NEC Foothill and Spruce Traffic Impact Analysis

City of Rialto, California

August 9 2024

Prepared by:

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August 9, 2024

TJW ENGINEERING, INC.
TRAFFIC ENGINEERING &
TRANSPORTATION PLANNING
CONSULTANTS

Greg Ocasek
WARMINGTON RESIDENTIAL
3090 Pullman Street
Costa Mesa, CA 92626

Subject: Traffic Impact Analysis – NEC Foothill and Spruce, City of Rialto, CA

Dear Mr. Ocasek:

TJW ENGINEERING, INC. (TJW) is pleased to present you with this traffic impact analysis for the proposed project located at the northeast corner of West Foothill Boulevard and North Spruce Avenue in the City of Rialto. This project proposes the construction of 82 new townhomes.

This traffic study has been prepared to meet the traffic study requirements for the City of Rialto and assesses the forecast traffic operations associated with the proposed project and its impact on the local street network. This report is being submitted to you for review and forwarding to the City of Rialto.

Please contact us at (949) 878-3509 if you have any questions regarding this analysis.

Sincerely,

Thomas Wheat, PE, TE
President
Registered Civil Engineer *#69467*
Registered Traffic Engineer *#2565*

David Chew, PTP
Transportation Planner

Travis Yokota
Assistant Transportation Planner

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1.0 EXECUTIVE SUMMARY

This traffic impact analysis (TIA) analyzes the projected traffic operations associated with the proposed project located at the northeast corner of West Foothill Boulevard and North Spruce Avenue in the City of Rialto. The purpose of this TIA is to evaluate potential circulation system deficiencies that may result from the development of the proposed project, and to recommend improvements to achieve acceptable operations, if applicable. This analysis has been prepared in coordination with the City of Rialto via a scoping agreement (See **Appendix B**) and follows the *City of Rialto General Plan (City General Plan)* (December 2010) and the *City of Rialto Traffic Impact Analysis Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment (LOS)* (October 2021).

This project proposes the construction of 82 new townhomes. Site access is planned via one full-access gated private road at North Spruce Avenue.

The proposed project is anticipated to be built and generating trips in 2026. A growth rate of 2% was used to account for 2026 volumes. The proposed project is projected to generate 553 daily trips which includes 33 AM peak hour trips and 42 PM peak hour trips.

The following three (3) intersections in the vicinity of the project site have been included in the intersection level of service (LOS) analysis:

1. North Spruce Avenue/West Foothill Boulevard;
2. North Larch Avenue/West Foothill Boulevard;
3. North Spruce Avenue /Project Access.

The study intersections are analyzed for the following study scenarios:

- Existing Traffic Conditions (Existing);
- Opening Year Plus Cumulative Traffic Conditions (OYC);
- Opening Year Plus Project and Cumulative Traffic Conditions (OYCP).

1.1 SUMMARY OF LEVEL OF SERVICE ANALYSIS RESULTS

Table ES-1 summarizes the results of the intersection level of service analysis based on the City of Rialto thresholds of significance for analyzing transportation deficiencies.

Table ES-1

Summary of Transportation Deficiencies at Study Intersections

Intersection			Deficiencies		
			Existing Conditions	OYC Conditions	OYCP Conditions
1	North Spruce Avenue	West Foothill Boulevard	-	-	-
2	North Larch Avenue	West Foothill Boulevard	-	Deficient	Deficient
3	North Spruce Avenue	Project Access	-	-	-

Existing Traffic Conditions

The study intersections are projected to operate at an acceptable LOS during the AM and PM peak hours for *Existing* traffic conditions.

Opening Year Plus Cumulative Traffic Conditions (OYC)

The study intersections are projected to operate at an acceptable LOS during the AM and PM peak hours for *Opening Year Plus Cumulative* traffic conditions with the exception of:

- North Larch Avenue and West Foothill Boulevard at the PM Peak Hour.

Opening Year Plus Project And Cumulative Traffic Conditions (OYCP)

The study intersections are projected to operate at an acceptable LOS during the AM and PM peak hours for *Opening Year Plus Project And Cumulative* traffic conditions with the exception of:

- North Larch Avenue and West Foothill Boulevard at the PM Peak Hour.

1.2 ON-SITE ROADWAY AND SITE ACCESS IMPROVEMENTS

Wherever necessary, roadways adjacent to the proposed project site and site access points will be constructed in compliance with recommended roadway classifications and respective cross-sections in the *City General Plan* or as directed by the City Engineer.

Sight distance at each project access point should be reviewed with respect to standard Caltrans and City of Rialto sight distance standards at the time of final grading, landscaping and street improvement plans.

Signing/striping should be implemented in conjunction with detailed construction plans for the project site.

2.0 INTRODUCTION

This traffic impact analysis (TIA) analyzes the projected traffic operations associated with the proposed project located at the northeast corner of Foothill Boulevard and Spruce Avenue in the City of Rialto. The purpose of this TIA is to evaluate potential circulation system deficiencies that may result from the development of the proposed project, and to recommend improvements to achieve acceptable operations, if applicable. This analysis has been prepared in coordination with the City of Rialto via a scoping agreement (See **Appendix B**) and follows the *City of Rialto General Plan (City General Plan)* (December 2010), and the *City of Rialto Traffic Impact Analysis Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment (LOS) (City Guidelines)* (October 2021).

2.1 PROJECT DESCRIPTION

The project proposes the construction of 82 new townhomes. Site access is planned via one full-access gated private road at North Spruce Avenue. The site is located within the Foothill Central Specific Plan area and is zoned as Foothill Mixed-Use Zone (FMUZ). The site is currently vacant.

The proposed project is anticipated to be built and generating trips in 2026. A growth rate of 2% was used to account for 2026 volumes.

Exhibit 1 shows the location of the proposed project site. **Exhibit 2** shows the proposed project site plan.

2.2 STUDY AREA

4. North Spruce Avenue/West Foothill Boulevard;
5. North Larch Avenue/West Foothill Boulevard;
6. North Spruce Avenue /Project Access.

The study intersections are analyzed for the following study scenarios:

- Existing Traffic Conditions (Existing);
- Opening Year Plus Cumulative Traffic Conditions (OYC);
- Opening Year Plus Project and Cumulative Traffic Conditions (OYCP).

Traffic operations are evaluated for the following time periods:

- Weekday AM Peak Hour occurring between 7:00 AM to 9:00 AM; and
- Weekday PM Peak Hour occurring between 4:00 PM to 6:00 PM.

Exhibit 3 shows the locations of the study intersection.

2.3 INTERSECTION ANALYSIS METHODOLOGY

Level of Service (LOS) is commonly used to describe the quality of flow on roadways and at intersections using a range of LOS from LOS A (free flow with little congestion) to LOS F (severely congested conditions). The definitions for LOS for interruption of traffic flow differ depending on the type of traffic control (traffic signal, unsignalized intersection with side street stops, unsignalized intersection with all-way stops). The *Highway Capacity Manual (HCM) 7th Edition* (Transportation Research Board 2022) methodology expresses the LOS of an intersection in terms of delay time for the intersection approaches. The HCM methodology utilizes different procedures for different types of intersection control.

City Guidelines require signalized intersection operations to be analyzed utilizing the HCM methodology. Intersection LOS for signalized intersections is based on the intersections average control delay for all movements at the intersection during the peak hour. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The procedure for stop-control analysis determines the average total delay, expressed in seconds of delay per vehicle, for left turns from the major street and from the stop-controlled minor street traffic stream. Delay values are calculated based on the relationship between traffic on the major street and the availability of acceptable "gaps" in this stream through which conflicting traffic movements can be made.

Table 1 describes the general characteristics of traffic flow and accompanying delay ranges at signalized intersections.

Table 1

HCM – LOS & Delay Ranges – Signalized Intersections

Level of Service	Description	Delay (in seconds)
A	Very favorable progression; most vehicles arrive during green signal and do not stop. Short cycle lengths.	0 – 10.00
B	Good progression, short cycle lengths. More vehicles stop than for LOS A.	10.01 – 20.00
C	Fair progression; longer cycle lengths. Individual cycle failures may begin to appear. The number of vehicles stopping is significant, though many vehicles still pass through without stopping.	20.01 – 35.00
D	Progression less favorable, longer cycle length and high flow/capacity ratio. The proportion of vehicles that pass through without stopping diminishes. Individual cycle failures are obvious.	35.01 – 55.00
E	Severe congestion with some long-standing queues on critical approaches. Poor progression, long cycle lengths and high flow/capacity ratio. Individual cycle failures are frequent.	55.01 – 80.00
F	Very poor progression, long cycle lengths and many individual cycle failures. Arrival flow rates exceed capacity of intersection.	> 80.01

Source: Transportation Research Board, *Highway Capacity Manual*, 7th Edition (Washington D.C., 2022).

Collected peak hour traffic volumes have been adjusted using a peak hour factor (PHF) to reflect peak 15-minute volumes. It is a common practice in LOS analysis to conservatively use a peak 15-minute flow rate applied to the entire hour to derive flow rates in vehicles per hour that are used in the LOS analysis. The PHF is the relationship between the peak 15-minute flow rate and the full hourly volume. PHF = [Hourly Volume]/ [4 * Peak 15-Minute Volume]. The use of a 15-minute PHF produces a more detailed and conservative analysis compared to analyzing vehicles per hour. Existing PHFs, obtained from the existing traffic counts have been used for all analysis scenarios in this study.

City Guidelines also require unsignalized intersection operations to be analyzed utilizing the *HCM 7th Edition* methodology. Intersection operation for unsignalized intersections is based on the weighted average control delay expressed in seconds per vehicle.

At a two-way or side-street stop-controlled intersection, LOS is calculated for each stop-controlled minor street movement, for the left-turn movement(s) from the major street, and for the intersection as a whole. For approaches consisting of a single lane, the delay is calculated as the average of all movements in that lane. For all-way stop-controlled intersection, LOS is computed for the intersection as a whole.

