate [veh/h]	1781	1621	1781	1870	1589	1125	1870	1844	1781	1870	1844
c, Capacity [veh/h]	179	486	97	475	403	579	770	759	101	584	575
d1, Uniform Delay [s]	39.92	22.77	42.01	25.31	32.56	15.82	19.95	19.96	41.95	25.92	25.94
k, delay calibration	0.11	0.11	0.11	0.11	0.19	0.50	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.20	0.09	10.85	0.03	12.48	6.25	2.59	2.63	11.35	3.96	4.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.10	0.75	0.03	0.90	0.68	0.53	0.53	0.76	0.57	0.57
d, Delay for Lane Group [s/veh]	51.11	22.85	52.86	25.34	45.05	22.07	22.54	22.60	53.30	29.88	29.97
Lane Group LOS	D	C	D	C	D	C	C	C	D	C	C
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.75	0.69	1.82	0.23	8.54	5.34	6.34	6.27	1.93	6.12	6.06
50th-Percentile Queue Length [ft/ln]	93.80	17.18	45.61	5.80	213.43	133.46	158.40	156.74	48.29	153.03	151.61
95th-Percentile Queue Length [veh/ln]	6.75	1.24	3.28	0.42	13.33	9.13	10.46	10.38	3.48	10.18	10.10
95th-Percentile Queue Length [ft/ln]	168.85	30.93	82.10	10.45	333.22	228.19	261.60	259.40	86.92	254.47	252.58

Movement, Approach, & Intersection Results

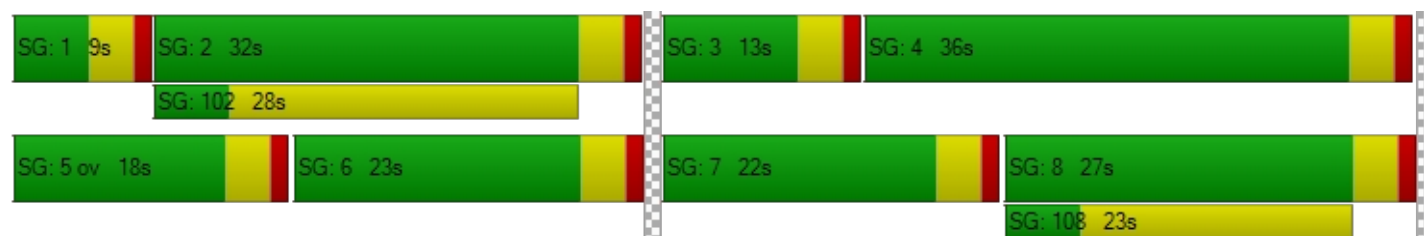
d_M, Delay for Movement [s/veh]	51.11	22.85	22.85	52.86	25.34	45.05	22.07	22.57	22.60	53.30	29.92	29.97
Movement LOS	D	C	C	D	C	D	C	C	C	D	C	C
d_A, Approach Delay [s/veh]	44.51			45.66			22.41			32.37		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	31.01											
Intersection LOS	C											
Intersection V/C	0.777											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0			0.0			0.0			9.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	36.49			0.00			0.00			36.49		
I_p,int, Pedestrian LOS Score for Intersection	2.251			0.000			0.000			2.777		
Crosswalk LOS	B			F			F			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	511			710			622			422		
d_b, Bicycle Delay [s]	24.98			18.73			21.41			28.06		
I_b,int, Bicycle LOS Score for Intersection	1.891			2.305			2.550			2.166		
Bicycle LOS	A			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 5: Sherman Rd (NS) at Ethanac Rd (EW)**

Control Type:	Signalized	Delay (sec / veh):	12.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.599

Intersection Setup

Name	Sherman Rd			Sherman Rd			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			Yes		

