APPENDIX I – TRAFFIC IMPACT ANALYSIS

TTM 83674 PALMDALE TRAFFIC IMPACT ANALYSIS

City of Palmdale

August 10, 2023

gandhi

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

TTM 83674 PALMDALE
TRAFFIC IMPACT ANALYSIS

City of Palmdale

August 10, 2023

prepared by

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Project No. 19644

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EXECUTIVE SUMMARY

The 59.1-acre project site (APN 3001-003-160, 163, 164) is located at south of Rancho Vista Boulevard and west of Tilbury Drive within the Rancho Vista Specific Plan in the City of Palmdale California. The project site is currently vacant and zoned Urban Village Residential (3.1 to 17.9 DU/AC).

The proposed project involves the development of 239 single-family residential lots. Vehicular access for the project site is proposed via internal residential streets of which two will connect to Tilbury Drive and one will connect to Registry Way. Tilbury Drive runs from Rancho Vista Boulevard on the north to Sandstone Court on the south and Registry Way connects to the existing residential neighborhood to the north of the project site.

Project Trip Generation

The proposed project is forecast to generate approximately 2,505 daily trips, including 165 trips during the AM peak hour and 225 trips during the PM peak hour.

Level of Service Analysis

The study intersections currently operate within acceptable Levels of Service (D or better) during peak hours, except for the intersection of 50th Street and Avenue N that currently operates at Level of Service E during the AM and PM peak hours.

The study intersections are forecast to continue operating within acceptable Levels of Service (D or better) during the peak hours for all analysis scenarios evaluated, except for the intersection of 50th Street and Avenue N that is forecast to continue operating at Level of Service E during the AM and PM peak hours.

The proposed project is forecast to increase the intersection delay by less than 2.0 seconds at the intersection of 50th Street and Avenue N for Existing Plus Project and cause no change in delay for Opening Year (2025) With Project conditions; therefore, the proposed project is forecast to result in no significant impacts at the study intersections for the analysis scenarios evaluated based on the City-established thresholds of significance.

Summary of Improvements

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

Since the proposed project is forecast to result in no significant impacts at the study intersections for the analysis scenarios evaluated, no additional off-site improvements are required beyond those necessary to provide project site access.

Vehicle Miles Traveled Analysis

Since the proposed project is forecast to result in the same or fewer daily trips in comparison to the land use previously evaluated, the proposed project's VMT impact would be the same or less as the land use previously evaluated in the originally certified EIR and its subsequent addendums.

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 Palmdale'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 Palmdale staff following the procedures and methodologies for assessing transportation impacts established by the City of Palmdale.

The project site is within the Rancho Vista Specific Plan, which was previously evaluated under Environmental Impact Report (EIR) 84-37 (SCH No. 84110711). The traffic impact analysis tiers from the previous EIR and subsequent amendments prepared for the Rancho Vista Specific Plan. Specifically, this report evaluates whether the proposed project warrants implementation of the mitigation measures identified in the Traffic/Circulation section of the EIR.

PROJECT DESCRIPTION

The 59.1-acre project site (APN 3001-003-160, 163, 164) is located at south of Rancho Vista Boulevard and west of Tilbury Drive within the Rancho Vista Specific Plan in the City of Palmdale California. The project site is currently vacant and zoned Urban Village Residential (3.1 to 17.9 DU/AC). Figure 1 and Figure 2 show the regional and project location maps.

The proposed project involves the development of 239 single-family residential lots. Vehicular access for the project site is proposed via internal residential streets of which two will connect to Tilbury Drive and one will connect to Registry Way. Tilbury Drive runs from Rancho Vista Boulevard on the north to Sandstone Court on the south and Registry Way connects to the existing residential neighborhood to the north of the project site. Figure 3 illustrates the project site plan.

SCOPE OF ANALYSIS

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

Study Area

Figure 4 illustrates the study area. In accordance with the City of Palmdale requirements, the study area was determined in consultation with the City of Palmdale engineering staff and consists of the study intersections at which mitigation measures identified in the Rancho Vista Specific Plan EIR have not yet been implemented. Accordingly, the study area consists of the following study intersections, each within the City of Palmdale jurisdiction:

1. 50th Street (NS) and Avenue N (EW) [1]
2. 45th Street (NS) and Avenue N (EW)
3. 30th Street (NS) and Avenue N (EW)

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

4. Rancho Vista Boulevard (NS) and Tilbury Drive (EW)
5. Rancho Vista Boulevard (NS) and Rancho Vista Plaza Driveway (EW) [2]

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

[2] This intersection was included at the request of the City of Palmdale and does not relate to the Rancho Vista Specific Plan. The commercial development for which this driveway provides access is not related to the project and the project is forecast to contribute fewer than 50 peak hour trips in/out of the driveway.

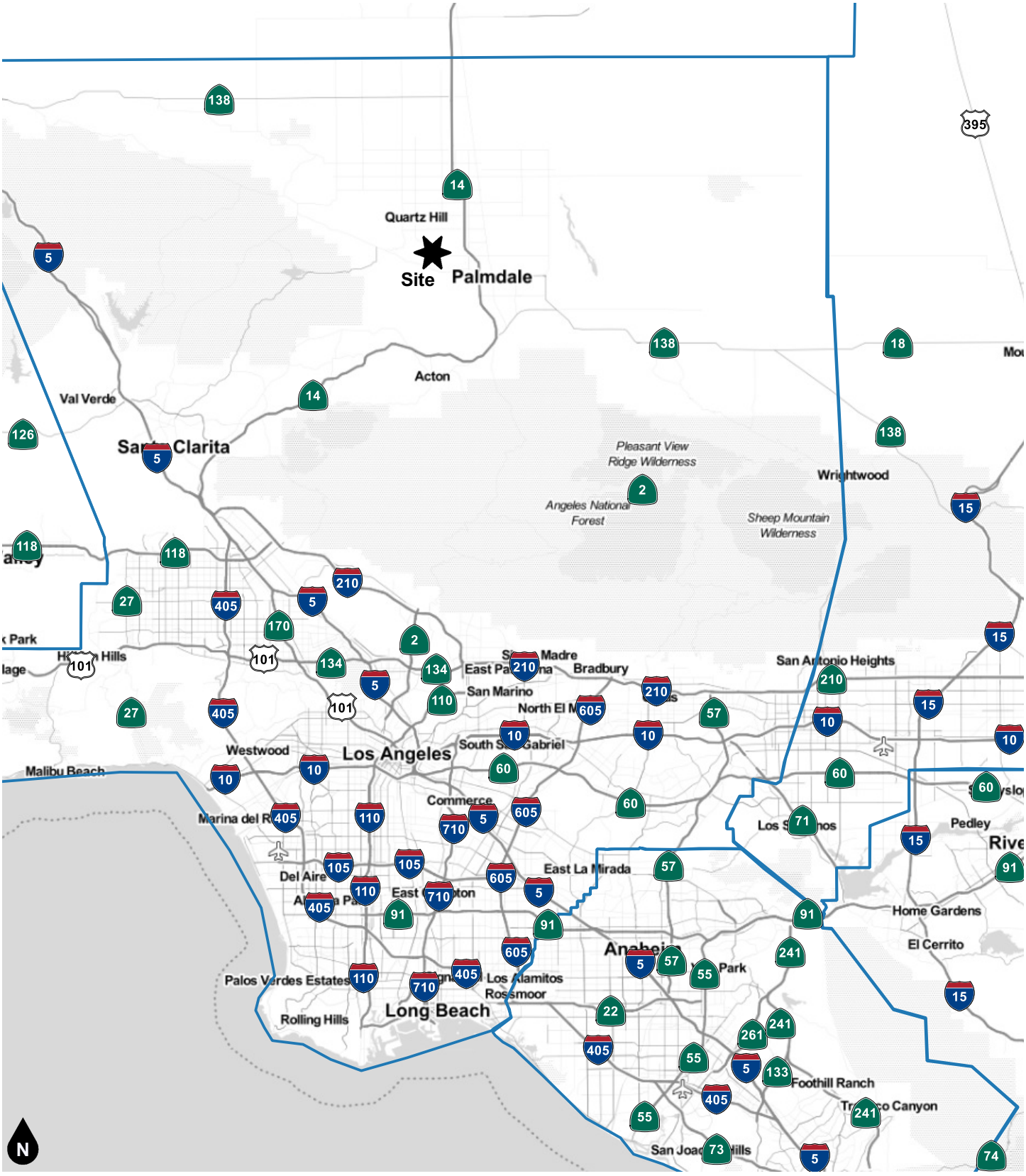


Figure 1
Regional Location Map

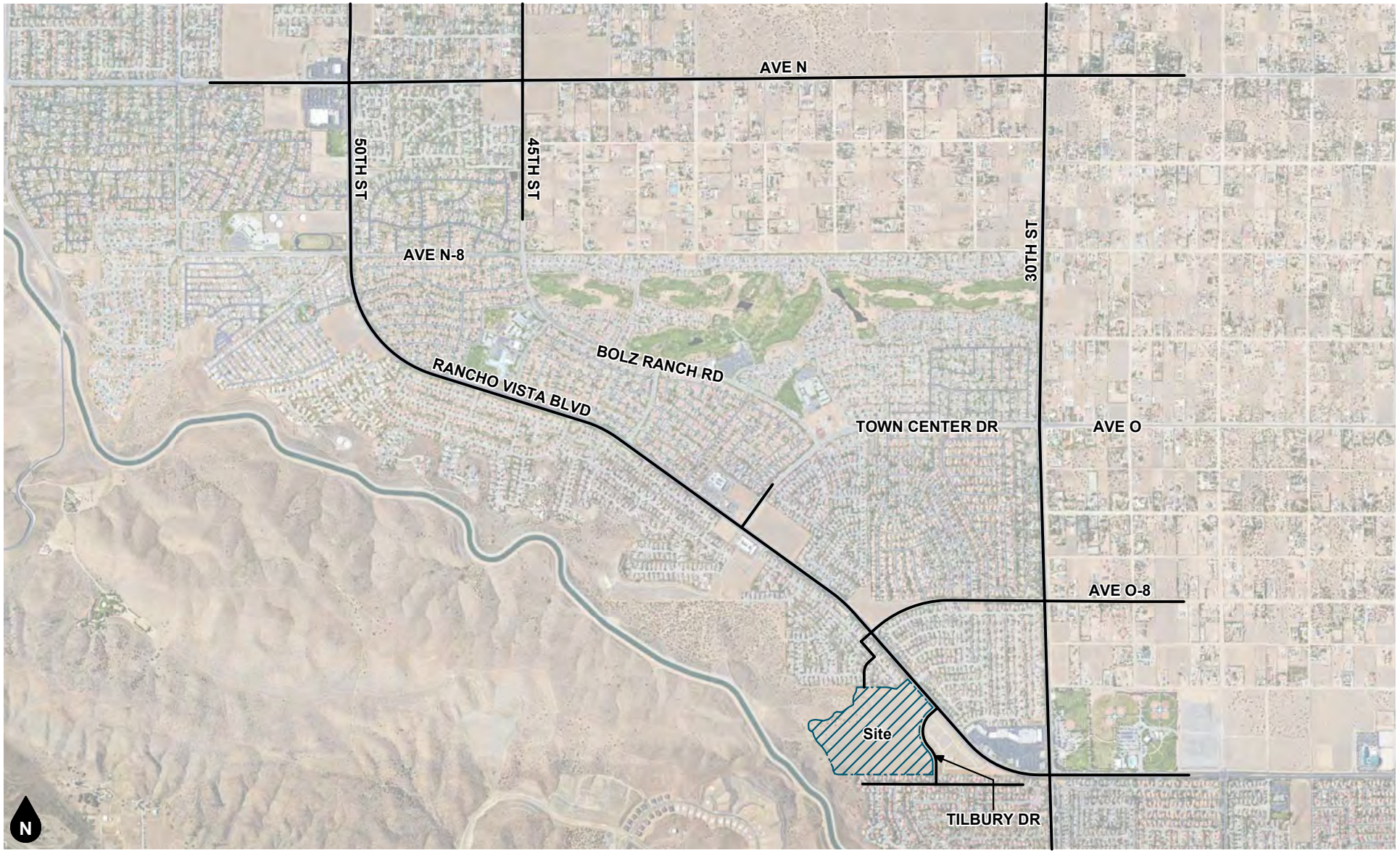
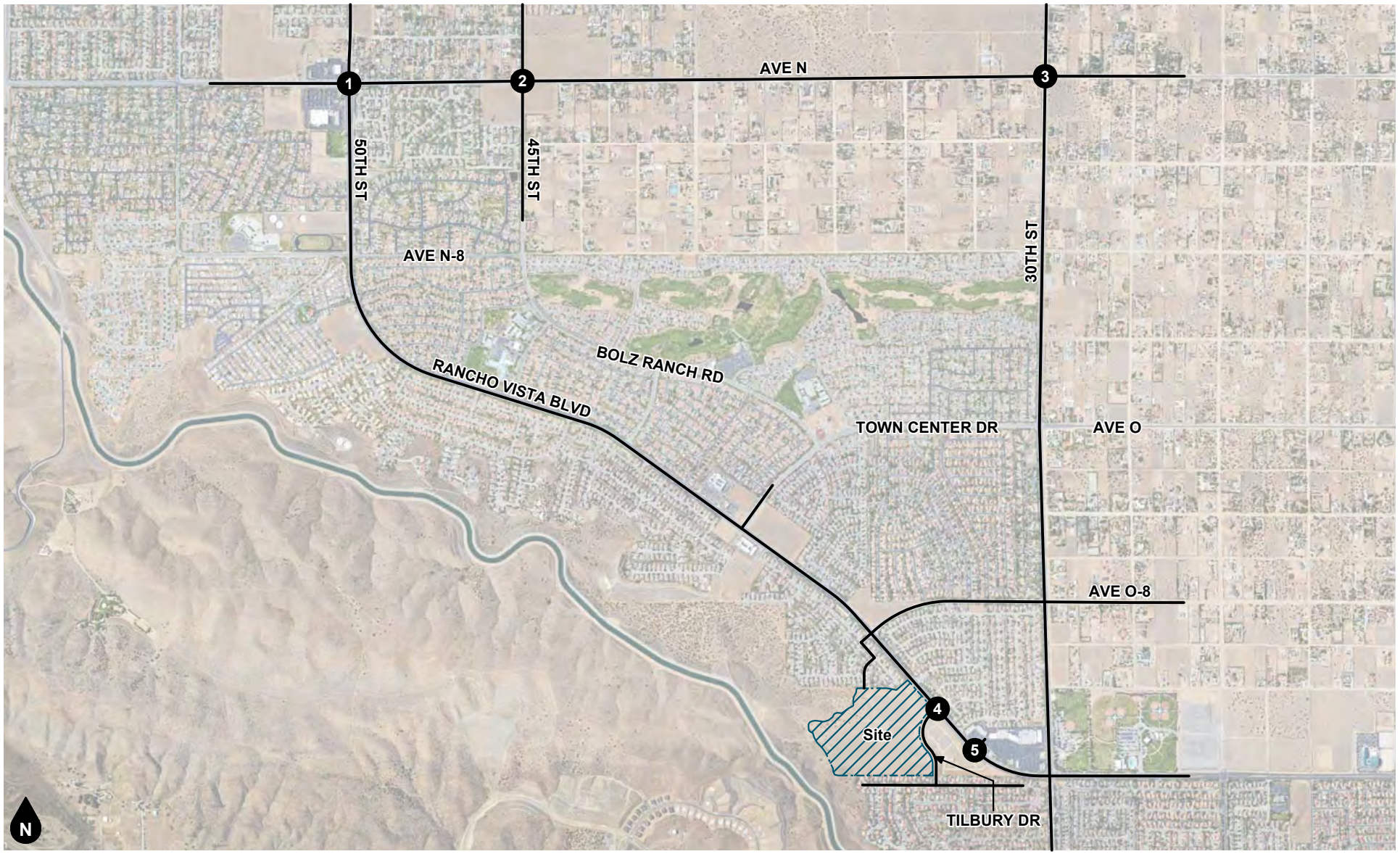


Figure 2
Project Location Map

Figure 3
Site Plan



Legend

Study Intersection

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 Palmdale requirements, which are generally based on the methodologies outlined in the County of Los Angeles *Transportation Impact Analysis Guidelines* (July 23, 2020) ["County TIA Guidelines"].

LEVEL OF SERVICE/OPERATIONAL ANALYSIS METHODOLOGY

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

City of Palmdale 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. At intersections with cross street stop control (i.e., one- or two-way stop control), the Level of Service is determined by the average control delay for the worst minor street approach or major street left-turn movement. 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). Intersection analysis was performed using the Vistro software. The Level of Service analysis was performed in accordance with parameters specified in the HCM or County TIA Guidelines.

At intersections with 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.

THRESHOLD OF SIGNIFICANCE

The Traffic/Circulation section of the Rancho Vista Specific Plan EIR does not clearly identify thresholds of significance, particularly for intersections where Level of Service standards are already operating at Level of Service E or F under existing conditions; however, the "Intersection ICU and LOS" section describes acceptable

LOS as D or better. Based on review of the Rancho Vista Specific Plan EIR and scoping discussions with City of Palmdale staff, the project is considered to cause a significant impact under the following conditions:

- The project causes signalized study intersection operations to degrade from acceptable Level of Service (D or better) to deficient Level of Service (E or F); or

- The project worsens deficient pre-project intersection operations (Level of Service E or F) at a signalized study intersection by 2.0 seconds or more; or

- The project worsens deficient pre-project intersection operations (Level of Service E or F) at a signalized study intersection by 2.0 seconds or more and a traffic signal control is warranted based on the peak hour volume (Warrant 3) of the California Manual on Uniform Traffic Control Devices (CA MUTCD).

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. Since the proposed project is tiering from previously completed environmental review prior to adoption of VMT thresholds by the City of Palmdale, assessment of VMT impacts is not required; additional discussion is provided in the Vehicle Miles Traveled section of this report (Section 8).

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 14 approximately 2.5 miles to the east of the project site. Local north-south circulation is provided by 50th Street, 45th Street, and 30th Street and east-west circulation is provided by Avenue N and Rancho Vista Boulevard.

50th Street: This two-lane undivided to four-lane divided roadway trends in a north-south direction and is classified as an 88 to 98-foot Major Arterial (four-lane divided raised or painted median) on the City of Palmdale circulation system in the study area. On-street parking is restricted in the project vicinity. Currently, there are no designated bicycle facilities; however, this roadway is an Adopted Route on the master plan. Sidewalks are generally provided on both sides of the roadway adjacent to development in the project vicinity. The posted speed is 55 miles per hour in the project vicinity.

45th Street: This two-lane undivided to three-lane divided roadway trends in a north-south direction and is classified as a 68 to 88-foot Secondary Highway (four-lane divided or undivided) on the City of Palmdale circulation system in the study area. On-street parking is not restricted in the project vicinity. Currently, there are no designated bicycle facilities or sidewalks in the project vicinity; however, this roadway is an Adopted Route on the master plan. Sidewalks are provided on the west side of the roadway adjacent to development in the project vicinity. The posted speed is 55 miles per hour in the project vicinity.

30th Street: This two-lane undivided to two-lane divided roadway trends in a north-south direction and is classified as an 88 to 98-foot Major Arterial (four-lane divided raised or painted median) on the City of Palmdale circulation system in the study area. On-street parking is not restricted in the project vicinity. Currently, there are no designated bicycle facilities; however, this roadway is an Adopted Route on the master plan. Sidewalks are not provided on either side of the roadway in the project vicinity. The posted speed is 55 miles per hour in the project vicinity.

Avenue N: This two-lane undivided to four-lane divided roadway trends in an east-west direction and is classified as an 88 to 98-foot Major Arterial (four-lane divided raised or painted median) on the City of Palmdale circulation system in the study area. On-street parking is restricted in the project vicinity. Currently, there are no designated bicycle facilities; however, this roadway is an Adopted Route on the master plan. Sidewalks are generally not provided on either side of the roadway in the project vicinity, except near 50th Street. The posted speed is 55 miles per hour in the project vicinity.

Rancho Vista Boulevard: This four-lane divided roadway trends in a northwest-southeast direction and is classified as an 88 to 98-foot Major Arterial (four-lane divided raised or painted median) on the City of Palmdale General Plan Circulation Element in the project vicinity. On-street parking is restricted in the project vicinity. Currently, there are no designated bicycle facilities in the project vicinity. Sidewalks are generally provided on both sides of the roadway adjacent to development in the project vicinity. The posted speed in the project vicinity is 55 miles per hour.

PEDESTRIAN FACILITIES

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

TRANSIT FACILITIES

Figure 7 shows the existing Antelope Valley Transit Authority (AVTA) system map in the project vicinity. Routes 7 and 97 run along Rancho Vista Boulevard and 50 the Street. The closest bus stop to the project is at Rancho Vista Boulevard and Avenue O-8.

GENERAL PLAN CONTEXT

Figure 8 shows the City of Palmdale 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 Palmdale standard roadway cross-sections are illustrated in Figure 9.

BICYCLE FACILITIES MASTER PLAN

The City of Palmdale Bicycle Master Plan is shown in Figure 10. This figure shows the bicycle facilities master plan. As shown in Figure 10, there are proposed bike facilities on 50th Street, 45th Street and 30th Street.

DESIGNATED TRUCK ROUTES

The City of Palmdale Truck Routes are shown in Figure 11.This figure shows the designated truck routes. As shown in Figure 11 there are no designated truck routes in the study area.

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:

PM Peak Hour (Approach Volume + Exit Volume) x 10.0 = 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 May and August 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.

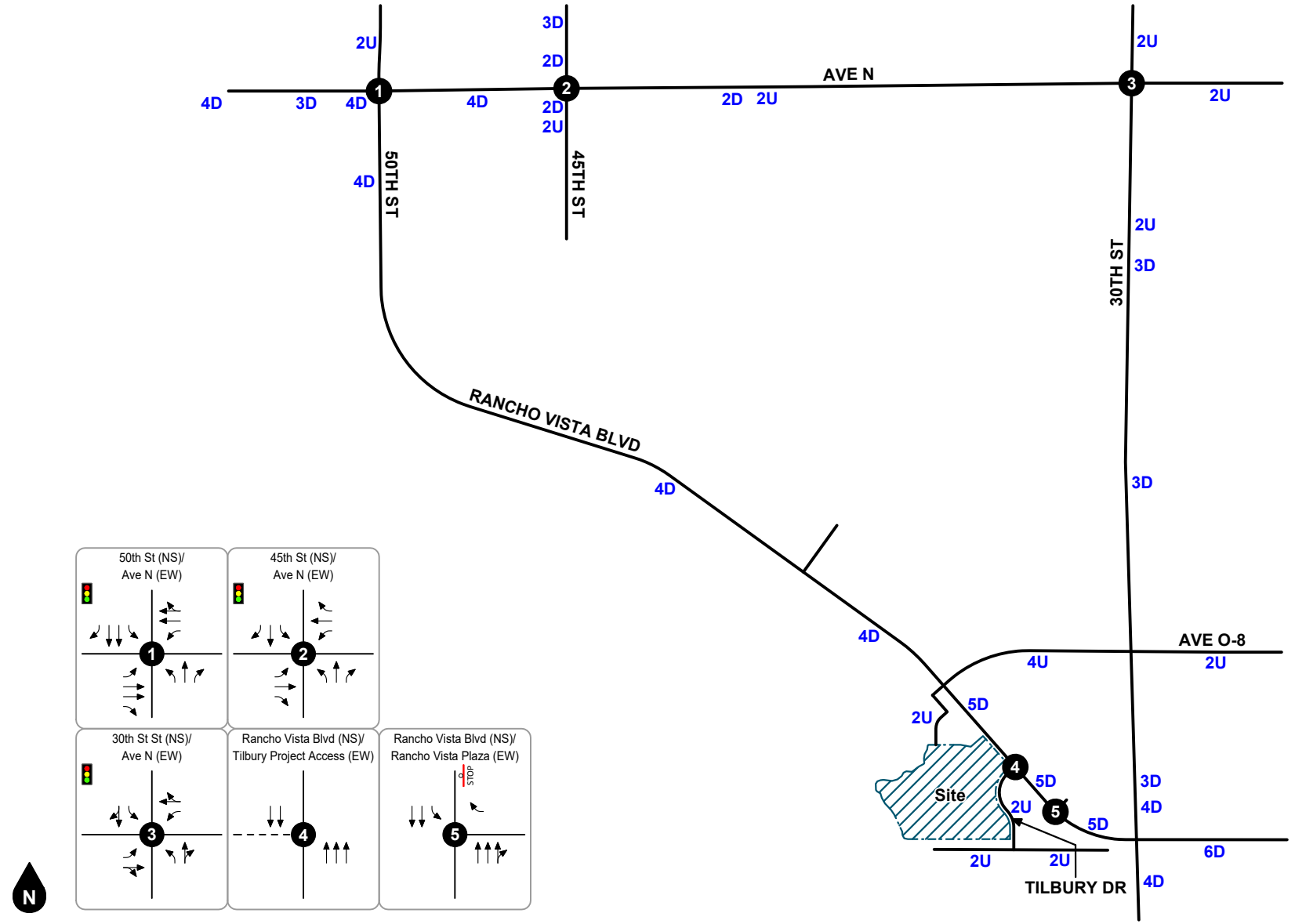
As shown in Table 1, the study intersections currently operate within acceptable Levels of Service (D or better) during peak hours, except for the intersection of 50th Street at Avenue N that currently operates at Level of Service E during the AM and PM peak hours.

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. 50th Street at Avenue N	TS	68.0	E	61.5	E
2. 45th Street West at Avenue N	TS	18.0	B	17.6	B
3. 30th Street West at Avenue N	TS	27.5	C	16.0	B
5. Rancho Vista Plaza at Rancho Vista Blvd	CSS	12.4	B	14.6	B

Notes:

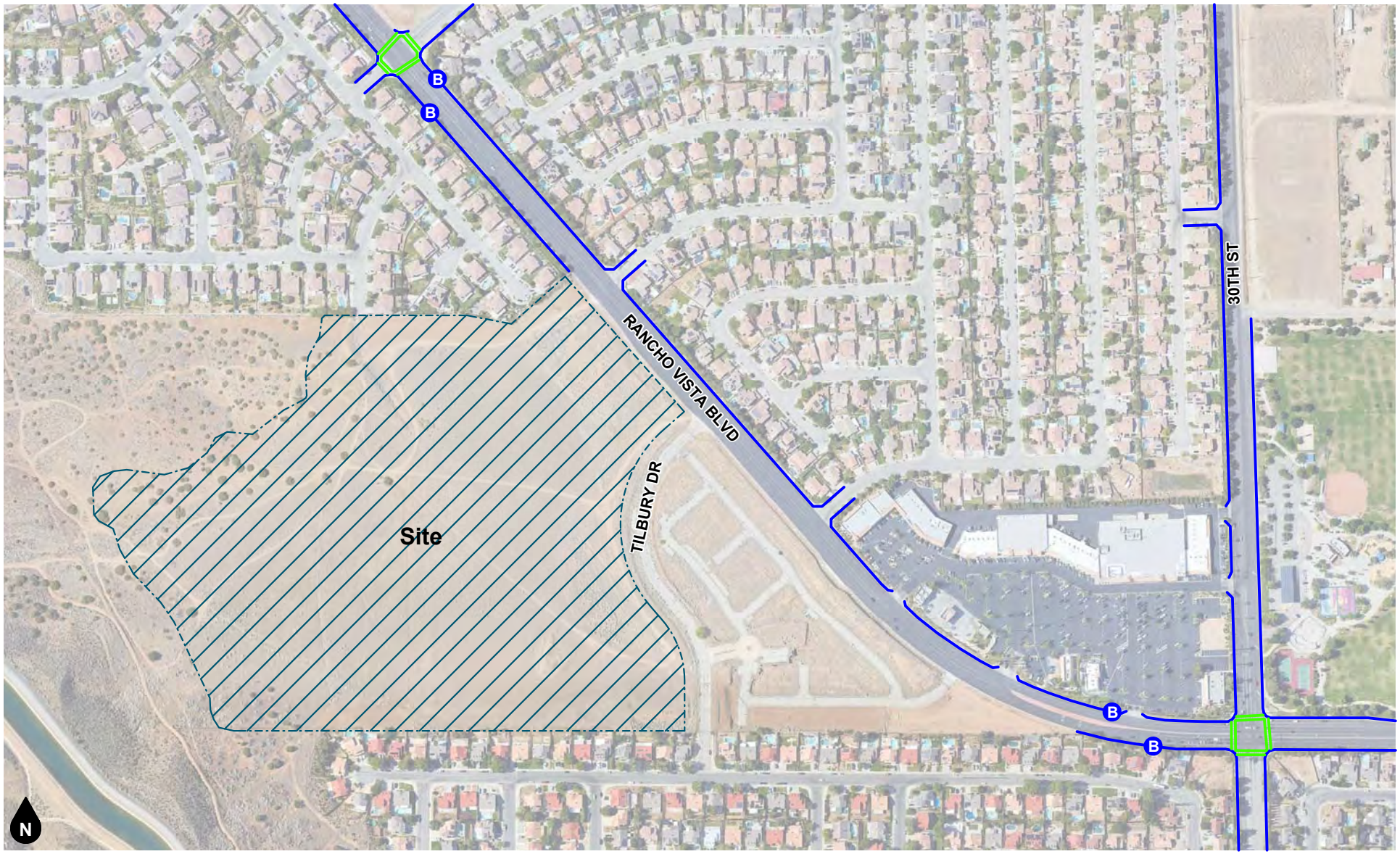
1. TS = Traffic Signal; CSS = Cross Street Stop. AWS = All Way Stop;
2. Delay is shown in seconds per vehicle. For intersections with traffic signal or all way stop control, overall average intersection delay and LOS are shown. For intersections with cross street stop control, LOS is based on average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



Legend

- Traffic Signal
- AWS All Way Stop
- STOP Stop Sign
- #D #-Lane Divided Roadway
- #U #-Lane Undivided Roadway
- Existing Lane
- d De Facto Right Turn Lane
- – – – Project Access