Table 2 describes the general characteristics of traffic flow and accompanying delay ranges at unsignalized intersections.

Table 2

HCM – LOS & Delay Ranges – Unsignalized Intersections

Level of Service	Description	Delay (in seconds)
A	Very favorable progression; most vehicles arrive during green signal and do not stop. Short cycle lengths.	0 – 10.00
B	Good progression, short cycle lengths. More vehicles stop than for LOS A.	10.01 – 20.00
C	Fair progression; longer cycle lengths. Individual cycle failures may begin to appear. The number of vehicles stopping is significant, though many vehicles still pass through without stopping.	20.01 – 35.00
D	Progression less favorable, longer cycle length and high flow/capacity ratio. The proportion of vehicles that pass through without stopping diminishes. Individual cycle failures are obvious.	35.01 – 55.00
E	Severe congestion with some long-standing queues on critical approaches. Poor progression, long cycle lengths and high flow/capacity ratio. Individual cycle failures are frequent.	55.01 – 80.00
F	Very poor progression, long cycle lengths and many individual cycle failures. Arrival flow rates exceed capacity of intersection.	> 80.01

Source: Transportation Research Board, *Highway Capacity Manual*, 7th Edition (Washington D.C., 2022).

This analysis utilizes *PTV Vistro*, Version 2022 analysis software for all signalized and unsignalized intersections. Vistro is a macroscopic traffic software program that is based on the signalized intersection

capacity analysis specified in Chapter 16 of the HCM. The level of service and capacity analysis performed within Vistro takes the optimization and coordination of signalized intersections within a network into consideration.

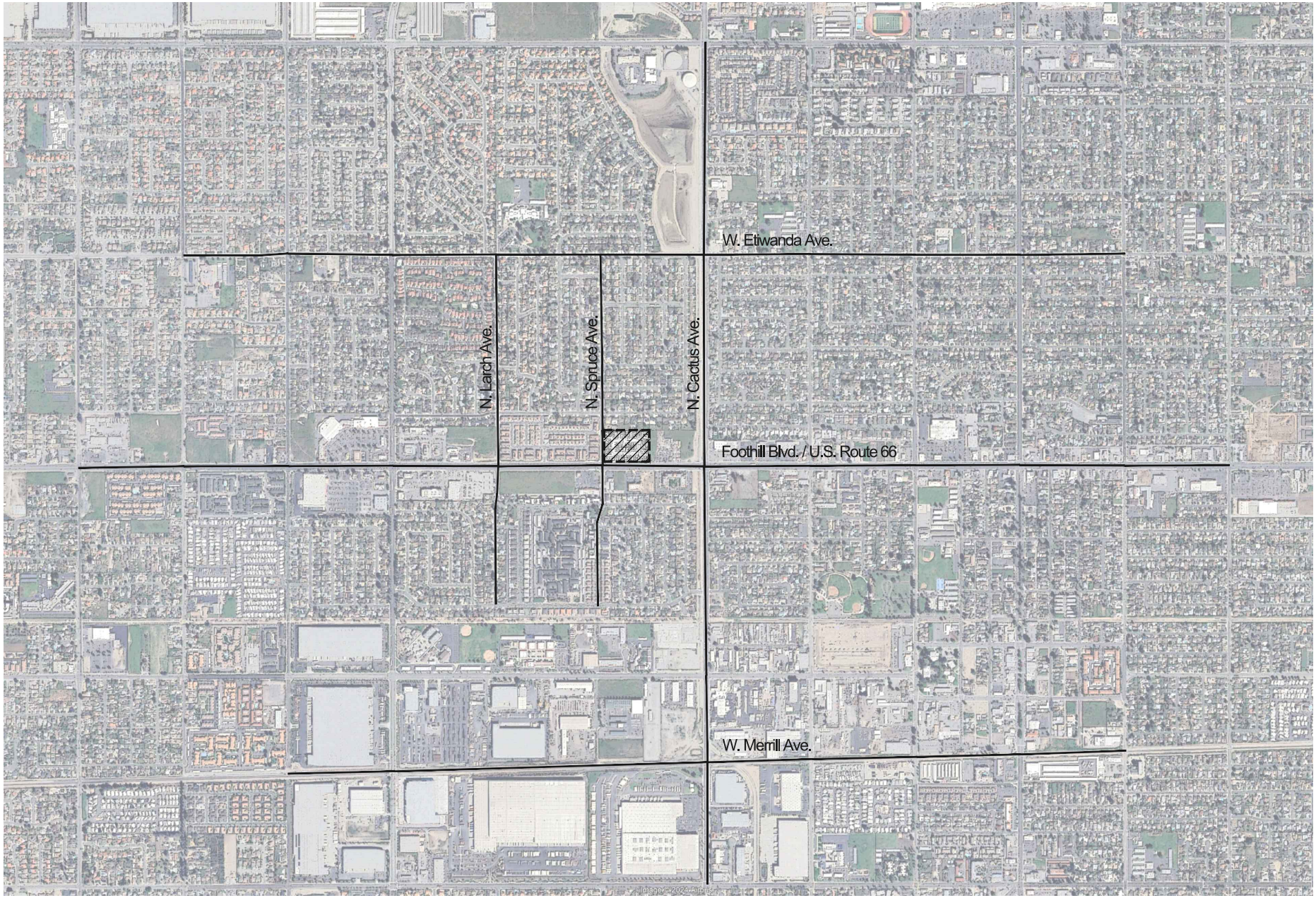
2.4 CITY OF RIALTO PERFORMANCE CRITERIA

This section outlines the methodology used in this analysis related to identifying circulation system deficiencies. Based on the *City Guidelines*, infrastructure deficiencies are deemed to occur at any intersection in which the project causes the LOS to fall below level D, or the peak hour delay increases over the thresholds as shown in **Table 3**.

Table 3
Intersection Performance Criteria

LOS	Peak Hour Delay Maximum Increase Allowed
A/B	10.0 seconds
C	8.0 seconds
D	5.0 seconds
E	2.0 seconds
F	1.0 seconds

Source: City of Rialto Traffic Impact Analysis Guidelines for Vehicle Miles Traveled (VMT) and Level of Service (LOS) (October 2021).



Legend:

Project Site

Exhibit 1: Project Location

Traffic Impact Analysis

WRI-24-003

Not to Scale

TJW Engineering, Inc.