Volumes

Name	Sherman Rd			Sherman Rd			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	14	4	8	13	3	100	152	479	16	3	305	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0600	1.0000	1.0600	1.0600	1.0600	1.0000	1.0000	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	25	0	0	16	1	0	110	0	0	152	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	24	0	0	7	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	29	8	14	19	107	161	642	16	3	482	3
Peak Hour Factor	0.8786	0.8786	0.8786	0.8786	0.8786	0.8786	0.8786	0.8786	0.8786	0.8786	0.8786	0.8786
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	8	2	4	5	30	46	183	5	1	137	1
Total Analysis Volume [veh/h]	16	33	9	16	22	122	183	731	18	3	549	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	5	10	0	0	10	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	25	0	0	25	0	26	40	0	0	14	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	16	0	0	10	0	0	18	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No		No	No			No	
Maximum Recall		No			No		No	No			No	
Pedestrian Recall		No			No		No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	9	9	8	43	31
g / C, Green / Cycle	0.16	0.16	0.16	0.13	0.71	0.51
(v / s)_i Volume / Saturation Flow Rate	0.03	0.02	0.08	0.10	0.40	0.30
s, saturation flow rate [veh/h]	1698	1704	1589	1781	1862	1865
c, Capacity [veh/h]	342	352	249	238	1323	1012
d1, Uniform Delay [s]	22.11	21.84	23.18	25.17	4.22	10.25
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.23	0.13	1.49	5.21	1.76	2.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.17	0.11	0.49	0.77	0.57	0.55
d, Delay for Lane Group [s/veh]	22.34	21.98	24.67	30.38	5.98	12.39
Lane Group LOS	C	C	C	C	A	B
Critical Lane Group	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.68	0.44	1.55	2.57	2.22	4.22
50th-Percentile Queue Length [ft/ln]	16.99	10.97	38.85	64.24	55.58	105.44
95th-Percentile Queue Length [veh/ln]	1.22	0.79	2.80	4.63	4.00	7.59
95th-Percentile Queue Length [ft/ln]	30.59	19.75	69.92	115.63	100.05	189.64

Movement, Approach, & Intersection Results

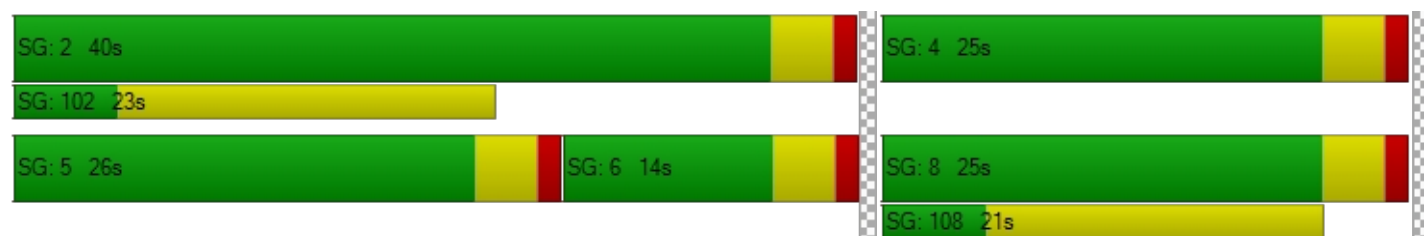
d_M, Delay for Movement [s/veh]	22.34	22.34	22.34	21.98	21.98	24.67	30.38	5.98	5.98	12.39	12.39	12.39
Movement LOS	C	C	C	C	C	C	C	A	A	B	B	B
d_A, Approach Delay [s/veh]	22.34			24.03			10.77			12.39		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	12.93											
Intersection LOS	B											
Intersection V/C	0.599											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	21.72	0.00	0.00	21.72
I_p,int, Pedestrian LOS Score for Intersection	1.757	0.000	0.000	2.677
Crosswalk LOS	A	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	699	699	1198	333
d_b, Bicycle Delay [s]	12.71	12.71	4.83	20.87
I_b,int, Bicycle LOS Score for Intersection	1.655	1.824	3.097	2.475
Bicycle LOS	A	A	C	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**OPENING YEAR (2025) WITH PROJECT
WITH IMPROVEMENTS**

AM PEAK HOUR

Intersection Level Of Service Report
Intersection 1: I-215 SB Ramps (NS) at Ethanac Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	35.7
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.924

Intersection Setup

Name	I-215 SB Ramps			I-215 SB Ramps			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↵↵			↵			↵↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	274.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			55.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			Yes		