Figure 5
Existing Lane Geometry and Intersection Traffic Controls



Legend
- Sidewalk
- Cross Walk
- B Bus Stop

Figure 6
Existing Pedestrian Facilities

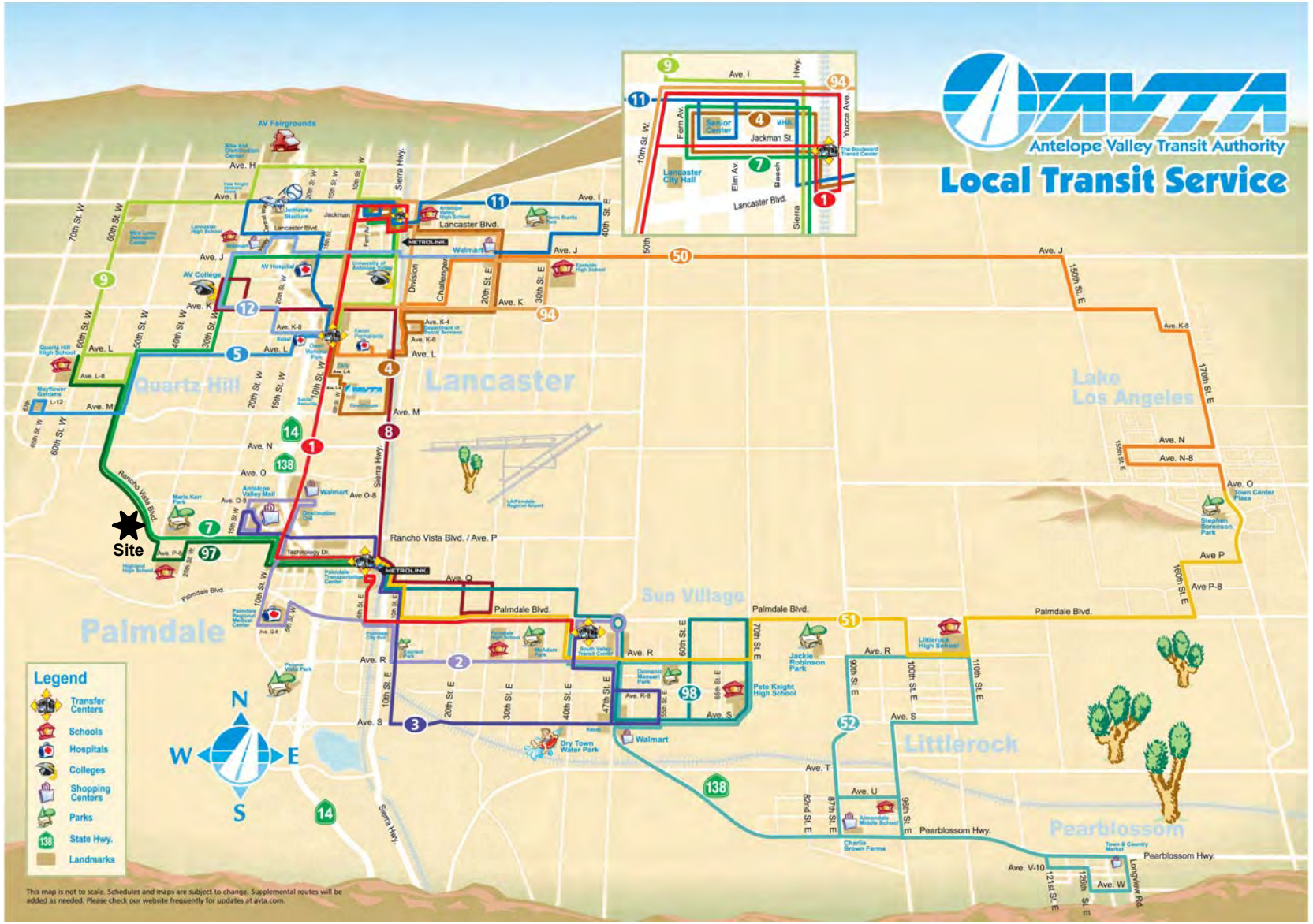


Figure 7
Existing Transit Routes

Source: Antelope Valley Transit Authority

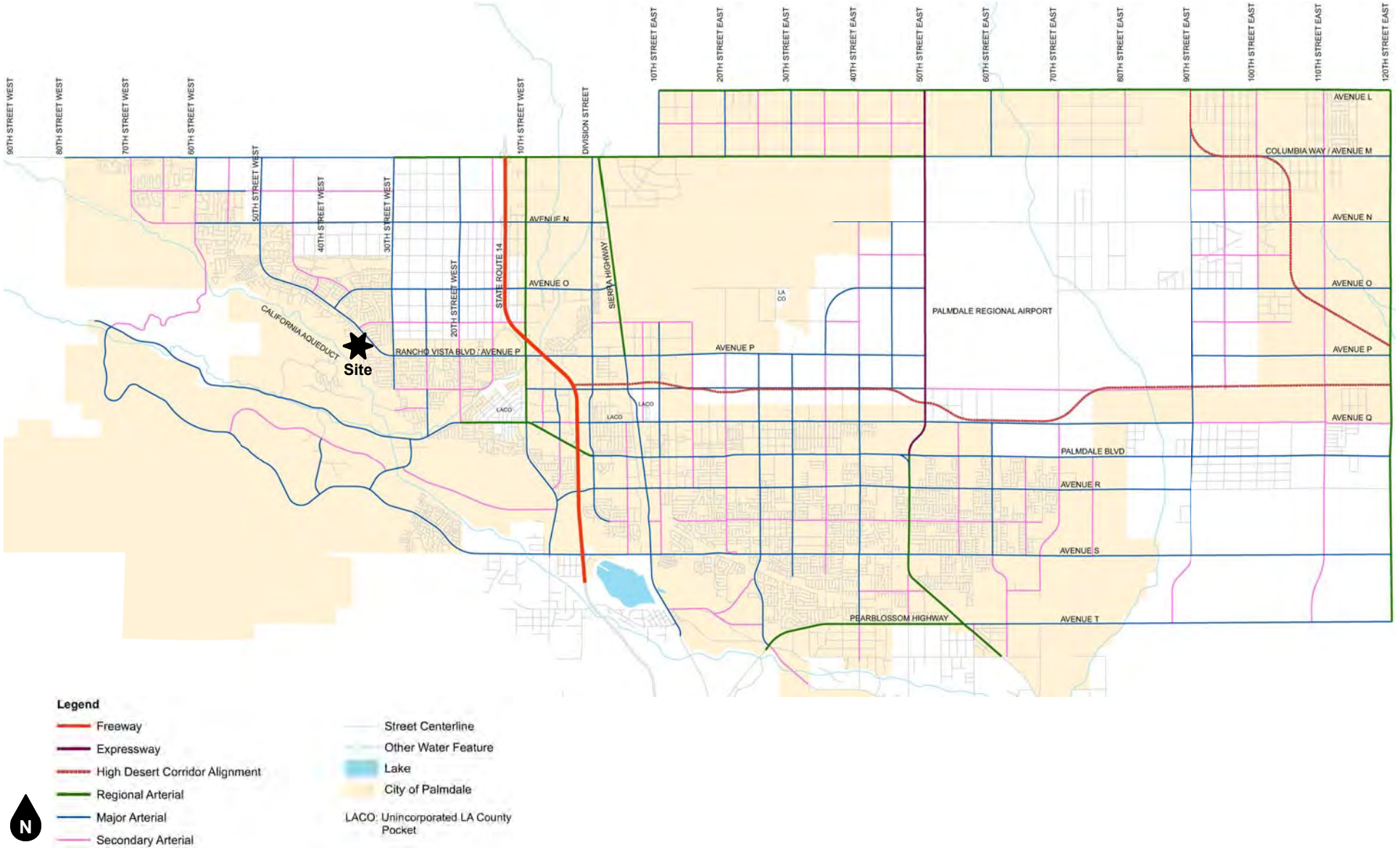


Figure 8
City of Palmdale General Plan Circulation Element

Source: City of Palmdale

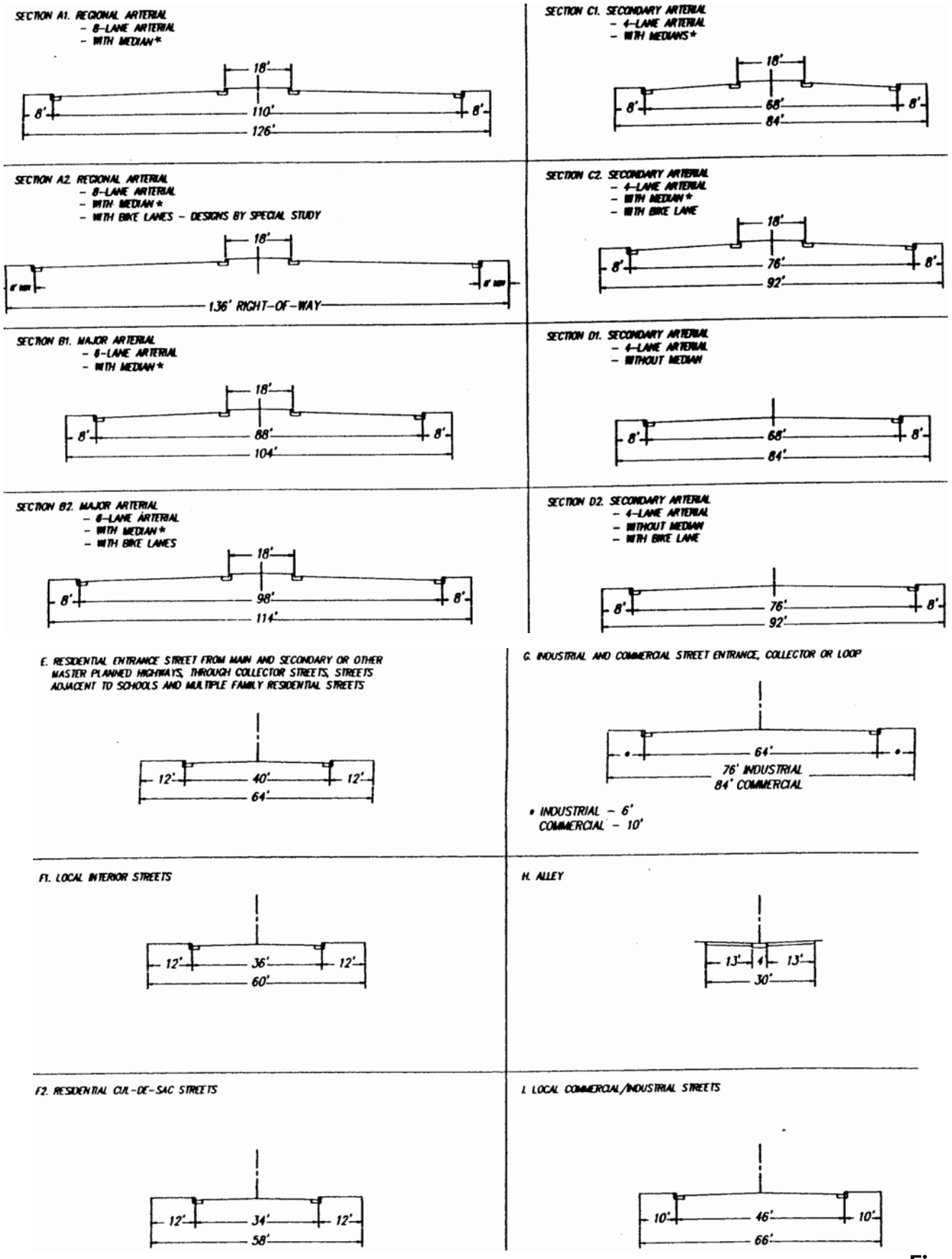


Figure 9
City of Palmdale General Plan Roadway Cross-Sections

Source: City of Palmdale

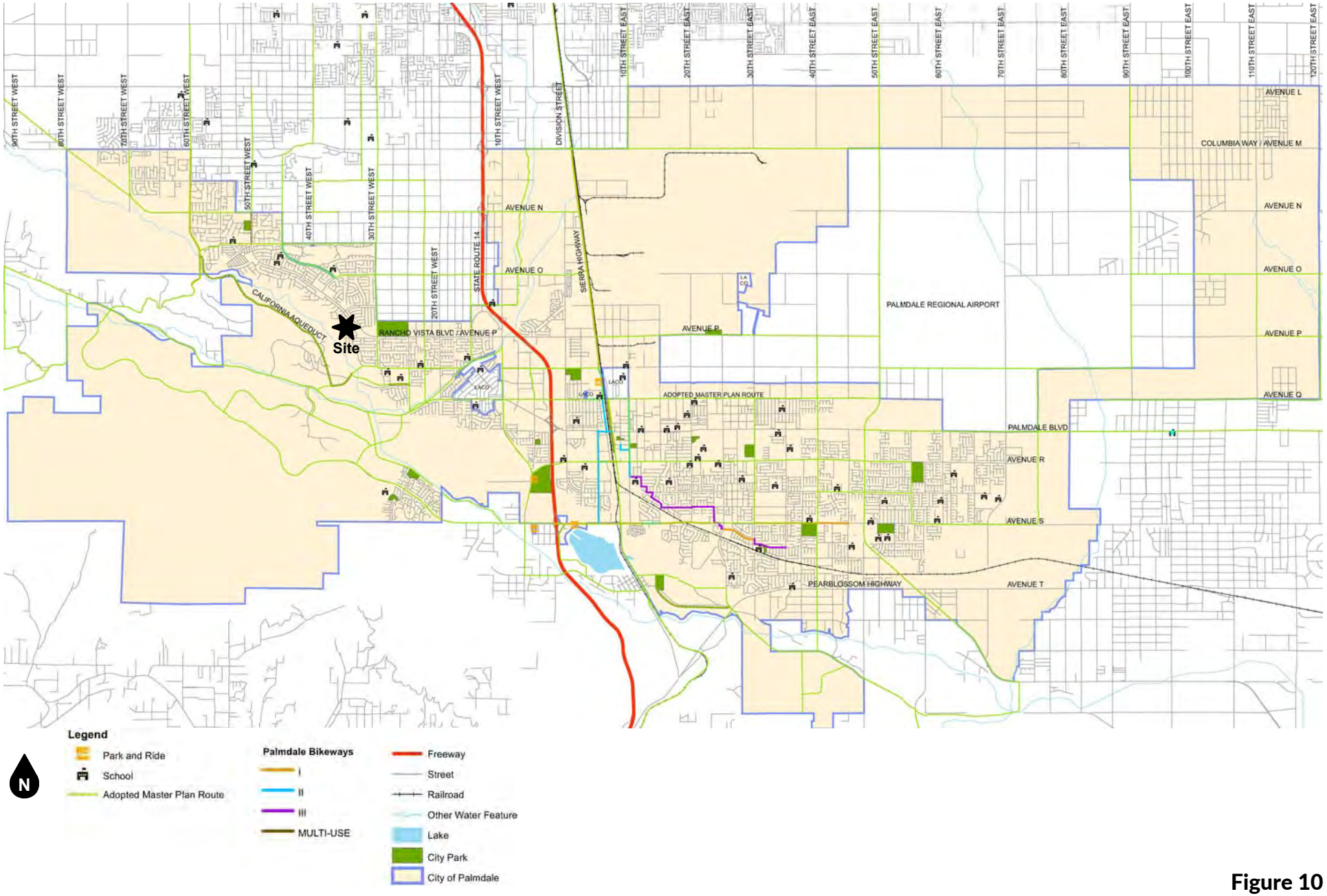


Figure 10
City of Palmdale Bicycle Facilities Master Plan

Source: City of Plamdale

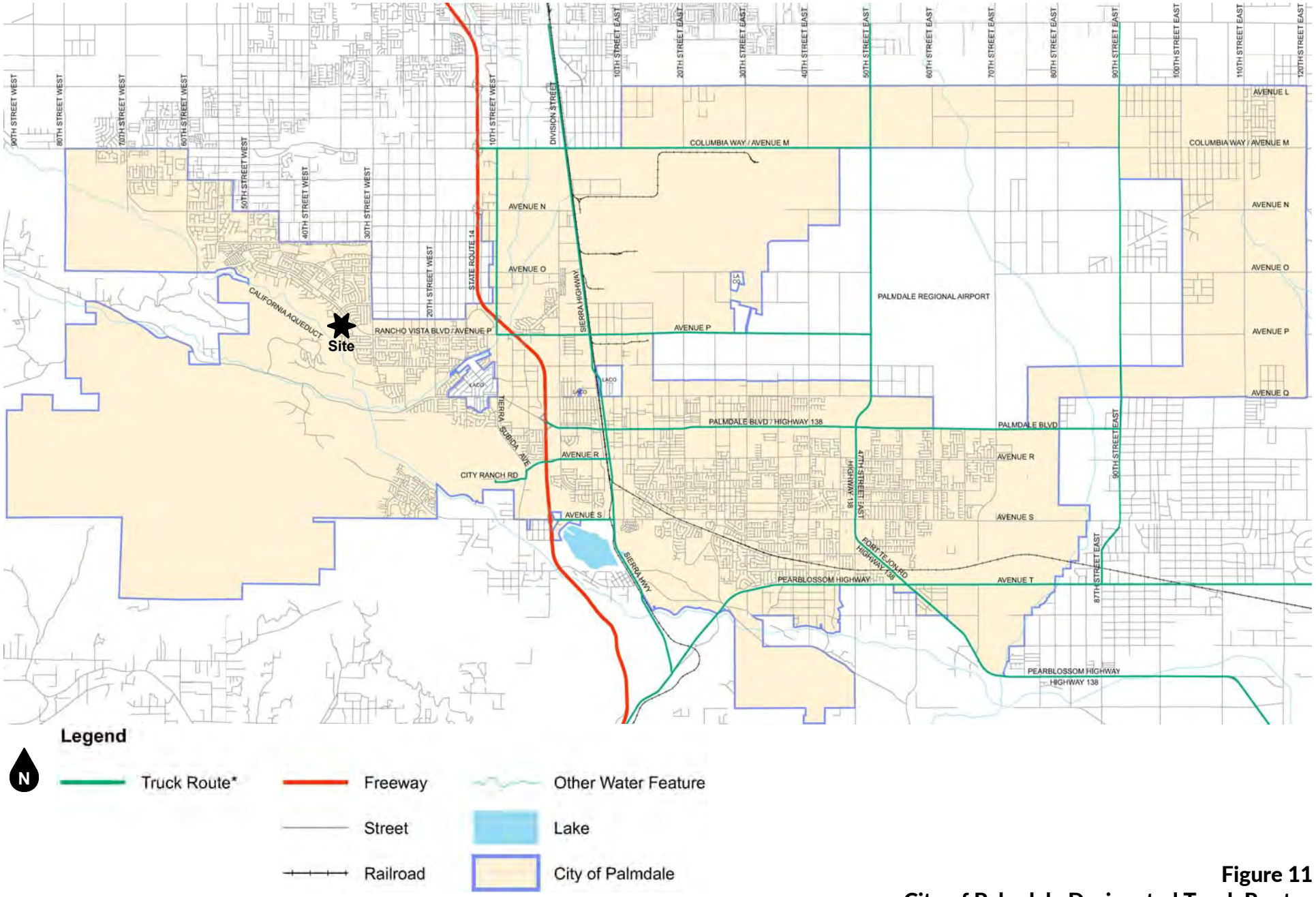
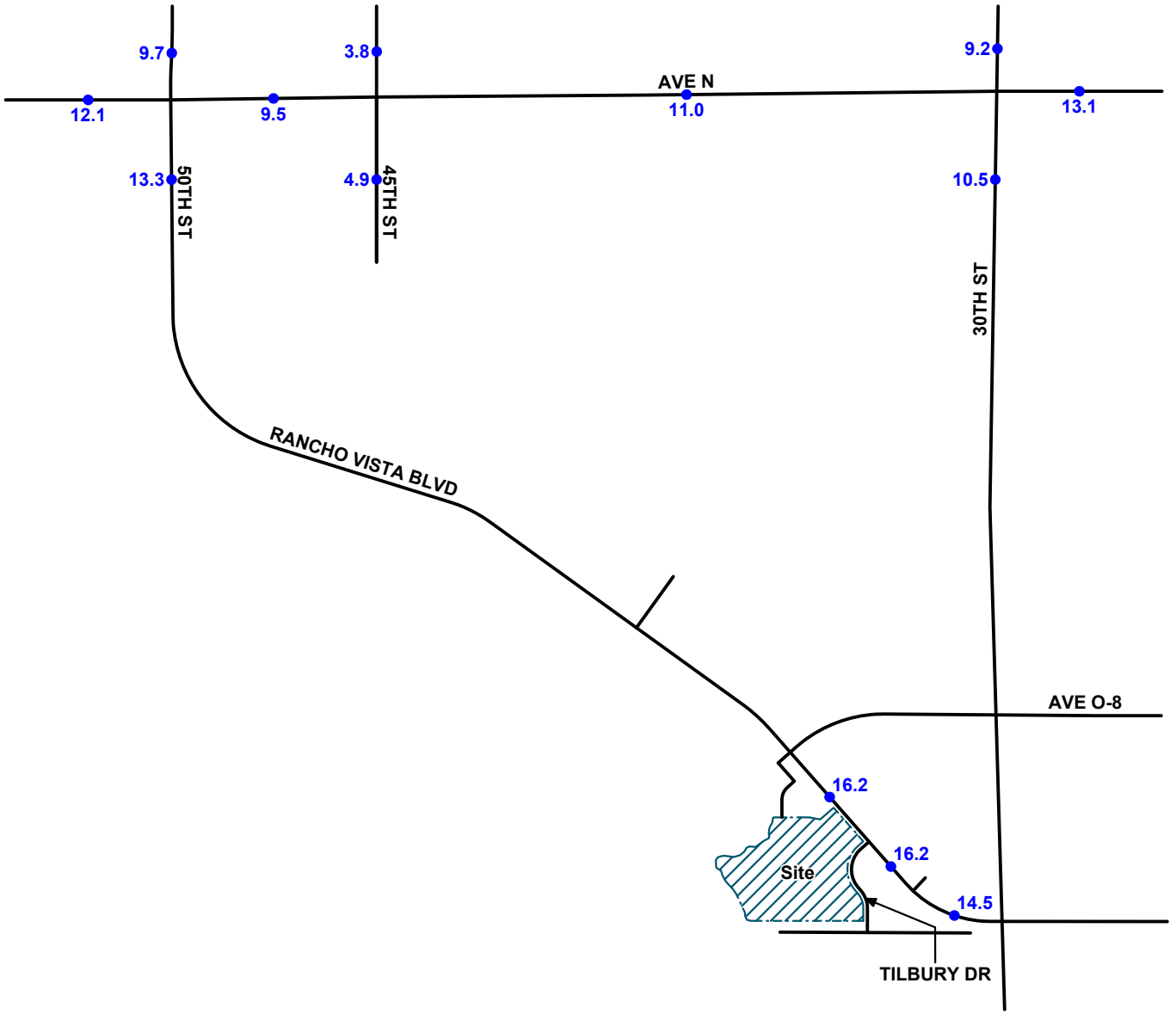


Figure 11
City of Palmdale Designated Truck Routes

Source: City of Palmdale



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●## Vehicles Per Day (1,000's)

Figure 12
Existing Average Daily Traffic Volumes

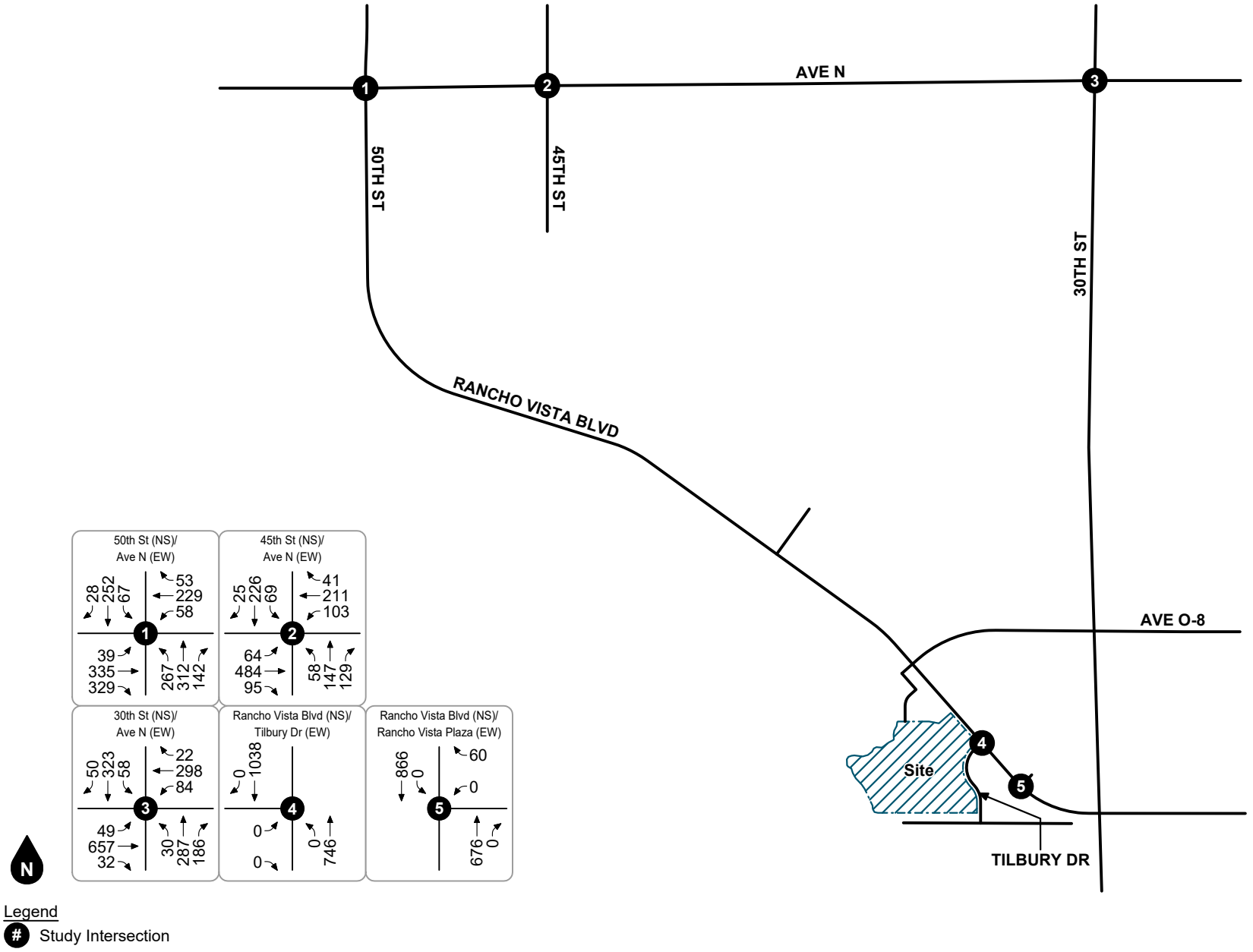


Figure 13
Existing AM Peak Hour Intersection Turning Movement Volumes

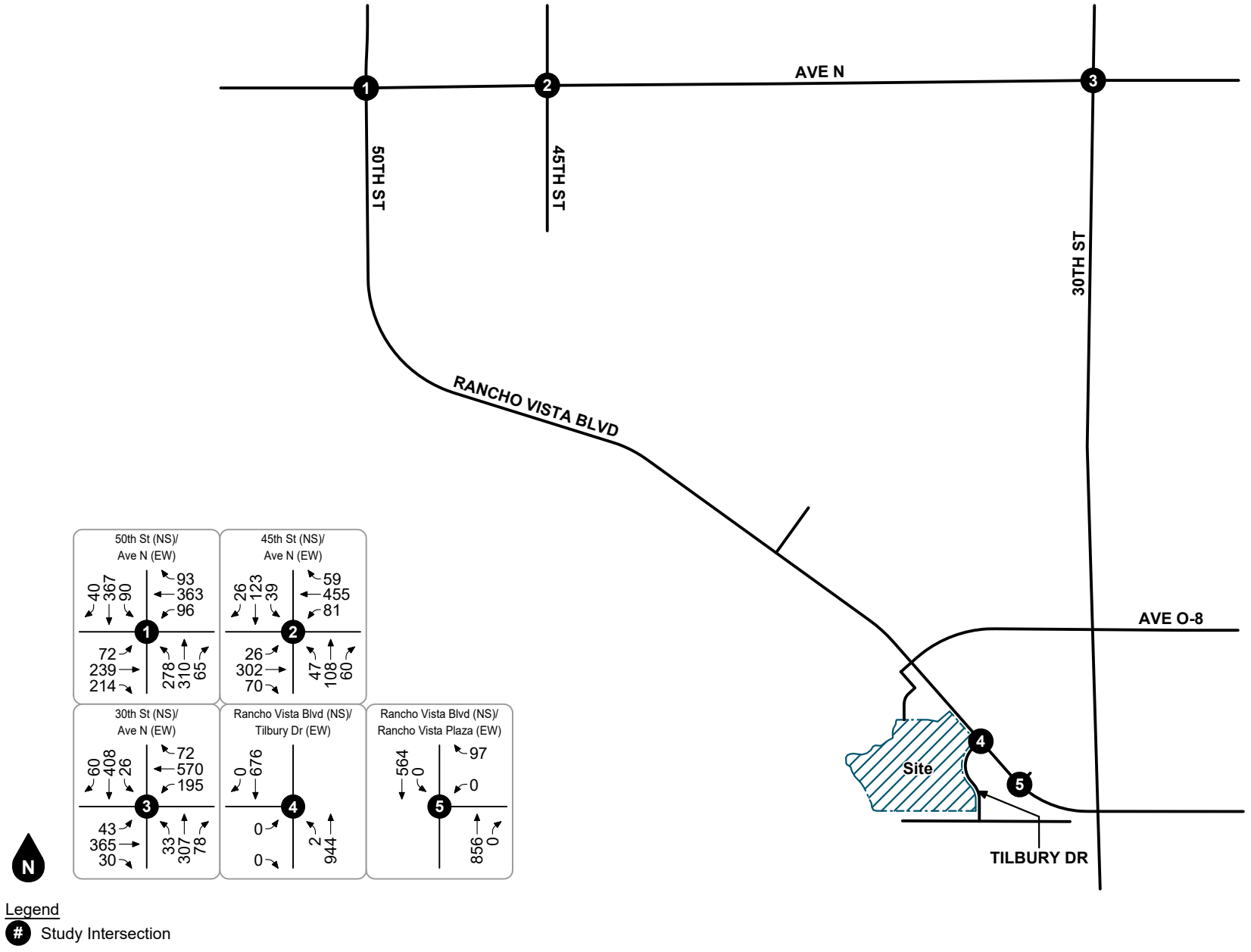


Figure 14
Existing PM Peak Hour Intersection Turning Movement Volumes

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.

PROJECT 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 210 (Single Family Detached Housing).

As shown in Table 2, the proposed project is forecast to generate approximately 2,505 daily trips, including 165 trips during the AM peak hour and 225 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 review of existing traffic data, surrounding land uses, local and regional roadway facilities in the project vicinity, and regional trip distribution forecasts documented in the traffic analysis for the Rancho Vista Specific Plan EIR.

Based on the identified project trip generation and distributions, The project-generated average daily traffic volumes are shown in Figure 17. The project-generated AM peak hour and PM peak hour intersection turning movement volumes are shown in 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	
Single-Family Detached Housing	ITE 210	DU	25%	75%	0.70	63%	37%	0.94	9.43

Trips Generated[3]									
Land Use	Source	Quantity	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Single-Family Detached Housing	ITE 210	239 DU	40	125	165	140	85	225	2,250

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. DU = Dwelling Unit. TSF = Thousand Square Feet; VFP = Vehicle Fuel Position.
3. Peak hour trips have been rounded to the nearest 5 trips, and average daily traffic has been rounded to the nearest 10 trips.

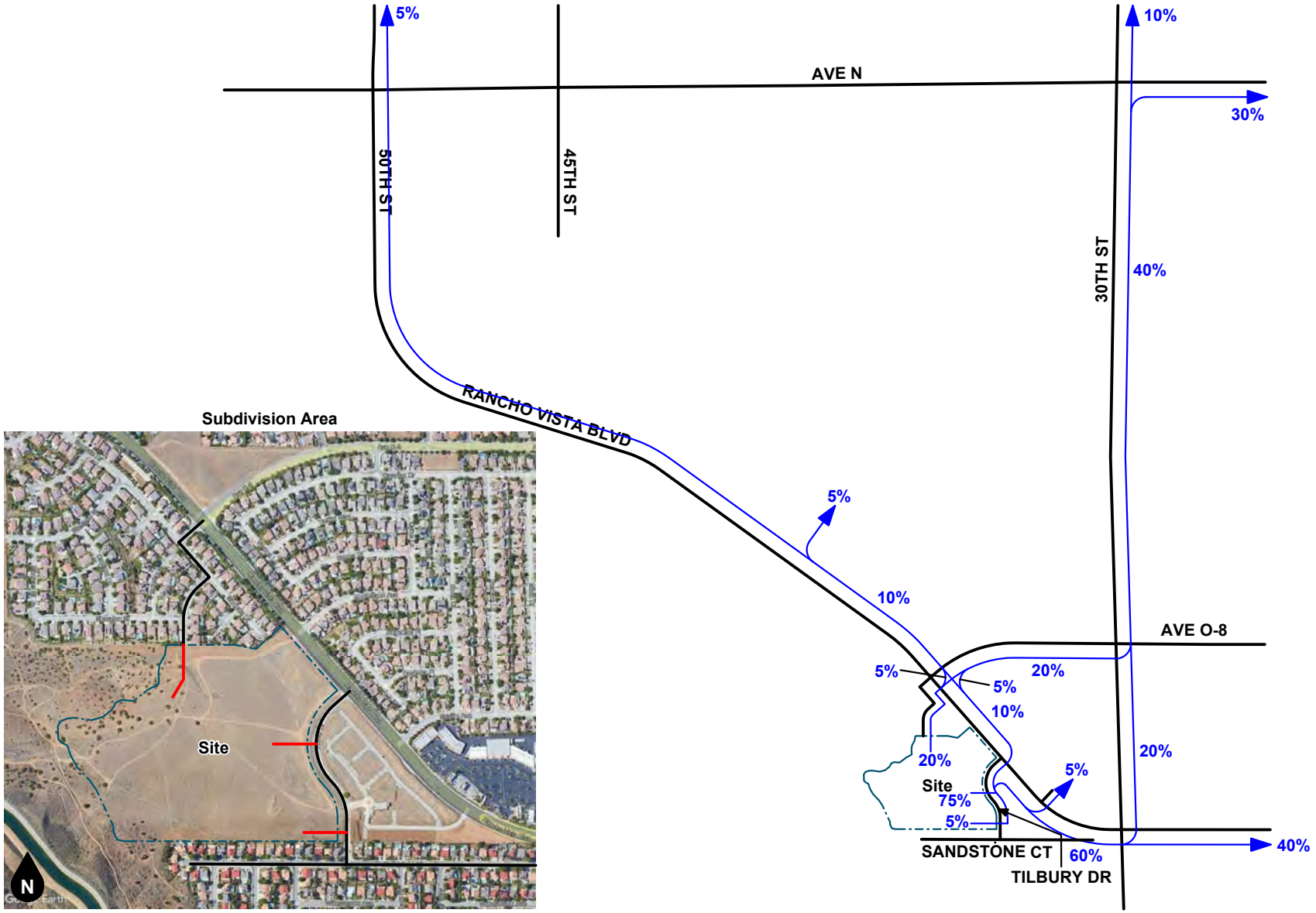
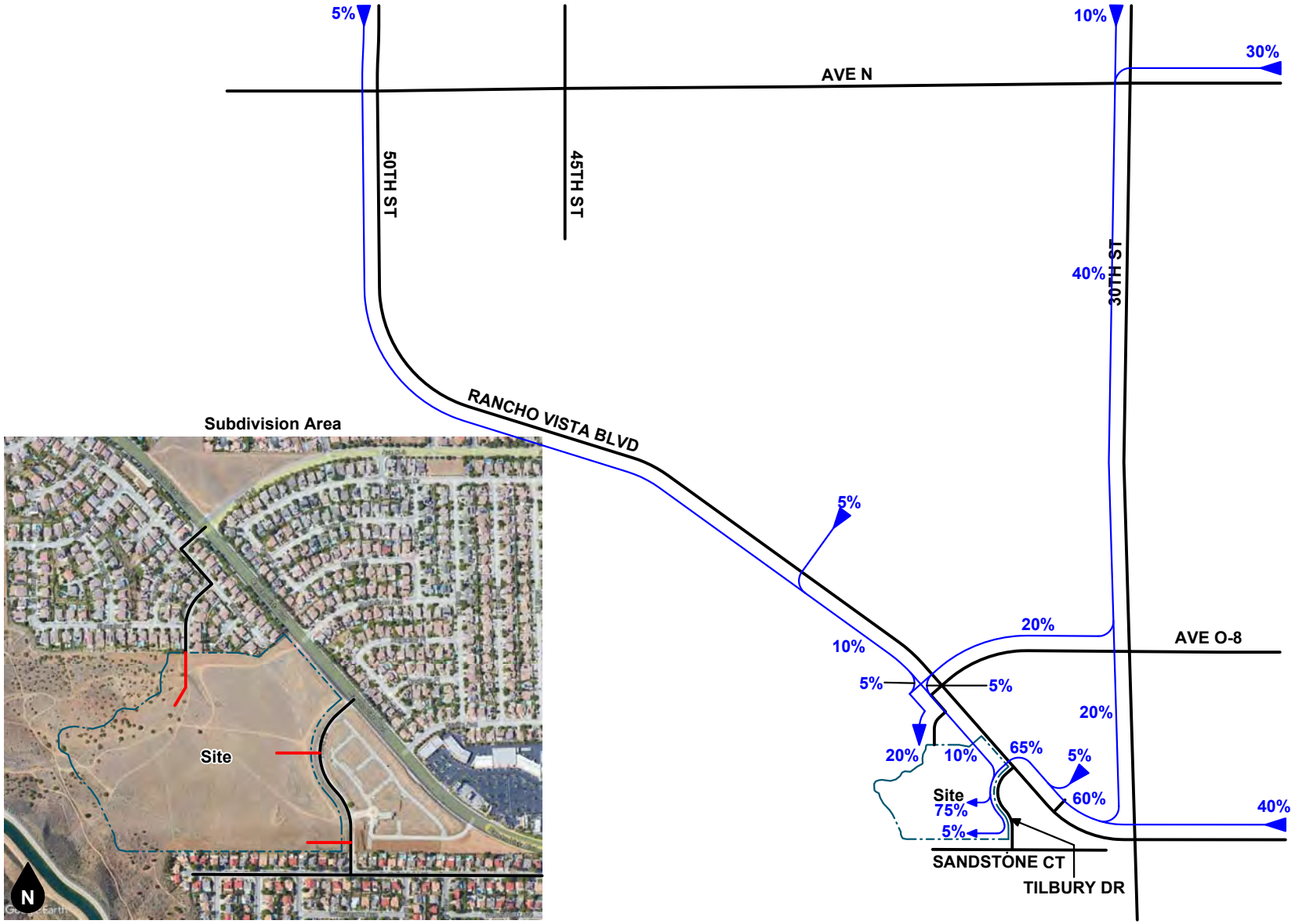


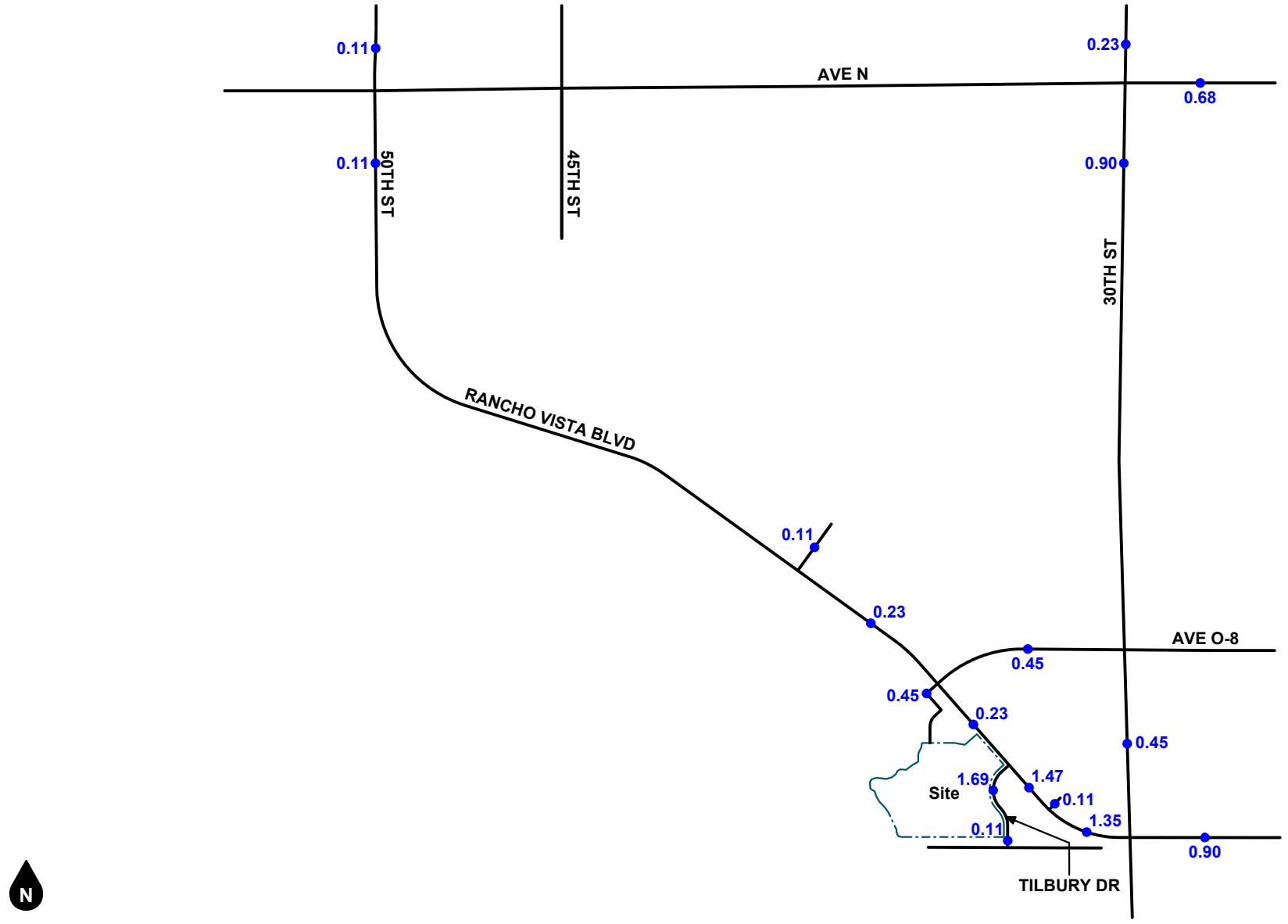
Figure 15
Project Trip Distribution (Outbound)



Legend

10% Percent To Project

Figure 16
Project Trip Distribution (Inbound)



Legend

●## Vehicles Per Day (1,000's)

Figure 17
Project Average Daily Traffic Volumes

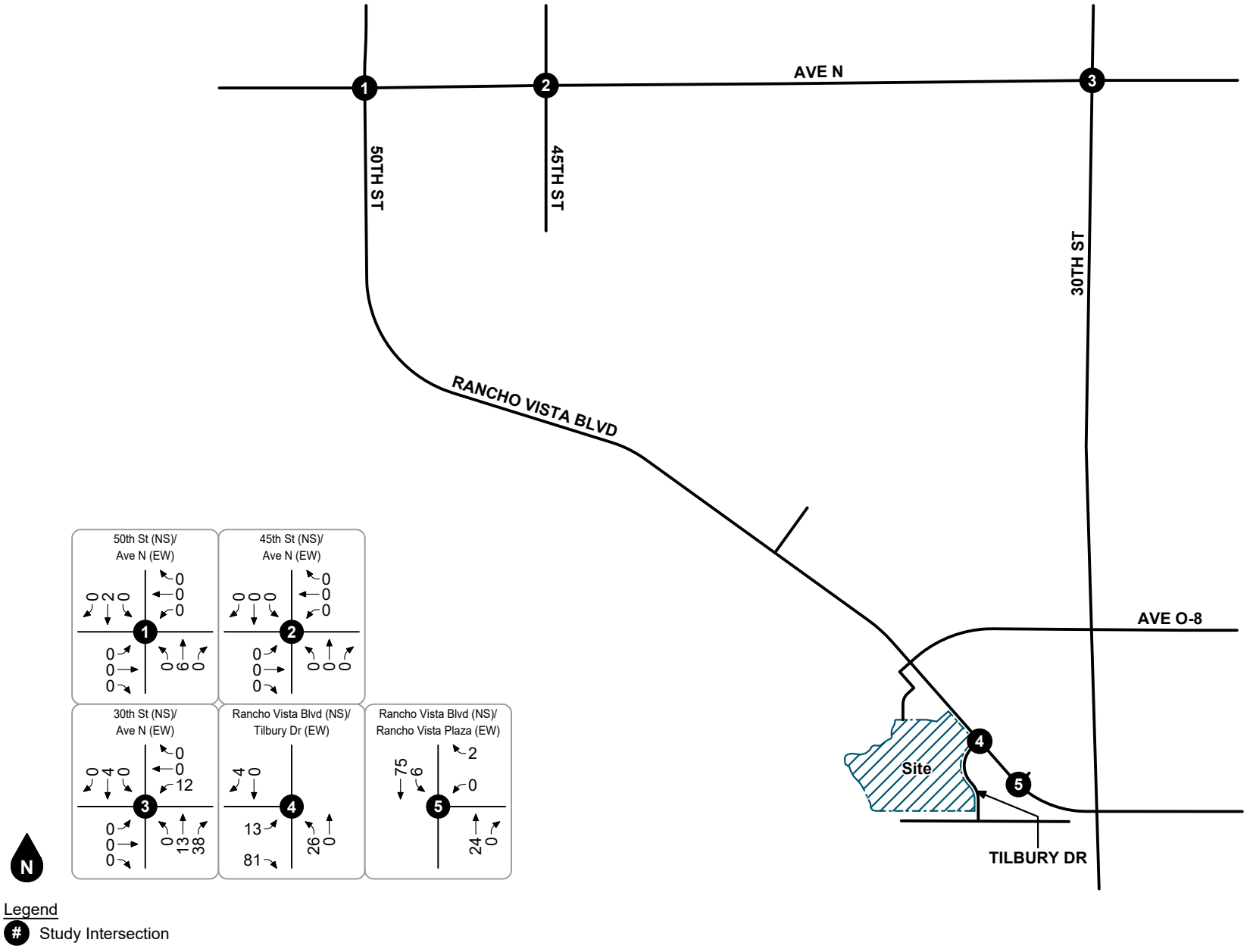


Figure 18
Project AM Peak Hour Intersection Turning Movement Volumes

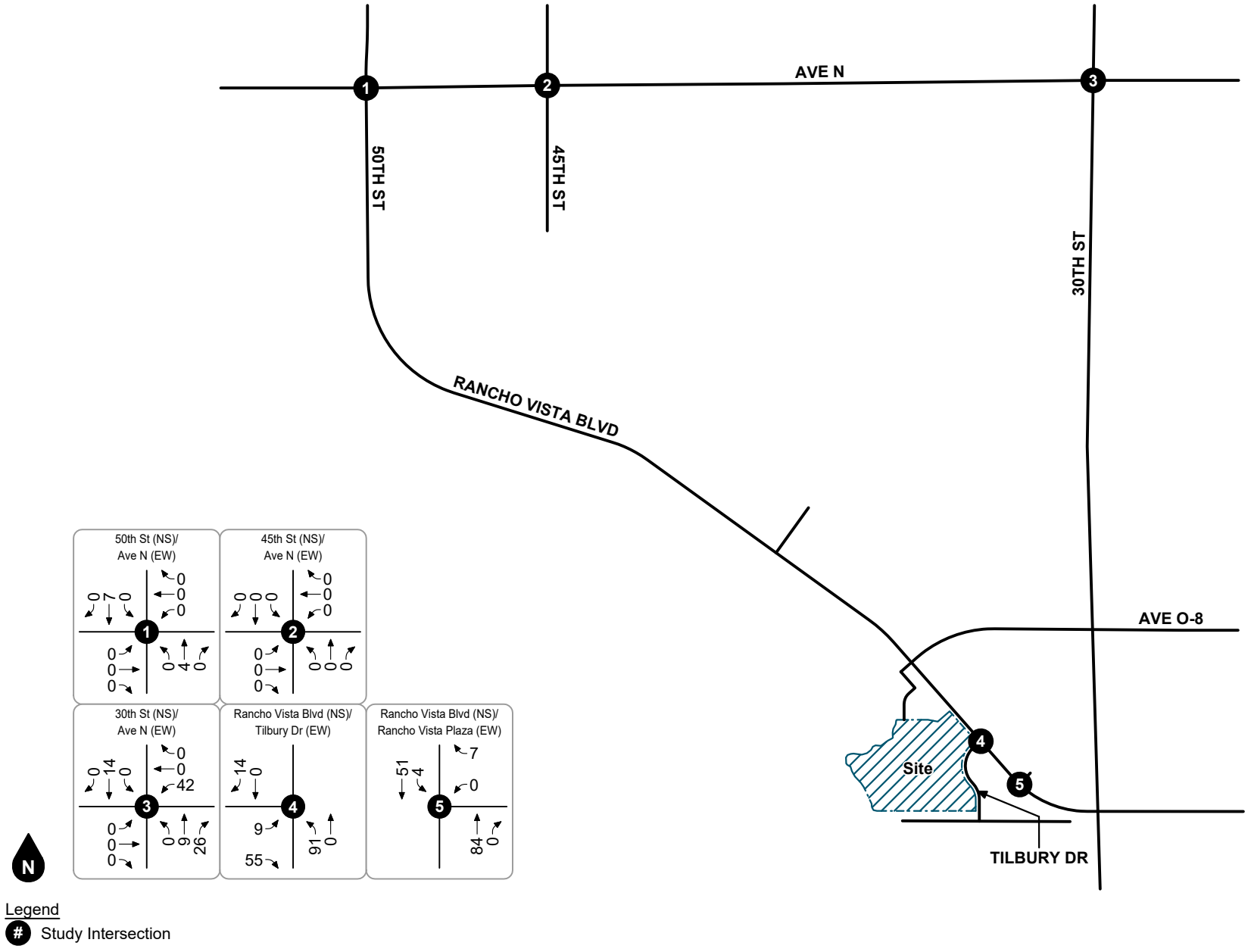


Figure 19
Project PM Peak Hour Intersection Turning Movement Volumes

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 and ambient growth. The project completion date for analysis purposes in this report is 2025.