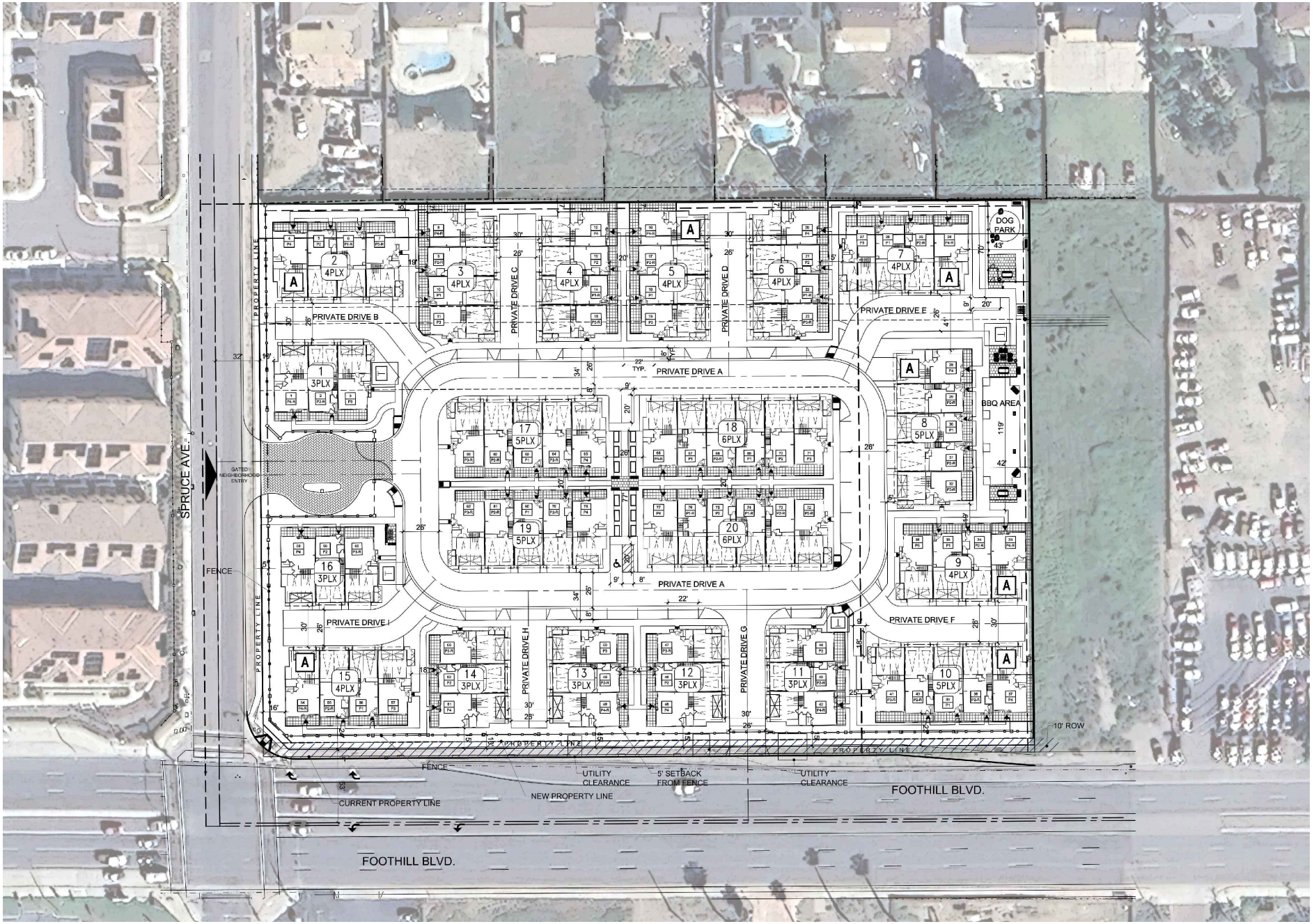


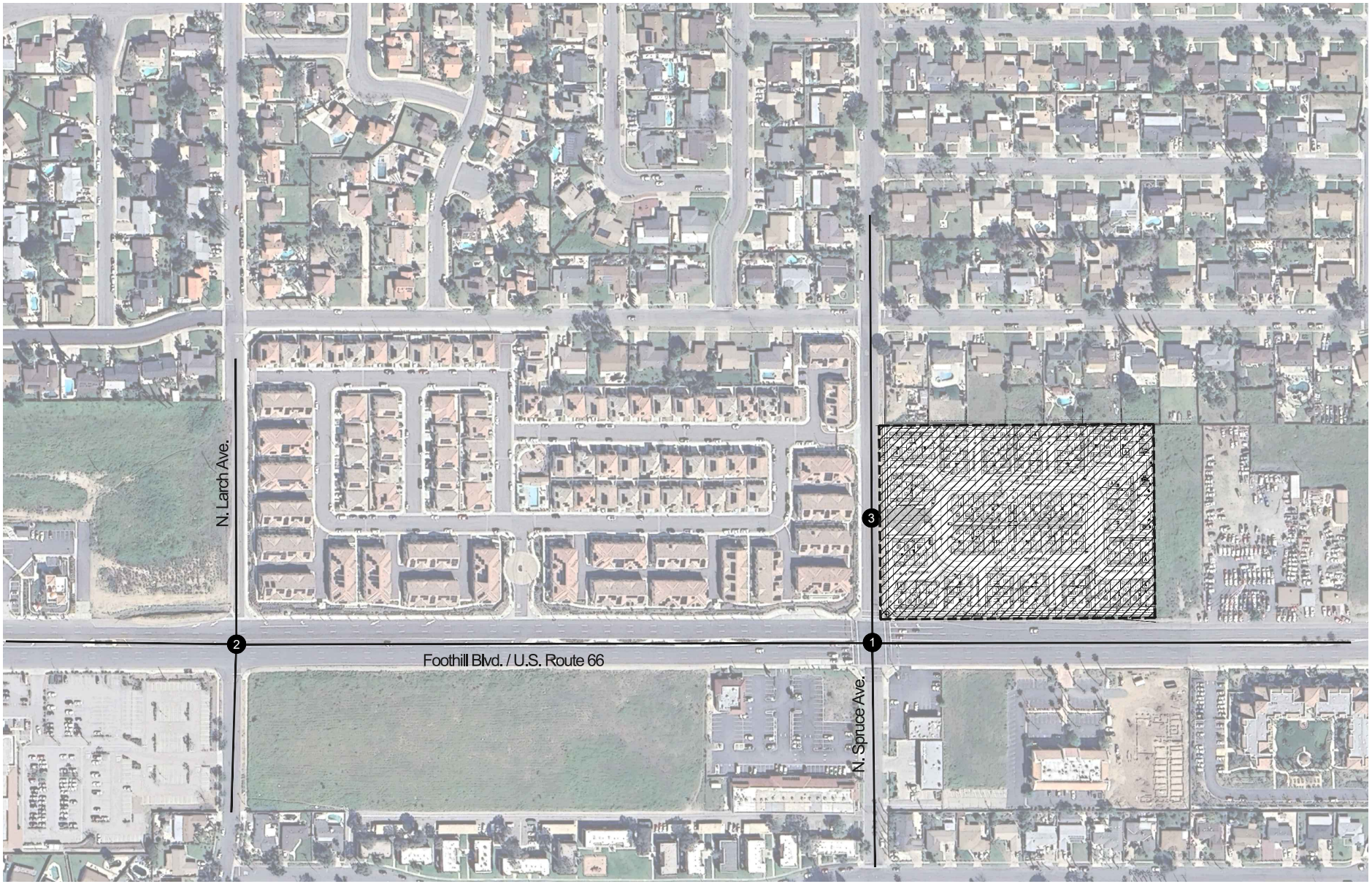
Exhibit 2: Proposed Project Site Plan

Traffic Impact Analysis

TJW ENGINEERING, INC.

WRI-24-003

Not to Scale



Legend:

Project Site

(#) Study Intersection Location

Exhibit 3: Study Intersection Locations

Traffic Impact Analysis

WRI-24-003

Not to Scale

TJW Engineering, Inc.

3.0 EXISTING CONDITIONS

3.1 EXISTING CIRCULATION NETWORK/STUDY AREA CONDITIONS

The *City General Plan* provides a classification system based on the characteristics of the roadways within the City of Rialto limits. This classification system is shown in **Appendix B**. The characteristics of the roadways in the vicinity of the proposed project site are described in **Table 4.**

Table 4
Roadway Characteristics within Study Area

Roadway	Classification[1]	Jurisdiction	Direction	Existing Travel Lanes	Median Type[2]	Speed Limit (mph)	On-Street Parking
North Spruce Avenue	Local Street	Rialto	North-South	2	NM	25	No
North Larch Avenue	Local Street	Rialto	North-South	2	NM	25	NB – No SB – Yes
West Foothill Boulevard	Modified Major Arterial	Rialto	East-West	6	RM	50	No

1: Sources: City of Rialto General Plan (December 2010).
2: RM= Raised Median, NM = No Median.

Exhibit 4 shows the existing roadway geometry and intersection controls at the study intersections.

3.2 EXISTING BICYCLE AND PEDESTRIAN FACILITIES

The *City General Plan* describes the bicycle and pedestrian facility network in the City of Rialto. Within on-half mile from the project site, a Class I Bike Path runs parallel to but physically separate from North Cactus Avenue. This Bike Path intersects an access point for the Pacific Electric Trail, a Class I Bike Path between the Cities of Rialto and Upland. See **Appendix B** for *City General Plan* bike path characteristics.

Pedestrian sidewalks exist along all three roadways of the study area. Currently, the south border of the project site along West Foothill Boulevard does not have a sidewalk.

3.3 EXISTING PUBLIC TRANSIT SERVICES

The City of Rialto is served by Omnitrans which provides bus service throughout San Bernardino County. The project site is less than 300 feet from Omintrans Route 14 eastbound and westbound stops on North Spruce Avenue and West Foothill Boulevard. This route connects the Fontana Metrolink Transit Center and the San Bernardino Transit Center. See **Appendix B** for a map and schedule of the route.

3.4 EXISTING TRAFFIC VOLUMES

To determine the existing operation of the study intersections, AM and PM peak period traffic volumes were collected on Wednesday, June 19, 2024. Detailed traffic count data is provided in **Appendix C**.

Exhibit 5 shows *Existing* AM peak hour volumes at the study intersections. **Exhibit 6** shows *Existing* PM peak hour volumes at the study intersections.

3.5 EXISTING TRAFFIC CONDITIONS INTERSECTION LEVEL OF SERVICE ANALYSIS

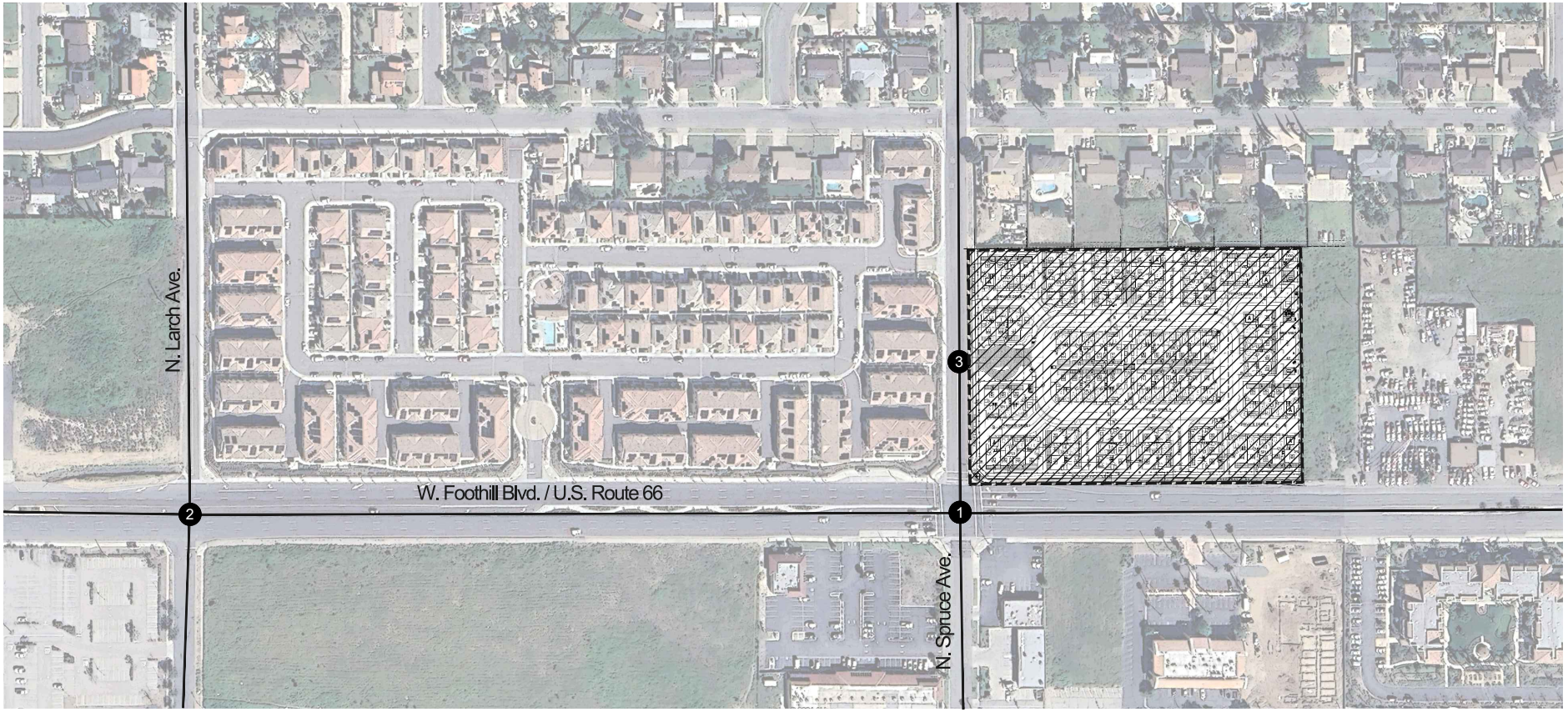
Analysis of intersections under *Existing* traffic conditions during AM and PM peak hours is shown in **Table 5.** Calculations are based on the existing geometrics at the study area intersections as shown in **Exhibit 4.** HCM analysis sheets are provided in **Appendix D**.