Volumes

Name	I-215 SB Ramps			I-215 SB Ramps			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	0	0	0	123	2	247	0	617	525	79	580	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0600	1.0600	1.0600	1.0000	1.0600	1.0600	1.0600	1.0600	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	89	0	138	0	198	229	69	255	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	95	0	0	0	5	0	97	5	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	314	2	400	0	857	786	250	875	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9754	0.9754	0.9754	0.9500	0.9754	0.9754	0.9754	0.9754	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	80	1	103	0	220	201	64	224	0
Total Analysis Volume [veh/h]	0	0	0	322	2	410	0	879	806	256	897	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	1			0			0			1		
Bicycle Volume [bicycles/h]	0			0			0			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	0	4	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	0	10	0	0	10	0	5	10	0
Maximum Green [s]	0	0	0	0	30	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	34	0	0	59	0	27	86	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	0	25	0	0	10	0	0	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk					No			No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall					No			No		No	No	
Maximum Recall					No			No		No	No	
Pedestrian Recall					No			No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	R	L	C
C, Cycle Length [s]		120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		24	24	24	64	64	19	88
g / C, Green / Cycle		0.20	0.20	0.20	0.54	0.54	0.16	0.73
(v / s)_i Volume / Saturation Flow Rate		0.18	0.13	0.13	0.47	0.51	0.14	0.25
s, saturation flow rate [veh/h]		1781	1592	1589	1870	1589	1781	3560
c, Capacity [veh/h]		362	323	323	1005	854	284	2600
d1, Uniform Delay [s]		46.49	43.75	43.75	24.21	26.02	49.49	5.83
k, delay calibration		0.25	0.11	0.11	0.50	0.50	0.14	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		15.27	2.09	2.10	10.52	19.77	12.56	0.36
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.89	0.64	0.64	0.87	0.94	0.90	0.35
d, Delay for Lane Group [s/veh]		61.76	45.84	45.85	34.73	45.80	62.04	6.20
Lane Group LOS		E	D	D	C	D	E	A
Critical Lane Group		Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]		10.84	5.79	5.79	21.84	23.33	8.30	3.39
50th-Percentile Queue Length [ft/ln]		270.92	144.79	144.65	546.10	583.28	207.46	84.66
95th-Percentile Queue Length [veh/ln]		16.24	9.74	9.73	29.51	31.25	13.02	6.10
95th-Percentile Queue Length [ft/ln]		405.89	243.46	243.27	737.73	781.32	325.57	152.38

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	61.76	45.84	45.84	0.00	34.73	45.80	62.04	6.20	0.00
Movement LOS				E	D	D		C	D	E	A	
d_A, Approach Delay [s/veh]	0.00			52.82			40.02			18.60		
Approach LOS	A			D			D			B		
d_I, Intersection Delay [s/veh]	35.74											
Intersection LOS	D											
Intersection V/C	0.924											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			9.0			0.0			9.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			51.32			0.00			51.32		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.325			0.000			3.007		
Crosswalk LOS	F			B			F			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	0			500			917			1367		
d_b, Bicycle Delay [s]	59.98			33.73			17.59			6.01		
I_b,int, Bicycle LOS Score for Intersection	4.132			2.771			4.340			2.511		
Bicycle LOS	D			C			E			B		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Encanto Dr (NS) at Ethanac Rd (EW)

Control Type:	Two-way stop	Delay (sec / veh):	27.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.194

Intersection Setup

Name	Encanto Dr		Ethanac Rd		Ethanac Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↩		↩		↩	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Encanto Dr		Ethanac Rd		Ethanac Rd	
Base Volume Input [veh/h]	0	28	616	56	0	529
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	7	5	284	0	5	129
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	195	0	0	200
Total Hourly Volume [veh/h]	7	35	1132	59	5	890
Peak Hour Factor	0.9036	0.9036	0.9036	0.9036	0.9036	0.9036
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	10	313	16	1	246
Total Analysis Volume [veh/h]	8	39	1253	65	6	985
Pedestrian Volume [ped/h]	0		0		0	

Version 2022 (SP 0-8)

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.19	0.01	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	0.00	27.18	0.00	0.00	0.00	0.00
Movement LOS		D	A	A		A
95th-Percentile Queue Length [veh/ln]	0.00	0.70	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	17.46	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	27.18		0.00		0.00	
Approach LOS	D		A		A	
d_I, Intersection Delay [s/veh]	0.45					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 4: Trumble Rd (NS) at Ethanac Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	40.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.848

Intersection Setup

Name	Trumble Rd			Trumble Rd			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	0	0	0	1
Entry Pocket Length [ft]	105.00	100.00	100.00	100.00	100.00	100.00	135.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	100.00	0.00	0.00	100.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			Yes		