To account for ambient growth, Opening Year (2025) roadway volumes were developed by increasing existing (year 2023) volumes by a growth rate of one and one-half percent (1.5%) per year over a two (2) year period for a total growth factor of 1.03. The ambient growth factor was conservatively applied to all movements at the study intersections.

ANALYSIS SCENARIO VOLUMES

Existing Plus Project

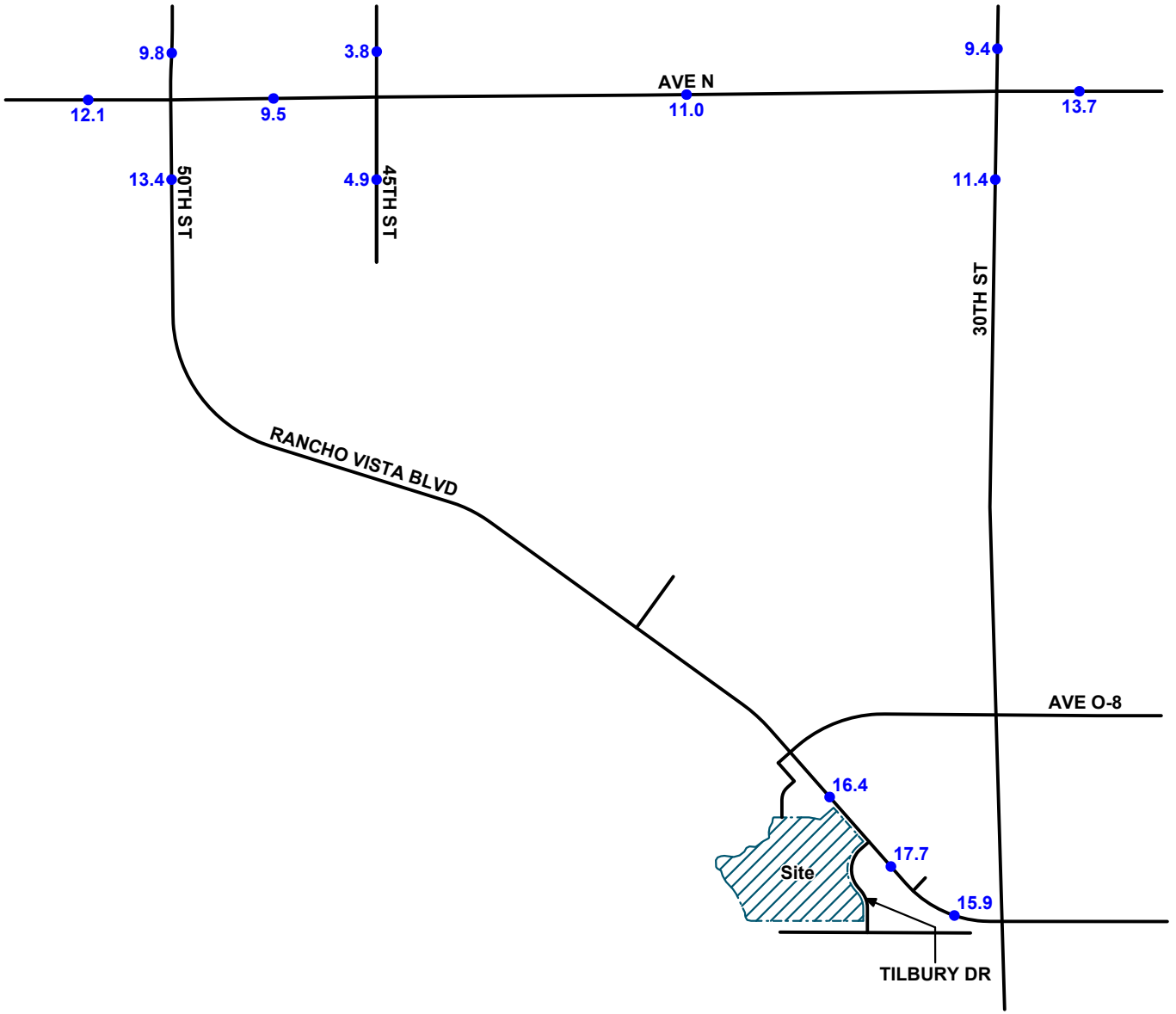
The Existing Plus Project volume forecast was developed by adding project-generated trips to the Existing volumes. Existing Plus Project average daily traffic volumes are shown in Figure 20. Existing Plus Project AM peak hour and PM peak hour intersection turning movement volumes are shown in Figure 21 and Figure 22.

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 in Figure 23. Opening Year (2025) Without Project AM peak hour and PM peak hour intersection turning movement volumes are shown in Figure 24 and Figure 25.

Opening Year (2025) With Project

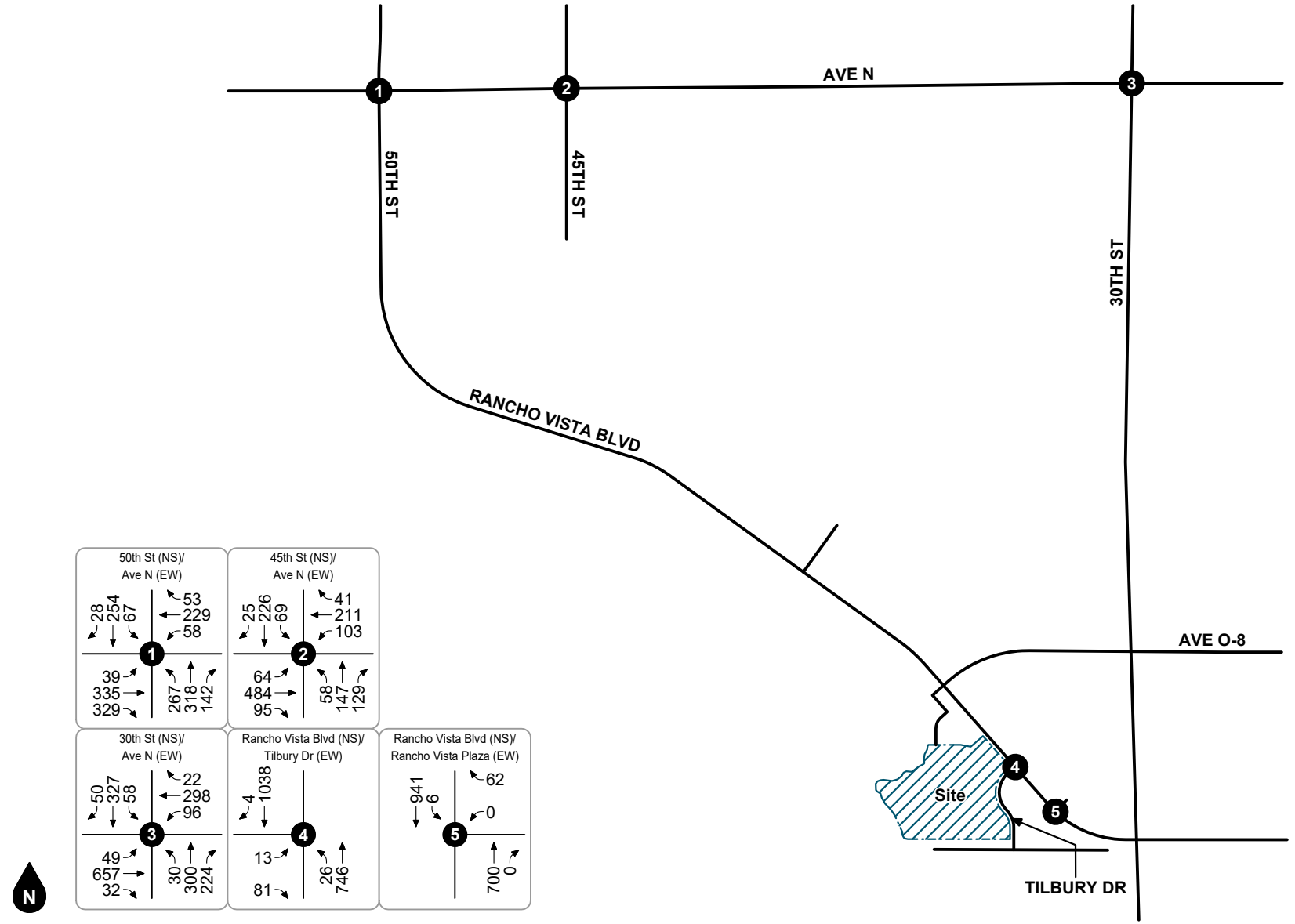
The Opening Year (2025) With Project volume forecast was developed by adding project-generated trips to the Opening Year (2025) Without Project volumes. Opening Year (2025) With Project average daily traffic volumes are shown in Figure 26. Opening Year (2025) With Project AM peak hour and PM peak hour intersection turning movement volumes are shown in Figure 27 and Figure 28.



Legend

●## Vehicles Per Day (1,000's)

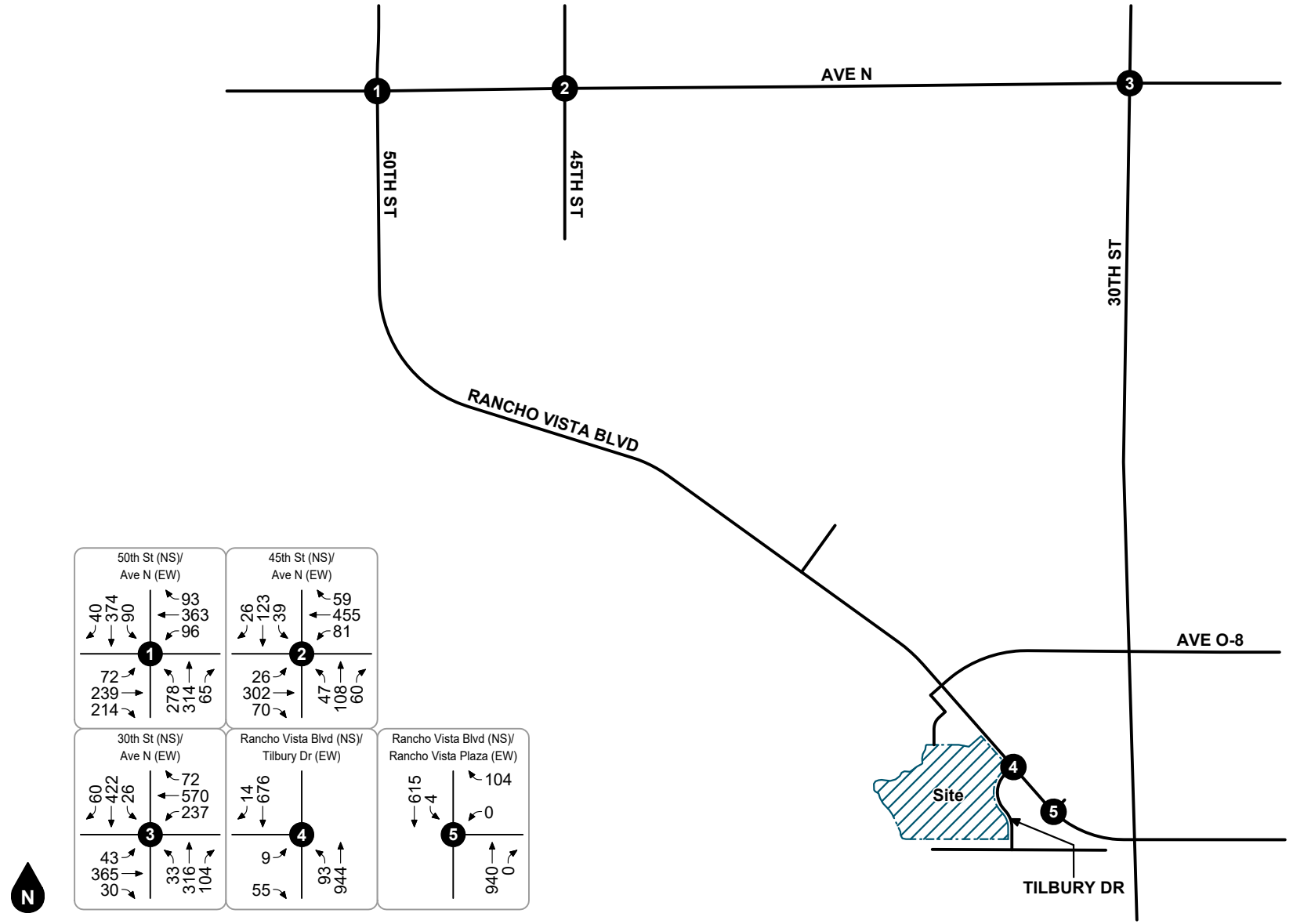
Figure 20
Existing Plus Project Average Daily Traffic Volumes



Legend

Study Intersection

Figure 21
Existing Plus Project
AM Peak Hour Intersection Turning Movement Volumes



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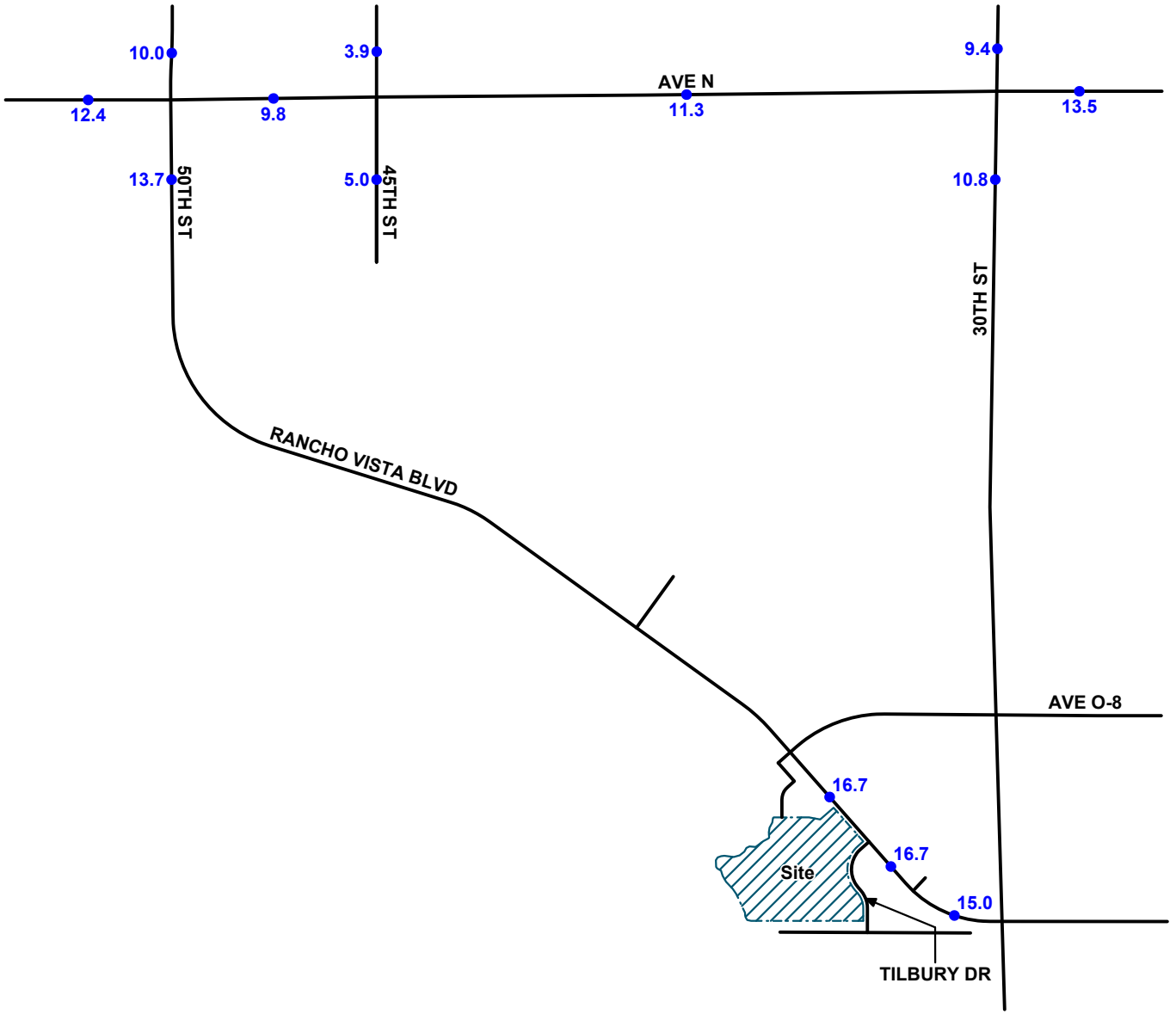
Study Intersection

Figure 22
Existing Plus Project
PM Peak Hour Intersection Turning Movement Volumes



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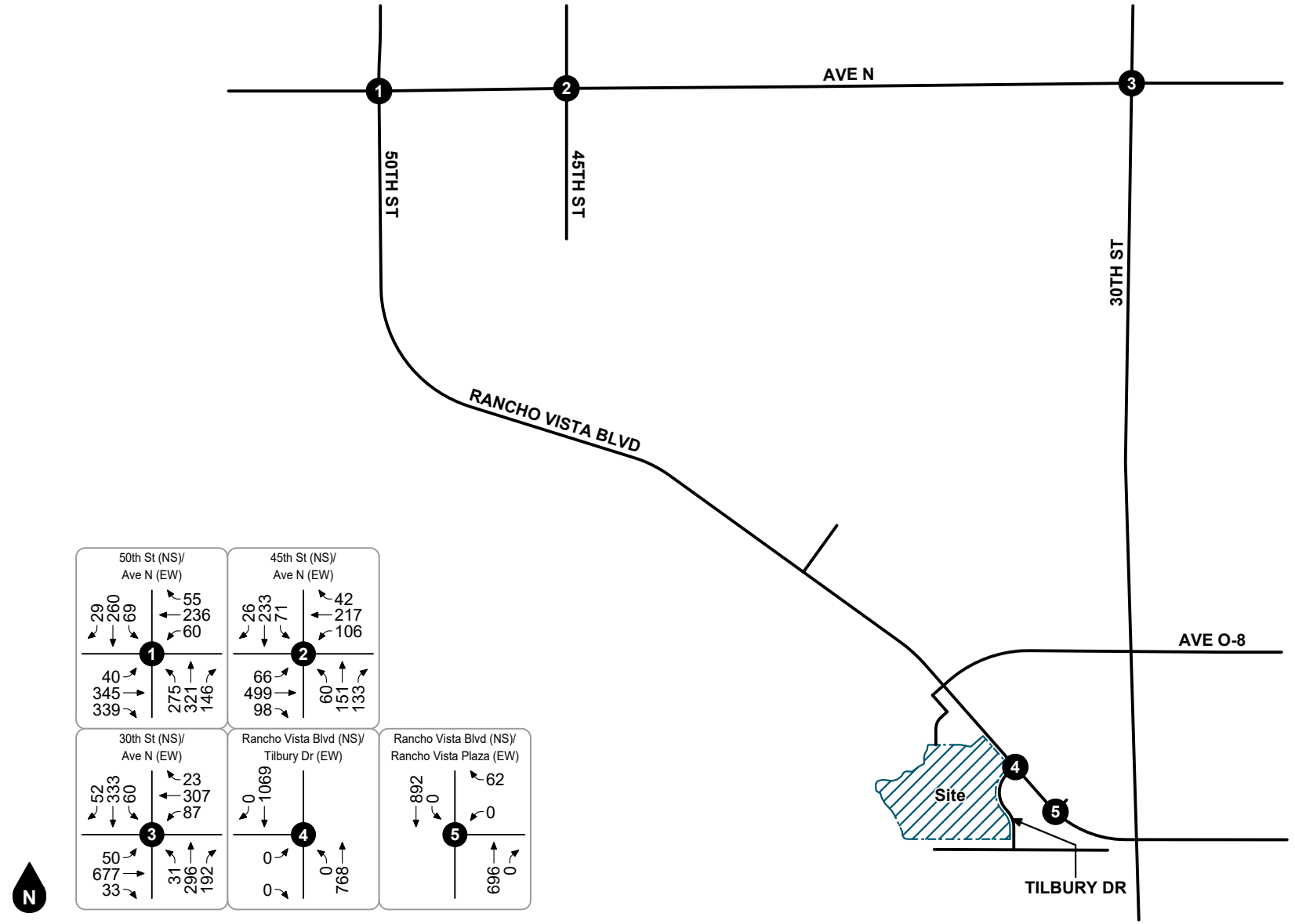
●## Vehicles Per Day (1,000's)

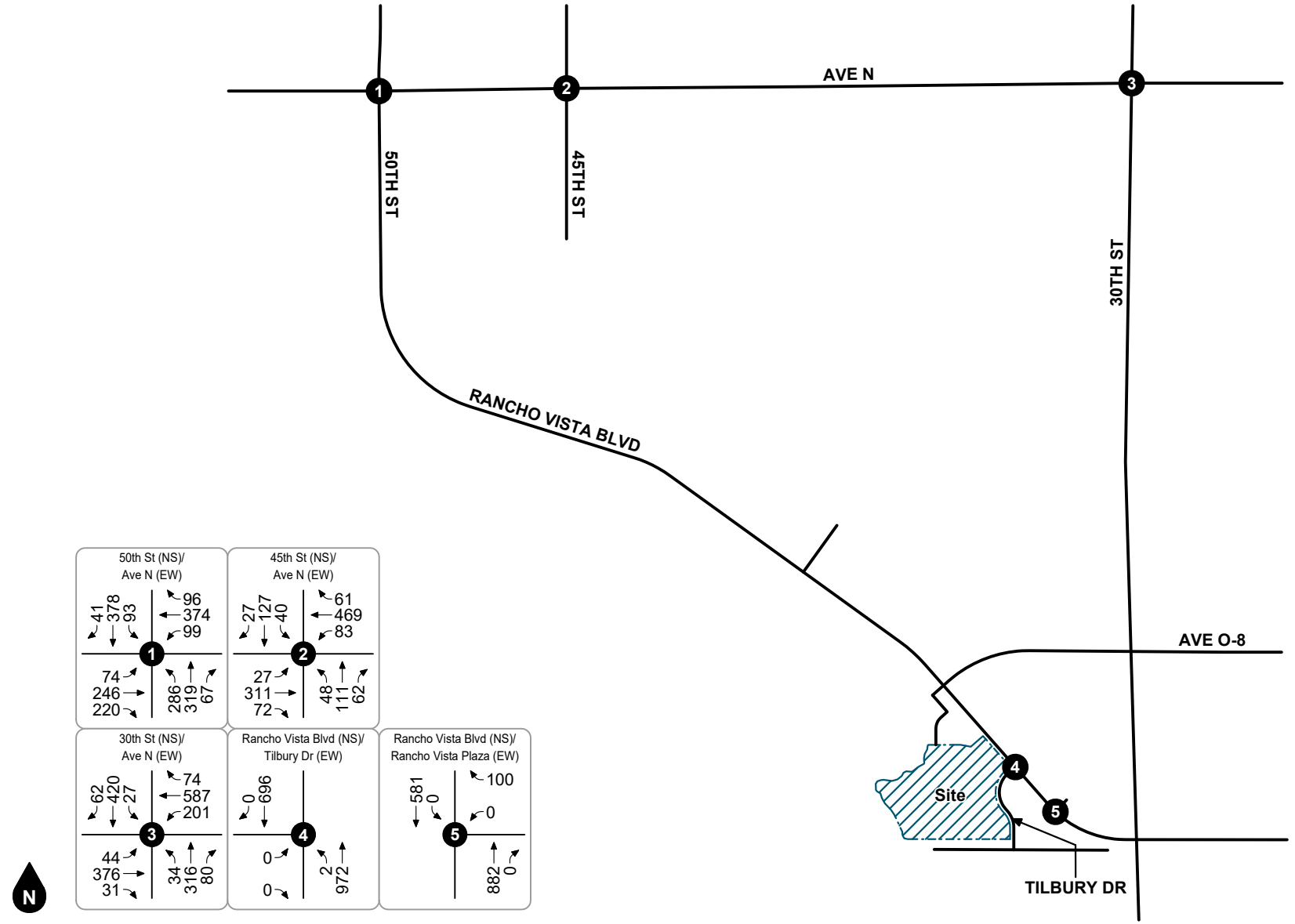
Figure 23
Opening Year (2025) Without Project Average Daily Traffic Volumes



Legend

Study Intersection

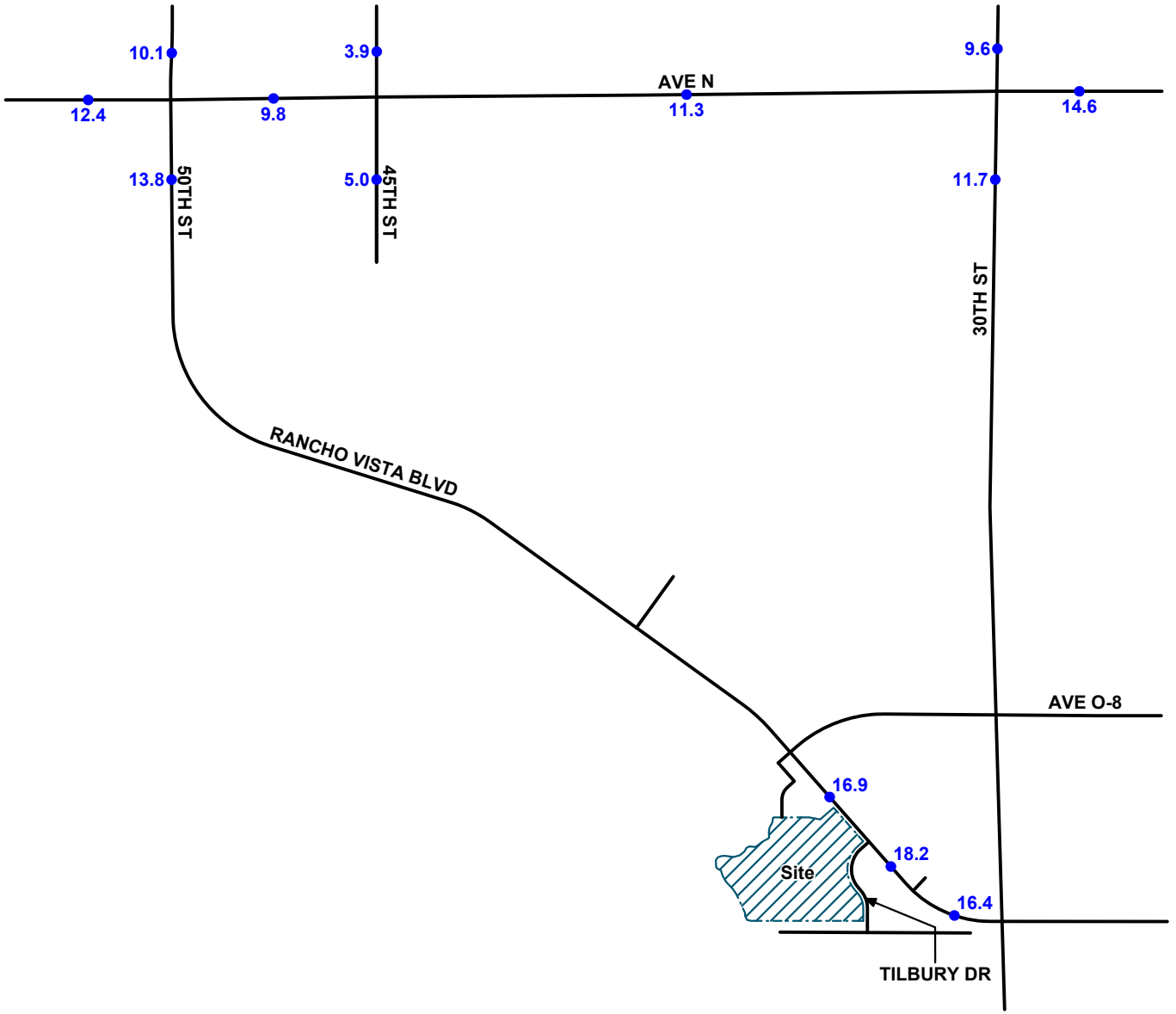
Figure 24
Opening Year (2025) Without Project
AM Peak Hour Intersection Turning Movement Volumes



Legend

Study Intersection

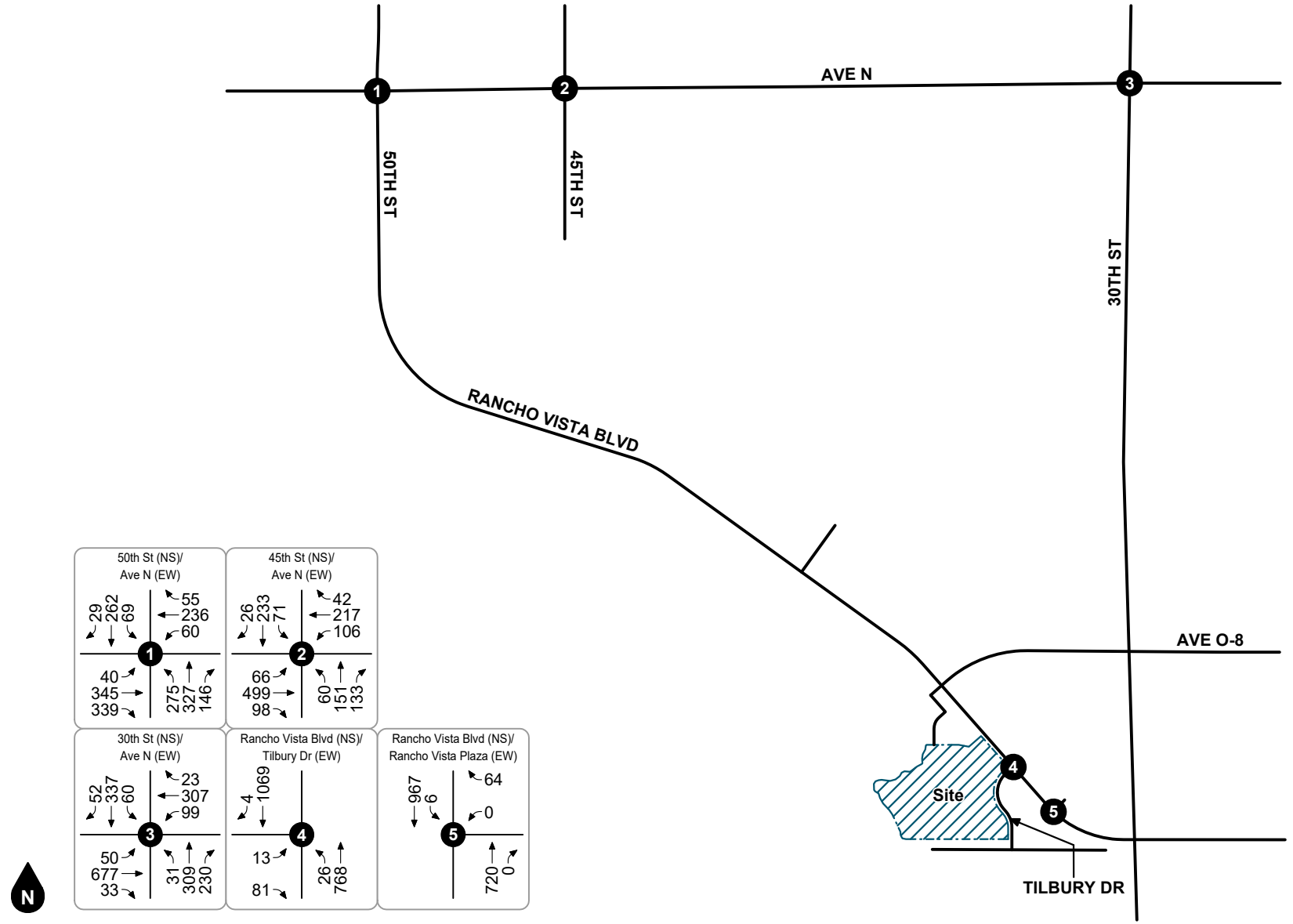
Figure 25
Opening Year (2025) Without Project
PM Peak Hour Intersection Turning Movement Volumes



Legend

●## Vehicles Per Day (1,000's)

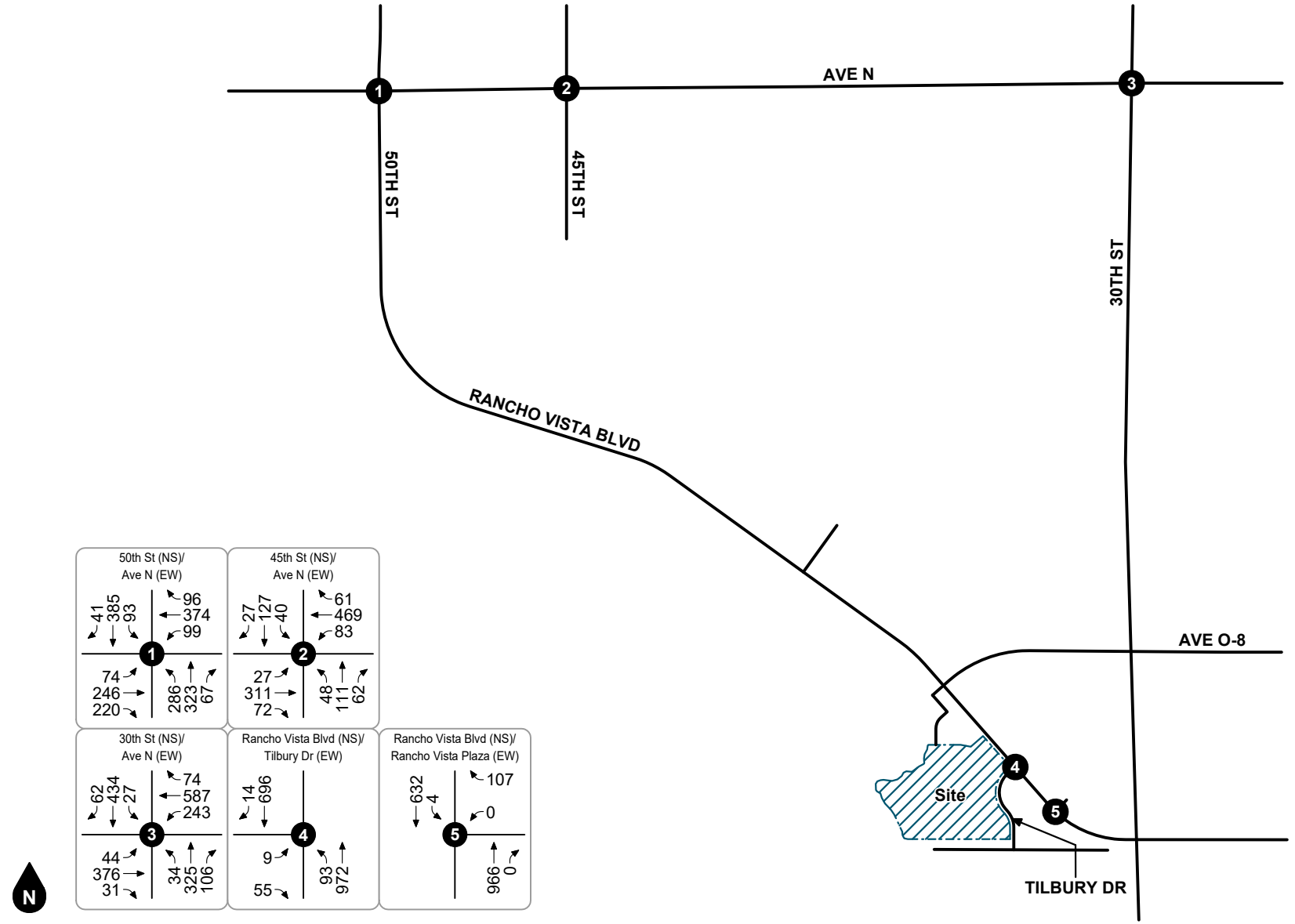
Figure 26
Opening Year (2025) With Project Average Daily Traffic Volumes



Legend

Study Intersection

Figure 27
Opening Year (2025) With Project
AM Peak Hour Intersection Turning Movement Volumes



Legend

Study Intersection

Figure 28
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 3. As shown in Table 3, the study intersections are forecast to operate within acceptable Levels of Service (D or better) during the peak hours for Existing Plus Project conditions, except for the intersection of 50th Street and Avenue N that is forecast to continue operating at Level of Service E during the AM and PM peak hours.