Table 5
Intersection Analysis – Existing Conditions

Intersection			Control Type[1]	Peak Hour	Existing Conditions	
					Delay[2]	LOS
1	North Spruce Avenue	West Foothill Boulevard	Signal	AM	21.3	C
				PM	22.7	C
2	North Larch Avenue	West Foothill Boulevard	TWSC	AM	15.1	C
				PM	25.8	D

1: TWSC = Two-Way Stop-Control.
2: Per the Highway Capacity Manual 7th Edition, overall average delay and LOS are shown for signalized intersections. For intersections with one-or-two-way stop-control, the delay and LOS for the worst individual movement is shown. Delay shown in seconds per vehicle.

As shown in **Table 5**, the study intersections are currently operating at an acceptable LOS during the AM and PM peak hours for *Existing* traffic conditions.



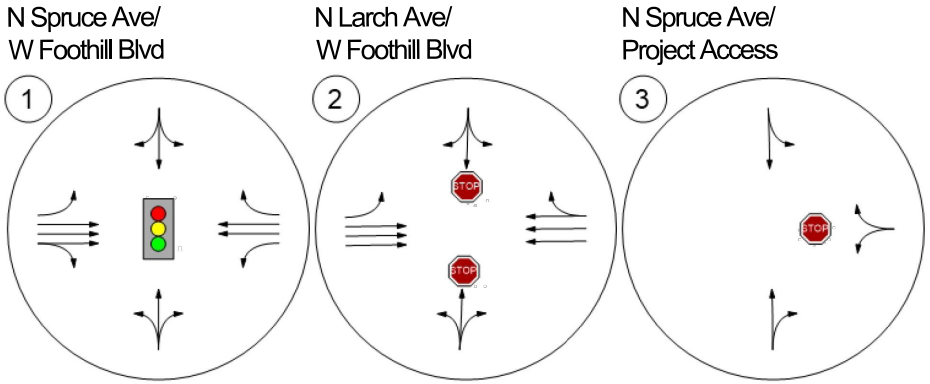
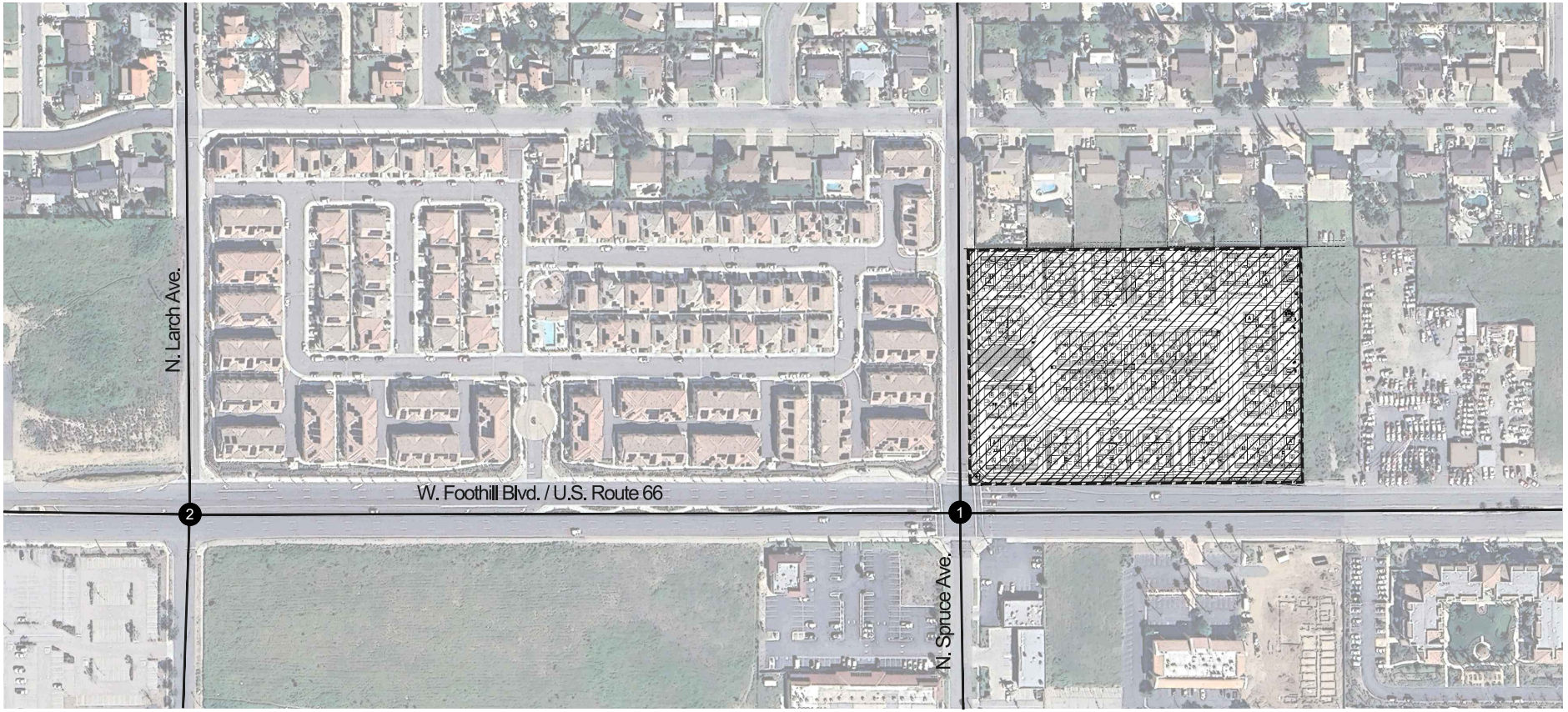


Exhibit 4: Lane Geometry and Intersection Controls



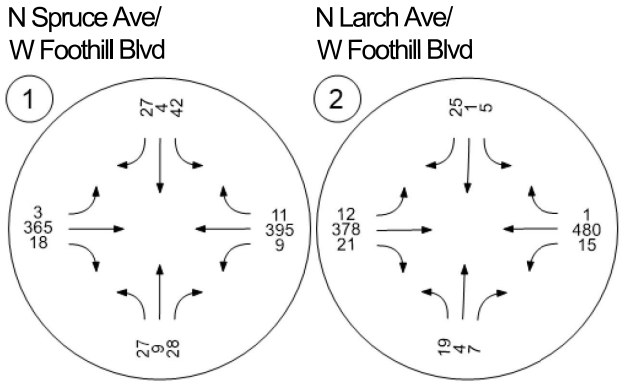


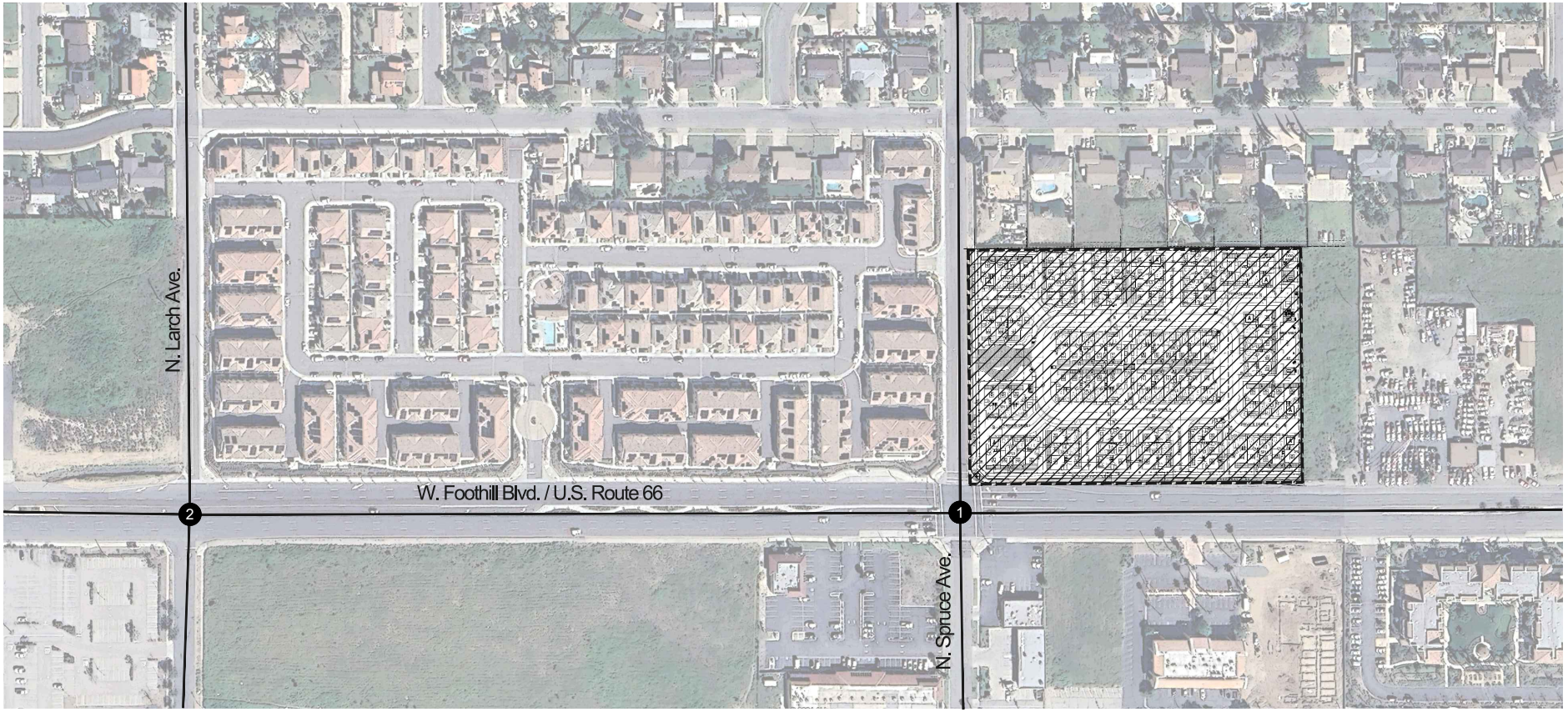
Exhibit 5: Existing AM Peak Hour Volumes

Traffic Impact Analysis

WRI-24-003

Not to Scale

TJW Engineering, Inc.