Volumes

Name	Trumble Rd			Trumble Rd			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	89	8	23	22	10	64	79	544	6	62	416	30
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	54	0	129	31	30	176	197	0	14	204	12
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	16	0	148	206	0	0	0	5	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	94	62	24	168	42	246	466	774	6	80	650	44
Peak Hour Factor	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074	0.9074
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	17	7	46	12	68	128	213	2	22	179	12
Total Analysis Volume [veh/h]	104	68	26	185	46	271	514	853	7	88	716	48
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	1			0			0			1		
Bicycle Volume [bicycles/h]	0			0			1			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	105
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	10	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	19	27	0	16	24	24	36	32	0	30	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	18	0	0	10	10	0	23	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No	No	No	No		No	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	16	12	20	20	32	55	55	7	29	29
g / C, Green / Cycle	0.07	0.15	0.11	0.19	0.19	0.30	0.52	0.52	0.06	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.06	0.05	0.10	0.02	0.17	0.29	0.23	0.23	0.05	0.20	0.03
s, saturation flow rate [veh/h]	1781	1783	1781	1870	1589	1781	1870	1864	1781	3560	1569
c, Capacity [veh/h]	133	268	204	357	303	540	968	965	115	995	438
d1, Uniform Delay [s]	47.81	40.04	45.96	35.29	41.50	35.89	15.88	15.88	48.37	34.16	28.14
k, delay calibration	0.11	0.11	0.11	0.11	0.16	0.42	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.63	0.78	13.68	0.16	12.32	25.39	1.48	1.49	10.00	4.48	0.50
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.35	0.90	0.13	0.89	0.95	0.44	0.45	0.76	0.72	0.11
d, Delay for Lane Group [s/veh]	57.44	40.82	59.64	35.45	53.82	61.28	17.36	17.37	58.37	38.64	28.64
Lane Group LOS	E	D	E	D	D	E	B	B	E	D	C
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.95	2.17	5.38	0.96	7.59	15.93	6.26	6.25	2.52	8.44	0.92
50th-Percentile Queue Length [ft/ln]	73.65	54.13	134.40	24.04	189.75	398.25	156.47	156.17	62.95	210.91	23.12
95th-Percentile Queue Length [veh/ln]	5.30	3.90	9.18	1.73	12.11	22.48	10.36	10.35	4.53	13.20	1.66
95th-Percentile Queue Length [ft/ln]	132.56	97.44	229.46	43.28	302.70	561.90	259.04	258.65	113.31	330.00	41.61

Movement, Approach, & Intersection Results

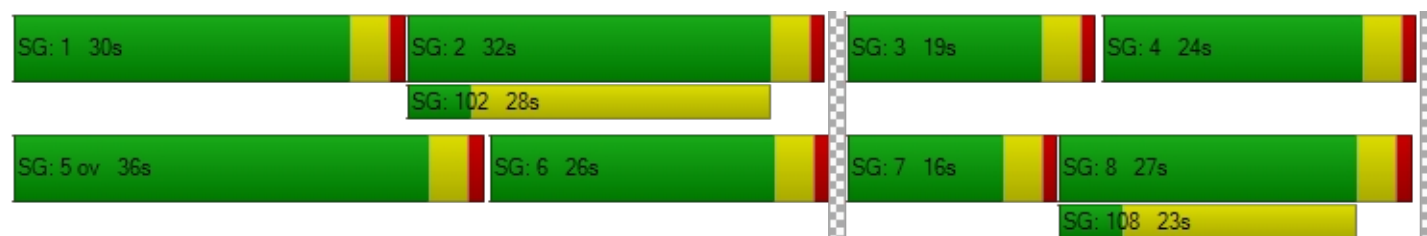
d_M, Delay for Movement [s/veh]	57.44	40.82	40.82	59.64	35.45	53.82	61.28	17.36	17.37	58.37	38.64	28.64
Movement LOS	E	D	D	E	D	D	E	B	B	E	D	C
d_A, Approach Delay [s/veh]	49.55			54.28			33.79			40.12		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	40.21											
Intersection LOS	D											
Intersection V/C	0.848											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	43.92	0.00	0.00	43.92
I_p,int, Pedestrian LOS Score for Intersection	2.114	0.000	0.000	2.929
Crosswalk LOS	B	F	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	438	381	533	419
d_b, Bicycle Delay [s]	32.05	34.43	28.28	32.85
I_b,int, Bicycle LOS Score for Intersection	1.886	2.388	2.693	2.263
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Sherman Rd (NS) at Ethanac Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	12.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.633