As also shown in Table 3, the proposed project is forecast to increase intersection delay by less than 2.0 seconds at the intersection of 50th Street and Avenue N for Existing Plus Project conditions; therefore, the proposed project is forecast to result in no significant impacts at the study intersections for Existing Plus Project conditions based on the City-established thresholds of significance.

OPENING YEAR (2025) WITHOUT PROJECT

The study intersection Levels of Service for Opening Year (2025) Without 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) during the peak hours for Opening Year (2025) Without Project conditions, except for the intersection of 50th Street and Avenue N that is forecast to continue operating at Level of Service E during the AM and PM peak hours.

OPENING YEAR (2025) WITH PROJECT

The study intersection Levels of Service for Opening Year (2025) With Project conditions is shown in Table 5. As shown in Table 5, the study intersections are forecast to operate within acceptable Levels of Service (D or better) during the peak hours for Opening Year (2025) With Project conditions, except for the intersection of 50th Street and Avenue N that is forecast to continue operating at Level of Service E during the AM and PM peak hours.

As also shown in Table 5, the proposed project is forecast to cause no change in intersection delay at the intersection of 50th Street and Avenue N for Opening Year (2025) With Project conditions; therefore, the proposed project is forecast to result in no significant impacts at the study intersections for Opening Year (2025) With Project conditions based on the City-established thresholds of significance.

TRAFFIC SIGNAL WARRANT ANALYSIS

The potential need for installation of a traffic signal at the intersection of Ranch Vista Plaza Driveway and Ranch Vista Boulevard for commercial development south of the project 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. Traffic signal warrant worksheets are provided in Appendix E.

For the commercial driveway operating as a restricted right-turn only, the peak hour traffic signal warrant was evaluated for the major street left-turn volume and conflicting major street through volume. The minor street left-turns were not evaluated since the commercial driveway traffic counts show that the driveway has been restricted to right-turns only. Installation of a traffic signal does not appear to currently be warranted at the commercial driveway at Rancho Vista Plaza/Rancho Vista Boulevard based on the forecast Opening Year (2025) With Project weekday AM and PM peak hour volumes.

Table 3
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					
		Delay[2]	LOS[3]	Delay[2]	LOS	Delay[2]	LOS[3]	Delay[2]	LOS	Change	Substantial Effect?	Change	Substantial Effect?
1. 50th Street at Avenue N	TS	68.0	E	61.5	E	68.1	E	61.7	E	+0.1	NO	+0.2	NO
2. 45th Street West at Avenue N	TS	18.0	B	17.6	B	18.0	B	17.6	B	+0.0	NO	+0.0	NO
3. 30th Street West at Avenue N	TS	27.5	C	16.0	B	31.7	C	26.4	C	+4.2	NO	+10.4	NO
4. Tilbury Drive at Rancho Vista Boulevard	TS	-	-	-	-	20.8	C	13.0	B	+20.8	NO	+13.0	NO
5. Rancho Vista Plaza at Rancho Vista Blvd	CSS	12.4	B	14.6	B	12.6	B	15.7	C	+0.2	NO	+1.1	NO

Notes:

1. TS = Traffic Signal; CSS = Cross Street Stop. AWS = All Way 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

Table 4
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. 50th Street at Avenue N	TS	71.0	E	64.4	E
2. 45th Street West at Avenue N	TS	18.2	B	20.0	B
3. 30th Street West at Avenue N	TS	31.7	C	16.5	B
5. Rancho Vista Plaza at Rancho Vista Blvd	CSS	12.6	B	15.0	B

Notes:

1. TS = Traffic Signal; CSS = Cross Street Stop. AWS = All Way 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

Table 5
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					
		Delay[1]	LOS[2]	Delay[1]	LOS[2]	Delay[1]	LOS[2]	Delay[1]	LOS[2]	Change	Substantial Effect?	Change	Substantial Effect?
1. 50th Street at Avenue N	TS	71.0	E	64.4	E	71.0	E	64.4	E	+0.0	NO	+0.0	NO
2. 45th Street West at Avenue N	TS	18.2	B	20.0	B	18.2	B	20.0	B	+0.0	NO	+0.0	NO
3. 30th Street West at Avenue N	TS	31.7	C	16.5	B	31.7	C	17.2	B	+0.0	NO	+0.7	NO
4. Tilbury Drive at Rancho Vista Boulevard	TS	-	-	-	-	21.5	C	13.2	B	+21.5	NO	+13.2	NO
5. Rancho Vista Plaza at Rancho Vista Blvd	CSS	12.6	B	15.0	B	12.8	B	16.1	C	+0.2	NO	+1.1	NO

Notes:

1. TS = Traffic Signal; CSS = Cross Street Stop. AWS = All Way Stop;

1. 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.
2. 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 three full access residential street connections. Two project connects are on Tilbury Drive and one project connection is at Registry Way.

PROJECT DESIGN FEATURES

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

- Construct Tilbury Drive along the project frontage at its ultimate half-section width, including landscaping and parkway improvements in conjunction with development, plus one travel lane in the opposite direction, or as otherwise required by the City of Palmdale.

4. Rancho Vista Boulevard (NS) and Tilbury Drive (EW)
    - Install eastbound stop control for Tilbury Drive at Rancho Vista Boulevard
    - Northbound/Southbound: Maintain existing through lanes along Rancho Vista Boulevard.
    - Eastbound: Construct one dedicated left-turn lane and one right-turn lane.

This analysis also assumes the project shall comply with the following conditions as part of the City of Palmdale 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 Palmdale.

- 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 Palmdale.

- 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 Palmdale 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 Palmdale 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 6 summarizes the results of the queue analysis to check for potential conflicts at the proposed project access intersection of Tilbury Drive and Rancho Vista Boulevard. The forecasted queue lengths shown in Table 6, 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 6, vehicle queue lengths at for project access 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 access intersection of Tilbury Drive and Ranch Vista Boulevard 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. Traffic signal warrant worksheets are provided in Appendix E.

Installation of a traffic signal is not forecast to be warranted for Opening Year (2025) With Project conditions at the intersection of Tilbury Drive and Rancho Vista Boulevard based on the peak hour volume warrant (Warrant 3). It is noted that the warrant is likely to be satisfied when/if the remainder of the Rancho Vista Specific Plan is developed on the east side of Tilbury Drive.

Table 6
Site Access Queuing Analysis

Study Intersection	Approach	Lane	Storage Length (Feet)[2]	Peak Hour 95th-Percentile Queue Length (Feet)[1] Opening Year (2025) With Project AM	Peak Hour 95th-Percentile Queue Length (Feet)[1] Opening Year (2025) With Project PM	Adequate Storage Provided
4. Tilbury Drive at Rancho Vista Boulevard	Northbound	Left	450	<20	<20	YES
	Southbound	Thru-Right	490	<20	<20	YES
	Eastbound	Left	330	<20	<20	YES
	Eastbound	Right	330	30	<20	YES
5. Rancho Vista Plaza at Rancho Vista Blvd	Northbound	Thru-Right	367	<20	<20	YES
	Southbound	Left	300	<20	<20	YES
	Westbound	Right	32	<20	30	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. VEHICLE MILES TRAVELED ANALYSIS

This section summarizes the proposed project, vehicle miles traveled (VMT) findings, and identifies recommendations (if any) as specified in previous sections of this study.

SENATE BILL 743 BACKGROUND

California Senate Bill 743 (SB 743) directs the State Office of Planning and Research (OPR) to amend the 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 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.

SPECIFIC PLAN BACKGROUND

The Rancho Vista Specific Plan was originally analyzed in the Rancho Vista Specific Plan Environmental Impact Report 84-37 (State Clearinghouse No. 1984110711) ("EIR"). The EIR considered the development of 6,759 residential dwelling units within the Rancho Vista Specific Plan area. The Rancho Vista Specific Plan was subsequently amended in 1988, 1989, 1996, 1999, 2001, 2005, 2006, 2010, 2016 and 2022. Those amendments and related development activity have resulted in approximately 3,120 residential dwelling units developed, a build-out to date of 46 percent of the capacity analyzed in the EIR. The current land use allocation for residential units contained in the 2022 Rancho Vista Specific Plan Amendment (Ordinance No. 1589, which is referred to herein as the "2022 Amendment") reflects a maximum of 5,268 residential units at full build out.

The proposed project is consistent with the 2022 Amendment and would not result in additional units.

VEHICLE MILES TRAVELED EXEMPTION

In December 2018, the Natural Resources Agency revised Appendix G of the State CEQA Guidelines to include a checklist item relating to a project's impacts relating to Transportation. In particular, Appendix G of the State CEQA Guidelines now includes a checklist item that provides:

XVII. Transportation. Would the project:

a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?
b) Conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)?
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?
d) Result in inadequate emergency access?

The Lead Agency (City of Palmdale) certified the Rancho Vista Specific Plan EIR in 1986, with the subsequent amendments, several years before the above modified checklist items were added to the State CEQA Guidelines (specifically, impact analysis XVII(b), which changed the criteria for analyzing transportation impacts from level of service (LOS) to vehicle miles traveled (VMT)). California courts have held that where a new guideline or threshold is adopted after the certification of an EIR, an Addendum to the EIR need not include additional environmental analysis relating to that guideline or threshold where the potential environmental impact at issue in the new guideline or threshold was known or could have been known at the time the EIR was certified. (See *Citizens Against Airport Pollution v. City of San Jose* (2014) 227 Cal.App.4th 788, 806 [even though State CEQA Guidelines were amended on March 18, 2010 to address greenhouse gas emissions, lead agency's 2010 Addendum to a 1997 EIR did not require analysis of greenhouse gas emissions because

"information about the potential environmental impact of greenhouse gas emissions was known or could have been know at the time the 1997 EIR and the 2003 SEIR for the [project] were certified"]; *Concerned Dublin Citizens v. City of Dublin* (2013) 214 Cal.App.4th 1301, 1319-1320 ["the adoption of guidelines for analyzing and evaluating the significance of data does not constitute new information if the underlying information was otherwise known or should have been known at the time the EIR was certified"]; see *also Citizens for Responsible Equitable Environmental Development v. City of San Diego* (2011) 196 Cal.App.4th 515, 532.)

Here, the impacts at issue in the above-referenced threshold (e.g., the potential environmental impacts from VMT) were known or could have been known when the EIR was certified in 1986 and amended as recently as 2022. Because the potential transportation-related impacts at issue in the above checklist item were known or could have been known when the EIR and its addendum were certified, and because the EIR and its addendum did not include the language related to CEQA Guidelines § 15064.3, subdivision (b) environmental factor in its checklist, California law does not require VMT impacts to be analyzed in projects which are consistent to the certified EIR and subsequent addendums.

PROJECT VMT COMPARISON

The 59.1-acre project site (APN 3001-003-160, 163, 164) is zoned Urban Village Residential (3.1 to 17.9 DU/AC) per the current Rancho Vista Specific Plan. The proposed project involves the development of 239 single-family residential lots with a density of 4.0 DU/AC. The project density does not exceed the zoning for this area; therefore, the project-generated trips would be the same or less as those previously evaluated.

Since the proposed project is forecast to result in the same or fewer daily trips in comparison to the land use previously evaluated, the proposed project's VMT impact would be the same or less as the land use previously evaluated in the originally certified EIR and its subsequent addendums.

9. CONCLUSIONS

This section summarizes the proposed project, operational findings, and identifies recommendations (if any) as specified in previous sections of this study. Figure 29 summarizes the recommended improvements.

PROJECT TRIP GENERATION

The proposed project is forecast to generate a total of approximately 2,250 daily trips, including 165 trips during the AM peak hour and 225 trips during the PM peak hour.

LEVEL OF SERVICE ANALYSIS

The study intersections currently operate within acceptable Levels of Service (D or better) during peak hours, except for the intersection of 50th Street and Avenue N that currently operates at Level of Service E during the AM and PM peak hours.

The study intersections are forecast to continue operating within acceptable Levels of Service (D or better) during the peak hours for all analysis scenarios evaluated, except for the intersection of 50th Street and Avenue N that is forecast to continue operating at Level of Service E during the AM and PM peak hours.

The proposed project is forecast to increase the intersection delay by less than 2.0 seconds at the intersection of 50th Street and Avenue N for Existing Plus Project and cause no change in delay for Opening Year (2025) With Project conditions; therefore, the proposed project is forecast to result in no significant impacts at the study intersections for the analysis scenarios evaluated based on the City-established thresholds of significance.

SUMMARY OF IMPROVEMENTS

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

Since the proposed project is forecast to result in no significant impacts at the study intersections for the analysis scenarios evaluated, no additional off-site improvements are required beyond those necessary to provide project site access.

VEHICLE MILES TRAVELED ANALYSIS

Since the proposed project is forecast to result in the same or fewer daily trips in comparison to the land use previously evaluated, the proposed project's VMT impact would be the same or less as the land use previously evaluated in the originally certified EIR and its subsequent addendums.

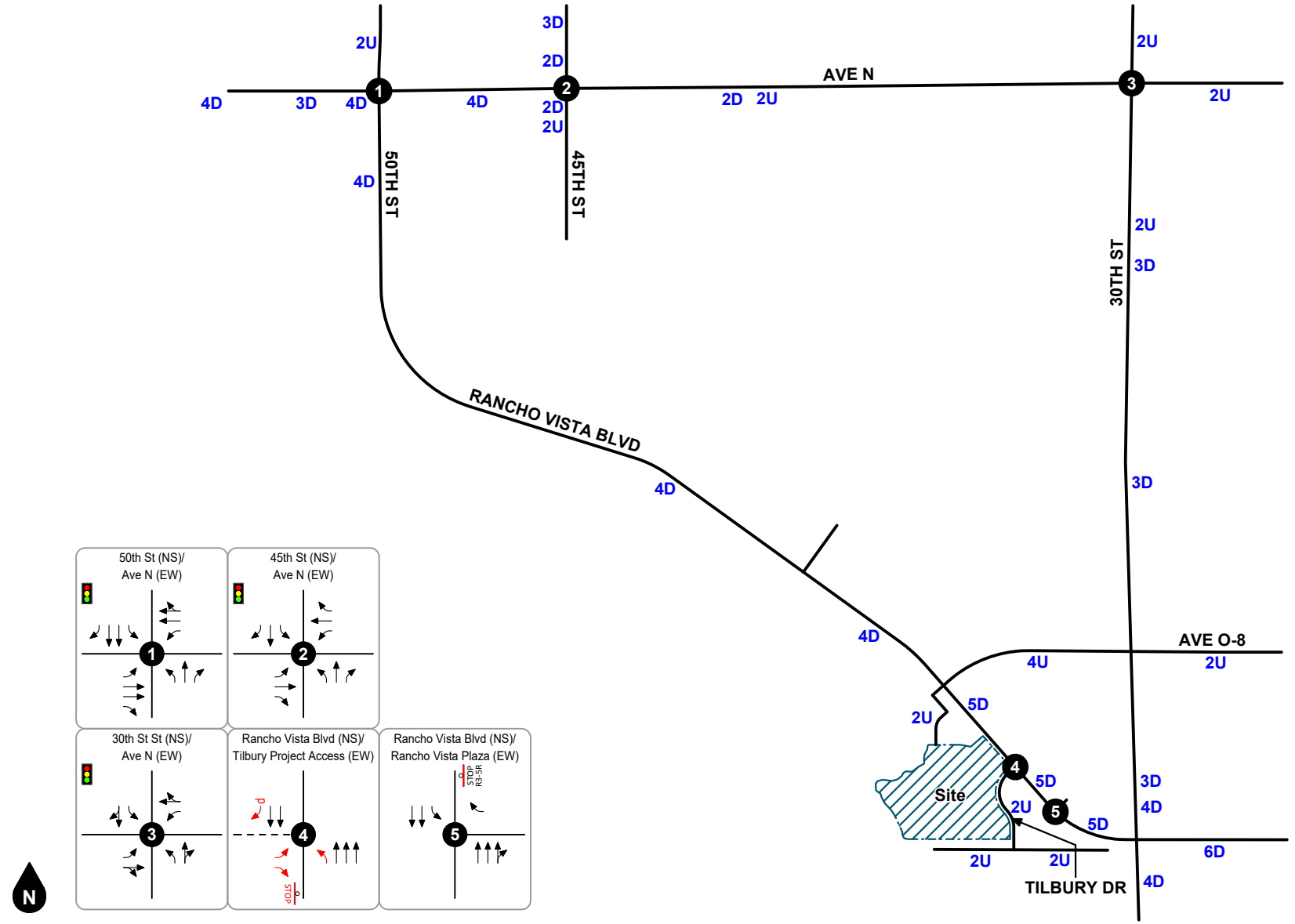


Figure 29
Recommended Lane Geometry and Intersection Traffic Controls

APPENDICES

Appendix A Glossary
Appendix B Scoping Agreement
Appendix C Traffic Count Data
Appendix D Intersection Level of Service Worksheets
Appendix E Traffic Signal Warrant 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

MEMORANDUM OF UNDERSTANDING

TO: CITY OF PALMDALE

FROM: Perrie Ilercil, PE (AZ)

DATE: July 14, 2023

SUBJECT: TTM 83674 Palmdale Traffic Study Scope
GGI Project No. 19644

The purpose of this scoping document is to outline the proposed traffic analysis parameters and assumptions for the TTM 83674 Palmdale for review/concurrence by City of Palmdale staff.

PROJECT DESCRIPTION

The 59.1-acre project site (APN 3001-003-160, 163, 164) is located at south of Rancho Vista Boulevard and west of Tilbury Drive within the Rancho Vista Specific Plan in the City of Palmdale California. The project site is currently vacant and zoned Urban Village Residential (3.1 to 17.9 DU/AC). Figure 1 shows the project location map.

The proposed project involves the development of 239 single-family residential lots. Project site access to/from the roadway network is primarily proposed via two driveways at Tilbury Drive, which connects to Rancho Vista Boulevard. Secondary access is proposed at Registry Way connecting to the existing residential neighborhood to the north. Tilbury Drive also connects to the existing residential neighborhood south of the project. The proposed site plan is illustrated in Figure 2.

PROJECT TRIP GENERATION & DISTRIBUTION

Table 1 shows the project trip generation based upon rates obtained from the Institute of Transportation Engineers (ITE) *Trip Generation Manual* (11th Edition, 2021) for Land Use Code 210 (Single Family Detached Housing).

As shown in Table 1, the proposed project is forecast to generate approximately 2,250 daily trips, including 165 trips during the AM peak hour and 225 trips during the PM peak hour. Figures 3 illustrates the forecast directional distribution patterns for the project-generated trips developed from engineering judgement based on review of surrounding land uses, local and regional roadway facilities in the project vicinity, and regional trip distributions forecasts documented in the traffic study for the Rancho Vista Specific Plan Environmental Impact Report (EIR).

STUDY AREA

The project site is within the Rancho Vista Specific Plan, which was previously evaluated under Environmental Impact Report 84-37 (SCH No. 84110711). The transportation impact analysis for the project shall tier from the previous EIR and subsequent amendments prepared for the Rancho Vista Specific Plan. Specifically, the Traffic/Circulation section of the EIR identifies mitigation measures for the Specific Plan Buildout which have not been completed at the following intersections:

- *50th Street and Avenue N* *(incomplete; add 2nd NB lane)*
- *45th Street West and Avenue N* *(incomplete; add 2nd EB & WB lanes)*
- *30th Street West and Avenue N* *(incomplete; add 2nd NB & SB lanes)*

In addition to the specified specific plan intersections above the subdivision access on to Ranch Vista Boulevard will be included as a study intersection. Therefore, the study shall consist of the following study intersections:

1. 50th Street (NS) at Avenue N (EW) [1]
2. 45th Street (NS) Avenue N (EW)
3. 30th Street (NS) at Avenue N (EW)
4. Tilbury Drive (NS) at Rancho Vista Boulevard (EW)
5. Rancho Vista Plaza west driveway (NS) at Rancho Vista Boulevard (EW)

TRAFFIC COUNTS

Existing conditions intersection volumes will be based on new intersection turning movement counts collected at the study intersections during the AM peak period (7:00 AM – 9:00 AM) and PM peak period (4:00 PM – 6:00 PM) on one typical weekday (Tuesday, Wednesday, or Thursday) while local schools were in session (Thursday, May 25, 2023).

ANALYSIS METHODOLOGY

Study intersection performance shall be calculated in accordance with the parameters outlined below:

Intersection HCM Delay Methodology

In accordance the County of Los Angeles *Transportation Impact Analysis Guidelines* (July 23, 2020) ["County TIA Guidelines"] requirements, signalized and unsignalized study intersections are analyzed using the intersection delay methodology based on procedures contained in the *Highway Capacity Manual* (Transportation Research Board, 7th Edition):

- Base saturation flow rate of 1,900 vehicles per hour per lane
- Peak hour factor (PHF) based on collected counts will be used for the existing conditions
- A PHF of 0.95 will be used for future conditions

ANALYSIS SCENARIOS

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

- Existing
- Existing Plus Project
- Opening Year (2024) Without Project
- Opening Year (2024) With Project

As the proposed project does not involve a General Plan Amendment, a horizon year analysis is not necessary.

[1] NS = north-south roadway; E-W – east-west roadway.

FORECASTING METHODOLOGY

To account for ambient growth, Opening Year (2025) roadway volumes shall be increased by a growth rate of one and one-half percent (1.5%) per year over a two (2) year period for a total growth factor of 1.03. This provides a conservative growth estimate compared to the annual growth rate of 1.47% per year derived from the *2010 Congestion Management Program for Los Angeles County* General Traffic Volume Growth Factors (Appendix D, Exhibit D-1).

In addition, a list of pending and approved/unconstructed development projects shall be requested from the City of Palmdale. Trip forecasts for other development projects within the project study area shall be determined based on trip rates from the ITE *Trip Generation Manual* and will be added to existing roadway volumes for the opening year analysis scenarios.

TRANSPORTATION EFFECTS

The City of Palmdale has established a minimum acceptable Level of Service standards during peak hour conditions of Level of Service C or better, while Level of Service D may be acceptable for a short duration during peak periods. Therefore, Level of Service D or better is generally considered acceptable during peak hours and Level of Service E/F is considered unacceptable.

A substantial transportation effect at unsignalized study intersections may require improvements if one or more of the following conditions are met:

- The addition of project trips to a study intersection results in the degradation of intersection operations from LOS D or better operations to LOS E or F.
- The project-related increase in delay is equal to or greater than 2.0 seconds at an intersection that is already operating at LOS E or F.
- The intersection meets peak hour signal warrants either caused by project volumes, or project volumes are added at an intersection that meets peak hour signal warrants in the baseline scenario(s). Peak hour signal warrants should be determined based on the latest California Manual on Uniform Traffic Control Devices (CA MUTCD).

SITE ACCESS AND ON-SITE CIRCULATION ANALYSIS

The traffic analysis shall review site access considerations such as intersection traffic controls and lane configurations for the study intersection of Tilbury Drive and Rancho Vista Boulevard, 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).

VEHICLE MILES TRAVELED (VMT) SCREENING ASSESSMENT

Prepare a qualitative assessment of the new California Environmental Quality Act (CEQA) requirements relating to vehicle miles traveled (VMT) enacted since the Environmental Impact Report (EIR) was prepared. Specifically, the assessment shall provide a background of previous environmental evaluation and explanation of California case law holding that an addendum to an EIR need not include additional environmental evaluation of new guidelines or thresholds adopted after the certification of an EIR where the potential

environmental impact at issue in the new guideline or threshold was known or could have been known at the time the EIR or subsequent addendums were certified. Notwithstanding the above, the assessment will describe how the number of trips generated by the Specific Plan are expected to be the same or less, thus resulting in the same or less VMT impacts relative to the currently adopted Specific Plan.

CONCLUSION

We appreciate the opportunity to provide this memorandum of understanding for your review. Should you have any questions or comments regarding the proposed scope, please contact me at 714-795-3100 ext. 103 or 949-257-3126.

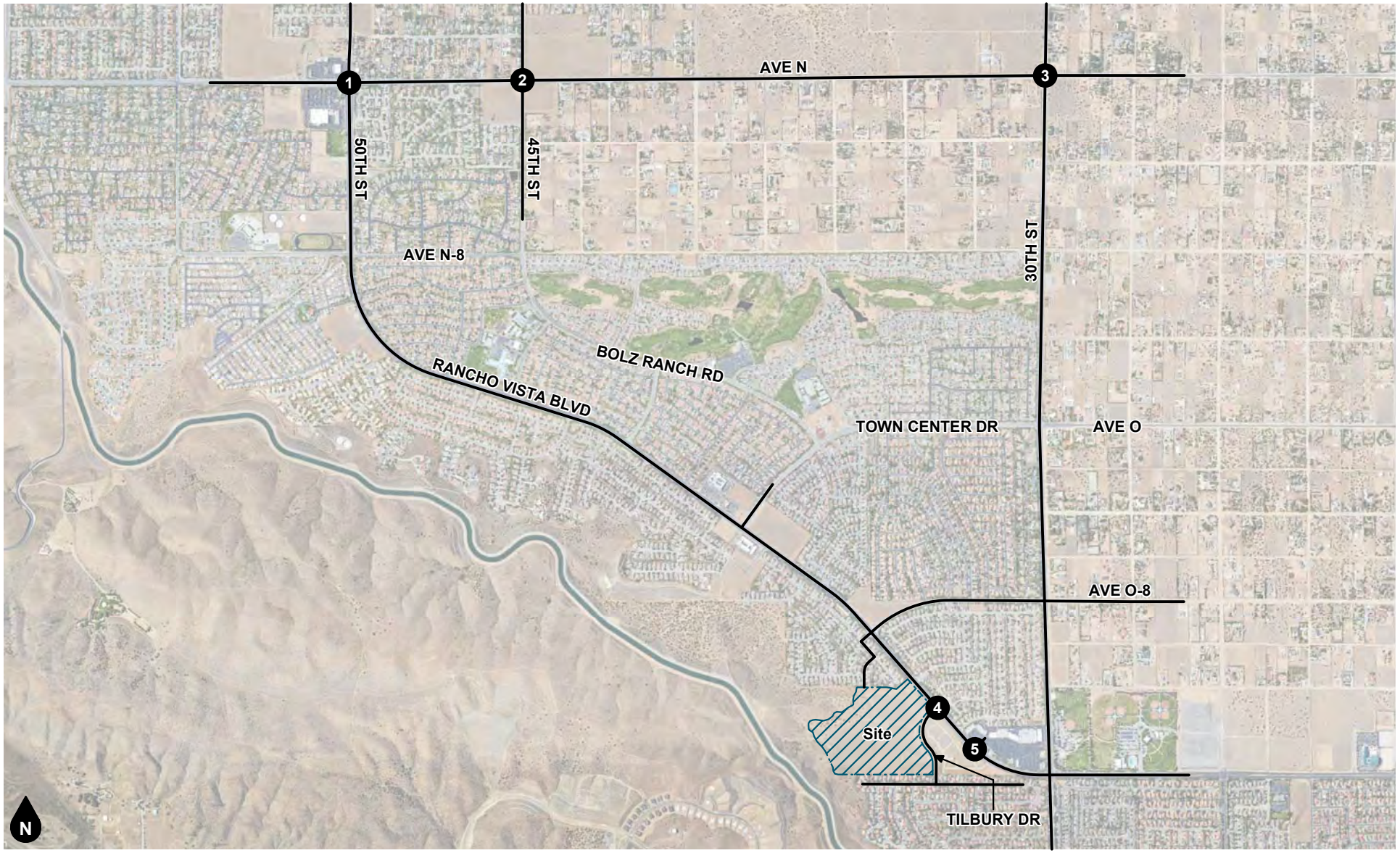
Table 2
Project Trip Generation

Trip Generation Rates									
			AM Peak Hour			PM Peak Hour			
Land Use	Source[1]	Land Use Variable[2]	% In	% Out	Rate	% In	% Out	Rate	Daily Rate
Single-Family Detached Housing	ITE 210	DU	25%	75%	0.70	63%	37%	0.94	9.43

Trips Generated[3]									
			AM Peak Hour			PM Peak Hour			
Land Use	Source	Quantity	In	Out	Total	In	Out	Total	Daily
Single-Family Detached Housing	ITE 210	239 DU	40	125	165	40	185	225	2,250

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. DU = Dwelling Unit; TSF = Thousand Square Feet
3. Peak hour trips have been rounded to the nearest 5 trips, and average daily traffic has been rounded to the nearest 10 trips.



Legend

(#) Study Intersection

Figure 1
Project Location Map

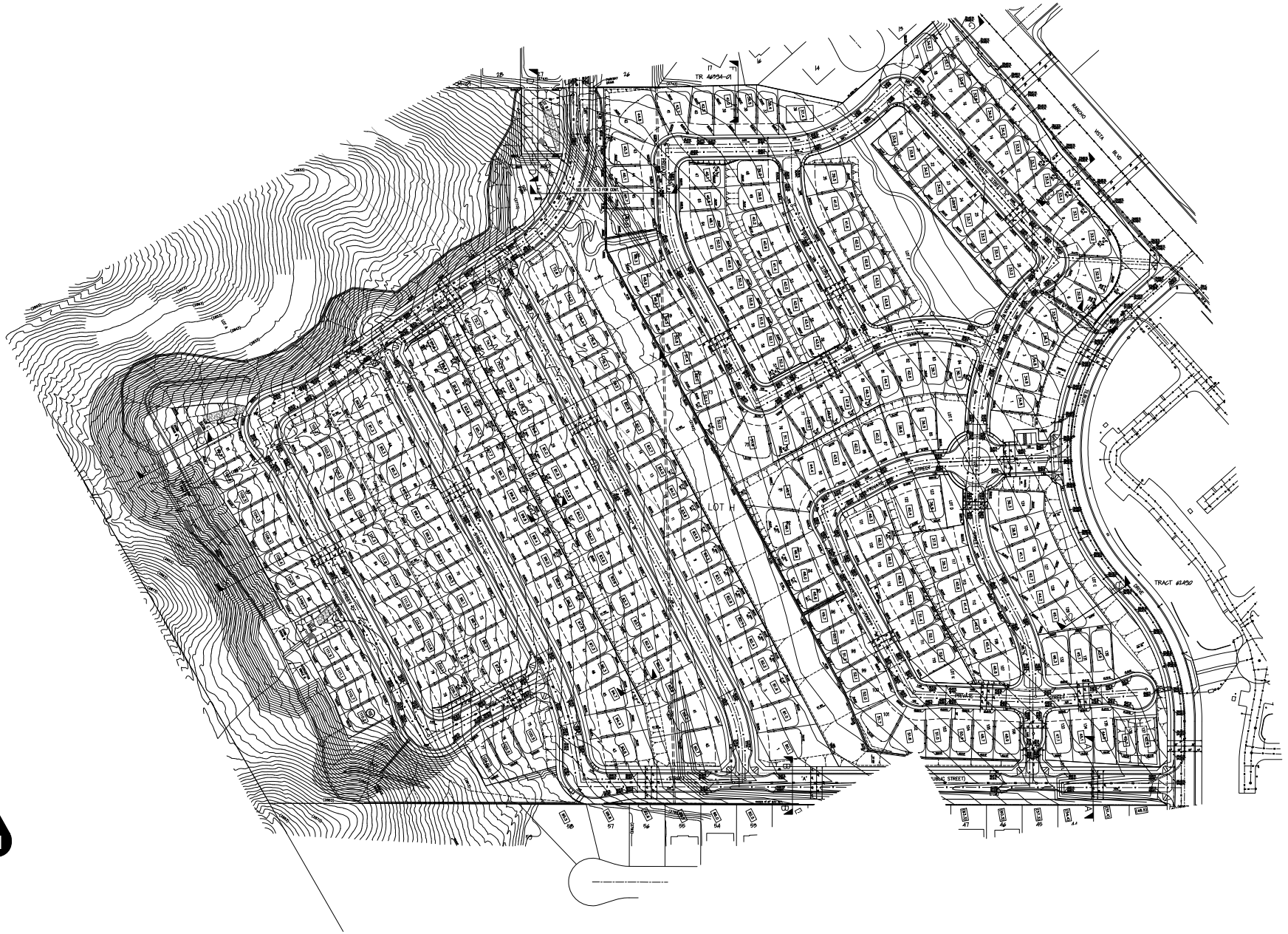
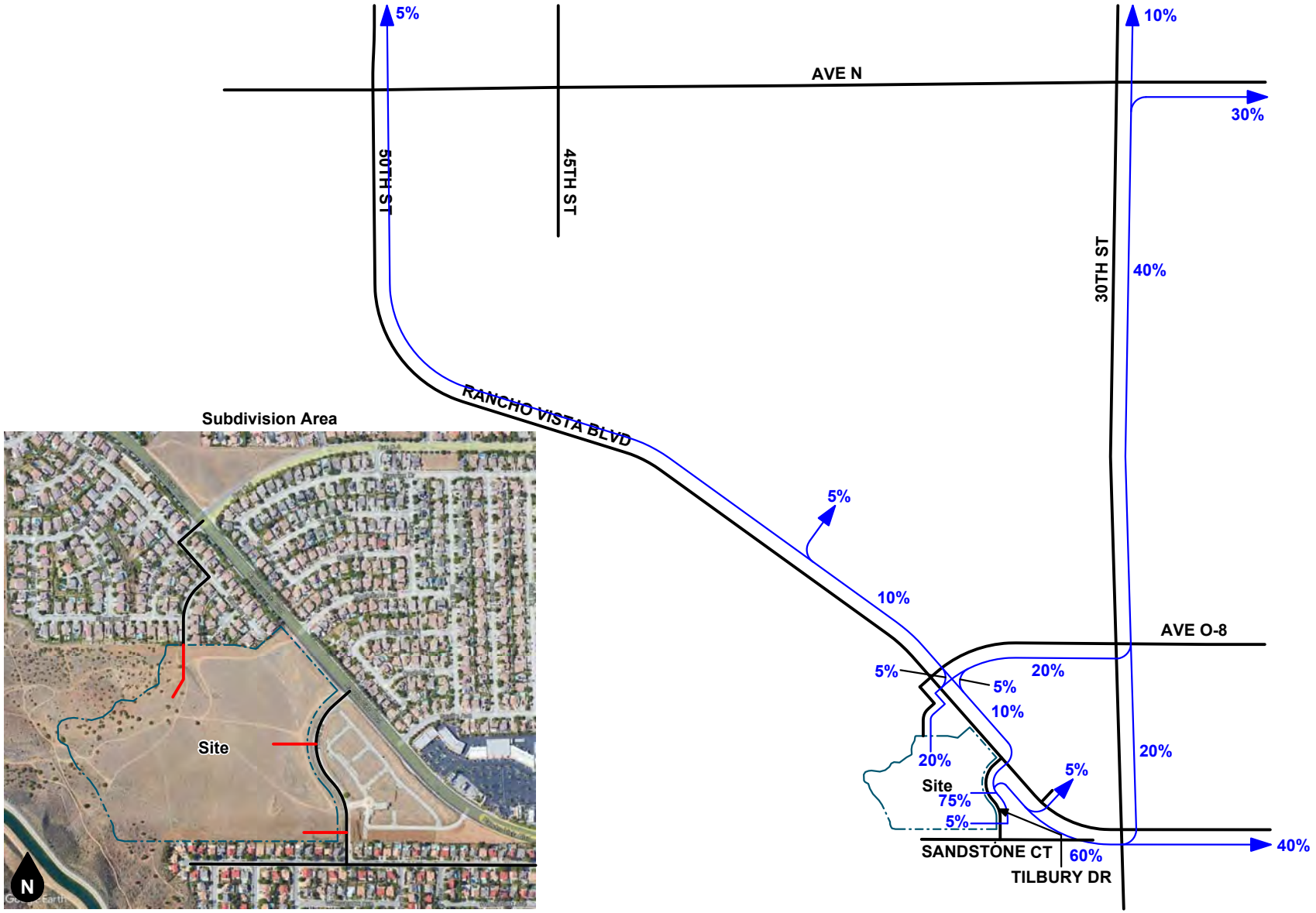


Figure 2
Site Plan



Legend

10% Percent To/From Project

Figure 3
Project Trip Distribution

Subject: FW: Traffic Scoping Agreement for TTM 83674 Palmdale

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From: Jay Nelson
Sent: Monday, July 17, 2023 10:11 AM
To: Perrie Ilercil; Giancarlo Ganddini
Cc: Lisa Martellaro-Palmer; Jason Finch; Chad Stadnicki
Subject: RE: Traffic Scoping Agreement for TTM 83674 Palmdale

Hi Perrie

I approve the traffic scope of work for TTM 83674 in Palmdale in your Memorandum dated July 14, 2023.

Jay Nelson
City Traffic Manager

CITY OF PALMDALE

Public Works
38250 Sierra Hwy.
Palmdale, CA 93550
661/267-5300 main
Office Hours: Monday-Thursday, 7:30 am - 6 pm. Closed Friday.

From: Perrie Ilercil
Sent: Monday, July 17, 2023 9:59 AM
To: Jay Nelson; Giancarlo Ganddini
Cc: Lisa Martellaro-Palmer; Jason Finch; Chad Stadnicki
Subject: RE: Traffic Scoping Agreement for TTM 83674 Palmdale

Hi Jay,
See the revised Scoping Agreement for this project.

As per previous comments the trip generation and distribution were revised.

Please email your acceptance of the scoping agreement for the traffic impact analysis to proceed.

Thank you,

Sincerely,
Perrie Ilercil, **PE (AZ)**
Senior Engineer
GANDDINI GROUP, INC

From: Jay Nelson
Sent: Thursday, July 13, 2023 8:38 PM

To: Perrie Ilercil; Giancarlo Ganddini
Cc: Lisa Martellaro-Palmer; Jason Finch
Subject: RE: Traffic Scoping Agreement for TTM 83674

Hi Perrie and Giancarlo:

Attached I have marked up the required changes to your Traffic Scoping Agreement. Please not that I have add one study intersection and it is important to the City that a traffic signal warrant analysis is also included in the TIA at this new study intersection at Rancho Vista Boulevard (RVB) and the most western Von's Shopping Center project driveway. As indicated in the attached Figure 3 I would like you to make a few minor changes to the Project Trip Distribution.

If you have any questions, please contact me. As the City's Traffic Manager, I am currently reviewing all the LOS and VMT traffic studies for the City of Palmdale.

Jay Nelson
City Traffic Manager

CITY OF PALMDALE

Public Works
38250 Sierra Hwy.
Palmdale, CA 93550
661/267-5300 main
Office Hours: Monday-Thursday, 7:30 am - 6 pm. Closed Friday.

From: Perrie Ilercil
Sent: Wednesday, July 12, 2023 3:00 PM
To: Jay Nelson
Subject: FW: Traffic Scoping Agreement for TTM 83674

Hi Jay,
See the attached for your review and approval.

The study area consists of those intersections that still have unconstructed improvements identified in the Rancho Vista Specific Plan EIR. Project trip distributions were also based on the regional percentages used in the traffic study for the EIR.
The scope is consistent with prior discussion (between Giancarlo and Jason), but documents additional information such as the trip generation and trip distribution forecasts for your review/approval.