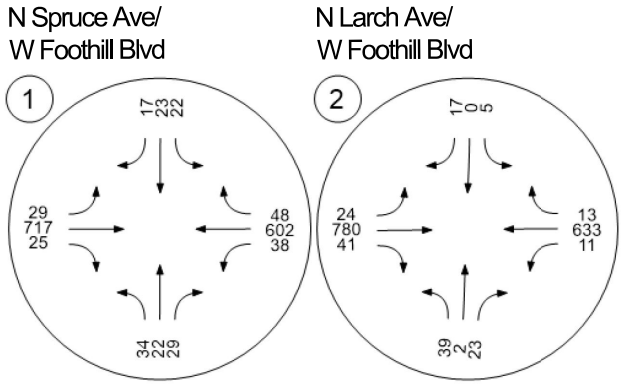


Exhibit 6: Existing PM Peak Hour Volumes

Traffic Impact Analysis

WRI-24-003

Not to Scale

TJW Engineering, Inc.

4.0 PROPOSED PROJECT

4.1 PROJECT DESCRIPTION

The project proposes the construction of 82 new townhomes. Site access is planned via one full-access gated private road at North Spruce Avenue. The site is located within the Foothill Central Specific Plan. The site is currently vacant.

Exhibit 1 shows the location of the proposed project. **Exhibit 2** shows the proposed project site plan.

4.2 PROJECT TRIP GENERATION

Trip generation represents the amount of traffic, both inbound and outbound, produced by a development. Determining trip generation for a proposed project is based on projecting the amount of traffic that the specific land uses being proposed will produce. Industry standard *Institute of Transportation Engineers (ITE) Trip Generation Manual* (11th Edition, 2021) trip generation rates were used to determine trip generation of for most of the proposed project land uses.

Table 6 summarizes the projected AM peak hour, PM peak hour, and daily trip generation of the proposed project. The proposed project is projected to generate 553 daily trips, 33 AM peak hour trips, and 42 PM peak hour trips.

Table 6
Proposed Project Trip Generation

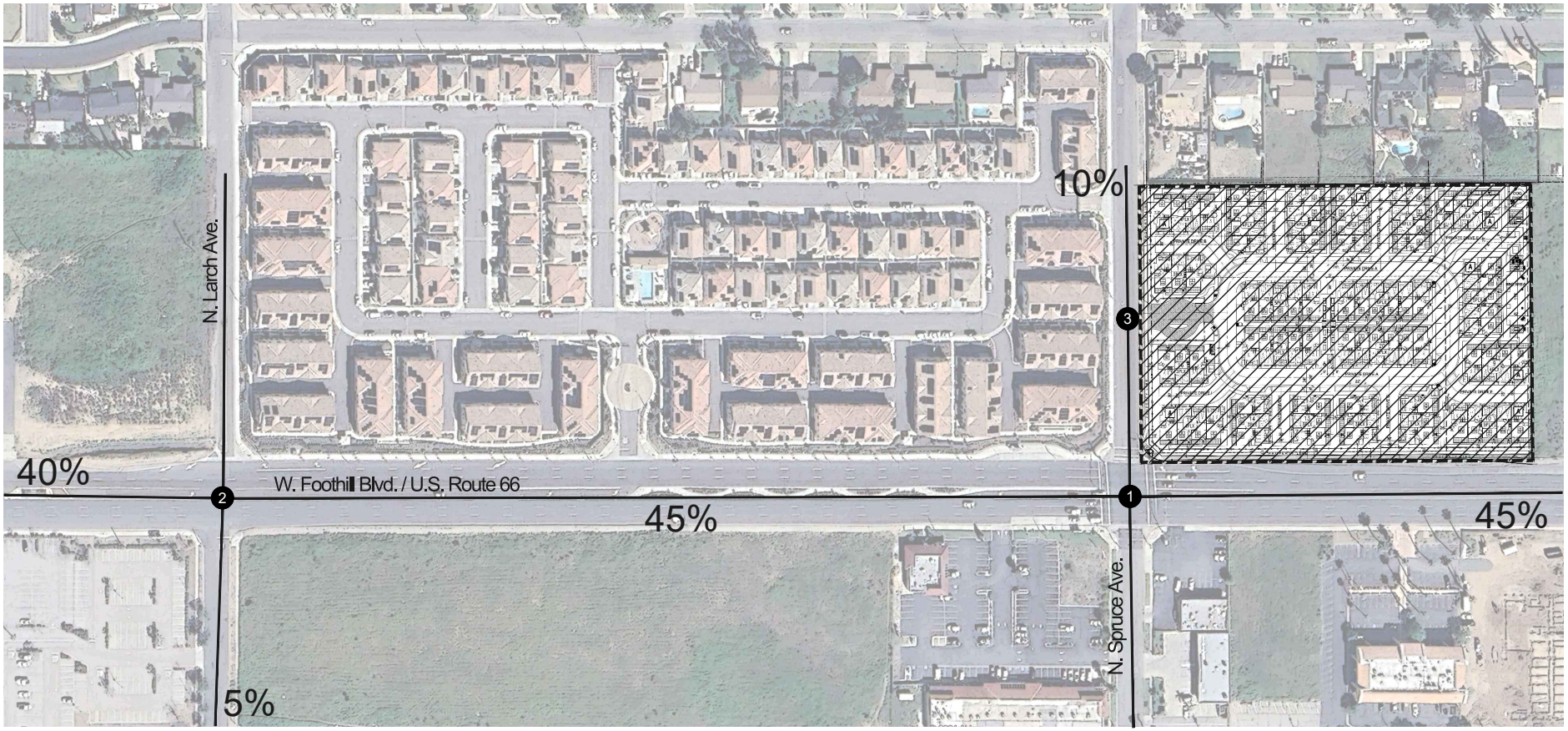
Proposed Land Use	ITE Code[1]	Qty	Unit[2]	Daily		AM Peak Hour					PM Peak Hour				
				Rate	Volume	Rate	In:Out Split	Volume			Rate	In:Out Split	Volume		
								In	Out	Total			In	Out	Total
Multifamily Housing (Low-Rise)	220	82	DU	6.74	553	0.4	24:76	8	25	33	0.51	63:37	26	16	42

1: Trip generation rates are from the ITE Trip Generation Manual (11th Edition, 2021).
2: DU = Dwelling Unit

4.3 PROJECT TRIP DISTRIBUTION

Projecting trip distribution involves the process of identifying probable destinations and traffic routes that will be utilized by the proposed project's traffic. The potential interaction between the proposed land use and surrounding regional access routes are considered to identify the probable routes onto which project traffic would distribute. The projected trip distribution for the proposed project is based on anticipated travel patterns to and from the project site.

Exhibit 7 shows the proposed trip distribution of the project.



Legend:

▱	Project Site
(#)	Study Intersection Location
(XX%)	Percent Trip Distribution

Exhibit 7: Project Trip Distribution

Traffic Impact Analysis

WRI-24-003

Not to Scale

TJW Engineering, Inc.

5.0 OPENING YEAR PLUS CUMULATIVE (OYC) TRAFFIC CONDITIONS

Opening Year Plus Cumulative (OYC) traffic conditions analysis is intended to identify baseline conditions in the near-term without impacts from the proposed project.

5.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for the *OYC* conditions scenario are consistent with those previously shown in **Exhibit 4**.