Intersection Setup

Name	Sherman Rd			Sherman Rd			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			Yes		

Volumes

Name	Sherman Rd			Sherman Rd			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	4	2	2	3	2	92	94	464	13	9	375	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0600	1.0000	1.0600	1.0600	1.0600	1.0000	1.0000	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	5	9	0	0	31	15	16	193	5	0	109	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	16	0	0	5	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	11	2	3	33	113	116	701	18	9	512	8
Peak Hour Factor	0.9020	0.9020	0.9020	0.9020	0.9020	0.9020	0.9020	0.9020	0.9020	0.9020	0.9020	0.9020
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	3	1	1	9	31	32	194	5	2	142	2
Total Analysis Volume [veh/h]	10	12	2	3	37	125	129	777	20	10	568	9
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	5	10	0	0	10	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	27	0	0	27	0	19	33	0	0	14	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	18	0	0	10	0	0	24	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No		No	No			No	
Maximum Recall		No			No		No	No			No	
Pedestrian Recall		No			No		No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	9	9	6	43	33
g / C, Green / Cycle	0.16	0.16	0.16	0.10	0.71	0.55
(v / s)_i Volume / Saturation Flow Rate	0.02	0.02	0.08	0.07	0.43	0.32
s, saturation flow rate [veh/h]	1569	1855	1589	1781	1862	1849
c, Capacity [veh/h]	332	356	250	171	1321	1072
d1, Uniform Delay [s]	21.64	21.82	23.18	26.49	4.44	9.01
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.09	0.14	1.54	6.51	2.05	2.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.07	0.11	0.50	0.75	0.60	0.55
d, Delay for Lane Group [s/veh]	21.73	21.96	24.72	33.00	6.48	11.03
Lane Group LOS	C	C	C	C	A	B
Critical Lane Group	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.27	0.46	1.59	1.91	2.53	4.00
50th-Percentile Queue Length [ft/ln]	6.87	11.54	39.86	47.86	63.16	100.10
95th-Percentile Queue Length [veh/ln]	0.49	0.83	2.87	3.45	4.55	7.21
95th-Percentile Queue Length [ft/ln]	12.37	20.78	71.75	86.14	113.68	180.18

Movement, Approach, & Intersection Results

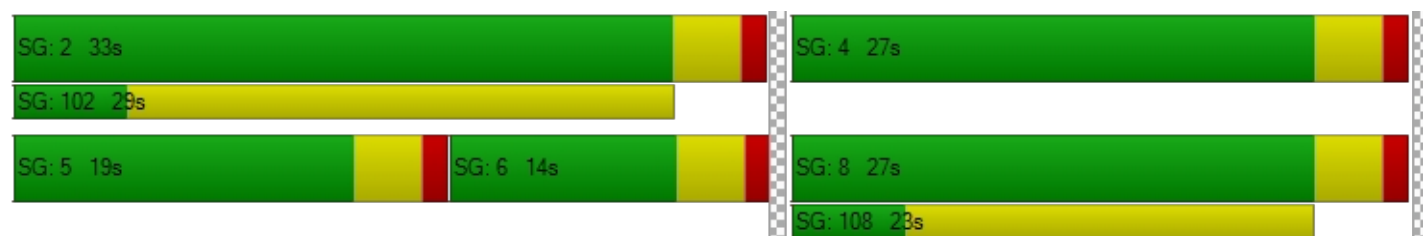
d_M, Delay for Movement [s/veh]	21.73	21.73	21.73	21.96	21.96	24.72	33.00	6.48	6.48	11.03	11.03	11.03
Movement LOS	C	C	C	C	C	C	C	A	A	B	B	B
d_A, Approach Delay [s/veh]	21.73			24.05			10.18			11.03		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	11.98											
Intersection LOS	B											
Intersection V/C	0.633											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	21.72	0.00	0.00	21.72
I_p,int, Pedestrian LOS Score for Intersection	1.762	0.000	0.000	2.701
Crosswalk LOS	A	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	766	766	965	333
d_b, Bicycle Delay [s]	11.44	11.44	8.04	20.87
I_b,int, Bicycle LOS Score for Intersection	1.599	1.832	3.088	2.528
Bicycle LOS	A	A	C	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