Let me know if you have any questions or comments.

Thank you for your attention to this matter.

Sincerely,
Perrie Ilercil, **PE (AZ)**
Senior Engineer
GANDDINI GROUP, INC

From: Giancarlo Ganddini
Sent: Monday, July 10, 2023 3:03 PM
To: Jason Finch

Cc: Chad Stadnicki; Perrie Ilercil
Subject: RE: Traffic Scoping Agreement for TTM 83674

Hi Jason,

Hope you had a great 4th of July.

Just following up on the below/attached. We were able to collect traffic counts prior to Palmdale School District summer break, so we are ready to proceed upon approval.

In summary, the study area consists of those intersections that still have unconstructed improvements identified in the Rancho Vista Specific Plan EIR. Project trip distributions were also based on the regional percentages used in the traffic study for the EIR.

Can you please let us know if you have any questions/comments and provide a list a cumulative development projects to be included in the analysis?

Thanks,

Giancarlo Ganddini, PE, PTP
Principal

GANDDINI GROUP, INC.
555 Parkcenter Drive, Suite 225
Santa Ana, CA 92705
o. 714 795 3100 x 101
ganddini.com

From: Giancarlo Ganddini
Sent: Wednesday, June 21, 2023 6:24 PM
To: Jason Finch
Cc: Chad Stadnicki; Perrie Ilercil
Subject: Traffic Scoping Agreement for TTM 83674

Hi Jason,

Attached is a memorandum outlining the traffic analysis scope for the TTM 83674 project we discussed last month.

The scope is consistent with our prior discussion, but documents additional information such as the trip generation and trip distribution forecasts for your review/approval.

Please let us know if you have any questions or comments.

Thanks,

Giancarlo Ganddini, PE, PTP
Principal

GANDDINI GROUP, INC.
555 Parkcenter Drive, Suite 225
Santa Ana, CA 92705
o. 714 795 3100 x 101
ganddini.com

APPENDIX C

TRAFFIC COUNT DATA

INTERSECTION TURNING MOVEMENT COUNTS

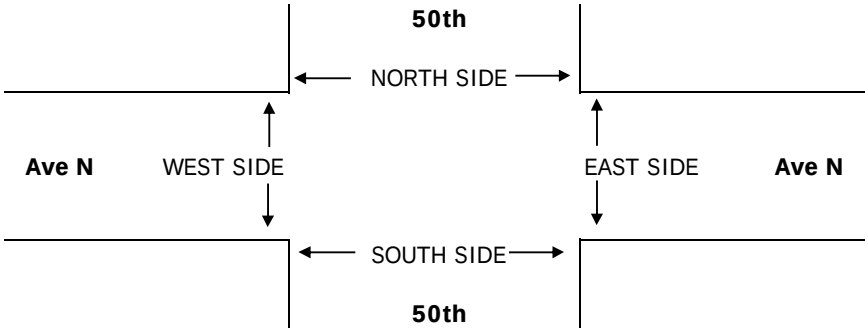
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	Palmdale	PROJECT #:	SC4057
Thu, May 25, 23	NORTH & SOUTH:	50th	LOCATION #:	1
	EAST & WEST:	Ave N	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

		NORTHBOUND 50th			SOUTHBOUND 50th			EASTBOUND Ave N			WESTBOUND Ave N			
	LANES:	NL 1	NT 1	NR 1	SL 1	ST 2	SR 1	EL 1	ET 2	ER 1	WL 1	WT 2	WR 0	TOTAL
AM	7:00 AM	24	39	26	9	34	3	13	75	51	9	43	7	333
	7:15 AM	43	43	40	16	67	5	5	99	85	13	51	8	475
	7:30 AM	80	86	69	23	70	5	9	128	123	21	59	12	685
	7:45 AM	63	105	36	17	73	11	11	84	76	14	54	20	564
	8:00 AM	57	55	18	16	53	4	10	50	50	8	47	11	379
	8:15 AM	67	66	19	11	56	8	9	73	80	15	69	10	483
	8:30 AM	51	57	17	14	68	6	16	89	91	11	61	23	504
	8:45 AM	42	46	14	22	69	10	16	81	82	9	37	15	443
	VOLUMES	427	497	239	128	490	52	89	679	638	100	421	106	3,866
	APPROACH %	37%	43%	21%	19%	73%	8%	6%	48%	45%	16%	67%	17%	
	APP/DEPART	1,163	/	692	670	/	1,228	1,406	/	1,046	627	/	900	0
	BEGIN PEAK HR		7:30 AM											
	VOLUMES	267	312	142	67	252	28	39	335	329	58	229	53	2,111
	APPROACH %	37%	43%	20%	19%	73%	8%	6%	48%	47%	17%	67%	16%	
	PEAK HR FACTOR		0.767			0.859			0.676			0.904		0.770
	APP/DEPART	721	/	404	347	/	639	703	/	544	340	/	524	0
PM	4:00 PM	48	84	18	31	104	14	27	72	95	20	107	25	645
	4:15 PM	81	61	15	26	79	11	17	72	62	26	78	26	554
	4:30 PM	61	51	11	14	93	10	22	69	50	23	78	24	506
	4:45 PM	65	75	12	13	88	3	23	58	56	17	71	22	503
	5:00 PM	76	77	17	31	89	14	19	63	51	15	102	23	577
	5:15 PM	66	75	18	22	89	9	15	65	59	26	101	25	570
	5:30 PM	68	88	13	23	108	11	17	61	45	23	80	25	562
	5:45 PM	68	70	17	14	81	6	21	50	59	32	80	20	518
	VOLUMES	533	581	121	174	731	78	161	510	477	182	697	190	4,435
	APPROACH %	43%	47%	10%	18%	74%	8%	14%	44%	42%	17%	65%	18%	
	APP/DEPART	1,235	/	932	983	/	1,390	1,148	/	805	1,069	/	1,308	0
	BEGIN PEAK HR		5:00 PM											
	VOLUMES	278	310	65	90	367	40	72	239	214	96	363	93	2,227
	APPROACH %	43%	47%	10%	18%	74%	8%	14%	46%	41%	17%	66%	17%	
	PEAK HR FACTOR		0.960			0.875			0.944			0.908		0.965
	APP/DEPART	653	/	475	497	/	677	525	/	394	552	/	681	0



INTERSECTION TURNING MOVEMENT COUNTS

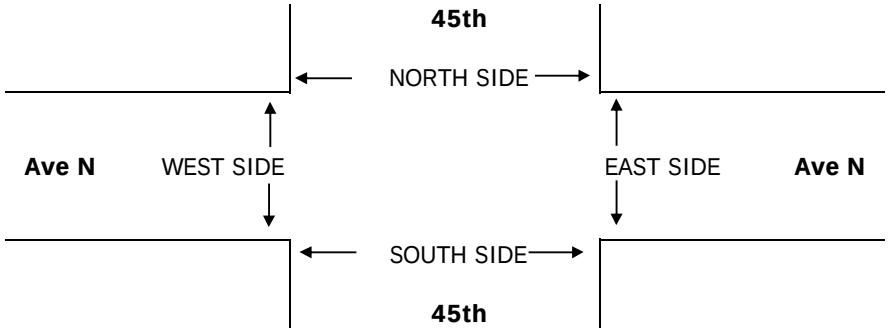
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	Palmdale	PROJECT #:	SC4057
Thu, May 25, 23	NORTH & SOUTH:	45th	LOCATION #:	2
	EAST & WEST:	Ave N	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

		NORTHBOUND 45th			SOUTHBOUND 45th			EASTBOUND Ave N			WESTBOUND Ave N			
	LANES:	NL 1	NT 1	NR 1	SL 1	ST 1	SR 1	EL 1	ET 1	ER 1	WL 1	WT 1	WR 1	TOTAL
AM	7:00 AM	9	11	24	30	34	5	7	95	18	21	42	9	305
	7:15 AM	14	33	40	10	76	4	14	111	28	20	50	12	412
	7:30 AM	15	54	34	14	74	9	26	162	35	39	63	9	534
	7:45 AM	20	49	31	15	42	7	17	116	14	23	56	11	401
	8:00 AM	19	22	23	10	18	5	5	87	10	10	51	7	267
	8:15 AM	23	34	31	9	13	4	2	68	11	7	56	10	268
	8:30 AM	9	27	18	14	18	4	5	101	13	8	64	10	291
	8:45 AM	10	16	16	15	21	5	5	91	15	5	41	7	247
	VOLUMES	119	246	217	117	296	43	81	831	144	133	423	75	2,725
	APPROACH %	20%	42%	37%	26%	65%	9%	8%	79%	14%	21%	67%	12%	
	APP/DEPART	582	/	402	456	/	573	1,056	/	1,165	631	/	585	0
	BEGIN PEAK HR		7:00 AM											
	VOLUMES	58	147	129	69	226	25	64	484	95	103	211	41	1,652
	APPROACH %	17%	44%	39%	22%	71%	8%	10%	75%	15%	29%	59%	12%	
	PEAK HR FACTOR		0.811			0.825			0.721			0.800		0.773
	APP/DEPART	334	/	252	320	/	424	643	/	682	355	/	294	0
PM	4:00 PM	13	21	15	12	40	11	9	81	24	21	120	18	385
	4:15 PM	10	32	14	12	23	8	5	89	14	22	110	12	351
	4:30 PM	8	25	19	6	29	1	8	71	15	19	121	20	342
	4:45 PM	16	30	12	9	31	6	4	61	17	19	104	9	318
	5:00 PM	20	30	14	7	20	3	3	77	22	23	111	17	347
	5:15 PM	17	24	15	8	26	4	5	82	11	23	126	14	355
	5:30 PM	20	21	11	6	21	8	4	86	18	22	107	16	340
	5:45 PM	21	28	16	7	22	7	4	60	9	24	96	12	306
	VOLUMES	125	211	116	67	212	48	42	607	130	173	895	118	2,744
	APPROACH %	28%	47%	26%	20%	65%	15%	5%	78%	17%	15%	75%	10%	
	APP/DEPART	452	/	371	327	/	515	779	/	790	1,186	/	1,068	0
	BEGIN PEAK HR		4:00 PM											
	VOLUMES	47	108	60	39	123	26	26	302	70	81	455	59	1,396
	APPROACH %	22%	50%	28%	21%	65%	14%	7%	76%	18%	14%	76%	10%	
	PEAK HR FACTOR		0.927			0.746			0.873			0.930		0.906
	APP/DEPART	215	/	193	188	/	274	398	/	401	595	/	528	0



INTERSECTION TURNING MOVEMENT COUNTS

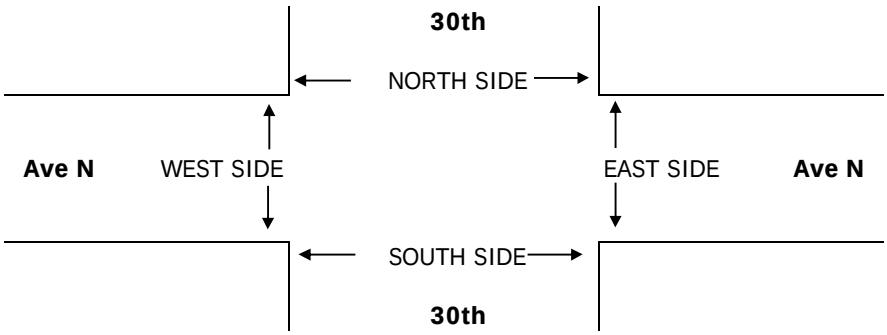
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	Palmdale	PROJECT #:	SC4057
Thu, May 25, 23	NORTH & SOUTH:	30th	LOCATION #:	3
	EAST & WEST:	Ave N	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

		NORTHBOUND 30th			SOUTHBOUND 30th			EASTBOUND Ave N			WESTBOUND Ave N			
	LANES:	NL 1	NT 1	NR 0	SL 1	ST 1	SR 0	EL 1	ET 1	ER 0	WL 1	WT 1	WR 0	TOTAL
AM	7:00 AM	2	35	38	3	47	16	10	112	3	15	63	7	351
	7:15 AM	6	63	44	12	89	18	13	160	6	25	66	7	509
	7:30 AM	9	90	44	9	90	13	15	177	10	21	97	3	578
	7:45 AM	3	73	59	25	90	13	17	186	10	25	80	5	586
	8:00 AM	12	61	39	12	54	6	4	134	6	13	55	7	403
	8:15 AM	13	56	45	6	61	8	6	112	10	14	74	11	416
	8:30 AM	8	63	20	7	58	5	8	130	4	21	73	8	405
	8:45 AM	6	62	45	12	57	10	9	131	4	14	58	3	411
	VOLUMES	59	503	334	86	546	89	82	1,142	53	148	566	51	3,659
	APPROACH %	7%	56%	37%	12%	76%	12%	6%	89%	4%	19%	74%	7%	
	APP/DEPART	896	/	636	721	/	747	1,277	/	1,562	765	/	714	0
	BEGIN PEAK HR		7:15 AM											
	VOLUMES	30	287	186	58	323	50	49	657	32	84	298	22	2,076
	APPROACH %	6%	57%	37%	13%	75%	12%	7%	89%	4%	21%	74%	5%	
	PEAK HR FACTOR		0.879			0.842			0.866			0.835		0.886
	APP/DEPART	503	/	358	431	/	439	738	/	901	404	/	378	0
PM	4:00 PM	11	74	28	7	85	10	6	104	11	45	158	10	549
	4:15 PM	8	79	21	3	101	13	8	110	4	32	145	14	538
	4:30 PM	5	71	18	3	93	11	11	88	10	61	158	22	551
	4:45 PM	7	87	21	10	106	18	13	93	3	40	126	18	542
	5:00 PM	8	80	20	8	99	16	10	94	7	54	132	13	541
	5:15 PM	13	69	19	5	110	15	9	90	10	40	154	19	553
	5:30 PM	6	66	27	3	88	11	14	99	5	51	143	18	531
	5:45 PM	7	64	28	3	93	12	10	72	7	45	150	13	504
	VOLUMES	65	590	182	42	775	106	81	750	57	368	1,166	127	4,309
	APPROACH %	8%	70%	22%	5%	84%	11%	9%	84%	6%	22%	70%	8%	
	APP/DEPART	837	/	798	923	/	1,200	888	/	974	1,661	/	1,337	0
	BEGIN PEAK HR		4:30 PM											
	VOLUMES	33	307	78	26	408	60	43	365	30	195	570	72	2,187
	APPROACH %	8%	73%	19%	5%	83%	12%	10%	83%	7%	23%	68%	9%	
	PEAK HR FACTOR		0.909			0.922			0.986			0.868		0.989
	APP/DEPART	418	/	422	494	/	633	438	/	469	837	/	663	0



INTERSECTION TURNING MOVEMENT COUNTS

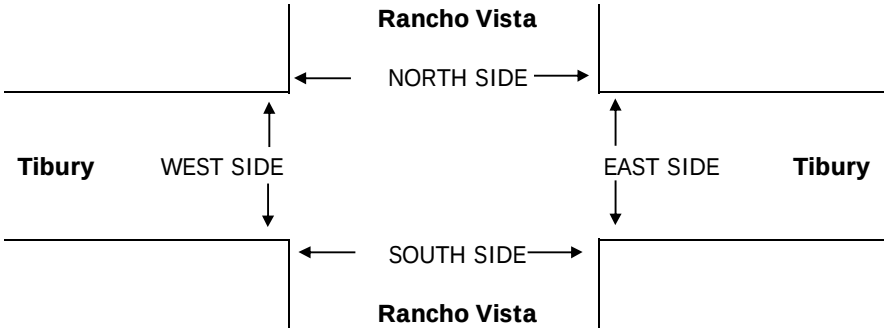
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:					
Thu, May 25, 23	LOCATION:	Palmdale	PROJECT #:	SC4057	
	NORTH & SOUTH:	Rancho Vista	LOCATION #:	4	
	EAST & WEST:	Tibury	CONTROL:	NO CONTROL	

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

		NORTHBOUND Rancho Vista			SOUTHBOUND Rancho Vista			EASTBOUND Tibury			WESTBOUND Tibury			
	LANES:	NL X	NT 3	NR X	SL X	ST 2	SR X	EL X	ET X	ER X	WL X	WT X	WR X	TOTAL
AM	7:00 AM	0	97	0	0	120	0	0	0	0	0	0	0	217
	7:15 AM	0	202	0	0	183	0	0	0	0	0	0	0	385
	7:30 AM	0	228	0	0	321	0	0	0	0	0	0	0	549
	7:45 AM	0	178	0	0	333	0	0	0	0	0	0	0	511
	8:00 AM	0	138	0	0	201	0	0	0	0	0	0	0	339
	8:15 AM	0	108	0	0	235	0	0	0	0	0	0	0	343
	8:30 AM	0	100	0	0	210	0	0	0	0	0	0	0	310
	8:45 AM	0	109	0	0	189	0	0	0	0	0	0	0	298
	VOLUMES	0	1,160	0	0	1,792	0	0	0	0	0	0	0	2,953
	APPROACH %	0%	100%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	
	APP/DEPART	1,161	/	1,160	1,792	/	1,793	0	/	0	0	/	0	0
	BEGIN PEAK HR		7:15 AM											
	VOLUMES	0	746	0	0	1,038	0	0	0	0	0	0	0	1,784
	APPROACH %	0%	100%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	
	PEAK HR FACTOR		0.818			0.779			0.000			0.000		0.812
	APP/DEPART	746	/	746	1,038	/	1,038	0	/	0	0	/	0	0
PM	4:00 PM	0	242	0	0	178	0	0	0	0	0	0	0	420
	4:15 PM	0	210	0	0	162	0	0	0	0	0	0	0	372
	4:30 PM	0	229	0	0	172	0	0	0	0	0	0	0	401
	4:45 PM	0	219	0	0	186	0	0	0	0	0	0	0	405
	5:00 PM	0	259	0	0	149	0	0	0	0	0	0	0	408
	5:15 PM	0	237	0	0	169	0	0	0	0	0	0	0	406
	5:30 PM	0	199	0	0	167	0	0	0	0	0	0	0	366
	5:45 PM	0	220	0	0	163	0	0	0	0	0	0	0	383
	VOLUMES	0	1,815	0	0	1,346	0	0	0	0	0	0	0	3,164
	APPROACH %	0%	100%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	
	APP/DEPART	1,818	/	1,815	1,346	/	1,349	0	/	0	0	/	0	0
	BEGIN PEAK HR		4:30 PM											
	VOLUMES	0	944	0	0	676	0	0	0	0	0	0	0	1,622
	APPROACH %	0%	100%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	
	PEAK HR FACTOR		0.913			0.909			0.000			0.000		0.994
	APP/DEPART	946	/	944	676	/	678	0	/	0	0	/	0	0



INTERSECTION TURNING MOVEMENT COUNTS

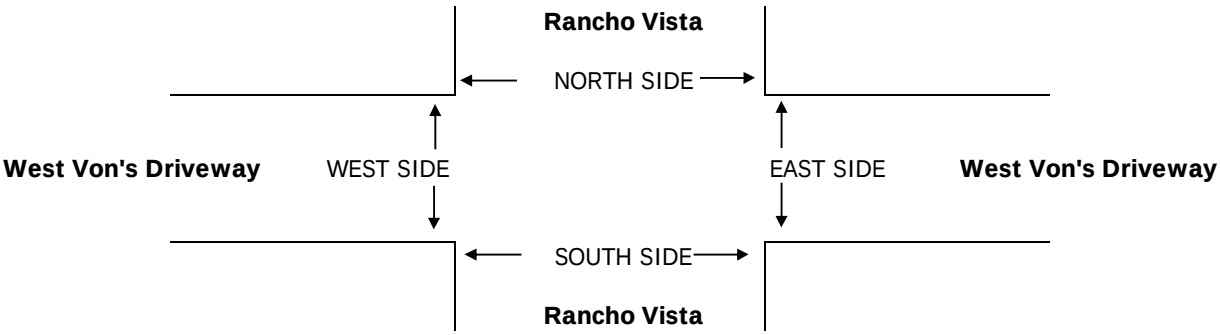
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:					
Thu, Jul 27, 23	LOCATION:	Palmdale	PROJECT #:	SC4140
	NORTH & SOUTH:	Rancho Vista	LOCATION #:	1
	EAST & WEST:	West Von's Driveway	CONTROL:	STOP W

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

		NORTHBOUND Rancho Vista			SOUTHBOUND Rancho Vista			EASTBOUND West Von's Driveway			WESTBOUND West Von's Driveway			
	LANES:	NL X	NT 3	NR 0	SL 0	ST 2	SR X	EL X	ET X	ER X	WL X	WT X	WR 0	TOTAL
AM	7:00 AM	0	51	2	10	103	0	0	0	0	0	0	19	185
	7:15 AM	0	60	0	10	108	0	0	0	0	0	0	7	185
	7:30 AM	0	75	1	5	142	0	0	0	0	0	0	11	234
	7:45 AM	0	76	1	6	148	0	0	0	0	0	0	15	246
	8:00 AM	0	86	2	11	142	0	0	0	0	0	0	10	251
	8:15 AM	0	83	5	22	150	0	0	0	0	0	0	14	274
	8:30 AM	0	85	2	12	132	0	0	0	0	0	0	17	248
	8:45 AM	0	98	9	15	132	0	0	0	0	0	0	11	265
	VOLUMES	0	614	22	91	1,057	0	0	0	0	0	0	104	1,888
	APPROACH %	0%	97%	3%	8%	92%	0%	0%	0%	0%	0%	0%	100%	
	APP/DEPART	636	/	720	1,148	/	1,057	0	/	111	104	/	0	0
	BEGIN PEAK HR		8:00 AM											
	VOLUMES	0	352	18	60	556	0	0	0	0	0	0	52	1,038
	APPROACH %	0%	95%	5%	10%	90%	0%	0%	0%	0%	0%	0%	100%	
	PEAK HR FACTOR		0.864			0.895			0.000			0.765		0.947
	APP/DEPART	370	/	406	616	/	556	0	/	76	52	/	0	0
PM	4:00 PM	0	203	7	23	120	0	0	0	0	0	0	32	385
	4:15 PM	0	183	7	16	114	0	0	0	0	0	0	27	347
	4:30 PM	0	160	11	22	131	0	0	0	0	0	0	30	354
	4:45 PM	0	213	14	14	124	0	0	0	0	0	0	33	398
	5:00 PM	0	223	8	13	150	0	0	0	0	0	0	19	413
	5:15 PM	0	218	8	18	141	0	0	0	0	0	0	17	402
	5:30 PM	0	202	6	22	149	0	0	0	0	0	0	28	407
	5:45 PM	0	203	6	17	128	0	0	0	0	0	0	27	381
	VOLUMES	0	1,605	67	145	1,057	0	0	0	0	0	0	213	3,087
	APPROACH %	0%	96%	4%	12%	88%	0%	0%	0%	0%	0%	0%	100%	
	APP/DEPART	1,672	/	1,818	1,202	/	1,057	0	/	212	213	/	0	0
	BEGIN PEAK HR		4:45 PM											
	VOLUMES	0	856	36	67	564	0	0	0	0	0	0	97	1,620
	APPROACH %	0%	96%	4%	11%	89%	0%	0%	0%	0%	0%	0%	100%	
	PEAK HR FACTOR		0.965			0.923			0.000			0.735		0.981
	APP/DEPART	892	/	953	631	/	564	0	/	103	97	/	0	0



APPENDIX D

INTERSECTION LEVEL OF SERVICE WORKSHEETS

EXISTING

AM PEAK HOUR

Intersection Level Of Service Report
Intersection 1: 50th St (NS) at Ave N (EW)

Control Type:	Signalized	Delay (sec / veh):	68.0
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.645

Intersection Setup

Name	50th St			50th St			Ave N			Ave N		
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	1	0	0
Entry Pocket Length [ft]	300.00	100.00	100.00	200.00	100.00	200.00	145.00	100.00	145.00	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			55.00			55.00			55.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	50th St			50th St			Ave N			Ave N		
Base Volume Input [veh/h]	267	312	142	67	252	28	39	335	329	58	229	53
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]	267	312	142	67	252	28	39	335	329	58	229	53
Peak Hour Factor	0.7704	0.7704	0.7704	0.7704	0.7704	0.7704	0.7704	0.7704	0.7704	0.7704	0.7704	0.7704
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]	87	101	46	22	82	9	13	109	107	19	74	17
Total Analysis Volume [veh/h]	347	405	184	87	327	36	51	435	427	75	297	69
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]	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	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	4	5	2	2	1	6	0
Auxiliary Signal Groups			1,8			4,5			2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	10	5	10	10	5	10	10	5	10	0
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	19	32	32	30	43	43	26	49	49	9	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	5	0	5	5	0	5	0
Pedestrian Clearance [s]	0	23	23	0	34	34	0	40	40	0	23	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	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No	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	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	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	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	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	29	38	8	21	30	5	63	82	5	63	63
g / C, Green / Cycle	0.13	0.24	0.31	0.06	0.18	0.25	0.04	0.52	0.68	0.04	0.53	0.53
(v / s)_i Volume / Saturation Flow Rate	0.19	0.22	0.12	0.05	0.09	0.02	0.03	0.12	0.27	0.04	0.10	0.10
s, saturation flow rate [veh/h]	1781	1870	1589	1781	3560	1589	1781	3560	1589	1781	1870	1751
c, Capacity [veh/h]	223	446	500	112	628	394	69	1861	1083	76	985	922
d1, Uniform Delay [s]	52.50	44.40	31.90	55.42	44.85	34.73	57.13	15.59	8.34	57.46	14.95	14.99
k, delay calibration	0.29	0.14	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
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
d2, Incremental Delay [s]	261.52	8.93	0.45	10.86	0.67	0.10	14.61	0.29	1.08	46.12	0.43	0.47
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	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	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	1.00

Lane Group Results

X, volume / capacity	1.55	0.91	0.37	0.78	0.52	0.09	0.74	0.23	0.39	0.99	0.19	0.19
d, Delay for Lane Group [s/veh]	314.02	53.33	32.35	66.28	45.52	34.83	71.75	15.88	9.41	103.58	15.38	15.46
Lane Group LOS	F	D	C	E	D	C	E	B	A	F	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	22.77	12.39	4.08	2.83	4.28	0.79	1.75	3.02	4.17	3.15	2.56	2.46
50th-Percentile Queue Length [ft/ln]	569.14	309.69	102.01	70.73	107.02	19.67	43.78	75.43	104.21	78.87	64.00	61.41
95th-Percentile Queue Length [veh/ln]	35.78	18.16	7.34	5.09	7.67	1.42	3.15	5.43	7.50	5.68	4.61	4.42
95th-Percentile Queue Length [ft/ln]	894.44	454.00	183.62	127.31	191.85	35.41	78.80	135.78	187.57	141.96	115.20	110.55

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	314.02	53.33	32.35	66.28	45.52	34.83	71.75	15.88	9.41	103.58	15.41	15.46
Movement LOS	F	D	C	E	D	C	E	B	A	F	B	B
d_A, Approach Delay [s/veh]	145.85			48.68			15.98			30.41		
Approach LOS	F			D			B			C		
d_I, Intersection Delay [s/veh]	68.04											
Intersection LOS	E											
Intersection V/C	0.645											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.35	51.35	51.35	51.35
l_p,int, Pedestrian LOS Score for Intersection	2.831	2.664	2.943	2.725
Crosswalk LOS	C	B	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	467	650	750	467
d_b, Bicycle Delay [s]	35.28	27.35	23.45	35.28
l_b,int, Bicycle LOS Score for Intersection	3.104	1.931	2.313	1.923
Bicycle LOS	C	A	B	A

Sequence

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

Intersection Level Of Service Report
Intersection 2: 45th St (NS) at Ave N (EW)

Control Type:	Signalized	Delay (sec / veh):	18.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.542

Intersection Setup

Name	45th St			45th St			Ave N			Ave N		
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	1	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	175.00	100.00	52.00	107.00	100.00	103.00	110.00	100.00	100.00	250.00	100.00	150.00
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			55.00			55.00			55.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	45th St			45th St			Ave N			Ave N		
Base Volume Input [veh/h]	58	147	129	69	226	25	64	484	95	103	211	41
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]	58	147	129	69	226	25	64	484	95	103	211	41
Peak Hour Factor	0.7734	0.7734	0.7734	0.7734	0.7734	0.7734	0.7734	0.7734	0.7734	0.7734	0.7734	0.7734
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	48	42	22	73	8	21	156	31	33	68	13
Total Analysis Volume [veh/h]	75	190	167	89	292	32	83	626	123	133	273	53
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]	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]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	10	0	0	10	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	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	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	35	0	0	35	0	0	50	0	0	50	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	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	20	0	0	26	0	0	18	0	0	19	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	0.0	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	0.0	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	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	85	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	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	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	2.00
g_i, Effective Green Time [s]	34	34	34	34	34	34	43	43	43	43	43	43
g / C, Green / Cycle	0.40	0.40	0.40	0.40	0.40	0.40	0.51	0.51	0.51	0.51	0.51	0.51
(v / s)_i Volume / Saturation Flow Rate	0.07	0.10	0.11	0.09	0.16	0.02	0.08	0.33	0.08	0.19	0.15	0.03
s, saturation flow rate [veh/h]	1056	1870	1589	1024	1870	1589	1054	1870	1589	713	1870	1589
c, Capacity [veh/h]	381	746	634	415	746	634	487	948	806	235	948	806
d1, Uniform Delay [s]	23.66	17.10	17.17	21.38	18.20	15.68	17.62	15.51	11.18	32.58	12.08	10.67
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.18	0.11	0.11	0.11	0.11
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
d2, Incremental Delay [s]	1.15	0.82	1.01	1.18	1.55	0.15	0.16	1.32	0.09	2.15	0.17	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	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	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	1.00

Lane Group Results

X, volume / capacity	0.20	0.25	0.26	0.21	0.39	0.05	0.17	0.66	0.15	0.57	0.29	0.07
d, Delay for Lane Group [s/veh]	24.81	17.92	18.18	22.56	19.75	15.83	17.78	16.83	11.27	34.73	12.25	10.71
Lane Group LOS	C	B	B	C	B	B	B	B	B	C	B	B
Critical Lane Group	No	No	No	No	Yes	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	1.21	2.42	2.16	1.31	3.84	0.36	0.97	7.50	1.03	2.53	2.47	0.42
50th-Percentile Queue Length [ft/ln]	30.15	60.53	54.10	32.63	96.12	8.98	24.33	187.51	25.82	63.22	61.84	10.61
95th-Percentile Queue Length [veh/ln]	2.17	4.36	3.90	2.35	6.92	0.65	1.75	11.99	1.86	4.55	4.45	0.76
95th-Percentile Queue Length [ft/ln]	54.27	108.95	97.39	58.73	173.02	16.17	43.80	299.80	46.48	113.80	111.31	19.10

Movement, Approach, & Intersection Results

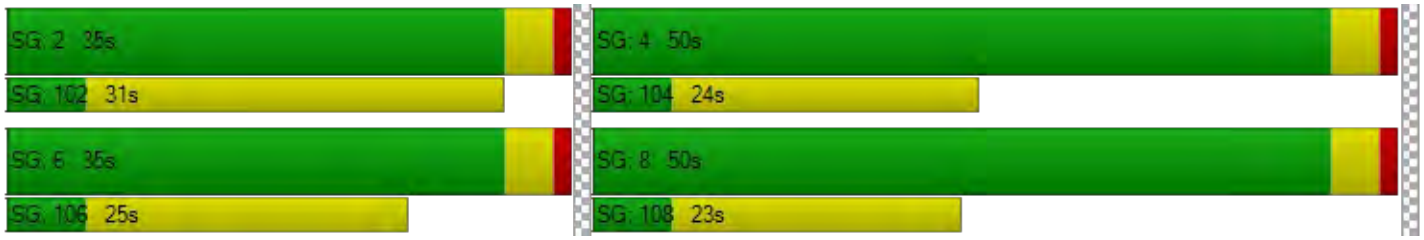
d_M, Delay for Movement [s/veh]	24.81	17.92	18.18	22.56	19.75	15.83	17.78	16.83	11.27	34.73	12.25	10.71
Movement LOS	C	B	B	C	B	B	B	B	B	C	B	B
d_A, Approach Delay [s/veh]	19.22			20.05			16.10			18.58		
Approach LOS	B			C			B			B		
d_I, Intersection Delay [s/veh]	18.03											
Intersection LOS	B											
Intersection V/C	0.542											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	33.97	33.97	33.97	33.97
l_p,int, Pedestrian LOS Score for Intersection	2.677	2.578	2.839	2.856
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	730	730	1083	1083
d_b, Bicycle Delay [s]	17.15	17.15	8.94	8.94
l_b,int, Bicycle LOS Score for Intersection	2.272	2.241	2.932	2.317
Bicycle LOS	B	B	C	B

Sequence

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



Intersection Level Of Service Report
Intersection 3: 30th St (NS) at Ave N (EW)

Control Type:	Signalized	Delay (sec / veh):	27.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.785

Intersection Setup

Name	30th St			30th St			Ave N			Ave N		
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]	250.00	100.00	100.00	250.00	100.00	100.00	255.00	100.00	100.00	255.00	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]	55.00			55.00			55.00			55.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	30th St			30th St			Ave N			Ave N		
Base Volume Input [veh/h]	30	287	186	58	323	50	49	657	32	84	298	22
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]	30	287	186	58	323	50	49	657	32	84	298	22
Peak Hour Factor	0.8860	0.8860	0.8860	0.8860	0.8860	0.8860	0.8860	0.8860	0.8860	0.8860	0.8860	0.8860
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]	8	81	52	16	91	14	14	185	9	24	84	6
Total Analysis Volume [veh/h]	34	324	210	65	365	56	55	742	36	95	336	25
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]	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]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	4	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	10	0	0	10	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	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	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	48	0	0	48	0	0	57	0	0	57	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	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	17	0	0	17	0	0	17	0	0	17	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	0.0	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	0.0	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	L	C	L	C	L	C	L	C
C, Cycle Length [s]	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
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	40	40	40	40	57	57	57	57
g / C, Green / Cycle	0.38	0.38	0.38	0.38	0.54	0.54	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.04	0.31	0.07	0.23	0.05	0.42	0.14	0.20
s, saturation flow rate [veh/h]	966	1749	870	1827	1020	1855	694	1847
c, Capacity [veh/h]	246	670	154	700	483	1003	196	999
d1, Uniform Delay [s]	36.26	28.75	46.17	25.95	19.57	19.09	40.58	13.77
k, delay calibration	0.11	0.26	0.11	0.13	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.25	5.23	1.84	0.99	0.48	5.87	8.37	1.02
d3, Initial Queue Delay [s]	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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.14	0.80	0.42	0.60	0.11	0.78	0.49	0.36
d, Delay for Lane Group [s/veh]	36.52	33.99	48.01	26.94	20.05	24.96	48.95	14.79
Lane Group LOS	D	C	D	C	C	C	D	B
Critical Lane Group	No	Yes	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.71	11.72	1.64	7.84	0.84	14.20	2.63	4.49
50th-Percentile Queue Length [ft/ln]	17.87	292.88	41.12	195.90	20.93	355.00	65.86	112.22
95th-Percentile Queue Length [veh/ln]	1.29	17.33	2.96	12.43	1.51	20.38	4.74	7.96
95th-Percentile Queue Length [ft/ln]	32.17	433.21	74.01	310.67	37.68	509.50	118.54	199.08

Movement, Approach, & Intersection Results

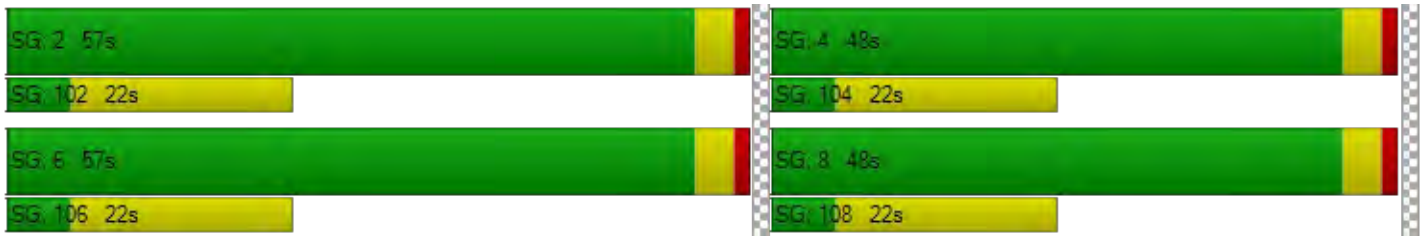
d_M, Delay for Movement [s/veh]	36.52	33.99	33.99	48.01	26.94	26.94	20.05	24.96	24.96	48.95	14.79	14.79
Movement LOS	D	C	C	D	C	C	C	C	C	D	B	B
d_A, Approach Delay [s/veh]	34.14			29.76			24.64			21.90		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	27.47											
Intersection LOS	C											
Intersection V/C	0.785											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	43.89	43.89	43.89	43.89
l_p,int, Pedestrian LOS Score for Intersection	2.751	2.558	2.748	2.919
Crosswalk LOS	C	B	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	838	838	1010	1010
d_b, Bicycle Delay [s]	17.72	17.72	12.88	12.88
l_b,int, Bicycle LOS Score for Intersection	2.497	2.362	2.934	2.312
Bicycle LOS	B	B	C	B

Sequence

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



Intersection Level Of Service Report
Intersection 5: Rancho Vista Blvd (NS) at Rancho Vista Plaza (EW)

Control Type:	Two-way stop	Delay (sec / veh):	12.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.115

Intersection Setup

Name	Rancho Vista Blvd		Rancho Vista Blvd		Rancho Vista Plaza	
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	1	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		55.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Rancho Vista Blvd		Rancho Vista Blvd		Rancho Vista Plaza	
Base Volume Input [veh/h]	676	0	0	866	0	60
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]	676	0	0	866	0	60
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	178	0	0	228	0	16
Total Analysis Volume [veh/h]	712	0	0	912	0	63
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			Yes
Number of Storage Spaces in Median	0	0	1

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.01	0.00	0.12
d_M, Delay for Movement [s/veh]	0.00	0.00	11.69	0.00	17.23	12.44
Movement LOS	A	A	B	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.39	0.39
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	9.70	9.70
d_A, Approach Delay [s/veh]	0.00		0.00		12.44	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.46					
Intersection LOS	B					

PM PEAK HOUR

Intersection Level Of Service Report
Intersection 1: 50th St (NS) at Ave N (EW)

Control Type:	Signalized	Delay (sec / veh):	61.5
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.512