5.2 CUMULATIVE PROJECTS

Guidelines require that other reasonably foreseeable development projects which are either approved or are currently being processed in the study area also be included as part of a cumulative analysis scenario. A list of cumulative projects was developed for this analysis through consultation with City of Rialto staff, and obtainment of current development status reports**. Exhibit 8** shows a map of approved cumulative projects identified by the City of Rialto. The cumulative projects included in the analysis are generally within a two-mile radius of the proposed project. A summary of the cumulative projects land uses and projected trip generation of each is shown in **Table 7.**

Table 7

Cumulative Projects Trip Generation

Project	Land Use[1]	ITE Code	Qty	Unit[2]	Daily		AM Peak Hour					PM Peak Hour				
					Rate	Volume	Rate	In:Out Split	Volume			Rate	In:Out Split	Volume		
									In	Out	Total			In	Out	Total
1. MC2023-0013 Chik-Fil-A	Fast Food w/Drive Thru	934	4.8	TSF	467.5	2,255	44.61	51:49	110	105	215	33.03	52:48	83	76	159
2. MC2023-0027 Self Storage	Mini-Warehouse	151	75.3	TSF	1.45	109	0.09	59:41	4	3	7	0.15	47:53	5	6	11
3. MC2020-0004 Crow	Warehousing	150	679.6	TSF	1.71	1,162	0.17	77:23	89	27	116	0.18	28:72	34	88	122
4. MC2021-0022 Fitzgerald	Warehousing	150	45.6	TSF	1.71	78	0.17	77:23	6	2	8	0.18	28:72	2	6	8
5. MC2021-0059 Renaissance Residential	Single-Family Detached Housing	210	429	DU	9.43	4,045	0.7	26:74	78	222	300	0.94	63:37	254	149	403
6. MC2017-0006 Renaissance	Fast-Food w/Drive Thru	934	5.6	TSF	467.48	2,633	44.61	51:49	128	123	251	33.03	52:48	97	89	186
7. MC2015-0023 Shiki Sushi	Fast Casual Restaurant	930	9.0	TSF	97.14	874	1.43	50:50	7	6	13	12.55	55:45	62	51	113
8. MC2020-0008 Foothill/Larch	Multifamily Housing (Low)	220	70	DU	6.74	472	0.4	24:76	7	21	28	0.51	63:37	23	13	36
9. MC2023-0036 Quick-Quack	Automated Car Wash	948	1	TU	0	0	0	0	0	0	0	77.5	50:50	39	39	78
10. MC2022-0017 Best Western	Hotel	310	76	RM	7.99	607	0.46	56:44	20	15	35	0.59	51:49	23	22	45
11. MC2022-0028 Evergreen Apt	Multifamily Housing (Low)	220	26	DU	6.74	175	0.4	24:76	2	8	10	0.51	63:37	8	5	13
12. MC2021-0054 Frontier Apt	Multifamily Housing (Low)	220	204	DU	6.74	1,375	0.4	24:76	20	62	82	0.51	63:37	66	38	104
13. MC2022-0096 Eucalyptus	Mini-Warehouse	151	117.6	TSF	1.45	171	0.09	59:41	6	5	11	0.15	47:53	8	10	18
14. MC2022-0002 Black Creek	Warehousing	150	294.3	TSF	1.71	503	0.17	77:23	39	11	50	0.18	28:72	15	38	53
15. MC2022-0059 LPC	Warehousing	150	159.7	TSF	1.71	273	0.17	77:23	21	6	27	0.18	28:72	8	21	29
16. MC2022-0030 Stream Realty	Warehousing	150	49.4	TSF	1.71	84	0.17	77:23	6	2	8	0.18	28:72	3	6	9
17. MC2021-0026 Stream Realty	Warehousing	150	70.0	TSF	1.71	120	0.17	77:23	9	3	12	0.18	28:72	4	9	13
18. MC2022-0052 Steelco	Warehousing	150	37.7	TSF	1.71	64	0.17	77:23	5	1	6	0.18	28:72	2	5	7
19. MC2021-0036 Black Creek	Warehousing	150	201.2	TSF	1.71	344	0.17	77:23	26	8	34	0.18	28:72	10	26	36

Results	Daily Volume	AM Peak Hour	In	Out	Total	PM Peak Hour	In	Out	Total
Net Total	**15,374**		**592**	**630**	**1,222**		**743**	**703**	**1,446**

1: Trip generation and pass-by rates are from the ITE Trip Generation Manual (11th Edition, 2021).

2: TSF = Thousand Square Feet; DU = Dwelling Units; TU = Tunnel; RM = Rooms.

5.3 OYC TRAFFIC VOLUMES

OYC traffic volumes include ambient traffic plus the addition of traffic projected to be generated by nearby cumulative projects. Since the anticipated opening year of the proposed project is 2026, *OYC* volumes are estimated by applying a yearly growth rate of 2% for a two-year period to the Existing volumes, then adding the projected trip generation volumes of the cumulative projects.

Opening Year Volumes = (Existing (2024) Counts * 1.02^2) + Cumulative Projects

Exhibit 9 shows *OYC* AM peak hour volumes at the study intersections. **Exhibit 10** shows *OYC* PM peak hour volumes at the study intersections.

5.4 OYC TRAFFIC CONDITIONS INTERSECTION LEVEL OF SERVICE ANALYSIS

Analysis of intersections under *OYC* traffic conditions during AM and PM peak hours are shown in **Table 8**. Calculations are based on the proposed geometrics at the study area intersections. HCM analysis sheets are shown in **Appendix D**.

Table 8
Intersection Analysis – OYC Conditions

Intersection			Control Type[1]	Peak Hour	OYC Conditions	
					Delay[2]	LOS
1	North Spruce Avenue	West Foothill Boulevard	Signal	AM	21.6	C
				PM	25.7	C
2	North Larch Avenue	West Foothill Boulevard	TWSC	AM	23.4	C
				PM	36.8	E

1: TWSC = Two-Way Stop-Control.

2: Per the Highway Capacity Manual 7th Edition, overall average delay and LOS are shown for signalized intersections. For intersections with one-or-two-way stop-control, the delay and LOS for the worst individual movement is shown. Delay shown in seconds per vehicle.

As shown in **Table 8**, the study intersections are projected to continue to operate at an acceptable LOS during the AM and PM peak hours for *OYC* conditions with the exception of:

- North Larch Avenue and West Foothill Boulevard at the PM Peak Hour.