PM PEAK HOUR

Intersection Level Of Service Report
Intersection 1: I-215 SB Ramps (NS) at Ethanac Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	45.4
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.067

Intersection Setup

Name	I-215 SB Ramps			I-215 SB Ramps			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↵↵			↵			↵↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	274.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			55.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			Yes		

Volumes

Name	I-215 SB Ramps			I-215 SB Ramps			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	0	0	0	239	18	417	0	616	327	95	664	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0600	1.0600	1.0600	1.0000	1.0600	1.0600	1.0600	1.0600	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	58	0	185	0	186	249	137	309	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	115	0	0	0	7	0	106	7	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	426	19	627	0	846	596	344	1020	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9754	0.9754	0.9754	0.9500	0.9754	0.9754	0.9754	0.9754	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	109	5	161	0	217	153	88	261	0
Total Analysis Volume [veh/h]	0	0	0	437	19	643	0	867	611	353	1046	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	1			0			0			1		
Bicycle Volume [bicycles/h]	0			0			0			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	0	4	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	0	10	0	0	10	0	5	10	0
Maximum Green [s]	0	0	0	0	30	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	22	0	0	40	0	18	58	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	0	13	0	0	10	0	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk					No			No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall					No			No		No	No	
Maximum Recall					No			No		No	No	
Pedestrian Recall					No			No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	R	L	C
C, Cycle Length [s]		80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		18	18	18	36	36	14	54
g / C, Green / Cycle		0.23	0.23	0.23	0.45	0.45	0.18	0.67
(v / s)_i Volume / Saturation Flow Rate		0.25	0.21	0.21	0.46	0.38	0.20	0.29
s, saturation flow rate [veh/h]		1781	1603	1589	1870	1589	1781	3560
c, Capacity [veh/h]		402	362	359	839	713	314	2402
d1, Uniform Delay [s]		31.04	30.29	30.36	22.11	19.81	33.02	6.01
k, delay calibration		0.20	0.12	0.13	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		55.03	10.24	11.31	40.13	12.66	65.80	0.58
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		1.09	0.91	0.92	1.03	0.86	1.13	0.44
d, Delay for Lane Group [s/veh]		86.07	40.53	41.66	62.24	32.47	98.82	6.59
Lane Group LOS		F	D	D	F	C	F	A
Critical Lane Group		Yes	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]		13.59	7.01	7.13	21.86	10.68	11.36	2.91
50th-Percentile Queue Length [ft/ln]		339.80	175.37	178.14	546.59	266.93	284.05	72.76
95th-Percentile Queue Length [veh/ln]		20.54	11.36	11.50	30.28	16.04	17.85	5.24
95th-Percentile Queue Length [ft/ln]		513.44	283.95	287.58	756.88	400.91	446.17	130.97

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	86.07	40.53	41.11	0.00	62.24	32.47	98.82	6.59	0.00
Movement LOS				F	D	D		F	C	F	A	
d_A, Approach Delay [s/veh]	0.00			58.98			49.93			29.86		
Approach LOS	A			E			D			C		
d_I, Intersection Delay [s/veh]	45.37											
Intersection LOS	D											
Intersection V/C	1.067											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			9.0			0.0			9.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			31.55			0.00			31.55		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.395			0.000			3.115		
Crosswalk LOS	F			B			F			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	0			450			899			1349		
d_b, Bicycle Delay [s]	40.04			24.07			12.13			4.25		
I_b,int, Bicycle LOS Score for Intersection	4.132			3.373			3.998			2.714		
Bicycle LOS	D			C			D			B		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Encanto Dr (NS) at Ethanac Rd (EW)

Control Type:	Two-way stop	Delay (sec / veh):	34.8
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.408

Intersection Setup

Name	Encanto Dr		Ethanac Rd		Ethanac Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↩		↩		↩	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Encanto Dr		Ethanac Rd		Ethanac Rd	
Base Volume Input [veh/h]	0	65	645	137	0	575
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	6	186	0	6	250
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	237	0	0	219
Total Hourly Volume [veh/h]	2	75	1107	145	6	1079
Peak Hour Factor	0.9173	0.9173	0.9173	0.9173	0.9173	0.9173
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	20	302	40	2	294
Total Analysis Volume [veh/h]	2	82	1207	158	7	1176
Pedestrian Volume [ped/h]	0		0		0	