Intersection Setup

Name	50th St			50th St			Ave N			Ave N		
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	1	0	0
Entry Pocket Length [ft]	300.00	100.00	100.00	200.00	100.00	200.00	145.00	100.00	145.00	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			55.00			55.00			55.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	50th St			50th St			Ave N			Ave N		
Base Volume Input [veh/h]	278	310	65	90	367	40	72	239	214	96	363	93
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]	278	310	65	90	367	40	72	239	214	96	363	93
Peak Hour Factor	0.9650	0.9650	0.9650	0.9650	0.9650	0.9650	0.9650	0.9650	0.9650	0.9650	0.9650	0.9650
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]	72	80	17	23	95	10	19	62	55	25	94	24
Total Analysis Volume [veh/h]	288	321	67	93	380	41	75	248	222	99	376	96
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]	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	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	4	5	2	2	1	6	0
Auxiliary Signal Groups			1,8			4,5			2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	10	5	10	10	5	10	10	5	10	0
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	19	32	32	30	43	43	25	49	49	9	33	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	5	0	5	5	0	5	0
Pedestrian Clearance [s]	0	23	23	0	34	34	0	40	40	0	23	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	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No	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	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	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	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	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	23	32	8	16	27	7	68	87	5	66	66
g / C, Green / Cycle	0.13	0.19	0.27	0.07	0.13	0.22	0.06	0.57	0.73	0.04	0.55	0.55
(v / s)_i Volume / Saturation Flow Rate	0.16	0.17	0.04	0.05	0.11	0.03	0.04	0.07	0.14	0.06	0.13	0.13
s, saturation flow rate [veh/h]	1781	1870	1589	1781	3560	1589	1781	3560	1589	1781	1870	1741
c, Capacity [veh/h]	223	358	425	119	474	353	99	2015	1152	76	1034	962
d1, Uniform Delay [s]	52.50	47.35	33.63	55.16	50.51	37.31	55.91	12.16	5.29	57.48	13.80	13.82
k, delay calibration	0.19	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
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
d2, Incremental Delay [s]	142.76	7.96	0.17	10.57	3.21	0.15	11.23	0.13	0.37	158.31	0.53	0.58
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	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	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	1.00

Lane Group Results

X, volume / capacity	1.29	0.90	0.16	0.78	0.80	0.12	0.76	0.12	0.19	1.31	0.24	0.24
d, Delay for Lane Group [s/veh]	195.26	55.32	33.80	65.73	53.73	37.46	67.14	12.29	5.67	215.79	14.33	14.41
Lane Group LOS	F	E	C	E	D	D	E	B	A	F	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	15.40	9.86	1.48	3.01	5.51	0.94	2.46	1.42	1.45	5.53	3.19	3.02
50th-Percentile Queue Length [ft/ln]	384.92	246.44	37.02	75.22	137.66	23.44	61.50	35.62	36.15	138.25	79.70	75.50
95th-Percentile Queue Length [veh/ln]	24.13	15.01	2.67	5.42	9.35	1.69	4.43	2.56	2.60	9.95	5.74	5.44
95th-Percentile Queue Length [ft/ln]	603.36	375.17	66.63	135.40	233.87	42.20	110.71	64.12	65.08	248.84	143.46	135.90

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	195.26	55.32	33.80	65.73	53.73	37.46	67.14	12.29	5.67	215.79	14.36	14.41
Movement LOS	F	E	C	E	D	D	E	B	A	F	B	B
d_A, Approach Delay [s/veh]	112.81			54.60			17.14			49.29		
Approach LOS	F			D			B			D		
d_I, Intersection Delay [s/veh]	61.50											
Intersection LOS	E											
Intersection V/C	0.512											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.35	51.35	51.35	51.35
l_p,int, Pedestrian LOS Score for Intersection	2.718	2.675	2.841	2.665
Crosswalk LOS	B	B	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	467	650	750	483
d_b, Bicycle Delay [s]	35.28	27.35	23.45	34.52
l_b,int, Bicycle LOS Score for Intersection	2.675	1.984	2.009	2.031
Bicycle LOS	B	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 2: 45th St (NS) at Ave N (EW)

Control Type:	Signalized	Delay (sec / veh):	17.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.385

Intersection Setup

Name	45th St			45th St			Ave N			Ave N		
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	1	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	175.00	100.00	52.00	107.00	100.00	103.00	110.00	100.00	100.00	250.00	100.00	150.00
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			55.00			55.00			55.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	45th St			45th St			Ave N			Ave N		
Base Volume Input [veh/h]	47	108	60	39	123	26	26	302	70	81	455	59
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]	47	108	60	39	123	26	26	302	70	81	455	59
Peak Hour Factor	0.9065	0.9065	0.9065	0.9065	0.9065	0.9065	0.9065	0.9065	0.9065	0.9065	0.9065	0.9065
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	30	17	11	34	7	7	83	19	22	125	16
Total Analysis Volume [veh/h]	52	119	66	43	136	29	29	333	77	89	502	65
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]	70
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]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	10	0	0	10	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	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	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	35	0	0	35	0	0	35	0	0	35	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	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	20	0	0	26	0	0	18	0	0	19	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	0.0	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	0.0	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	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
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	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	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	2.00
g_i, Effective Green Time [s]	37	37	37	37	37	37	25	25	25	25	25	25
g / C, Green / Cycle	0.54	0.54	0.54	0.54	0.54	0.54	0.35	0.35	0.35	0.35	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.04	0.06	0.04	0.04	0.07	0.02	0.03	0.18	0.05	0.09	0.27	0.04
s, saturation flow rate [veh/h]	1220	1870	1589	1198	1870	1589	844	1870	1589	976	1870	1589
c, Capacity [veh/h]	687	1002	851	682	1002	851	162	655	556	269	655	556
d1, Uniform Delay [s]	9.93	8.06	7.87	9.68	8.14	7.69	31.32	17.99	15.54	26.52	20.21	15.41
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.16	0.11
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
d2, Incremental Delay [s]	0.21	0.24	0.18	0.18	0.28	0.07	0.52	0.61	0.11	0.71	2.86	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	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	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	1.00

Lane Group Results

X, volume / capacity	0.08	0.12	0.08	0.06	0.14	0.03	0.18	0.51	0.14	0.33	0.77	0.12
d, Delay for Lane Group [s/veh]	10.14	8.30	8.05	9.86	8.42	7.76	31.84	18.60	15.65	27.23	23.07	15.51
Lane Group LOS	B	A	A	A	A	A	C	B	B	C	C	B
Critical Lane Group	No	No	No	No	Yes	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.40	0.76	0.42	0.30	0.81	0.17	0.45	3.60	0.71	1.24	6.43	0.60
50th-Percentile Queue Length [ft/ln]	9.95	19.07	10.47	7.56	20.36	4.15	11.13	89.97	17.85	30.97	160.68	14.94
95th-Percentile Queue Length [veh/ln]	0.72	1.37	0.75	0.54	1.47	0.30	0.80	6.48	1.28	2.23	10.58	1.08
95th-Percentile Queue Length [ft/ln]	17.91	34.33	18.85	13.61	36.64	7.46	20.04	161.95	32.12	55.74	264.62	26.89

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	10.14	8.30	8.05	9.86	8.42	7.76	31.84	18.60	15.65	27.23	23.07	15.51
Movement LOS	B	A	A	A	A	A	C	B	B	C	C	B
d_A, Approach Delay [s/veh]	8.63			8.62			18.96			22.89		
Approach LOS	A			A			B			C		
d_I, Intersection Delay [s/veh]	17.65											
Intersection LOS	B											
Intersection V/C	0.385											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	26.58	26.58	26.58	26.58
l_p,int, Pedestrian LOS Score for Intersection	2.444	2.349	2.728	2.672
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	886	886	886	886
d_b, Bicycle Delay [s]	10.86	10.86	10.86	10.86
l_b,int, Bicycle LOS Score for Intersection	1.951	1.903	2.284	2.642
Bicycle LOS	A	A	B	B

Sequence

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

Intersection Level Of Service Report
Intersection 3: 30th St (NS) at Ave N (EW)

Control Type:	Signalized	Delay (sec / veh):	16.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.707

Intersection Setup

Name	30th St			30th St			Ave N			Ave N		
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]	250.00	100.00	100.00	250.00	100.00	100.00	255.00	100.00	100.00	255.00	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]	55.00			55.00			55.00			55.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	30th St			30th St			Ave N			Ave N		
Base Volume Input [veh/h]	33	307	78	26	408	60	43	365	30	195	570	72
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]	33	307	78	26	408	60	43	365	30	195	570	72
Peak Hour Factor	0.9890	0.9890	0.9890	0.9890	0.9890	0.9890	0.9890	0.9890	0.9890	0.9890	0.9890	0.9890
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]	8	78	20	7	103	15	11	92	8	49	144	18
Total Analysis Volume [veh/h]	33	310	79	26	413	61	43	369	30	197	576	73
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]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	4	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	10	0	0	10	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	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	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	34	0	0	34	0	0	26	0	0	26	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	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	17	0	0	17	0	0	17	0	0	17	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	0.0	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	0.0	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	L	C	L	C	L	C	L	C
C, Cycle Length [s]	60	60	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	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	21	21	21	21	31	31	31	31
g / C, Green / Cycle	0.35	0.35	0.35	0.35	0.51	0.51	0.51	0.51
(v / s)_i Volume / Saturation Flow Rate	0.04	0.22	0.03	0.26	0.05	0.22	0.20	0.35
s, saturation flow rate [veh/h]	920	1805	995	1828	782	1845	985	1834
c, Capacity [veh/h]	192	636	248	644	302	949	475	943
d1, Uniform Delay [s]	26.43	16.04	23.39	16.99	18.71	9.04	15.35	10.96
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.42	0.96	0.18	1.65	0.99	1.37	2.66	4.09
d3, Initial Queue Delay [s]	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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.17	0.61	0.10	0.74	0.14	0.42	0.41	0.69
d, Delay for Lane Group [s/veh]	26.85	17.00	23.58	18.64	19.70	10.40	18.01	15.06
Lane Group LOS	C	B	C	B	B	B	B	B
Critical Lane Group	No	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.41	3.52	0.29	4.62	0.48	2.44	1.99	5.18
50th-Percentile Queue Length [ft/ln]	10.25	88.02	7.32	115.54	12.07	61.10	49.76	129.59
95th-Percentile Queue Length [veh/ln]	0.74	6.34	0.53	8.15	0.87	4.40	3.58	8.92
95th-Percentile Queue Length [ft/ln]	18.45	158.43	13.17	203.68	21.73	109.98	89.58	222.93

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	26.85	17.00	17.00	23.58	18.64	18.64	19.70	10.40	10.40	18.01	15.06	15.06
Movement LOS	C	B	B	C	B	B	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	17.77			18.90			11.31			15.74		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	15.96											
Intersection LOS	B											
Intersection V/C	0.707											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	21.68	21.68	21.68	21.68
l_p,int, Pedestrian LOS Score for Intersection	2.867	2.534	2.630	2.744
Crosswalk LOS	C	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1000	1000	733	733
d_b, Bicycle Delay [s]	7.51	7.51	12.04	12.04
l_b,int, Bicycle LOS Score for Intersection	2.256	2.385	2.289	2.956
Bicycle LOS	B	B	B	C

Sequence

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

Intersection Level Of Service Report
Intersection 5: Rancho Vista Blvd (NS) at Rancho Vista Plaza (EW)

Control Type:	Two-way stop	Delay (sec / veh):	14.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.215

Intersection Setup

Name	Rancho Vista Blvd		Rancho Vista Blvd		Rancho Vista Plaza 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	1	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		55.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Rancho Vista Blvd		Rancho Vista Blvd		Rancho Vista Plaza Dwy	
Base Volume Input [veh/h]	856	0	0	564	0	97
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]	856	0	0	564	0	97
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	225	0	0	148	0	26
Total Analysis Volume [veh/h]	901	0	0	594	0	102
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			Yes
Number of Storage Spaces in Median	0	0	1

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.01	0.00	0.21
d_M, Delay for Movement [s/veh]	0.00	0.00	13.24	0.00	21.27	14.63
Movement LOS	A	A	B	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.81	0.81
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	20.13	20.13
d_A, Approach Delay [s/veh]	0.00		0.00		14.63	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.93					
Intersection LOS	B					

EXISTING PLUS PROJECT

AM PEAK HOUR

Intersection Level Of Service Report
Intersection 1: 50th St (NS) at Ave N (EW)

Control Type:	Signalized	Delay (sec / veh):	68.1
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.646

Intersection Setup

Name	50th St			50th St			Ave N			Ave N		
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	1	0	0
Entry Pocket Length [ft]	300.00	100.00	100.00	200.00	100.00	200.00	145.00	100.00	145.00	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			55.00			55.00			55.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	50th St			50th St			Ave N			Ave N		
Base Volume Input [veh/h]	267	312	142	67	252	28	39	335	329	58	229	53
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	6	0	0	2	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]	267	318	142	67	254	28	39	335	329	58	229	53
Peak Hour Factor	0.7704	0.7704	0.7704	0.7704	0.7704	0.7704	0.7704	0.7704	0.7704	0.7704	0.7704	0.7704
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]	87	103	46	22	82	9	13	109	107	19	74	17
Total Analysis Volume [veh/h]	347	413	184	87	330	36	51	435	427	75	297	69
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]	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	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	4	5	2	2	1	6	0
Auxiliary Signal Groups			1,8			4,5			2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	10	5	10	10	5	10	10	5	10	0
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	19	48	48	14	43	43	10	49	49	9	48	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	5	0	5	5	0	5	0
Pedestrian Clearance [s]	0	23	23	0	34	34	0	40	40	0	23	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	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No	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	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	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	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	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	29	38	7	22	30	4	62	81	5	63	63
g / C, Green / Cycle	0.13	0.24	0.32	0.06	0.18	0.25	0.04	0.52	0.68	0.04	0.52	0.52
(v / s)_i Volume / Saturation Flow Rate	0.19	0.22	0.12	0.05	0.09	0.02	0.03	0.12	0.27	0.04	0.10	0.10
s, saturation flow rate [veh/h]	1781	1870	1589	1781	3560	1589	1781	3560	1589	1781	1870	1751
c, Capacity [veh/h]	223	454	507	111	640	399	67	1848	1077	76	980	917
d1, Uniform Delay [s]	52.50	44.15	31.50	55.51	44.52	34.48	57.23	15.82	8.52	57.46	15.12	15.16
k, delay calibration	0.29	0.15	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
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
d2, Incremental Delay [s]	261.52	9.34	0.44	11.51	0.64	0.10	15.97	0.30	1.09	46.12	0.43	0.47
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	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	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	1.00

Lane Group Results

X, volume / capacity	1.55	0.91	0.36	0.79	0.52	0.09	0.76	0.24	0.40	0.99	0.19	0.19
d, Delay for Lane Group [s/veh]	314.02	53.49	31.94	67.02	45.16	34.58	73.20	16.11	9.61	103.58	15.56	15.63
Lane Group LOS	F	D	C	E	D	C	E	B	A	F	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	22.77	12.67	4.05	2.85	4.30	0.78	1.77	3.05	4.24	3.15	2.58	2.47
50th-Percentile Queue Length [ft/ln]	569.14	316.74	101.24	71.18	107.53	19.59	44.30	76.17	105.97	78.87	64.48	61.87
95th-Percentile Queue Length [veh/ln]	35.78	18.51	7.29	5.13	7.70	1.41	3.19	5.48	7.62	5.68	4.64	4.45
95th-Percentile Queue Length [ft/ln]	894.44	462.68	182.23	128.13	192.56	35.26	79.74	137.10	190.38	141.96	116.07	111.37

Movement, Approach, & Intersection Results

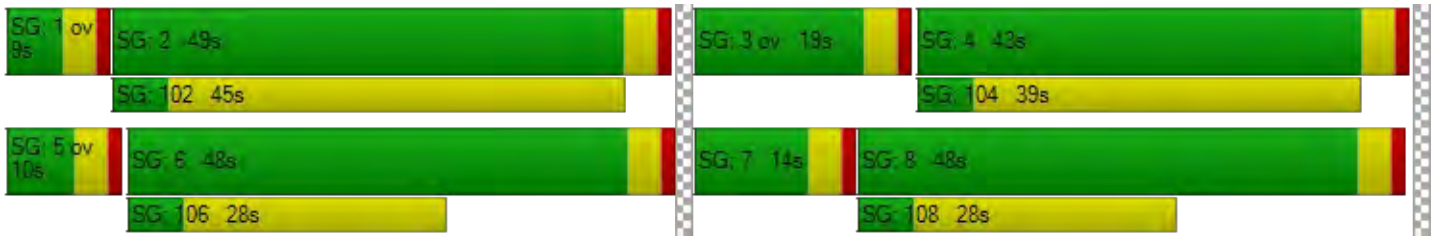
d_M, Delay for Movement [s/veh]	314.02	53.49	31.94	67.02	45.16	34.58	73.20	16.11	9.61	103.58	15.58	15.63
Movement LOS	F	D	C	E	D	C	E	B	A	F	B	B
d_A, Approach Delay [s/veh]	145.06			48.52			16.26			30.56		
Approach LOS	F			D			B			C		
d_I, Intersection Delay [s/veh]	68.06											
Intersection LOS	E											
Intersection V/C	0.646											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.35	51.35	51.35	51.35
l_p,int, Pedestrian LOS Score for Intersection	2.835	2.668	2.943	2.725
Crosswalk LOS	C	B	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	733	650	750	733
d_b, Bicycle Delay [s]	24.08	27.35	23.45	24.08
l_b,int, Bicycle LOS Score for Intersection	3.117	1.933	2.313	1.923
Bicycle LOS	C	A	B	A

Sequence

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



Intersection Level Of Service Report
Intersection 2: 45th St (NS) at Ave N (EW)

Control Type:	Signalized	Delay (sec / veh):	18.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.542

Intersection Setup

Name	45th St			45th St			Ave N			Ave N		
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	1	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	175.00	100.00	52.00	107.00	100.00	103.00	110.00	100.00	100.00	250.00	100.00	150.00
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			55.00			55.00			55.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	45th St			45th St			Ave N			Ave N		
Base Volume Input [veh/h]	58	147	129	69	226	25	64	484	95	103	211	41
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]	58	147	129	69	226	25	64	484	95	103	211	41
Peak Hour Factor	0.7734	0.7734	0.7734	0.7734	0.7734	0.7734	0.7734	0.7734	0.7734	0.7734	0.7734	0.7734
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	48	42	22	73	8	21	156	31	33	68	13
Total Analysis Volume [veh/h]	75	190	167	89	292	32	83	626	123	133	273	53
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]	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]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	10	0	0	10	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	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	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	35	0	0	35	0	0	50	0	0	50	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	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	20	0	0	26	0	0	18	0	0	19	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	0.0	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	0.0	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	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	85	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	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	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	2.00
g_i, Effective Green Time [s]	34	34	34	34	34	34	43	43	43	43	43	43
g / C, Green / Cycle	0.40	0.40	0.40	0.40	0.40	0.40	0.51	0.51	0.51	0.51	0.51	0.51
(v / s)_i Volume / Saturation Flow Rate	0.07	0.10	0.11	0.09	0.16	0.02	0.08	0.33	0.08	0.19	0.15	0.03
s, saturation flow rate [veh/h]	1056	1870	1589	1024	1870	1589	1054	1870	1589	713	1870	1589
c, Capacity [veh/h]	381	746	634	415	746	634	487	948	806	235	948	806
d1, Uniform Delay [s]	23.66	17.10	17.17	21.38	18.20	15.68	17.62	15.51	11.18	32.58	12.08	10.67
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.18	0.11	0.11	0.11	0.11
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
d2, Incremental Delay [s]	1.15	0.82	1.01	1.18	1.55	0.15	0.16	1.32	0.09	2.15	0.17	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	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	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	1.00

Lane Group Results

X, volume / capacity	0.20	0.25	0.26	0.21	0.39	0.05	0.17	0.66	0.15	0.57	0.29	0.07
d, Delay for Lane Group [s/veh]	24.81	17.92	18.18	22.56	19.75	15.83	17.78	16.83	11.27	34.73	12.25	10.71
Lane Group LOS	C	B	B	C	B	B	B	B	B	C	B	B
Critical Lane Group	No	No	No	No	Yes	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	1.21	2.42	2.16	1.31	3.84	0.36	0.97	7.50	1.03	2.53	2.47	0.42
50th-Percentile Queue Length [ft/ln]	30.15	60.53	54.10	32.63	96.12	8.98	24.33	187.51	25.82	63.22	61.84	10.61
95th-Percentile Queue Length [veh/ln]	2.17	4.36	3.90	2.35	6.92	0.65	1.75	11.99	1.86	4.55	4.45	0.76
95th-Percentile Queue Length [ft/ln]	54.27	108.95	97.39	58.73	173.02	16.17	43.80	299.80	46.48	113.80	111.31	19.10

Movement, Approach, & Intersection Results

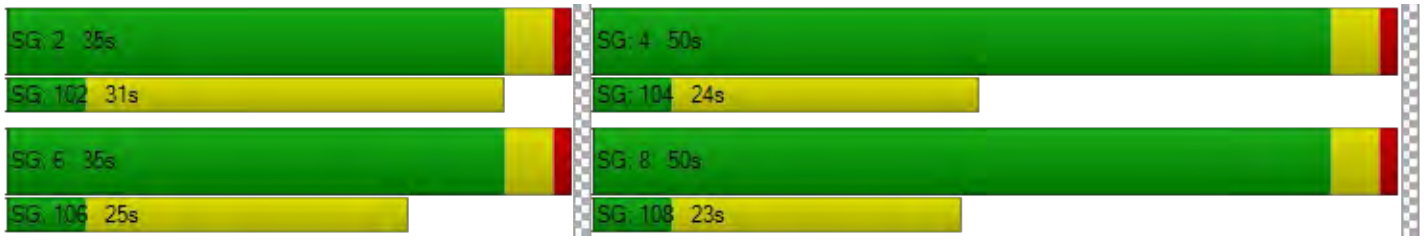
d_M, Delay for Movement [s/veh]	24.81	17.92	18.18	22.56	19.75	15.83	17.78	16.83	11.27	34.73	12.25	10.71
Movement LOS	C	B	B	C	B	B	B	B	B	C	B	B
d_A, Approach Delay [s/veh]	19.22			20.05			16.10			18.58		
Approach LOS	B			C			B			B		
d_I, Intersection Delay [s/veh]	18.03											
Intersection LOS	B											
Intersection V/C	0.542											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	33.97	33.97	33.97	33.97
l_p,int, Pedestrian LOS Score for Intersection	2.677	2.578	2.839	2.856
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	730	730	1083	1083
d_b, Bicycle Delay [s]	17.15	17.15	8.94	8.94
l_b,int, Bicycle LOS Score for Intersection	2.272	2.241	2.932	2.317
Bicycle LOS	B	B	C	B

Sequence

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



Intersection Level Of Service Report
Intersection 3: 30th St (NS) at Ave N (EW)

Control Type:	Signalized	Delay (sec / veh):	31.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.817

Intersection Setup

Name	30th St			30th St			Ave N			Ave N		
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]	250.00	100.00	100.00	250.00	100.00	100.00	255.00	100.00	100.00	255.00	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]	55.00			55.00			55.00			55.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	30th St			30th St			Ave N			Ave N		
Base Volume Input [veh/h]	30	287	186	58	323	50	49	657	32	84	298	22
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	13	38	0	4	0	0	0	0	12	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]	30	300	224	58	327	50	49	657	32	96	298	22
Peak Hour Factor	0.8860	0.8860	0.8860	0.8860	0.8860	0.8860	0.8860	0.8860	0.8860	0.8860	0.8860	0.8860
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]	8	85	63	16	92	14	14	185	9	27	84	6
Total Analysis Volume [veh/h]	34	339	253	65	369	56	55	742	36	108	336	25
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]	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]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	4	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	10	0	0	10	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	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	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	52	0	0	52	0	0	63	0	0	63	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	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	17	0	0	17	0	0	17	0	0	17	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	0.0	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	0.0	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	L	C	L	C	L	C	L	C
C, Cycle Length [s]	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	48	48	48	48	59	59	59	59
g / C, Green / Cycle	0.42	0.42	0.42	0.42	0.51	0.51	0.51	0.51
(v / s)_i Volume / Saturation Flow Rate	0.04	0.34	0.08	0.23	0.05	0.42	0.16	0.20
s, saturation flow rate [veh/h]	962	1739	825	1827	1020	1855	694	1847
c, Capacity [veh/h]	270	723	136	760	456	955	171	951
d1, Uniform Delay [s]	36.72	29.77	51.80	25.58	22.98	23.32	48.51	16.83
k, delay calibration	0.11	0.33	0.11	0.14	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.21	6.86	2.59	0.81	0.54	7.60	16.47	1.15
d3, Initial Queue Delay [s]	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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.13	0.82	0.48	0.56	0.12	0.81	0.63	0.38
d, Delay for Lane Group [s/veh]	36.92	36.63	54.38	26.39	23.52	30.92	64.98	17.98
Lane Group LOS	D	D	D	C	C	C	E	B
Critical Lane Group	No	Yes	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.76	14.50	1.87	8.27	0.98	17.44	3.72	5.47
50th-Percentile Queue Length [ft/ln]	18.91	362.45	46.63	206.66	24.46	435.92	92.99	136.69
95th-Percentile Queue Length [veh/ln]	1.36	20.74	3.36	12.98	1.76	24.29	6.69	9.30
95th-Percentile Queue Length [ft/ln]	34.04	518.56	83.94	324.54	44.03	607.13	167.37	232.56

Movement, Approach, & Intersection Results

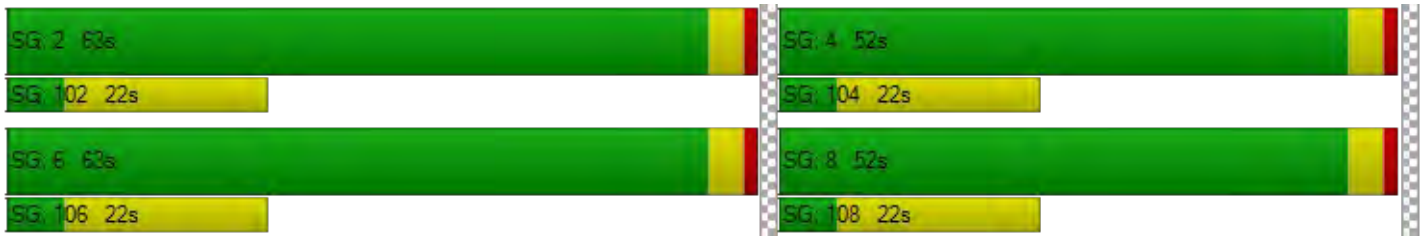
d_M, Delay for Movement [s/veh]	36.92	36.63	36.63	54.38	26.39	26.39	23.52	30.92	30.92	64.98	17.98	17.98
Movement LOS	D	D	D	D	C	C	C	C	C	E	B	B
d_A, Approach Delay [s/veh]	36.64			30.11			30.43			28.80		
Approach LOS	D			C			C			C		
d_I, Intersection Delay [s/veh]	31.66											
Intersection LOS	C											
Intersection V/C	0.817											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	48.85	48.85	48.85	48.85
l_p,int, Pedestrian LOS Score for Intersection	2.807	2.573	2.752	2.957
Crosswalk LOS	C	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	835	835	1026	1026
d_b, Bicycle Delay [s]	19.52	19.52	13.63	13.63
l_b,int, Bicycle LOS Score for Intersection	2.593	2.368	2.934	2.333
Bicycle LOS	B	B	C	B

Sequence

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



Intersection Level Of Service Report
Intersection 4: Rancho Vista Blvd (NS) at Tilbury Dr (EW)

Control Type:	Two-way stop	Delay (sec / veh):	32.7
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.110

Intersection Setup

Name	Rancho Vista Blvd		Rancho Vista Blvd		Tilbury Dr	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1
Entry Pocket Length [ft]	415.00	100.00	100.00	250.00	100.00	100.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	49.21	0.00	0.00	0.00	0.00
Speed [mph]	55.00		55.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Rancho Vista Blvd		Rancho Vista Blvd		Tilbury Dr	
Base Volume Input [veh/h]	0	746	1038	0	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]	26	0	0	4	13	81
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]	26	746	1038	4	13	81
Peak Hour Factor	0.8124	0.8124	0.8124	0.8124	0.8124	0.8124
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	230	319	1	4	25
Total Analysis Volume [veh/h]	32	918	1278	5	16	100
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			Yes
Number of Storage Spaces in Median	0	0	1

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.01	0.01	0.00	0.11	0.28
d_M, Delay for Movement [s/veh]	12.13	0.00	0.00	0.00	32.68	18.86
Movement LOS	B	A	A	A	D	C
95th-Percentile Queue Length [veh/ln]	0.19	0.00	0.00	0.00	0.36	1.12
95th-Percentile Queue Length [ft/ln]	4.74	0.00	0.00	0.00	9.03	28.00
d_A, Approach Delay [s/veh]	0.41		0.00		20.77	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	1.19					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 5: Rancho Vista Blvd (NS) at Rancho Vista Plaza (EW)

Control Type:	Two-way stop	Delay (sec / veh):	12.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.121

Intersection Setup

Name	Rancho Vista Blvd		Rancho Vista Blvd		Rancho Vista Plaza	
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	1	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		55.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Rancho Vista Blvd		Rancho Vista Blvd		Rancho Vista Plaza	
Base Volume Input [veh/h]	676	0	0	866	0	60
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]	24	0	6	75	0	2
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]	700	0	6	941	0	62
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	184	0	2	248	0	16
Total Analysis Volume [veh/h]	737	0	6	991	0	65
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			Yes
Number of Storage Spaces in Median	0	0	1

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.01	0.01	0.00	0.12
d_M, Delay for Movement [s/veh]	0.00	0.00	11.96	0.00	17.90	12.63
Movement LOS	A	A	B	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.03	0.00	0.41	0.41
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.87	0.00	10.26	10.26
d_A, Approach Delay [s/veh]	0.00		0.07		12.63	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.50					
Intersection LOS	B					

PM PEAK HOUR

Intersection Level Of Service Report
Intersection 1: 50th St (NS) at Ave N (EW)

Control Type:	Signalized	Delay (sec / veh):	61.7
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.515

Intersection Setup

Name	50th St			50th St			Ave N			Ave N		
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	1	0	0
Entry Pocket Length [ft]	300.00	100.00	100.00	200.00	100.00	200.00	145.00	100.00	145.00	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			55.00			55.00			55.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	50th St			50th St			Ave N			Ave N		
Base Volume Input [veh/h]	278	310	65	90	367	40	72	239	214	96	363	93
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	4	0	0	7	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]	278	314	65	90	374	40	72	239	214	96	363	93
Peak Hour Factor	0.9650	0.9650	0.9650	0.9650	0.9650	0.9650	0.9650	0.9650	0.9650	0.9650	0.9650	0.9650
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]	72	81	17	23	97	10	19	62	55	25	94	24
Total Analysis Volume [veh/h]	288	325	67	93	388	41	75	248	222	99	376	96
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]	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	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	4	5	2	2	1	6	0
Auxiliary Signal Groups			1,8			4,5			2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	10	5	10	10	5	10	10	5	10	0
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	19	48	48	14	43	43	10	49	49	9	48	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	5	0	5	5	0	5	0
Pedestrian Clearance [s]	0	23	23	0	34	34	0	40	40	0	23	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	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No	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	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	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	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	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	23	32	8	16	26	6	68	87	5	67	67
g / C, Green / Cycle	0.13	0.19	0.27	0.07	0.13	0.22	0.05	0.57	0.72	0.04	0.56	0.56
(v / s)_i Volume / Saturation Flow Rate	0.16	0.17	0.04	0.05	0.11	0.03	0.04	0.07	0.14	0.06	0.13	0.13
s, saturation flow rate [veh/h]	1781	1870	1589	1781	3560	1589	1781	3560	1589	1781	1870	1741
c, Capacity [veh/h]	223	362	428	117	478	347	90	2010	1150	76	1040	969
d1, Uniform Delay [s]	52.50	47.23	33.44	55.26	50.49	37.65	56.47	12.24	5.34	57.48	13.59	13.61
k, delay calibration	0.19	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
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
d2, Incremental Delay [s]	142.76	7.96	0.17	11.26	3.36	0.15	17.13	0.13	0.37	158.31	0.53	0.57
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	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	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	1.00

Lane Group Results

X, volume / capacity	1.29	0.90	0.16	0.79	0.81	0.12	0.83	0.12	0.19	1.31	0.23	0.24
d, Delay for Lane Group [s/veh]	195.26	55.19	33.61	66.52	53.85	37.80	73.60	12.36	5.72	215.79	14.11	14.19
Lane Group LOS	F	E	C	E	D	D	E	B	A	F	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	15.40	9.97	1.48	3.03	5.63	0.94	2.59	1.43	1.46	5.53	3.15	2.99
50th-Percentile Queue Length [ft/ln]	384.92	249.37	36.89	75.74	140.86	23.57	64.86	35.77	36.43	138.25	78.86	74.70
95th-Percentile Queue Length [veh/ln]	24.13	15.15	2.66	5.45	9.53	1.70	4.67	2.58	2.62	9.95	5.68	5.38
95th-Percentile Queue Length [ft/ln]	603.36	378.86	66.39	136.33	238.18	42.43	116.75	64.38	65.58	248.84	141.94	134.46

Movement, Approach, & Intersection Results

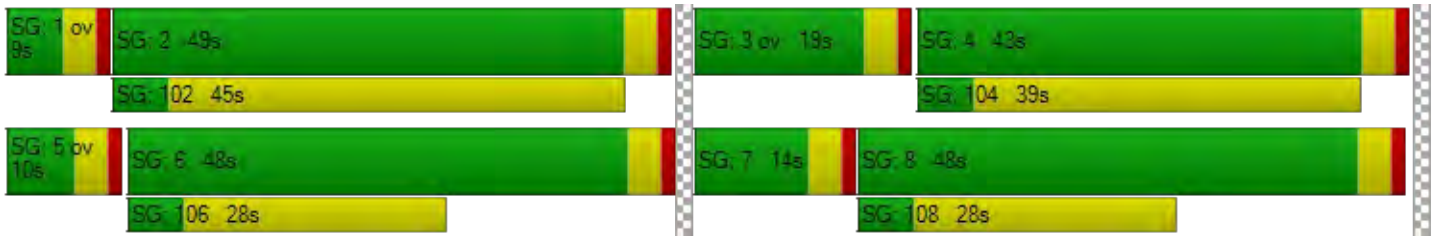
d_M, Delay for Movement [s/veh]	195.26	55.19	33.61	66.52	53.85	37.80	73.60	12.36	5.72	215.79	14.14	14.19
Movement LOS	F	E	C	E	D	D	E	B	A	F	B	B
d_A, Approach Delay [s/veh]	112.39			54.85			18.08			49.11		
Approach LOS	F			D			B			D		
d_I, Intersection Delay [s/veh]	61.67											
Intersection LOS	E											
Intersection V/C	0.515											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.35	51.35	51.35	51.35
l_p,int, Pedestrian LOS Score for Intersection	2.721	2.679	2.841	2.665
Crosswalk LOS	B	B	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	733	650	750	733
d_b, Bicycle Delay [s]	24.08	27.35	23.45	24.08
l_b,int, Bicycle LOS Score for Intersection	2.682	1.990	2.009	2.031
Bicycle LOS	B	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 2: 45th St (NS) at Ave N (EW)

Control Type:	Signalized	Delay (sec / veh):	17.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.385

Intersection Setup

Name	45th St			45th St			Ave N			Ave N		
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	1	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	175.00	100.00	52.00	107.00	100.00	103.00	110.00	100.00	100.00	250.00	100.00	150.00
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			55.00			55.00			55.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	45th St			45th St			Ave N			Ave N		
Base Volume Input [veh/h]	47	108	60	39	123	26	26	302	70	81	455	59
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]	47	108	60	39	123	26	26	302	70	81	455	59
Peak Hour Factor	0.9065	0.9065	0.9065	0.9065	0.9065	0.9065	0.9065	0.9065	0.9065	0.9065	0.9065	0.9065
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	30	17	11	34	7	7	83	19	22	125	16
Total Analysis Volume [veh/h]	52	119	66	43	136	29	29	333	77	89	502	65
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]	70
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]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	10	0	0	10	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	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	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	35	0	0	35	0	0	35	0	0	35	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	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	20	0	0	26	0	0	18	0	0	19	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	0.0	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	0.0	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	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
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	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	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	2.00
g_i, Effective Green Time [s]	37	37	37	37	37	37	25	25	25	25	25	25
g / C, Green / Cycle	0.54	0.54	0.54	0.54	0.54	0.54	0.35	0.35	0.35	0.35	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.04	0.06	0.04	0.04	0.07	0.02	0.03	0.18	0.05	0.09	0.27	0.04
s, saturation flow rate [veh/h]	1220	1870	1589	1198	1870	1589	844	1870	1589	976	1870	1589
c, Capacity [veh/h]	687	1002	851	682	1002	851	162	655	556	269	655	556
d1, Uniform Delay [s]	9.93	8.06	7.87	9.68	8.14	7.69	31.32	17.99	15.54	26.52	20.21	15.41
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.16	0.11
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
d2, Incremental Delay [s]	0.21	0.24	0.18	0.18	0.28	0.07	0.52	0.61	0.11	0.71	2.86	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	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	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	1.00

Lane Group Results

X, volume / capacity	0.08	0.12	0.08	0.06	0.14	0.03	0.18	0.51	0.14	0.33	0.77	0.12
d, Delay for Lane Group [s/veh]	10.14	8.30	8.05	9.86	8.42	7.76	31.84	18.60	15.65	27.23	23.07	15.51
Lane Group LOS	B	A	A	A	A	A	C	B	B	C	C	B
Critical Lane Group	No	No	No	No	Yes	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.40	0.76	0.42	0.30	0.81	0.17	0.45	3.60	0.71	1.24	6.43	0.60
50th-Percentile Queue Length [ft/ln]	9.95	19.07	10.47	7.56	20.36	4.15	11.13	89.97	17.85	30.97	160.68	14.94
95th-Percentile Queue Length [veh/ln]	0.72	1.37	0.75	0.54	1.47	0.30	0.80	6.48	1.28	2.23	10.58	1.08
95th-Percentile Queue Length [ft/ln]	17.91	34.33	18.85	13.61	36.64	7.46	20.04	161.95	32.12	55.74	264.62	26.89

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	10.14	8.30	8.05	9.86	8.42	7.76	31.84	18.60	15.65	27.23	23.07	15.51
Movement LOS	B	A	A	A	A	A	C	B	B	C	C	B
d_A, Approach Delay [s/veh]	8.63			8.62			18.96			22.89		
Approach LOS	A			A			B			C		
d_I, Intersection Delay [s/veh]	17.65											
Intersection LOS	B											
Intersection V/C	0.385											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	26.58	26.58	26.58	26.58
l_p,int, Pedestrian LOS Score for Intersection	2.444	2.349	2.728	2.672
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	886	886	886	886
d_b, Bicycle Delay [s]	10.86	10.86	10.86	10.86
l_b,int, Bicycle LOS Score for Intersection	1.951	1.903	2.284	2.642
Bicycle LOS	A	A	B	B

Sequence

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

Intersection Level Of Service Report
Intersection 3: 30th St (NS) at Ave N (EW)

Control Type:	Signalized	Delay (sec / veh):	26.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.667