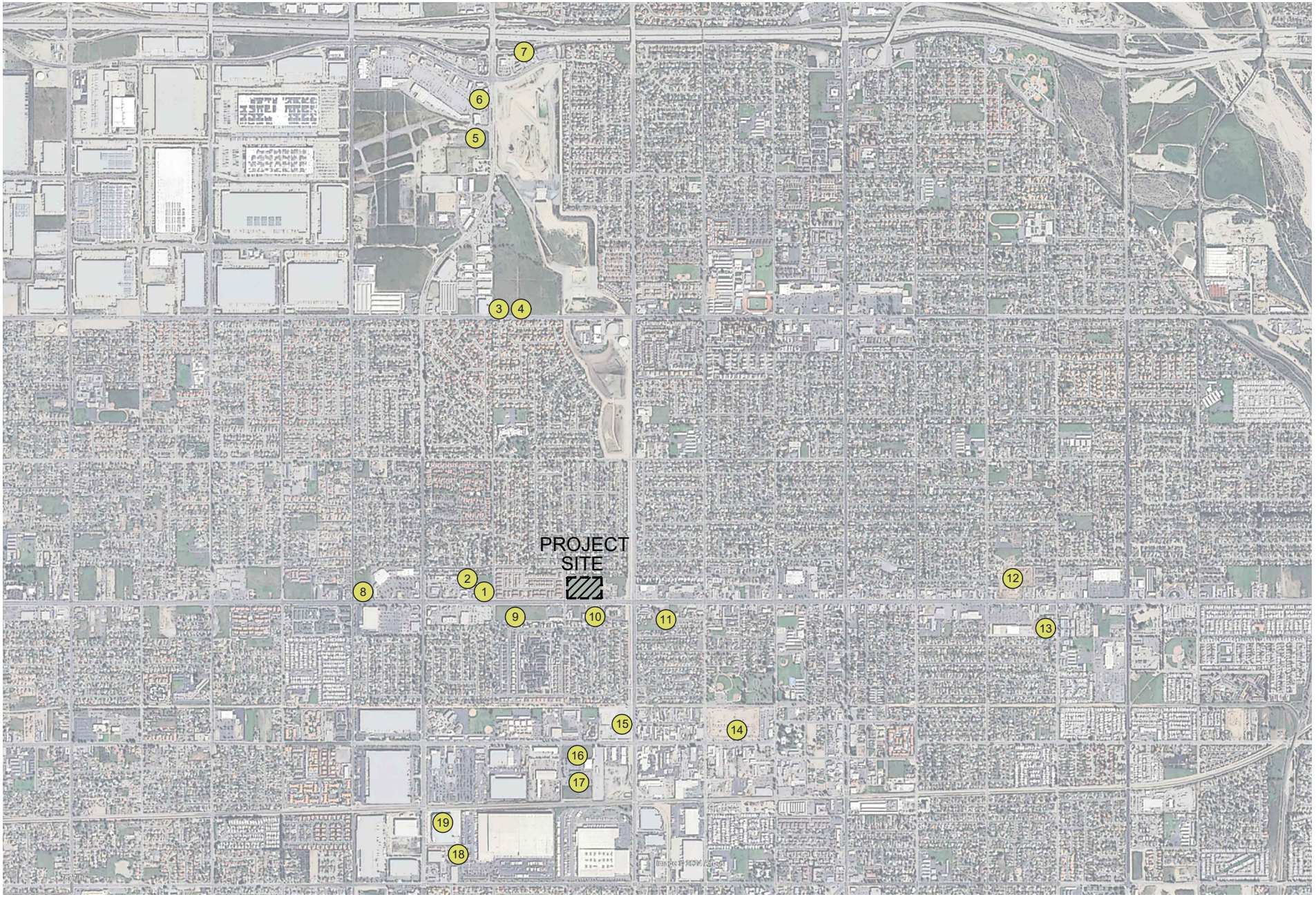


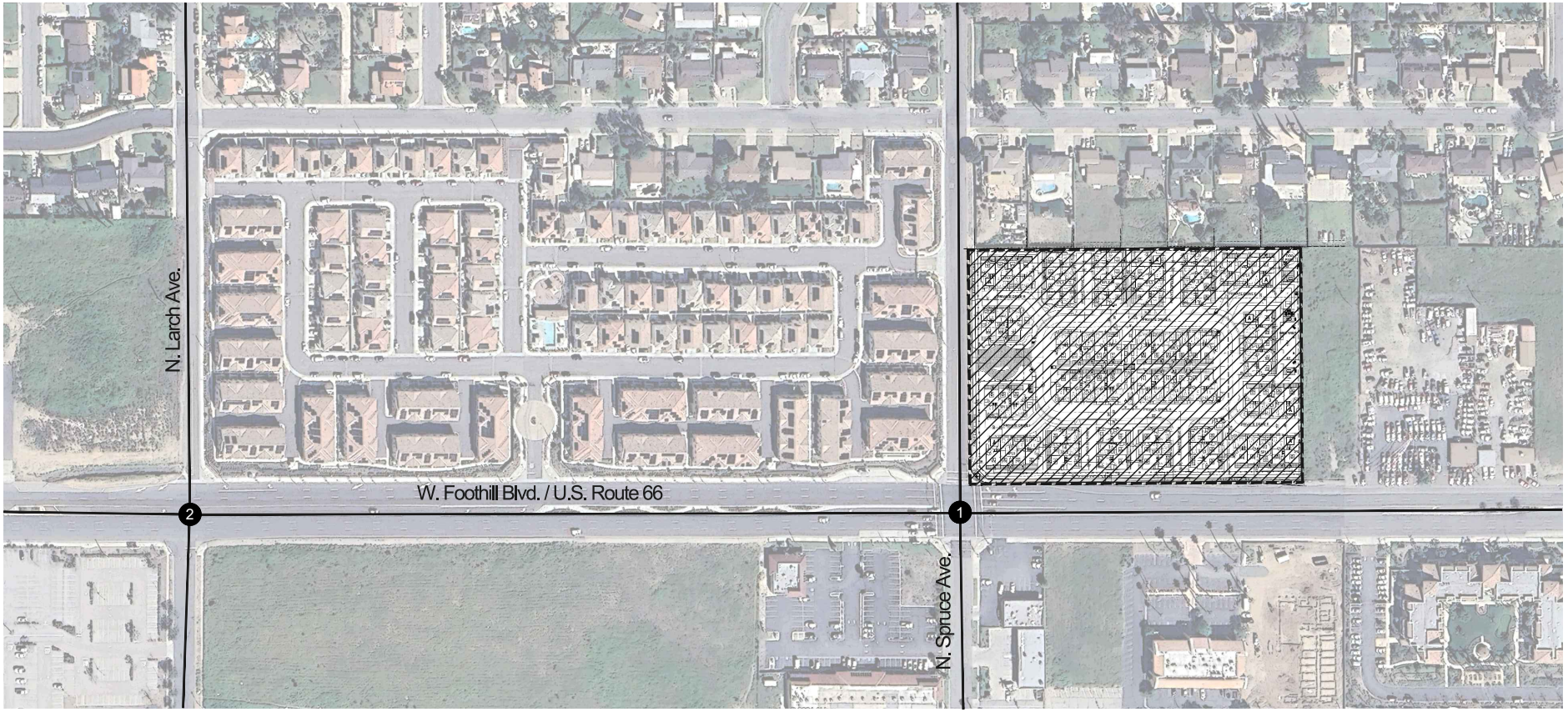
Exhibit 8: Cumulative Project Locations

Traffic Impact Analysis

TJW Engineering, Inc.

WRI-24-003

Not to Scale


N. Larch Ave.
W. Foothill Blvd. / U.S. Route 66
N. Spruce Ave.
2
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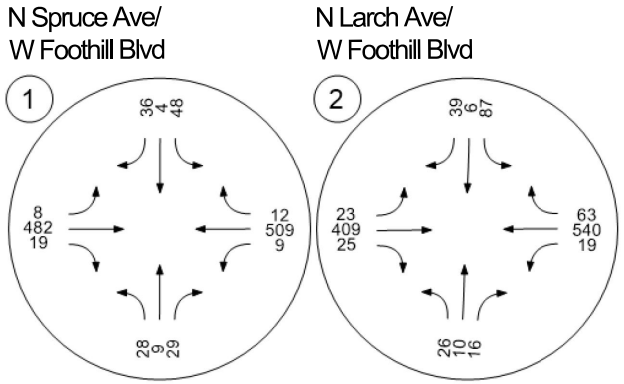
N Spruce Ave/
W Foothill Blvd
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W Foothill Blvd
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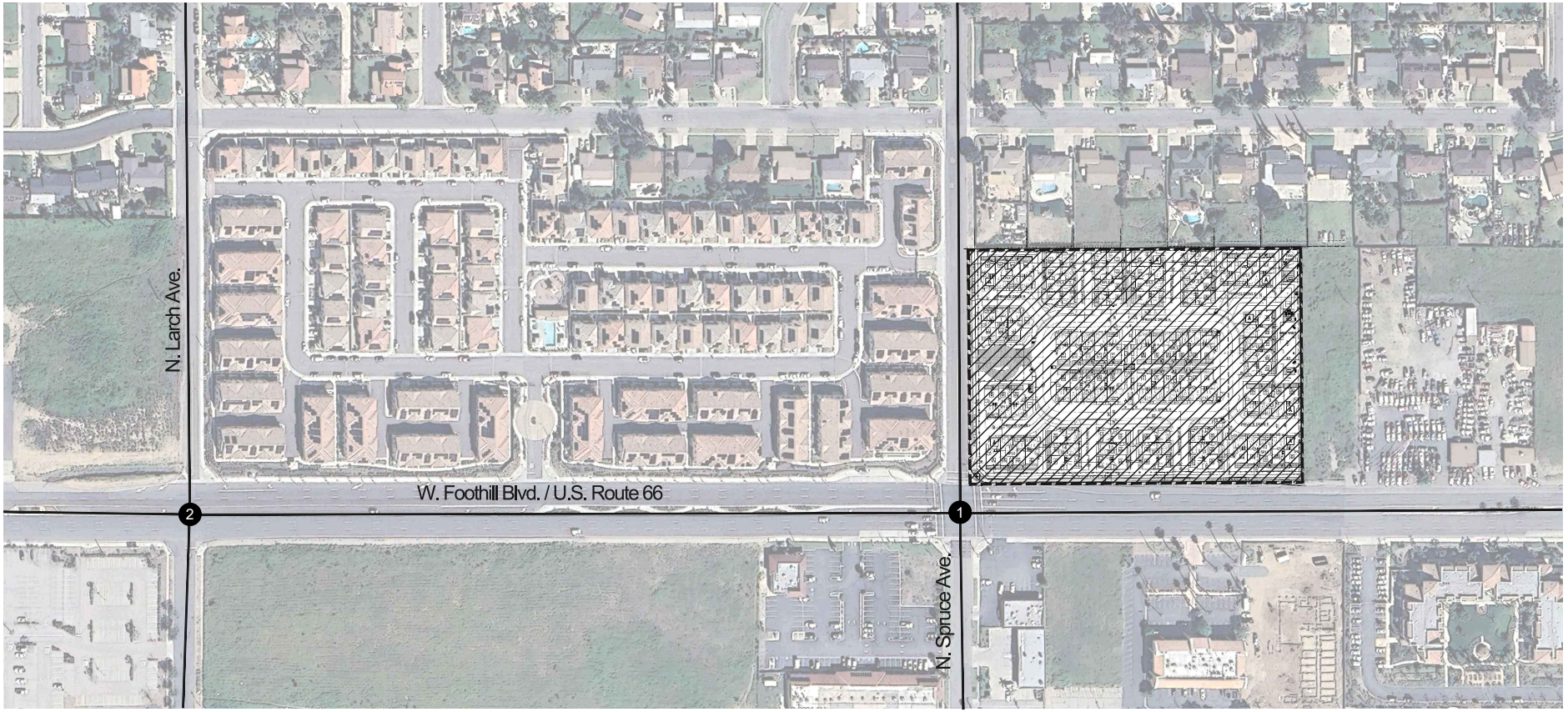
N. Larch Ave.
W. Foothill Blvd. / U.S. Route 66
N. Spruce Ave.
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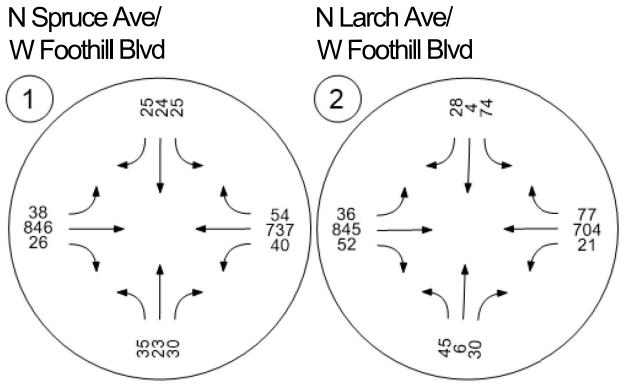
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N Larch Ave/
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6.0 OPENING YEAR PLUS PROJECT AND CUMULATIVE (OYCP) CONDITIONS

Opening Year Plus Project And Cumulative (OYCP) traffic conditions analysis is intended identify existing conditions in the near-term with cumulative projects and with the proposed project.

6.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for the *OYCP* conditions scenario are consistent with those previously shown in **Exhibit 4**.

6.2 OYCP TRAFFIC VOLUMES

OYCP traffic volumes include ambient traffic plus the addition of traffic projected to be generated by the proposed project and nearby cumulative projects. Since the proposed project is expected to be built and generating trips in 2026, *OYCP* volumes include a growth rate of 2% per year for two years, applied to existing volumes, then adding the projected trip generation volumes of the proposed project and cumulative projects.

OYCP Volumes = (Existing (2024) Counts * 1.02^2) + Cumulative Projects + Proposed Project

Exhibit 11 shows *OYCP* AM peak hour volumes at the study intersections. **Exhibit 12** shows *OYCP* PM peak hour volumes at the study intersections.