Version 2022 (SP 0-8)

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.41	0.01	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	0.00	34.78	0.00	0.00	0.00	0.00
Movement LOS		D	A	A		A
95th-Percentile Queue Length [veh/ln]	0.00	1.84	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	46.06	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	34.78		0.00		0.00	
Approach LOS	D		A		A	
d_I, Intersection Delay [s/veh]	1.09					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 4: Trumble Rd (NS) at Ethanac Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	38.7
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.861

Intersection Setup

Name	Trumble Rd			Trumble Rd			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	0	0	1
Entry Pocket Length [ft]	105.00	100.00	100.00	100.00	100.00	100.00	135.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	100.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			No			Yes		

Volumes

Name	Trumble Rd			Trumble Rd			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	132	5	35	26	11	115	53	570	25	63	389	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	49	0	133	29	59	160	103	0	14	283	10
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	24	0	150	254	0	0	0	7	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	140	54	37	185	41	331	470	707	27	81	702	21
Peak Hour Factor	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085	0.9085
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	15	10	51	11	91	129	195	7	22	193	6
Total Analysis Volume [veh/h]	154	59	41	204	45	364	517	778	30	89	773	23
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	1			0			0			1		
Bicycle Volume [bicycles/h]	0			0			1			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	10	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	27	0	21	33	33	42	32	0	40	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	18	0	0	10	10	0	23	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No	No	No	No		No	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	10	16	14	55	37	71	71	8	42	42
g / C, Green / Cycle	0.09	0.08	0.13	0.12	0.46	0.31	0.59	0.59	0.06	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.09	0.06	0.11	0.02	0.23	0.29	0.22	0.22	0.05	0.22	0.01
s, saturation flow rate [veh/h]	1781	1744	1781	1870	1589	1781	1870	1842	1781	3560	1556
c, Capacity [veh/h]	164	141	232	222	728	545	1105	1089	115	1244	544
d1, Uniform Delay [s]	54.15	53.78	51.30	47.75	22.85	40.73	12.82	12.83	55.31	32.44	25.77
k, delay calibration	0.11	0.11	0.11	0.11	0.39	0.40	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	20.53	6.36	10.36	0.44	1.91	23.89	0.94	0.96	10.59	2.34	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.94	0.71	0.88	0.20	0.50	0.95	0.37	0.37	0.78	0.62	0.04
d, Delay for Lane Group [s/veh]	74.68	60.14	61.66	48.20	24.76	64.62	13.76	13.80	65.89	34.78	25.92
Lane Group LOS	E	E	E	D	C	E	B	B	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	5.44	3.12	6.53	1.22	7.24	17.88	5.50	5.45	2.93	9.34	0.44
50th-Percentile Queue Length [ft/ln]	135.99	78.08	163.23	30.45	180.88	446.93	137.52	136.21	73.17	233.54	11.11
95th-Percentile Queue Length [veh/ln]	9.26	5.62	10.72	2.19	11.65	24.81	9.35	9.28	5.27	14.35	0.80
95th-Percentile Queue Length [ft/ln]	231.61	140.54	267.99	54.81	291.17	620.28	233.68	231.91	131.70	358.85	20.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	74.68	60.14	60.14	61.66	48.20	24.76	64.62	13.78	13.80	65.89	34.78	25.92
Movement LOS	E	E	E	E	D	C	E	B	B	E	C	C
d_A, Approach Delay [s/veh]	68.96			38.76			33.62			37.68		
Approach LOS	E			D			C			D		
d_I, Intersection Delay [s/veh]	38.73											
Intersection LOS	D											
Intersection V/C	0.861											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0	9.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.35	0.00	0.00	51.35
I_p,int, Pedestrian LOS Score for Intersection	2.159	0.000	0.000	2.933
Crosswalk LOS	B	F	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	383	483	467	433
d_b, Bicycle Delay [s]	39.22	34.52	35.30	36.85
I_b,int, Bicycle LOS Score for Intersection	1.979	2.571	2.653	2.290
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Sherman Rd (NS) at Ethanac Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	13.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.642