Intersection Setup

Name	30th St			30th St			Ave N			Ave N		
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]	250.00	100.00	100.00	250.00	100.00	100.00	255.00	100.00	100.00	255.00	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]	55.00			55.00			55.00			55.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	30th St			30th St			Ave N			Ave N		
Base Volume Input [veh/h]	33	307	78	26	408	60	43	365	30	195	570	72
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	9	26	0	14	0	0	0	0	42	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]	33	316	104	26	422	60	43	365	30	237	570	72
Peak Hour Factor	0.9890	0.9890	0.9890	0.9890	0.9890	0.9890	0.9890	0.9890	0.9890	0.9890	0.9890	0.9890
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]	8	80	26	7	107	15	11	92	8	60	144	18
Total Analysis Volume [veh/h]	33	320	105	26	427	61	43	369	30	240	576	73
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]	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]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	4	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	10	0	0	10	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	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	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	52	0	0	52	0	0	63	0	0	63	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	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	17	0	0	17	0	0	17	0	0	17	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	0.0	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	0.0	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	L	C	L	C	L	C	L	C
C, Cycle Length [s]	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	37	37	37	37	70	70	70	70
g / C, Green / Cycle	0.32	0.32	0.32	0.32	0.61	0.61	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.04	0.24	0.03	0.27	0.05	0.22	0.24	0.35
s, saturation flow rate [veh/h]	908	1792	962	1830	782	1845	985	1834
c, Capacity [veh/h]	117	576	155	588	355	1124	537	1117
d1, Uniform Delay [s]	52.69	34.72	48.30	36.12	23.87	11.21	20.48	13.60
k, delay calibration	0.11	0.14	0.11	0.20	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.29	2.48	0.51	5.50	0.70	0.88	2.69	2.21
d3, Initial Queue Delay [s]	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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.28	0.74	0.17	0.83	0.12	0.35	0.45	0.58
d, Delay for Lane Group [s/veh]	53.98	37.20	48.80	41.61	24.57	12.09	23.17	15.81
Lane Group LOS	D	D	D	D	C	B	C	B
Critical Lane Group	No	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.93	10.23	0.69	12.64	0.80	4.59	4.39	9.20
50th-Percentile Queue Length [ft/ln]	23.30	255.71	17.14	316.03	19.92	114.76	109.73	230.07
95th-Percentile Queue Length [veh/ln]	1.68	15.47	1.23	18.47	1.43	8.10	7.83	14.18
95th-Percentile Queue Length [ft/ln]	41.93	386.83	30.86	461.81	35.86	202.60	195.63	354.45

Movement, Approach, & Intersection Results

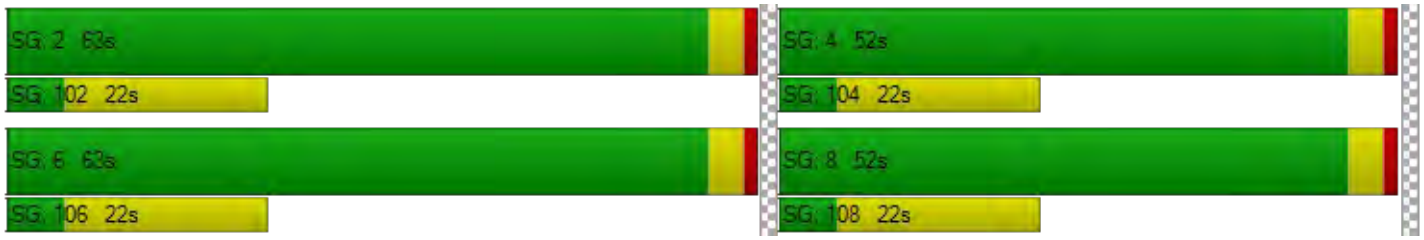
d_M, Delay for Movement [s/veh]	53.98	37.20	37.20	48.80	41.61	41.61	24.57	12.09	12.09	23.17	15.81	15.81
Movement LOS	D	D	D	D	D	D	C	B	B	C	B	B
d_A, Approach Delay [s/veh]	38.41			41.98			13.30			17.79		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	26.43											
Intersection LOS	C											
Intersection V/C	0.667											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	48.85	48.85	48.85	48.85
l_p,int, Pedestrian LOS Score for Intersection	3.002	2.581	2.663	2.818
Crosswalk LOS	C	B	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	835	835	1026	1026
d_b, Bicycle Delay [s]	19.52	19.52	13.63	13.63
l_b,int, Bicycle LOS Score for Intersection	2.315	2.408	2.289	3.026
Bicycle LOS	B	B	B	C

Sequence

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



Intersection Level Of Service Report
Intersection 4: Rancho Vista Blvd (NS) at Tilbury Dr (EW)

Control Type:	Two-way stop	Delay (sec / veh):	18.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.032

Intersection Setup

Name	Rancho Vista Blvd		Rancho Vista Blvd		Tilbury Dr	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1
Entry Pocket Length [ft]	415.00	100.00	100.00	250.00	100.00	100.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	49.21	0.00	0.00	0.00	0.00
Speed [mph]	55.00		55.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Rancho Vista Blvd		Rancho Vista Blvd		Tilbury Dr	
Base Volume Input [veh/h]	2	944	676	0	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]	91	0	0	14	9	55
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]	93	944	676	14	9	55
Peak Hour Factor	0.9940	0.9940	0.9940	0.9940	0.9940	0.9940
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	237	170	4	2	14
Total Analysis Volume [veh/h]	94	950	680	14	9	55
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			Yes
Number of Storage Spaces in Median	0	0	1

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.10	0.01	0.01	0.00	0.03	0.10
d_M, Delay for Movement [s/veh]	9.48	0.00	0.00	0.00	18.37	12.13
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.35	0.00	0.00	0.00	0.10	0.33
95th-Percentile Queue Length [ft/ln]	8.75	0.00	0.00	0.00	2.50	8.13
d_A, Approach Delay [s/veh]	0.85		0.00		13.01	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.96					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 5: Rancho Vista Blvd (NS) at Rancho Vista Plaza (EW)

Control Type:	Two-way stop	Delay (sec / veh):	15.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.245

Intersection Setup

Name	Rancho Vista Blvd		Rancho Vista Blvd		Rancho Vista Plaza 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	1	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		55.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Rancho Vista Blvd		Rancho Vista Blvd		Rancho Vista Plaza Dwy	
Base Volume Input [veh/h]	856	0	0	564	0	97
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]	84	0	4	51	0	7
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]	940	0	4	615	0	104
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	247	0	1	162	0	27
Total Analysis Volume [veh/h]	989	0	4	647	0	109
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			Yes
Number of Storage Spaces in Median	0	0	1

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.01	0.01	0.00	0.24
d_M, Delay for Movement [s/veh]	0.00	0.00	14.18	0.00	23.70	15.68
Movement LOS	A	A	B	A	C	C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.03	0.00	0.95	0.95
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.76	0.00	23.76	23.76
d_A, Approach Delay [s/veh]	0.00		0.09		15.68	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	1.01					
Intersection LOS	C					

OPENING YEAR (2025) WITHOUT PROJECT

AM PEAK HOUR

Intersection Level Of Service Report
Intersection 1: 50th St (NS) at Ave N (EW)

Control Type:	Signalized	Delay (sec / veh):	71.0
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.665

Intersection Setup

Name	50th St			50th St			Ave N			Ave N		
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	1	0	0
Entry Pocket Length [ft]	300.00	100.00	100.00	200.00	100.00	200.00	145.00	100.00	145.00	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			55.00			55.00			55.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	50th St			50th St			Ave N			Ave N		
Base Volume Input [veh/h]	267	312	142	67	252	28	39	335	329	58	229	53
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	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
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]	275	321	146	69	260	29	40	345	339	60	236	55
Peak Hour Factor	0.7704	0.7704	0.7704	0.7704	0.7704	0.7704	0.7704	0.7704	0.7704	0.7704	0.7704	0.7704
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]	89	104	47	22	84	9	13	112	110	19	77	18
Total Analysis Volume [veh/h]	357	417	190	90	337	38	52	448	440	78	306	71
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]	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	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	4	5	2	2	1	6	0
Auxiliary Signal Groups			1,8			4,5			2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	10	5	10	10	5	10	10	5	10	0
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	19	32	32	30	43	43	26	49	49	9	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	5	0	5	5	0	5	0
Pedestrian Clearance [s]	0	23	23	0	34	34	0	40	40	0	23	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	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No	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	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	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	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	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	29	38	8	22	31	5	62	81	5	62	62
g / C, Green / Cycle	0.13	0.25	0.32	0.06	0.18	0.26	0.04	0.51	0.67	0.04	0.52	0.52
(v / s)_i Volume / Saturation Flow Rate	0.20	0.22	0.12	0.05	0.09	0.02	0.03	0.13	0.28	0.04	0.10	0.11
s, saturation flow rate [veh/h]	1781	1870	1589	1781	3560	1589	1781	3560	1589	1781	1870	1751
c, Capacity [veh/h]	223	459	510	116	658	409	70	1831	1070	76	967	906
d1, Uniform Delay [s]	52.50	44.01	31.43	55.29	44.08	33.93	57.08	16.21	8.88	57.48	15.59	15.63
k, delay calibration	0.31	0.15	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
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
d2, Incremental Delay [s]	281.78	9.69	0.45	10.71	0.62	0.10	14.34	0.32	1.17	56.47	0.46	0.51
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	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	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	1.00

Lane Group Results

X, volume / capacity	1.60	0.91	0.37	0.78	0.51	0.09	0.74	0.24	0.41	1.03	0.20	0.20
d, Delay for Lane Group [s/veh]	334.29	53.70	31.89	65.99	44.70	34.03	71.42	16.53	10.05	113.95	16.06	16.13
Lane Group LOS	F	D	C	E	D	C	E	B	B	F	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	24.02	12.83	4.18	2.92	4.37	0.82	1.78	3.19	4.52	3.39	2.72	2.60
50th-Percentile Queue Length [ft/ln]	600.57	320.72	104.60	72.97	109.23	20.49	44.49	79.86	113.11	84.77	67.91	65.10
95th-Percentile Queue Length [veh/ln]	37.77	18.70	7.53	5.25	7.80	1.47	3.20	5.75	8.01	6.10	4.89	4.69
95th-Percentile Queue Length [ft/ln]	944.15	467.57	188.27	131.35	194.93	36.87	80.09	143.75	200.32	152.59	122.23	117.17

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	334.29	53.70	31.89	65.99	44.70	34.03	71.42	16.53	10.05	113.95	16.08	16.13
Movement LOS	F	D	C	E	D	C	E	B	B	F	B	B
d_A, Approach Delay [s/veh]	153.31			47.95			16.53			32.87		
Approach LOS	F			D			B			C		
d_I, Intersection Delay [s/veh]	71.03											
Intersection LOS	E											
Intersection V/C	0.665											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.35	51.35	51.35	51.35
l_p,int, Pedestrian LOS Score for Intersection	2.847	2.674	2.957	2.738
Crosswalk LOS	C	B	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	467	650	750	467
d_b, Bicycle Delay [s]	35.28	27.35	23.45	35.28
l_b,int, Bicycle LOS Score for Intersection	3.150	1.943	2.335	1.935
Bicycle LOS	C	A	B	A

Sequence

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

Intersection Level Of Service Report
Intersection 2: 45th St (NS) at Ave N (EW)

Control Type:	Signalized	Delay (sec / veh):	18.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.558

Intersection Setup

Name	45th St			45th St			Ave N			Ave N		
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	1	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	175.00	100.00	52.00	107.00	100.00	103.00	110.00	100.00	100.00	250.00	100.00	150.00
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			55.00			55.00			55.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	45th St			45th St			Ave N			Ave N		
Base Volume Input [veh/h]	58	147	129	69	226	25	64	484	95	103	211	41
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	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
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]	60	151	133	71	233	26	66	499	98	106	217	42
Peak Hour Factor	0.7734	0.7734	0.7734	0.7734	0.7734	0.7734	0.7734	0.7734	0.7734	0.7734	0.7734	0.7734
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	49	43	23	75	8	21	161	32	34	70	14
Total Analysis Volume [veh/h]	78	195	172	92	301	34	85	645	127	137	281	54
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]	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]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	10	0	0	10	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	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	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	35	0	0	35	0	0	50	0	0	50	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	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	20	0	0	26	0	0	18	0	0	19	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	0.0	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	0.0	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	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	85	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	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	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	2.00
g_i, Effective Green Time [s]	33	33	33	33	33	33	44	44	44	44	44	44
g / C, Green / Cycle	0.39	0.39	0.39	0.39	0.39	0.39	0.52	0.52	0.52	0.52	0.52	0.52
(v / s)_i Volume / Saturation Flow Rate	0.07	0.10	0.11	0.09	0.16	0.02	0.08	0.34	0.08	0.20	0.15	0.03
s, saturation flow rate [veh/h]	1045	1870	1589	1015	1870	1589	1045	1870	1589	698	1870	1589
c, Capacity [veh/h]	356	722	614	393	722	614	499	972	826	239	972	826
d1, Uniform Delay [s]	25.18	17.87	17.95	22.63	19.08	16.36	16.86	14.96	10.65	32.07	11.53	10.14
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.19	0.11	0.11	0.11	0.11
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
d2, Incremental Delay [s]	1.41	0.92	1.14	1.39	1.77	0.17	0.16	1.41	0.09	2.16	0.16	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	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	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	1.00

Lane Group Results

X, volume / capacity	0.22	0.27	0.28	0.23	0.42	0.06	0.17	0.66	0.15	0.57	0.29	0.07
d, Delay for Lane Group [s/veh]	26.60	18.79	19.09	24.03	20.85	16.53	17.02	16.37	10.74	34.24	11.70	10.18
Lane Group LOS	C	B	B	C	C	B	B	B	B	C	B	B
Critical Lane Group	No	No	No	No	Yes	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	1.31	2.56	2.30	1.41	4.10	0.39	0.97	7.61	1.03	2.60	2.47	0.42
50th-Percentile Queue Length [ft/ln]	32.77	63.95	57.42	35.13	102.57	9.81	24.28	190.21	25.82	64.91	61.78	10.45
95th-Percentile Queue Length [veh/ln]	2.36	4.60	4.13	2.53	7.38	0.71	1.75	12.13	1.86	4.67	4.45	0.75
95th-Percentile Queue Length [ft/ln]	58.99	115.11	103.35	63.24	184.62	17.65	43.71	303.30	46.48	116.85	111.21	18.80

Movement, Approach, & Intersection Results

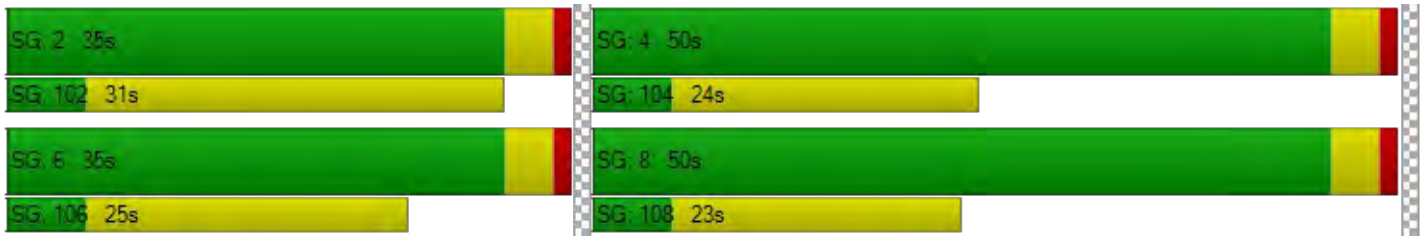
d_M, Delay for Movement [s/veh]	26.60	18.79	19.09	24.03	20.85	16.53	17.02	16.37	10.74	34.24	11.70	10.18
Movement LOS	C	B	B	C	C	B	B	B	B	C	B	B
d_A, Approach Delay [s/veh]	20.28			21.19			15.60			18.06		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	18.16											
Intersection LOS	B											
Intersection V/C	0.558											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	33.97	33.97	33.97	33.97
l_p,int, Pedestrian LOS Score for Intersection	2.694	2.591	2.856	2.878
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	730	730	1083	1083
d_b, Bicycle Delay [s]	17.15	17.15	8.94	8.94
l_b,int, Bicycle LOS Score for Intersection	2.294	2.264	2.974	2.338
Bicycle LOS	B	B	C	B

Sequence

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



Intersection Level Of Service Report
Intersection 3: 30th St (NS) at Ave N (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):	0.809

Intersection Setup

Name	30th St			30th St			Ave N			Ave N		
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]	250.00	100.00	100.00	250.00	100.00	100.00	255.00	100.00	100.00	255.00	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]	55.00			55.00			55.00			55.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	30th St			30th St			Ave N			Ave N		
Base Volume Input [veh/h]	30	287	186	58	323	50	49	657	32	84	298	22
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	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
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]	31	296	192	60	333	52	50	677	33	87	307	23
Peak Hour Factor	0.8860	0.8860	0.8860	0.8860	0.8860	0.8860	0.8860	0.8860	0.8860	0.8860	0.8860	0.8860
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]	9	84	54	17	94	15	14	191	9	25	87	6
Total Analysis Volume [veh/h]	35	334	217	68	376	59	56	764	37	98	347	26
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]	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]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	4	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	10	0	0	10	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	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	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	48	0	0	48	0	0	57	0	0	57	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	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	17	0	0	17	0	0	17	0	0	17	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	0.0	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	0.0	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	L	C	L	C	L	C	L	C
C, Cycle Length [s]	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
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	41	41	41	41	56	56	56	56
g / C, Green / Cycle	0.39	0.39	0.39	0.39	0.53	0.53	0.53	0.53
(v / s)_i Volume / Saturation Flow Rate	0.04	0.32	0.08	0.24	0.06	0.43	0.14	0.20
s, saturation flow rate [veh/h]	953	1748	857	1826	1009	1855	679	1847
c, Capacity [veh/h]	250	690	156	720	460	982	168	978
d1, Uniform Delay [s]	35.75	28.11	46.03	25.27	20.86	20.47	44.72	14.57
k, delay calibration	0.11	0.28	0.11	0.14	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.25	5.47	1.93	1.08	0.54	7.45	13.99	1.13
d3, Initial Queue Delay [s]	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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.14	0.80	0.44	0.60	0.12	0.82	0.58	0.38
d, Delay for Lane Group [s/veh]	36.00	33.58	47.95	26.35	21.40	27.92	58.71	15.70
Lane Group LOS	D	C	D	C	C	C	E	B
Critical Lane Group	No	Yes	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.73	12.03	1.72	8.01	0.89	15.71	3.04	4.84
50th-Percentile Queue Length [ft/ln]	18.25	300.69	43.05	200.19	22.25	392.71	76.08	121.03
95th-Percentile Queue Length [veh/ln]	1.31	17.72	3.10	12.65	1.60	22.21	5.48	8.45
95th-Percentile Queue Length [ft/ln]	32.85	442.88	77.50	316.21	40.04	555.21	136.95	211.24

Movement, Approach, & Intersection Results

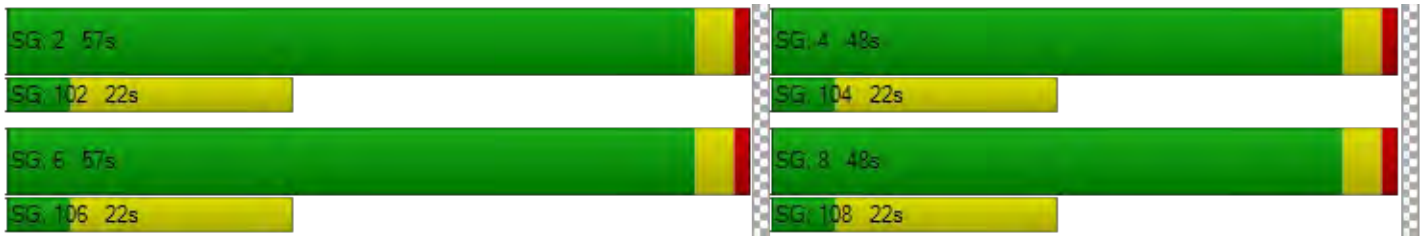
d_M, Delay for Movement [s/veh]	36.00	33.58	33.58	47.95	26.35	26.35	21.40	27.92	27.92	58.71	15.70	15.70
Movement LOS	D	C	C	D	C	C	C	C	C	E	B	B
d_A, Approach Delay [s/veh]	33.73			29.27			27.49			24.65		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	28.82											
Intersection LOS	C											
Intersection V/C	0.809											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	43.89	43.89	43.89	43.89
l_p,int, Pedestrian LOS Score for Intersection	2.770	2.576	2.772	2.952
Crosswalk LOS	C	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	838	838	1010	1010
d_b, Bicycle Delay [s]	17.72	17.72	12.88	12.88
l_b,int, Bicycle LOS Score for Intersection	2.527	2.390	2.974	2.337
Bicycle LOS	B	B	C	B

Sequence

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



Intersection Level Of Service Report

Intersection 5: Rancho Vista Blvd (NS) at Rancho Vista Plaza (EW)

Control Type:	Two-way stop	Delay (sec / veh):	12.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.121

Intersection Setup

Name	Rancho Vista Blvd		Rancho Vista Blvd		Rancho Vista Plaza	
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	1	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		55.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Rancho Vista Blvd		Rancho Vista Blvd		Rancho Vista Plaza	
Base Volume Input [veh/h]	676	0	0	866	0	60
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	1.0300	1.0300	1.0300	1.0300	1.0000	1.0300
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]	696	0	0	892	0	62
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	183	0	0	235	0	16
Total Analysis Volume [veh/h]	733	0	0	939	0	65
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			Yes
Number of Storage Spaces in Median	0	0	1

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.01	0.00	0.12
d_M, Delay for Movement [s/veh]	0.00	0.00	11.85	0.00	17.64	12.60
Movement LOS	A	A	B	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.41	0.41
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	10.23	10.23
d_A, Approach Delay [s/veh]	0.00		0.00		12.60	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.47					
Intersection LOS	B					

PM PEAK HOUR

Intersection Level Of Service Report
Intersection 1: 50th St (NS) at Ave N (EW)

Control Type:	Signalized	Delay (sec / veh):	64.4
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.528

Intersection Setup

Name	50th St			50th St			Ave N			Ave N		
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	1	0	0
Entry Pocket Length [ft]	300.00	100.00	100.00	200.00	100.00	200.00	145.00	100.00	145.00	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			55.00			55.00			55.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	50th St			50th St			Ave N			Ave N		
Base Volume Input [veh/h]	278	310	65	90	367	40	72	239	214	96	363	93
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	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
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]	286	319	67	93	378	41	74	246	220	99	374	96
Peak Hour Factor	0.9650	0.9650	0.9650	0.9650	0.9650	0.9650	0.9650	0.9650	0.9650	0.9650	0.9650	0.9650
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]	74	83	17	24	98	11	19	64	57	26	97	25
Total Analysis Volume [veh/h]	296	331	69	96	392	42	77	255	228	103	388	99
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]	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	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	4	5	2	2	1	6	0
Auxiliary Signal Groups			1,8			4,5			2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	10	5	10	10	5	10	10	5	10	0
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	19	32	32	30	43	43	25	49	49	9	33	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	5	0	5	5	0	5	0
Pedestrian Clearance [s]	0	23	23	0	34	34	0	40	40	0	23	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	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No	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	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	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	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	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	24	33	8	17	28	7	67	86	5	65	65
g / C, Green / Cycle	0.13	0.20	0.27	0.07	0.14	0.23	0.06	0.56	0.72	0.04	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.17	0.18	0.04	0.05	0.11	0.03	0.04	0.07	0.14	0.06	0.13	0.14
s, saturation flow rate [veh/h]	1781	1870	1589	1781	3560	1589	1781	3560	1589	1781	1870	1741
c, Capacity [veh/h]	223	368	434	122	500	366	101	1989	1140	76	1017	947
d1, Uniform Delay [s]	52.50	47.03	33.18	55.03	49.85	36.51	55.81	12.60	5.60	57.48	14.41	14.43
k, delay calibration	0.20	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
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
d2, Incremental Delay [s]	158.73	7.94	0.17	10.44	2.75	0.14	11.07	0.13	0.39	180.44	0.58	0.63
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	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	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	1.00

Lane Group Results

X, volume / capacity	1.33	0.90	0.16	0.78	0.78	0.11	0.76	0.13	0.20	1.36	0.25	0.25
d, Delay for Lane Group [s/veh]	211.23	54.97	33.35	65.48	52.61	36.65	66.88	12.74	6.00	237.92	14.99	15.06
Lane Group LOS	F	D	C	E	D	D	E	B	A	F	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	16.39	10.15	1.51	3.10	5.62	0.95	2.52	1.50	1.56	5.99	3.40	3.21
50th-Percentile Queue Length [ft/ln]	409.69	253.71	37.84	77.47	140.51	23.71	62.99	37.56	38.96	149.87	84.88	80.31
95th-Percentile Queue Length [veh/ln]	25.69	15.37	2.72	5.58	9.51	1.71	4.53	2.70	2.81	10.74	6.11	5.78
95th-Percentile Queue Length [ft/ln]	642.33	384.32	68.10	139.45	237.71	42.67	113.37	67.61	70.13	268.59	152.78	144.55

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	211.23	54.97	33.35	65.48	52.61	36.65	66.88	12.74	6.00	237.92	15.01	15.06
Movement LOS	F	D	C	E	D	D	E	B	A	F	B	B
d_A, Approach Delay [s/veh]	119.28			53.67			17.44			53.94		
Approach LOS	F			D			B			D		
d_I, Intersection Delay [s/veh]	64.42											
Intersection LOS	E											
Intersection V/C	0.528											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.35	51.35	51.35	51.35
l_p,int, Pedestrian LOS Score for Intersection	2.730	2.686	2.851	2.676
Crosswalk LOS	B	B	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	467	650	750	483
d_b, Bicycle Delay [s]	35.28	27.35	23.45	34.52
l_b,int, Bicycle LOS Score for Intersection	2.708	1.997	2.022	2.046
Bicycle LOS	B	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 2: 45th St (NS) at Ave N (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):	0.397

Intersection Setup

Name	45th St			45th St			Ave N			Ave N		
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	1	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	175.00	100.00	52.00	107.00	100.00	103.00	110.00	100.00	100.00	250.00	100.00	150.00
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			55.00			55.00			55.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	45th St			45th St			Ave N			Ave N		
Base Volume Input [veh/h]	47	108	60	39	123	26	26	302	70	81	455	59
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	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
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]	48	111	62	40	127	27	27	311	72	83	469	61
Peak Hour Factor	0.9065	0.9065	0.9065	0.9065	0.9065	0.9065	0.9065	0.9065	0.9065	0.9065	0.9065	0.9065
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	31	17	11	35	7	7	86	20	23	129	17
Total Analysis Volume [veh/h]	53	122	68	44	140	30	30	343	79	92	517	67
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]	70
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]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	10	0	0	10	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	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	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	35	0	0	35	0	0	35	0	0	35	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	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	20	0	0	26	0	0	18	0	0	19	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	0.0	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	0.0	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	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
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	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	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	2.00
g_i, Effective Green Time [s]	40	40	40	40	40	40	22	22	22	22	22	22
g / C, Green / Cycle	0.57	0.57	0.57	0.57	0.57	0.57	0.32	0.32	0.32	0.32	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.04	0.07	0.04	0.04	0.07	0.02	0.04	0.18	0.05	0.10	0.28	0.04
s, saturation flow rate [veh/h]	1215	1870	1589	1193	1870	1589	831	1870	1589	965	1870	1589
c, Capacity [veh/h]	678	1063	904	674	1063	904	165	593	504	270	593	504
d1, Uniform Delay [s]	10.13	6.95	6.79	9.85	7.02	6.62	31.02	19.93	17.13	26.37	22.49	16.99
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.17	0.11
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
d2, Incremental Delay [s]	0.23	0.22	0.16	0.19	0.26	0.07	0.52	0.90	0.14	0.74	6.51	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	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	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	1.00

Lane Group Results

X, volume / capacity	0.08	0.11	0.08	0.07	0.13	0.03	0.18	0.58	0.16	0.34	0.87	0.13
d, Delay for Lane Group [s/veh]	10.35	7.17	6.95	10.04	7.28	6.69	31.54	20.83	17.27	27.11	29.00	17.11
Lane Group LOS	B	A	A	B	A	A	C	C	B	C	C	B
Critical Lane Group	No	No	No	No	Yes	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.41	0.69	0.38	0.31	0.73	0.15	0.46	4.03	0.79	1.28	7.67	0.66
50th-Percentile Queue Length [ft/ln]	10.28	17.31	9.55	7.84	18.36	3.76	11.45	100.71	19.70	31.97	191.81	16.57
95th-Percentile Queue Length [veh/ln]	0.74	1.25	0.69	0.56	1.32	0.27	0.82	7.25	1.42	2.30	12.22	1.19
95th-Percentile Queue Length [ft/ln]	18.51	31.15	17.20	14.10	33.04	6.76	20.61	181.28	35.47	57.54	305.38	29.83

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	10.35	7.17	6.95	10.04	7.28	6.69	31.54	20.83	17.27	27.11	29.00	17.11
Movement LOS	B	A	A	B	A	A	C	C	B	C	C	B
d_A, Approach Delay [s/veh]	7.80			7.76			20.92			27.57		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	19.97											
Intersection LOS	B											
Intersection V/C	0.397											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	26.52	26.52	26.52	26.52
l_p,int, Pedestrian LOS Score for Intersection	2.453	2.356	2.740	2.688
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	887	887	887	887
d_b, Bicycle Delay [s]	10.81	10.81	10.81	10.81
l_b,int, Bicycle LOS Score for Intersection	1.961	1.913	2.305	2.675
Bicycle LOS	A	A	B	B

Sequence

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

Intersection Level Of Service Report
Intersection 3: 30th St (NS) at Ave N (EW)

Control Type:	Signalized	Delay (sec / veh):	16.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.729

Intersection Setup

Name	30th St			30th St			Ave N			Ave N		
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]	250.00	100.00	100.00	250.00	100.00	100.00	255.00	100.00	100.00	255.00	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]	55.00			55.00			55.00			55.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	30th St			30th St			Ave N			Ave N		
Base Volume Input [veh/h]	33	307	78	26	408	60	43	365	30	195	570	72
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	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
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]	34	316	80	27	420	62	44	376	31	201	587	74
Peak Hour Factor	0.9890	0.9890	0.9890	0.9890	0.9890	0.9890	0.9890	0.9890	0.9890	0.9890	0.9890	0.9890
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]	9	80	20	7	106	16	11	95	8	51	148	19
Total Analysis Volume [veh/h]	34	320	81	27	425	63	44	380	31	203	594	75
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]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	4	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	10	0	0	10	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	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	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	34	0	0	34	0	0	26	0	0	26	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	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	17	0	0	17	0	0	17	0	0	17	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	0.0	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	0.0	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	L	C	L	C	L	C	L	C
C, Cycle Length [s]	60	60	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	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	22	22	22	22	30	30	30	30
g / C, Green / Cycle	0.36	0.36	0.36	0.36	0.51	0.51	0.51	0.51
(v / s)_i Volume / Saturation Flow Rate	0.04	0.22	0.03	0.27	0.06	0.22	0.21	0.36
s, saturation flow rate [veh/h]	908	1806	984	1828	768	1845	975	1834
c, Capacity [veh/h]	194	652	251	660	278	933	455	927
d1, Uniform Delay [s]	26.30	15.75	23.18	16.71	20.10	9.44	16.34	11.55
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.42	0.95	0.19	1.65	1.22	1.51	3.15	4.84
d3, Initial Queue Delay [s]	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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.18	0.61	0.11	0.74	0.16	0.44	0.45	0.72
d, Delay for Lane Group [s/veh]	26.72	16.70	23.37	18.36	21.31	10.95	19.49	16.40
Lane Group LOS	C	B	C	B	C	B	B	B
Critical Lane Group	No	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.42	3.59	0.30	4.71	0.52	2.63	2.17	5.70
50th-Percentile Queue Length [ft/ln]	10.54	89.68	7.56	117.85	13.12	65.65	54.36	142.47
95th-Percentile Queue Length [veh/ln]	0.76	6.46	0.54	8.27	0.94	4.73	3.91	9.61
95th-Percentile Queue Length [ft/ln]	18.97	161.42	13.61	206.87	23.61	118.16	97.86	240.34

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	26.72	16.70	16.70	23.37	18.36	18.36	21.31	10.95	10.95	19.49	16.40	16.40
Movement LOS	C	B	B	C	B	B	C	B	B	B	B	B
d_A, Approach Delay [s/veh]	17.48			18.63			11.95			17.12		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	16.50											
Intersection LOS	B											
Intersection V/C	0.729											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	21.68	21.68	21.68	21.68
l_p,int, Pedestrian LOS Score for Intersection	2.889	2.552	2.652	2.770
Crosswalk LOS	C	B	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1000	1000	733	733
d_b, Bicycle Delay [s]	7.51	7.51	12.04	12.04
l_b,int, Bicycle LOS Score for Intersection	2.277	2.409	2.310	2.998
Bicycle LOS	B	B	B	C

Sequence

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

Intersection Level Of Service Report
Intersection 5: Rancho Vista Blvd (NS) at Rancho Vista Plaza (EW)

Control Type:	Two-way stop	Delay (sec / veh):	15.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.225

Intersection Setup

Name	Rancho Vista Blvd		Rancho Vista Blvd		Rancho Vista Plaza 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	1	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		55.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Rancho Vista Blvd		Rancho Vista Blvd		Rancho Vista Plaza Dwy	
Base Volume Input [veh/h]	856	0	0	564	0	97
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	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
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]	882	0	0	581	0	100
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	232	0	0	153	0	26
Total Analysis Volume [veh/h]	928	0	0	612	0	105
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			Yes
Number of Storage Spaces in Median	0	0	1

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.01	0.00	0.23
d_M, Delay for Movement [s/veh]	0.00	0.00	13.49	0.00	22.00	14.96
Movement LOS	A	A	B	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.86	0.86
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	21.40	21.40
d_A, Approach Delay [s/veh]	0.00		0.00		14.96	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.95					
Intersection LOS	B					

OPENING YEAR (2025) WITH PROJECT

AM PEAK HOUR

Intersection Level Of Service Report
Intersection 1: 50th St (NS) at Ave N (EW)

Control Type:	Signalized	Delay (sec / veh):	71.0
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.666

Intersection Setup

Name	50th St			50th St			Ave N			Ave N		
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	1	0	0
Entry Pocket Length [ft]	300.00	100.00	100.00	200.00	100.00	200.00	145.00	100.00	145.00	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			55.00			55.00			55.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	50th St			50th St			Ave N			Ave N		
Base Volume Input [veh/h]	267	312	142	67	252	28	39	335	329	58	229	53
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	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	6	0	0	2	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]	275	327	146	69	262	29	40	345	339	60	236	55
Peak Hour Factor	0.7704	0.7704	0.7704	0.7704	0.7704	0.7704	0.7704	0.7704	0.7704	0.7704	0.7704	0.7704
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]	89	106	47	22	85	9	13	112	110	19	77	18
Total Analysis Volume [veh/h]	357	424	190	90	340	38	52	448	440	78	306	71
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]	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	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	4	5	2	2	1	6	0
Auxiliary Signal Groups			1,8			4,5			2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	10	5	10	10	5	10	10	5	10	0
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	19	32	32	30	43	43	26	49	49	9	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	5	0	5	5	0	5	0
Pedestrian Clearance [s]	0	23	23	0	34	34	0	40	40	0	23	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	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No	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	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	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	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	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	30	39	8	23	31	5	61	80	5	62	62
g / C, Green / Cycle	0.13	0.25	0.32	0.06	0.19	0.26	0.04	0.51	0.67	0.04	0.51	0.51
(v / s)_i Volume / Saturation Flow Rate	0.20	0.23	0.12	0.05	0.10	0.02	0.03	0.13	0.28	0.04	0.10	0.11
s, saturation flow rate [veh/h]	1781	1870	1589	1781	3560	1589	1781	3560	1589	1781	1870	1751
c, Capacity [veh/h]	223	465	516	116	671	415	70	1817	1064	76	961	899
d1, Uniform Delay [s]	52.50	43.79	31.09	55.29	43.72	33.59	57.08	16.46	9.08	57.48	15.83	15.87
k, delay calibration	0.31	0.16	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
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
d2, Incremental Delay [s]	281.78	10.07	0.44	10.71	0.59	0.09	14.34	0.32	1.19	56.47	0.47	0.51
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	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	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	1.00

Lane Group Results

X, volume / capacity	1.60	0.91	0.37	0.78	0.51	0.09	0.74	0.25	0.41	1.03	0.20	0.20
d, Delay for Lane Group [s/veh]	334.29	53.87	31.53	65.99	44.31	33.68	71.42	16.78	10.27	113.95	16.30	16.38
Lane Group LOS	F	D	C	E	D	C	E	B	B	F	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	24.02	13.08	4.16	2.92	4.39	0.81	1.78	3.23	4.60	3.39	2.74	2.63
50th-Percentile Queue Length [ft/ln]	600.57	327.03	103.90	72.97	109.68	20.36	44.49	80.67	115.08	84.77	68.60	65.76
95th-Percentile Queue Length [veh/ln]	37.77	19.01	7.48	5.25	7.82	1.47	3.20	5.81	8.12	6.10	4.94	4.73
95th-Percentile Queue Length [ft/ln]	944.15	475.31	187.02	131.35	195.55	36.65	80.09	145.21	203.05	152.59	123.49	118.37

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	334.29	53.87	31.53	65.99	44.31	33.68	71.42	16.78	10.27	113.95	16.33	16.38
Movement LOS	F	D	C	E	D	C	E	B	B	F	B	B
d_A, Approach Delay [s/veh]	152.60			47.62			16.76			33.07		
Approach LOS	F			D			B			C		
d_I, Intersection Delay [s/veh]	71.01											
Intersection LOS	E											
Intersection V/C	0.666											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.35	51.35	51.35	51.35
l_p,int, Pedestrian LOS Score for Intersection	2.850	2.678	2.957	2.738
Crosswalk LOS	C	B	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	467	650	750	467
d_b, Bicycle Delay [s]	35.28	27.35	23.45	35.28
l_b,int, Bicycle LOS Score for Intersection	3.162	1.946	2.335	1.935
Bicycle LOS	C	A	B	A

Sequence

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

Intersection Level Of Service Report
Intersection 2: 45th St (NS) at Ave N (EW)

Control Type:	Signalized	Delay (sec / veh):	18.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.558