Intersection Setup

Name	Sherman Rd			Sherman Rd			Ethanac Rd			Ethanac Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Sherman Rd			Sherman Rd			Ethanac Rd			Ethanac Rd		
Base Volume Input [veh/h]	14	4	8	13	3	100	152	479	16	3	305	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0600	1.0000	1.0600	1.0600	1.0600	1.0000	1.0000	1.0600	1.0600
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	6	25	0	0	16	18	17	131	6	0	174	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	24	0	0	7	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	20	29	8	14	19	124	178	663	22	3	504	3
Peak Hour Factor	0.8786	0.8786	0.8786	0.8786	0.8786	0.8786	0.8786	0.8786	0.8786	0.8786	0.8786	0.8786
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	8	2	4	5	35	51	189	6	1	143	1
Total Analysis Volume [veh/h]	23	33	9	16	22	141	203	755	25	3	574	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	5	10	0	0	10	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	25	0	0	25	0	26	40	0	0	14	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	16	0	0	10	0	0	18	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No		No	No			No	
Maximum Recall		No			No		No	No			No	
Pedestrian Recall		No			No		No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	10	10	9	43	30
g / C, Green / Cycle	0.16	0.16	0.16	0.15	0.71	0.50
(v / s)_i Volume / Saturation Flow Rate	0.04	0.02	0.09	0.11	0.42	0.31
s, saturation flow rate [veh/h]	1637	1707	1589	1781	1859	1865
c, Capacity [veh/h]	342	357	254	260	1316	983
d1, Uniform Delay [s]	22.03	21.69	23.32	24.75	4.43	11.13
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.27	0.13	1.90	5.03	1.97	2.60
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.19	0.11	0.56	0.78	0.59	0.59
d, Delay for Lane Group [s/veh]	22.30	21.82	25.22	29.78	6.41	13.73
Lane Group LOS	C	C	C	C	A	B
Critical Lane Group	No	No	Yes	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	0.76	0.44	1.82	2.82	2.48	4.78
50th-Percentile Queue Length [ft/ln]	19.04	10.92	45.61	70.39	62.00	119.61
95th-Percentile Queue Length [veh/ln]	1.37	0.79	3.28	5.07	4.46	8.37
95th-Percentile Queue Length [ft/ln]	34.28	19.65	82.10	126.70	111.60	209.29

Movement, Approach, & Intersection Results

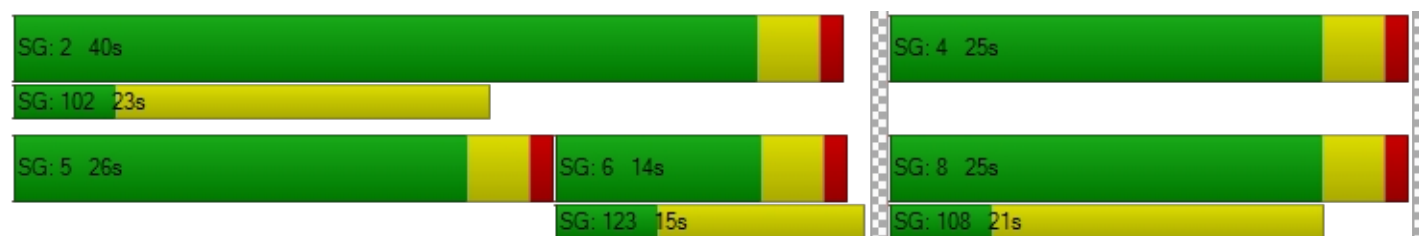
d_M, Delay for Movement [s/veh]	22.30	22.30	22.30	21.82	21.82	25.22	29.78	6.41	6.41	13.73	13.73	13.73
Movement LOS	C	C	C	C	C	C	C	A	A	B	B	B
d_A, Approach Delay [s/veh]	22.30			24.50			11.23			13.73		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	13.75											
Intersection LOS	B											
Intersection V/C	0.642											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	21.72	21.72	0.00	21.72
I_p,int, Pedestrian LOS Score for Intersection	1.765	2.079	0.000	2.713
Crosswalk LOS	A	B	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	699	699	1198	333
d_b, Bicycle Delay [s]	12.71	12.71	4.83	20.87
I_b,int, Bicycle LOS Score for Intersection	1.667	1.855	3.182	2.517
Bicycle LOS	A	A	C	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





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