Intersection Setup

Name	45th St			45th St			Ave N			Ave N		
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	1	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	175.00	100.00	52.00	107.00	100.00	103.00	110.00	100.00	100.00	250.00	100.00	150.00
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			55.00			55.00			55.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	45th St			45th St			Ave N			Ave N		
Base Volume Input [veh/h]	58	147	129	69	226	25	64	484	95	103	211	41
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	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
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]	60	151	133	71	233	26	66	499	98	106	217	42
Peak Hour Factor	0.7734	0.7734	0.7734	0.7734	0.7734	0.7734	0.7734	0.7734	0.7734	0.7734	0.7734	0.7734
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	49	43	23	75	8	21	161	32	34	70	14
Total Analysis Volume [veh/h]	78	195	172	92	301	34	85	645	127	137	281	54
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]	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]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	10	0	0	10	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	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	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	35	0	0	35	0	0	50	0	0	50	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	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	20	0	0	26	0	0	18	0	0	19	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	0.0	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	0.0	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	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	85	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	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	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	2.00
g_i, Effective Green Time [s]	33	33	33	33	33	33	44	44	44	44	44	44
g / C, Green / Cycle	0.39	0.39	0.39	0.39	0.39	0.39	0.52	0.52	0.52	0.52	0.52	0.52
(v / s)_i Volume / Saturation Flow Rate	0.07	0.10	0.11	0.09	0.16	0.02	0.08	0.34	0.08	0.20	0.15	0.03
s, saturation flow rate [veh/h]	1045	1870	1589	1015	1870	1589	1045	1870	1589	698	1870	1589
c, Capacity [veh/h]	356	722	614	393	722	614	499	972	826	239	972	826
d1, Uniform Delay [s]	25.18	17.87	17.95	22.63	19.08	16.36	16.86	14.96	10.65	32.07	11.53	10.14
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.19	0.11	0.11	0.11	0.11
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
d2, Incremental Delay [s]	1.41	0.92	1.14	1.39	1.77	0.17	0.16	1.41	0.09	2.16	0.16	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	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	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	1.00

Lane Group Results

X, volume / capacity	0.22	0.27	0.28	0.23	0.42	0.06	0.17	0.66	0.15	0.57	0.29	0.07
d, Delay for Lane Group [s/veh]	26.60	18.79	19.09	24.03	20.85	16.53	17.02	16.37	10.74	34.24	11.70	10.18
Lane Group LOS	C	B	B	C	C	B	B	B	B	C	B	B
Critical Lane Group	No	No	No	No	Yes	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	1.31	2.56	2.30	1.41	4.10	0.39	0.97	7.61	1.03	2.60	2.47	0.42
50th-Percentile Queue Length [ft/ln]	32.77	63.95	57.42	35.13	102.57	9.81	24.28	190.21	25.82	64.91	61.78	10.45
95th-Percentile Queue Length [veh/ln]	2.36	4.60	4.13	2.53	7.38	0.71	1.75	12.13	1.86	4.67	4.45	0.75
95th-Percentile Queue Length [ft/ln]	58.99	115.11	103.35	63.24	184.62	17.65	43.71	303.30	46.48	116.85	111.21	18.80

Movement, Approach, & Intersection Results

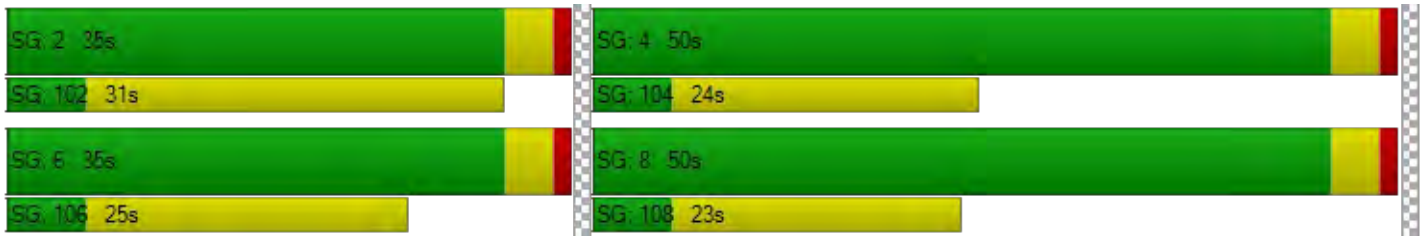
d_M, Delay for Movement [s/veh]	26.60	18.79	19.09	24.03	20.85	16.53	17.02	16.37	10.74	34.24	11.70	10.18
Movement LOS	C	B	B	C	C	B	B	B	B	C	B	B
d_A, Approach Delay [s/veh]	20.28			21.19			15.60			18.06		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	18.16											
Intersection LOS	B											
Intersection V/C	0.558											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	33.97	33.97	33.97	33.97
l_p,int, Pedestrian LOS Score for Intersection	2.694	2.591	2.856	2.878
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	730	730	1083	1083
d_b, Bicycle Delay [s]	17.15	17.15	8.94	8.94
l_b,int, Bicycle LOS Score for Intersection	2.294	2.264	2.974	2.338
Bicycle LOS	B	B	C	B

Sequence

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



Intersection Level Of Service Report
Intersection 3: 30th St (NS) at Ave N (EW)

Control Type:	Signalized	Delay (sec / veh):	31.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.847

Intersection Setup

Name	30th St			30th St			Ave N			Ave N		
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]	250.00	100.00	100.00	250.00	100.00	100.00	255.00	100.00	100.00	255.00	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]	55.00			55.00			55.00			55.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	30th St			30th St			Ave N			Ave N		
Base Volume Input [veh/h]	30	287	186	58	323	50	49	657	32	84	298	22
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	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	13	38	0	4	0	0	0	0	12	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]	31	309	230	60	337	52	50	677	33	99	307	23
Peak Hour Factor	0.8860	0.8860	0.8860	0.8860	0.8860	0.8860	0.8860	0.8860	0.8860	0.8860	0.8860	0.8860
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]	9	87	65	17	95	15	14	191	9	28	87	6
Total Analysis Volume [veh/h]	35	349	260	68	380	59	56	764	37	112	347	26
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]	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]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	4	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	10	0	0	10	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	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	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	48	0	0	48	0	0	57	0	0	57	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	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	17	0	0	17	0	0	17	0	0	17	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	0.0	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	0.0	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	L	C	L	C	L	C	L	C
C, Cycle Length [s]	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
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	44	44	44	44	53	53	53	53
g / C, Green / Cycle	0.42	0.42	0.42	0.42	0.51	0.51	0.51	0.51
(v / s)_i Volume / Saturation Flow Rate	0.04	0.35	0.08	0.24	0.06	0.43	0.16	0.20
s, saturation flow rate [veh/h]	950	1739	812	1827	1009	1855	679	1847
c, Capacity [veh/h]	267	726	132	763	439	939	150	935
d1, Uniform Delay [s]	34.10	27.40	48.68	23.44	22.27	22.53	47.91	16.04
k, delay calibration	0.11	0.34	0.11	0.15	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.22	7.95	3.09	0.93	0.60	9.71	28.26	1.27
d3, Initial Queue Delay [s]	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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.13	0.84	0.52	0.58	0.13	0.85	0.75	0.40
d, Delay for Lane Group [s/veh]	34.32	35.35	51.77	24.37	22.87	32.24	76.17	17.31
Lane Group LOS	C	D	D	C	C	C	E	B
Critical Lane Group	No	Yes	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.71	13.74	1.81	7.68	0.93	17.20	3.99	5.19
50th-Percentile Queue Length [ft/ln]	17.69	343.38	45.23	191.92	23.26	429.96	99.86	129.80
95th-Percentile Queue Length [veh/ln]	1.27	19.81	3.26	12.22	1.67	24.00	7.19	8.93
95th-Percentile Queue Length [ft/ln]	31.85	495.33	81.41	305.52	41.87	599.99	179.75	223.23

Movement, Approach, & Intersection Results

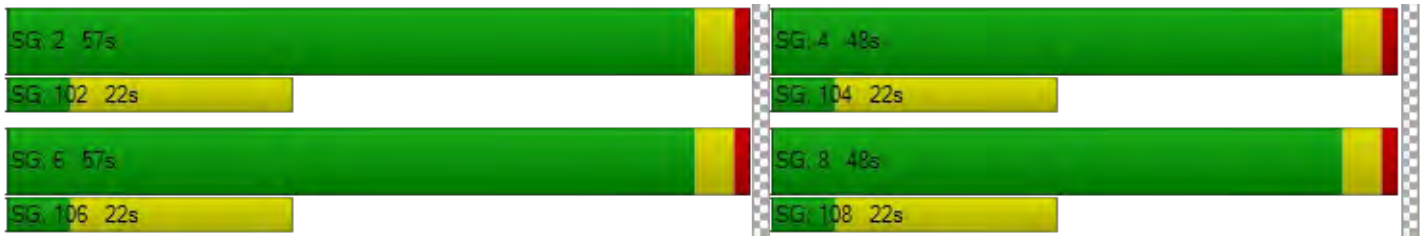
d_M, Delay for Movement [s/veh]	34.32	35.35	35.35	51.77	24.37	24.37	22.87	32.24	32.24	76.17	17.31	17.31
Movement LOS	C	D	D	D	C	C	C	C	C	E	B	B
d_A, Approach Delay [s/veh]	35.30			28.04			31.63			30.90		
Approach LOS	D			C			C			C		
d_I, Intersection Delay [s/veh]	31.71											
Intersection LOS	C											
Intersection V/C	0.847											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	43.88	43.88	43.88	43.88
l_p,int, Pedestrian LOS Score for Intersection	2.824	2.588	2.772	2.986
Crosswalk LOS	C	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	838	838	1010	1010
d_b, Bicycle Delay [s]	17.72	17.72	12.87	12.87
l_b,int, Bicycle LOS Score for Intersection	2.622	2.396	2.974	2.360
Bicycle LOS	B	B	C	B

Sequence

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



Intersection Level Of Service Report
Intersection 4: Rancho Vista Blvd (NS) at Tilbury Dr (EW)

Control Type:	Two-way stop	Delay (sec / veh):	34.4
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.116

Intersection Setup

Name	Rancho Vista Blvd		Rancho Vista Blvd		Tilbury Dr	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1
Entry Pocket Length [ft]	415.00	100.00	100.00	250.00	100.00	100.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	49.21	0.00	0.00	0.00	0.00
Speed [mph]	55.00		55.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Rancho Vista Blvd		Rancho Vista Blvd		Tilbury Dr	
Base Volume Input [veh/h]	0	746	1038	0	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	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	26	0	0	4	13	81
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]	26	768	1069	4	13	81
Peak Hour Factor	0.8124	0.8124	0.8124	0.8124	0.8124	0.8124
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	236	329	1	4	25
Total Analysis Volume [veh/h]	32	945	1316	5	16	100
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			Yes
Number of Storage Spaces in Median	0	0	1

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.01	0.01	0.00	0.12	0.29
d_M, Delay for Movement [s/veh]	12.39	0.00	0.00	0.00	34.42	19.42
Movement LOS	B	A	A	A	D	C
95th-Percentile Queue Length [veh/ln]	0.20	0.00	0.00	0.00	0.38	1.16
95th-Percentile Queue Length [ft/ln]	4.91	0.00	0.00	0.00	9.58	29.06
d_A, Approach Delay [s/veh]	0.41		0.00		21.49	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	1.20					
Intersection LOS	D					

Intersection Level Of Service Report

Intersection 5: Rancho Vista Blvd (NS) at Rancho Vista Plaza (EW)

Control Type:	Two-way stop	Delay (sec / veh):	12.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.127

Intersection Setup

Name	Rancho Vista Blvd		Rancho Vista Blvd		Rancho Vista Plaza	
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	1	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		55.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Rancho Vista Blvd		Rancho Vista Blvd		Rancho Vista Plaza	
Base Volume Input [veh/h]	676	0	0	866	0	60
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	1.0300	1.0300	1.0300	1.0300	1.0000	1.0300
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	24	0	6	75	0	2
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]	720	0	6	967	0	64
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	189	0	2	254	0	17
Total Analysis Volume [veh/h]	758	0	6	1018	0	67
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			Yes
Number of Storage Spaces in Median	0	0	1

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.01	0.01	0.00	0.13
d_M, Delay for Movement [s/veh]	0.00	0.00	12.12	0.00	18.33	12.80
Movement LOS	A	A	B	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.04	0.00	0.43	0.43
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.89	0.00	10.81	10.81
d_A, Approach Delay [s/veh]	0.00		0.07		12.80	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.50					
Intersection LOS	B					

PM PEAK HOUR

TTM 83674 Palmdale

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Report File: G:\...\PMOYp.pdf

Scenario 4 Opening Year With Project
8/2/2023

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	50th St (NS) at Ave N (EW)	Signalized	HCM 7th Edition	WB Left	0.530	64.4	E
2	45th St (NS) at Ave N (EW)	Signalized	HCM 7th Edition	EB Left	0.397	20.0	B
3	30th St (NS) at Ave N (EW)	Signalized	HCM 7th Edition	NB Left	0.738	17.2	B
4	Rancho Vista Blvd (NS) at Tilbury Dr (EW)	Two-way stop	HCM 7th Edition	EB Left	0.033	18.8	C
5	Rancho Vista Blvd (NS) at Rancho Vista Plaza (EW)	Two-way stop	HCM 7th Edition	WB Right	0.259	16.1	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: 50th St (NS) at Ave N (EW)

Control Type:	Signalized	Delay (sec / veh):	64.4
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.530

Intersection Setup

Name	50th St			50th St			Ave N			Ave N		
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	1	0	0
Entry Pocket Length [ft]	300.00	100.00	100.00	200.00	100.00	200.00	145.00	100.00	145.00	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			55.00			55.00			55.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	50th St			50th St			Ave N			Ave N		
Base Volume Input [veh/h]	278	310	65	90	367	40	72	239	214	96	363	93
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	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	4	0	0	7	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]	286	323	67	93	385	41	74	246	220	99	374	96
Peak Hour Factor	0.9650	0.9650	0.9650	0.9650	0.9650	0.9650	0.9650	0.9650	0.9650	0.9650	0.9650	0.9650
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]	74	84	17	24	100	11	19	64	57	26	97	25
Total Analysis Volume [veh/h]	296	335	69	96	399	42	77	255	228	103	388	99
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]	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	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	4	5	2	2	1	6	0
Auxiliary Signal Groups			1,8			4,5			2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	10	5	10	10	5	10	10	5	10	0
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	19	32	32	30	43	43	25	49	49	9	33	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	5	0	5	5	0	5	0
Pedestrian Clearance [s]	0	23	23	0	34	34	0	40	40	0	23	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	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No	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	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	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	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	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	24	33	8	17	28	7	67	86	5	65	65
g / C, Green / Cycle	0.13	0.20	0.27	0.07	0.14	0.23	0.06	0.56	0.72	0.04	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.17	0.18	0.04	0.05	0.11	0.03	0.04	0.07	0.14	0.06	0.13	0.14
s, saturation flow rate [veh/h]	1781	1870	1589	1781	3560	1589	1781	3560	1589	1781	1870	1741
c, Capacity [veh/h]	223	373	437	122	507	370	101	1981	1137	76	1013	944
d1, Uniform Delay [s]	52.50	46.90	32.99	55.03	49.71	36.31	55.81	12.73	5.69	57.48	14.55	14.57
k, delay calibration	0.20	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
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
d2, Incremental Delay [s]	158.73	7.93	0.17	10.44	2.74	0.13	11.07	0.13	0.40	180.44	0.58	0.64
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	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	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	1.00

Lane Group Results

X, volume / capacity	1.33	0.90	0.16	0.78	0.79	0.11	0.76	0.13	0.20	1.36	0.25	0.25
d, Delay for Lane Group [s/veh]	211.23	54.83	33.15	65.48	52.46	36.44	66.88	12.86	6.09	237.92	15.13	15.20
Lane Group LOS	F	D	C	E	D	D	E	B	A	F	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	16.39	10.26	1.51	3.10	5.72	0.94	2.52	1.51	1.58	5.99	3.42	3.23
50th-Percentile Queue Length [ft/ln]	409.69	256.62	37.70	77.47	142.89	23.62	62.99	37.81	39.45	149.87	85.42	80.82
95th-Percentile Queue Length [veh/ln]	25.69	15.52	2.71	5.58	9.64	1.70	4.53	2.72	2.84	10.74	6.15	5.82
95th-Percentile Queue Length [ft/ln]	642.33	387.98	67.86	139.45	240.91	42.52	113.37	68.06	71.01	268.59	153.75	145.47

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	211.23	54.83	33.15	65.48	52.46	36.44	66.88	12.86	6.09	237.92	15.16	15.20
Movement LOS	F	D	C	E	D	D	E	B	A	F	B	B
d_A, Approach Delay [s/veh]	118.83			53.53			17.53			54.05		
Approach LOS	F			D			B			D		
d_I, Intersection Delay [s/veh]	64.36											
Intersection LOS	E											
Intersection V/C	0.530											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.35	51.35	51.35	51.35
l_p,int, Pedestrian LOS Score for Intersection	2.733	2.690	2.851	2.676
Crosswalk LOS	B	B	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	467	650	750	483
d_b, Bicycle Delay [s]	35.28	27.35	23.45	34.52
l_b,int, Bicycle LOS Score for Intersection	2.715	2.003	2.022	2.046
Bicycle LOS	B	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 2: 45th St (NS) at Ave N (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):	0.397

Intersection Setup

Name	45th St			45th St			Ave N			Ave N		
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	1	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	175.00	100.00	52.00	107.00	100.00	103.00	110.00	100.00	100.00	250.00	100.00	150.00
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			55.00			55.00			55.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	45th St			45th St			Ave N			Ave N		
Base Volume Input [veh/h]	47	108	60	39	123	26	26	302	70	81	455	59
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	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
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]	48	111	62	40	127	27	27	311	72	83	469	61
Peak Hour Factor	0.9065	0.9065	0.9065	0.9065	0.9065	0.9065	0.9065	0.9065	0.9065	0.9065	0.9065	0.9065
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	31	17	11	35	7	7	86	20	23	129	17
Total Analysis Volume [veh/h]	53	122	68	44	140	30	30	343	79	92	517	67
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]	70
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]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	10	0	0	10	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	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	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	35	0	0	35	0	0	35	0	0	35	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	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	20	0	0	26	0	0	18	0	0	19	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	0.0	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	0.0	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	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70	70
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	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	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	2.00
g_i, Effective Green Time [s]	40	40	40	40	40	40	22	22	22	22	22	22
g / C, Green / Cycle	0.57	0.57	0.57	0.57	0.57	0.57	0.32	0.32	0.32	0.32	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.04	0.07	0.04	0.04	0.07	0.02	0.04	0.18	0.05	0.10	0.28	0.04
s, saturation flow rate [veh/h]	1215	1870	1589	1193	1870	1589	831	1870	1589	965	1870	1589
c, Capacity [veh/h]	678	1063	904	674	1063	904	165	593	504	270	593	504
d1, Uniform Delay [s]	10.13	6.95	6.79	9.85	7.02	6.62	31.02	19.93	17.13	26.37	22.49	16.99
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.17	0.11
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
d2, Incremental Delay [s]	0.23	0.22	0.16	0.19	0.26	0.07	0.52	0.90	0.14	0.74	6.51	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	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	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	1.00

Lane Group Results

X, volume / capacity	0.08	0.11	0.08	0.07	0.13	0.03	0.18	0.58	0.16	0.34	0.87	0.13
d, Delay for Lane Group [s/veh]	10.35	7.17	6.95	10.04	7.28	6.69	31.54	20.83	17.27	27.11	29.00	17.11
Lane Group LOS	B	A	A	B	A	A	C	C	B	C	C	B
Critical Lane Group	No	No	No	No	Yes	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.41	0.69	0.38	0.31	0.73	0.15	0.46	4.03	0.79	1.28	7.67	0.66
50th-Percentile Queue Length [ft/ln]	10.28	17.31	9.55	7.84	18.36	3.76	11.45	100.71	19.70	31.97	191.81	16.57
95th-Percentile Queue Length [veh/ln]	0.74	1.25	0.69	0.56	1.32	0.27	0.82	7.25	1.42	2.30	12.22	1.19
95th-Percentile Queue Length [ft/ln]	18.51	31.15	17.20	14.10	33.04	6.76	20.61	181.28	35.47	57.54	305.38	29.83

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	10.35	7.17	6.95	10.04	7.28	6.69	31.54	20.83	17.27	27.11	29.00	17.11
Movement LOS	B	A	A	B	A	A	C	C	B	C	C	B
d_A, Approach Delay [s/veh]	7.80			7.76			20.92			27.57		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	19.97											
Intersection LOS	B											
Intersection V/C	0.397											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	26.52	26.52	26.52	26.52
l_p,int, Pedestrian LOS Score for Intersection	2.453	2.356	2.740	2.688
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	887	887	887	887
d_b, Bicycle Delay [s]	10.81	10.81	10.81	10.81
l_b,int, Bicycle LOS Score for Intersection	1.961	1.913	2.305	2.675
Bicycle LOS	A	A	B	B

Sequence

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

Intersection Level Of Service Report
Intersection 3: 30th St (NS) at Ave N (EW)

Control Type:	Signalized	Delay (sec / veh):	17.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.738

Intersection Setup

Name	30th St			30th St			Ave N			Ave N		
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]	250.00	100.00	100.00	250.00	100.00	100.00	255.00	100.00	100.00	255.00	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]	55.00			55.00			55.00			55.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	30th St			30th St			Ave N			Ave N		
Base Volume Input [veh/h]	33	307	78	26	408	60	43	365	30	195	570	72
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	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	9	26	0	14	0	0	0	0	42	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]	34	325	106	27	434	62	44	376	31	243	587	74
Peak Hour Factor	0.9890	0.9890	0.9890	0.9890	0.9890	0.9890	0.9890	0.9890	0.9890	0.9890	0.9890	0.9890
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]	9	82	27	7	110	16	11	95	8	61	148	19
Total Analysis Volume [veh/h]	34	329	107	27	439	63	44	380	31	246	594	75
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]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	4	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	10	0	0	10	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	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	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	34	0	0	34	0	0	26	0	0	26	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	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	17	0	0	17	0	0	17	0	0	17	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	0.0	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	0.0	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	L	C	L	C	L	C	L	C
C, Cycle Length [s]	60	60	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	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	22	22	22	22	30	30	30	30
g / C, Green / Cycle	0.37	0.37	0.37	0.37	0.50	0.50	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.04	0.24	0.03	0.27	0.06	0.22	0.25	0.36
s, saturation flow rate [veh/h]	896	1792	952	1829	768	1845	975	1834
c, Capacity [veh/h]	196	662	236	676	267	918	444	912
d1, Uniform Delay [s]	26.14	15.77	23.85	16.45	20.81	9.76	17.90	11.94
k, delay calibration	0.11	0.11	0.11	0.12	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.42	1.12	0.21	1.81	1.32	1.58	4.93	5.21
d3, Initial Queue Delay [s]	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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.17	0.66	0.11	0.74	0.16	0.45	0.55	0.73
d, Delay for Lane Group [s/veh]	26.56	16.89	24.06	18.26	22.13	11.34	22.83	17.15
Lane Group LOS	C	B	C	B	C	B	C	B
Critical Lane Group	No	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.42	3.95	0.31	4.84	0.54	2.71	2.95	5.91
50th-Percentile Queue Length [ft/ln]	10.50	98.76	7.74	120.88	13.49	67.63	73.64	147.65
95th-Percentile Queue Length [veh/ln]	0.76	7.11	0.56	8.44	0.97	4.87	5.30	9.89
95th-Percentile Queue Length [ft/ln]	18.91	177.76	13.93	211.03	24.27	121.74	132.55	247.29

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	26.56	16.89	16.89	24.06	18.26	18.26	22.13	11.34	11.34	22.83	17.15	17.15
Movement LOS	C	B	B	C	B	B	C	B	B	C	B	B
d_A, Approach Delay [s/veh]	17.59			18.55			12.38			18.68		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	17.23											
Intersection LOS	B											
Intersection V/C	0.738											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	21.68	21.68	21.68	21.68
l_p,int, Pedestrian LOS Score for Intersection	2.992	2.566	2.652	2.811
Crosswalk LOS	C	B	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1000	1000	733	733
d_b, Bicycle Delay [s]	7.51	7.51	12.04	12.04
l_b,int, Bicycle LOS Score for Intersection	2.335	2.432	2.310	3.069
Bicycle LOS	B	B	B	C

Sequence

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

Intersection Level Of Service Report
Intersection 4: Rancho Vista Blvd (NS) at Tilbury Dr (EW)

Control Type:	Two-way stop	Delay (sec / veh):	18.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.033

Intersection Setup

Name	Rancho Vista Blvd		Rancho Vista Blvd		Tilbury Dr	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1
Entry Pocket Length [ft]	415.00	100.00	100.00	250.00	100.00	100.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	49.21	0.00	0.00	0.00	0.00
Speed [mph]	55.00		55.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Rancho Vista Blvd		Rancho Vista Blvd		Tilbury Dr	
Base Volume Input [veh/h]	2	944	676	0	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	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	91	0	0	14	9	55
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]	93	972	696	14	9	55
Peak Hour Factor	0.9940	0.9940	0.9940	0.9940	0.9940	0.9940
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	244	175	4	2	14
Total Analysis Volume [veh/h]	94	978	700	14	9	55
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			Yes
Number of Storage Spaces in Median	0	0	1

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.11	0.01	0.01	0.00	0.03	0.10
d_M, Delay for Movement [s/veh]	9.57	0.00	0.00	0.00	18.77	12.25
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.36	0.00	0.00	0.00	0.10	0.33
95th-Percentile Queue Length [ft/ln]	8.91	0.00	0.00	0.00	2.57	8.26
d_A, Approach Delay [s/veh]	0.84		0.00		13.16	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.94					
Intersection LOS	C					

Intersection Level Of Service Report

Intersection 5: Rancho Vista Blvd (NS) at Rancho Vista Plaza (EW)

Control Type:	Two-way stop	Delay (sec / veh):	16.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.259

Intersection Setup

Name	Rancho Vista Blvd		Rancho Vista Blvd		Rancho Vista Plaza 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	1	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		55.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Rancho Vista Blvd		Rancho Vista Blvd		Rancho Vista Plaza Dwy	
Base Volume Input [veh/h]	856	0	0	564	0	97
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	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	84	0	4	51	0	7
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]	966	0	4	632	0	107
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	254	0	1	166	0	28
Total Analysis Volume [veh/h]	1017	0	4	665	0	113
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			Yes
Number of Storage Spaces in Median	0	0	1

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.01	0.01	0.00	0.26
d_M, Delay for Movement [s/veh]	0.00	0.00	14.47	0.00	24.61	16.11
Movement LOS	A	A	B	A	C	C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.03	0.00	1.02	1.02
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.79	0.00	25.57	25.57
d_A, Approach Delay [s/veh]	0.00		0.09		16.11	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	1.04					
Intersection LOS	C					

APPENDIX E

TRAFFIC SIGNAL WARRANT WORKSHEETS

Figure E-1

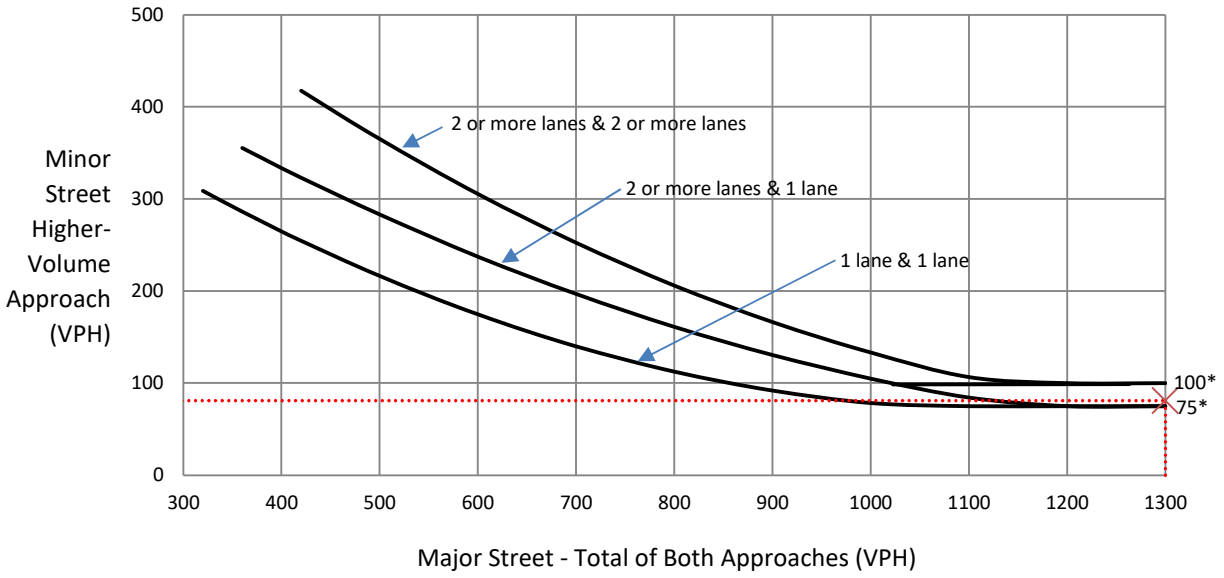
Rancho Vista Blvd (NS) / Tilbury Drive (EW) - #4
Opening Year (2025) With Project
AM

Major Street: Rancho Vista Blvd Volume: 1908

Minor Street: Tilbury Drive Volume: 81

Warrant 3, Peak Hour Vehicular Volume (70% Factor)

(Community less than 10,000 population or above 40 mph on the major street)



Traffic Signal Warrant Is NOT Satisfied

*Note: 100 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

Note:

1. The study should consider the effects of the right-turn vehicles from the minor-street approaches. Engineering judgment should be used to determine what, if any, portion of the right-turn traffic is subtracted from the minor-street traffic count when evaluating the count against the signal warrants listed in Paragraph 2.

2. Since there are 2 minor street approach lanes, minor street right-turn vehicles can turn at the same time as minor street left-turn. Therefore, minor street right-turn volume reduced by minor street left-turn volume.

Figure E-2

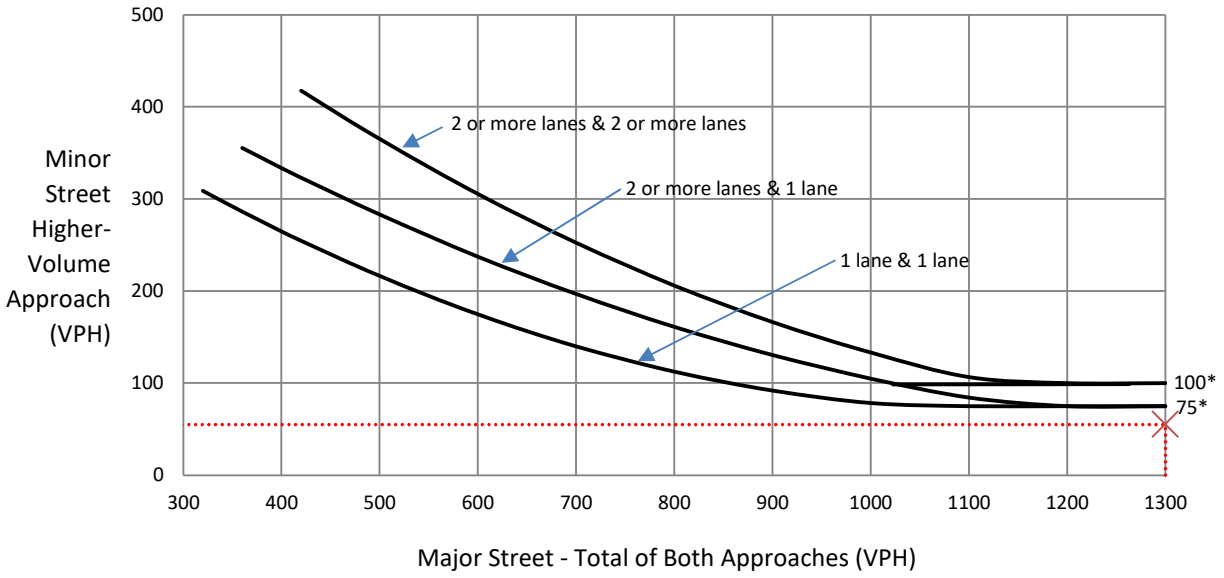
Rancho Vista Blvd (NS) / Tilbury Drive (EW) - #4
Opening Year (2025) With Project
PM

Major Street: Rancho Vista Blvd Volume: 1810

Minor Street: Tilbury Drive Volume: 55

Warrant 3, Peak Hour Vehicular Volume (70% Factor)

(Community less than 10,000 population or above 40 mph on the major street)



Traffic Signal Warrant Is NOT Satisfied

*Note: 100 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

Note:

1. The study should consider the effects of the right-turn vehicles from the minor-street approaches. Engineering judgment should be used to determine what, if any, portion of the right-turn traffic is subtracted from the minor-street traffic count when evaluating the count against the signal warrants listed in Paragraph 2.

2. Since there are 2 minor street approach lanes, minor street right-turn vehicles can turn at the same time as minor street left-turn. Therefore, minor street right-turn volume reduced by minor street left-turn volume.

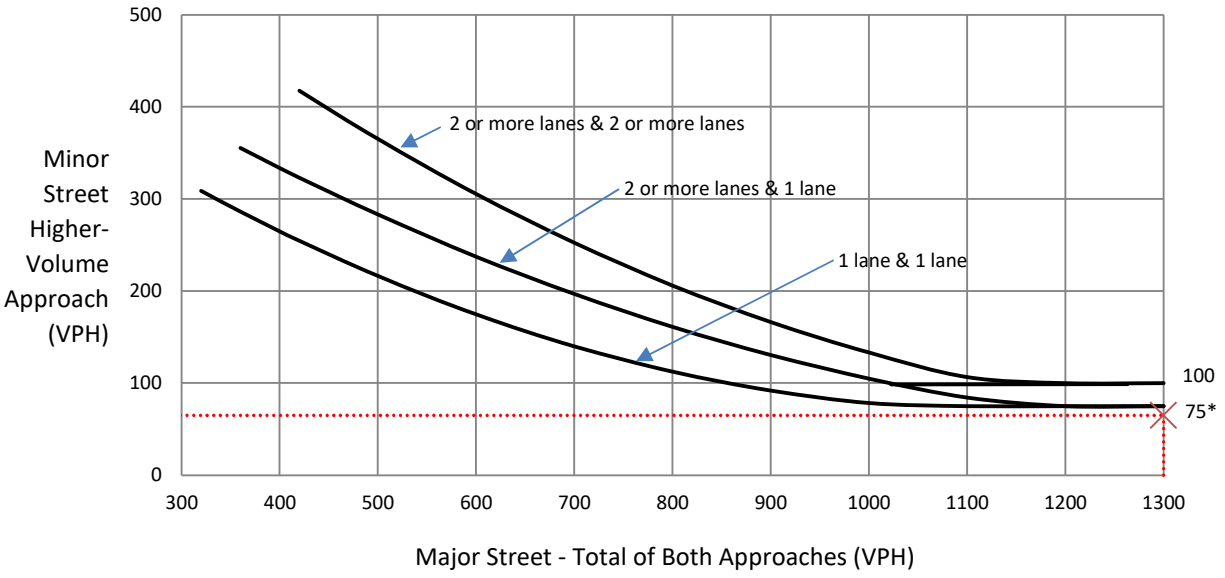
Figure E-3

Rancho Vista Blvd (NS) / RV Plaza Driveway (EW) - #5
Opening Year (2025) With Project
AM

Major Street:	Rancho Vista Blvd	Volume:	1772
Minor Street:	RV Plaza Driveway	Volume:	65

Warrant 3, Peak Hour Vehicular Volume (70% Factor)

(Community less than 10,000 population or above 40 mph on the major street)



Traffic Signal Warrant Is NOT Satisfied

*Note: 100 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

Note:

1. At an intersection with a high volume of left-turn traffic from the major street, the signal warrant analysis may be performed in a manner that considers the higher volume of the major-street left-turn volumes plus the higher volume minor-street approach as the "minor street" volume and both approaches of the major street minus the higher of the major-street left-turn volume as "major street" volume.

2. The study should consider the effects of the right-turn vehicles from the minor-street approaches. Engineering judgment should be used to determine what, if any, portion of the right-turn traffic is subtracted from the minor-street traffic count when evaluating the count against the signal warrants listed in Paragraph 2.

Figure E-4

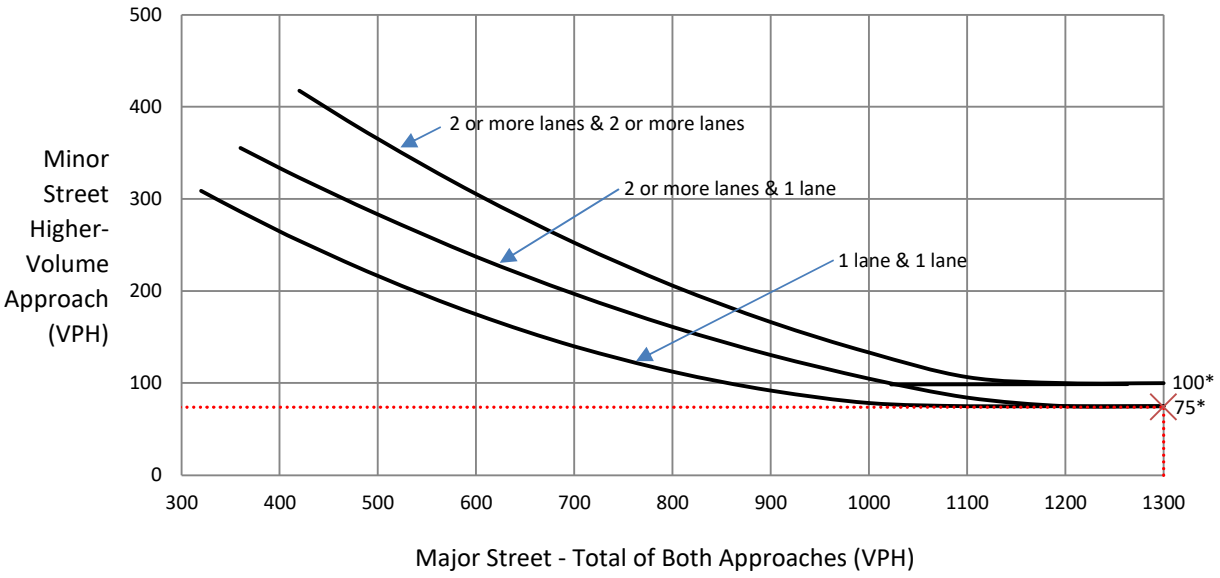
Rancho Vista Blvd (NS) / RV Plaza Driveway (EW) - #5
Opening Year (2025) With Project
PM

Major Street: Rancho Vista Blvd Volume: 1732

Minor Street: RV Plaza Driveway Volume: 74

Warrant 3, Peak Hour Vehicular Volume (70% Factor)

(Community less than 10,000 population or above 40 mph on the major street)



Traffic Signal Warrant Is NOT Satisfied

*Note: 100 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

Note:

1. At an intersection with a high volume of left-turn traffic from the major street, the signal warrant analysis may be performed in a manner that considers the higher volume of the major-street left-turn volumes plus the higher volume minor-street approach as the "minor street" volume and both approaches of the major street minus the higher of the major-street left-turn volume as "major street" volume.

2. The study should consider the effects of the right-turn vehicles from the minor-street approaches. Engineering judgment should be used to determine what, if any, portion of the right-turn traffic is subtracted from the minor-street traffic count when evaluating the count against the signal warrants listed in Paragraph 2.

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