6.3 OYCP TRAFFIC CONDITIONS INTERSECTION LEVEL OF SERVICE ANALYSIS

Analysis of the study intersections under *OYCP* traffic conditions during AM and PM peak hours is shown **Table 9**. HCM analysis sheets are provided in **Appendix D.**

Table 9
Intersection Analysis – OYCP Conditions

Intersection			Control Type[1]	Peak Hour	OYC Conditions		OYCP Conditions		Change	Deficient
					Delay[2]	LOS	Delay[2]	LOS		
1	North Spruce Avenue	West Foothill Boulevard	Signal	AM	21.6	C	25.2	C	-	-
				PM	25.7	C	28.2	C	-	-
2	North Larch Avenue	West Foothill Boulevard	TWSC	AM	23.4	C	24.0	C	-	-
				PM	36.8	E	54.7	F	-	Yes
3	North Spruce Avenue	Project Access	TWSC	AM	-	-	8.7	A	-	-
				PM	-	-	8.7	A	-	-

1: TWSC = Two-Way Stop-Control.
2: Per the Highway Capacity Manual 7th Edition, overall average delay and LOS are shown for signalized intersections. For intersections with one-or-two-way stop-control, the delay and LOS for the worst individual movement is shown. Delay shown in seconds per vehicle.

As shown in **Table 9**, the study intersections are projected to continue to operate at an acceptable LOS during the AM and PM peak hours *OYCP* traffic conditions with the exception of:

- North Larch Avenue and West Foothill Boulevard at the PM Peak Hour.

6.4 SIGNAL WARRANT ANALYSIS

Based on the thresholds described in section 2.4 City of Rialto Performance Criteria, the intersection at North Larch Avenue and West Foothill Boulevard requires operational improvements. A traffic signal warrant analysis was conducted for this intersection, which is currently unsignalized. Figure 4C-3 contained in the *California Manual on Uniform Traffic Control Devices* (CA MUTCD) was utilized to determine if a traffic signal is warranted. Based on AM and PM peak hour volumes in *OYCP* traffic conditions, a traffic signal is warranted at North Larch Avenue/West Foothill Boulevard for the PM peak hour. Traffic signal warrant analysis worksheets are provided in **Appendix E**.

Analysis of the *OYCP* traffic conditions study intersections with signalization of North Larch Avenue/West Foothill Boulevard during the AM and PM peak hours is shown in **Table 10**. Calculations are based on the proposed geometrics at the study area intersections plus the signalization. HCM analysis sheets are shown in **Appendix D**.

Table 10
Intersection Analysis – OYCP Conditions With Signalization

Intersection			Control Type	Peak Hour	OYCP Conditions		OYCP w/ Signalization		Change
					Delay[1]	LOS	Delay[1]	LOS	
2	North Larch Avenue	West Foothill Boulevard	Signal	AM	24.0	C	9.1	A	17.1
				PM	54.7	F	8.1	A	56.3

1: Per the Highway Capacity Manual 7th Edition, overall average delay and LOS are shown for signalized intersections. For intersections with one-or-two-way stop-control, the delay and LOS for the worst individual movement is shown. Delay shown in seconds per vehicle.

As shown in **Table 10***,* for *OYCP* traffic conditions, the addition of a signal at North Larch Avenue and West Foothill Boulevard is projected to result in improving operations to an acceptable LOS during both AM and PM peak hours.

6.5 SIGNAL CONTROL ANALYSIS

At the request of the City of Rialto, a signal control analysis was completed for the intersection of North Spruce Avenue and West Foothill Boulevard. Currently, signal controls at this intersection have protected left-turn lanes for both eastbound and westbound approaches on West Foothill Boulevard, while the northbound and southbound approaches on North Spruce Avenue provide permissive left-turns. Specifically,

the analysis reviewed the impact of modifying the North Spruce Avenue approaches to provide protected left-turns.

The current conditions of the northbound and southbound approaches allow sufficient space for the addition of left-turn only pockets. Protected controls may be added to the signals to support the left turns. Analysis of the *OYCP* study intersections with these addition during the AM and PM peak hours is shown in **Table 11**. HCM analysis sheets are shown in **Appendix D**.

Table 11
Intersection Analysis – OYCP Conditions With Protected Controls

Intersection			Control Type	Peak Hour	OYCP Conditions		OYCP w/ Protected Control Conditions		Change
					Delay[1]	LOS	Delay[1]	LOS	
1	North Spruce Avenue	West Foothill Boulevard	Signal	AM	25.2	C	23.1	C	2.1
				PM	28.2	C	25.1	C	3.1

1: Per the Highway Capacity Manual 7th Edition, overall average delay and LOS are shown for signalized intersections. For intersections with one-or-two-way stop-control, the delay and LOS for the worst individual movement is shown. Delay shown in seconds per vehicle.

As shown in **Table 11**, for *OYCP* traffic conditions, the addition of left-turn pockets with protected controls at the northbound and southbound approaches on North Spruce Avenue resulted in the reduction of the overall delay during both AM and PM peak hours.

6.6 PROJECT FAIR SHARE ANALYSIS

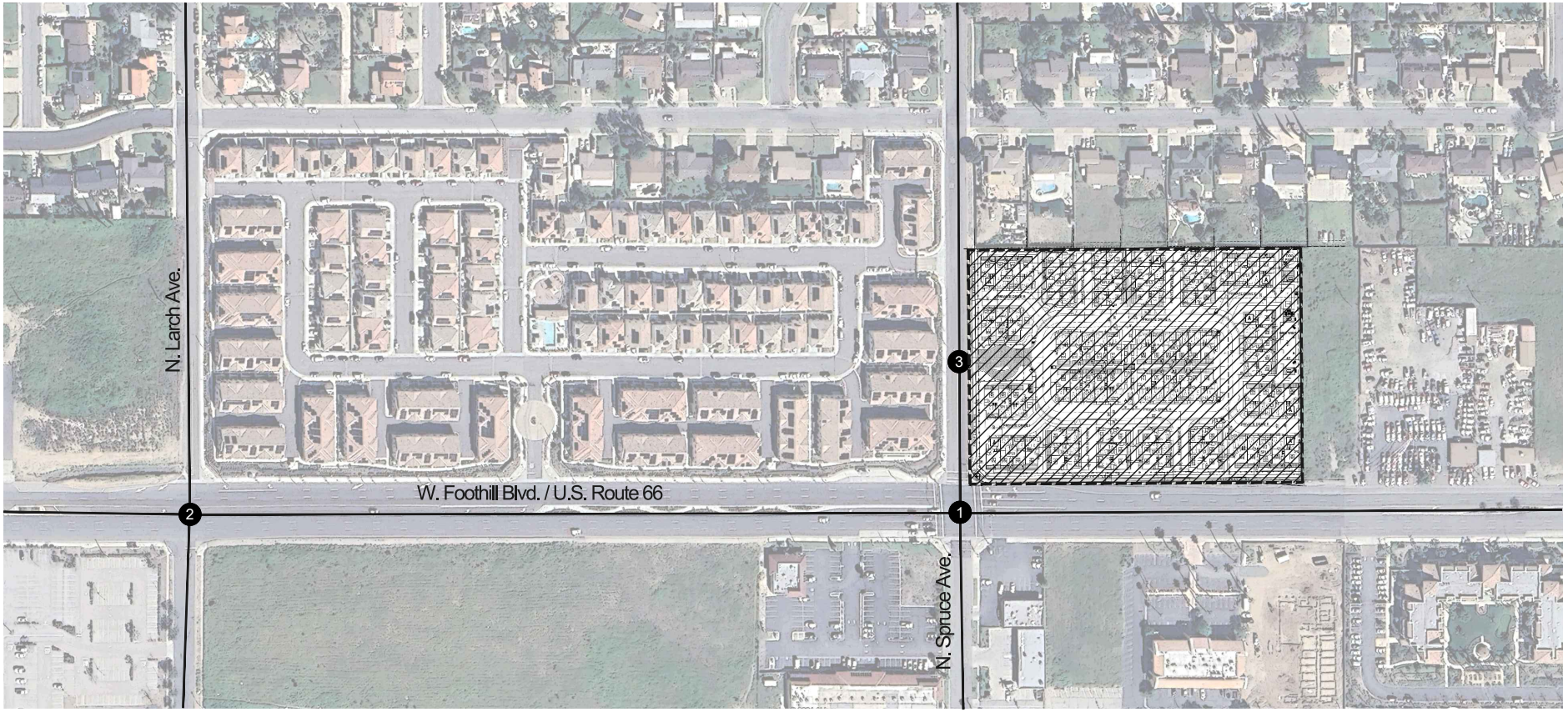
To calculate the proposed project fair share for the signalization of North Larch Avenue and West Foothill Boulevard, the percentage of project trips out of all trips associated with growth from *Existing* traffic conditions to *OYCP* traffic conditions was calculated using the following formula:

Project's Fair Share Percentage = Project Volumes / (OYCP Volumes – Existing Volumes)

The project fair share calculation is shown below in **Table 12**.

Table 12
Fair Share Analysis

Intersection			Peak Hour	Project Volume	OYCP Volume	Existing Volume	Fair Share Percentage
2	North Larch Avenue	West Foothill Boulevard	AM	14	1,338	968	3.8%
			PM	18	2,013	1,588	4.2%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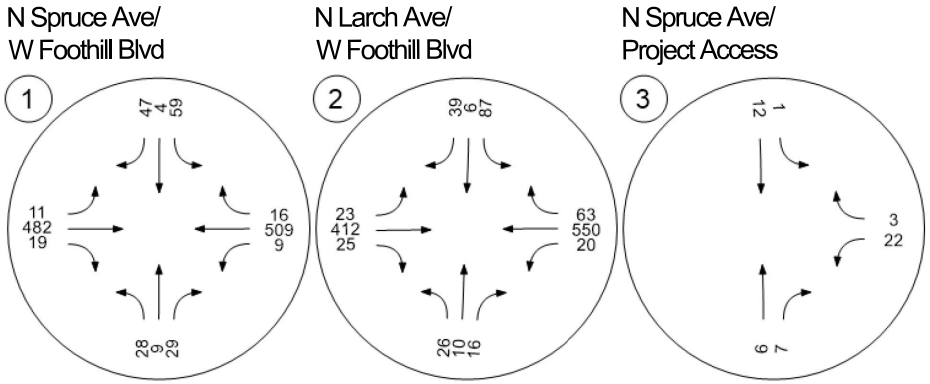
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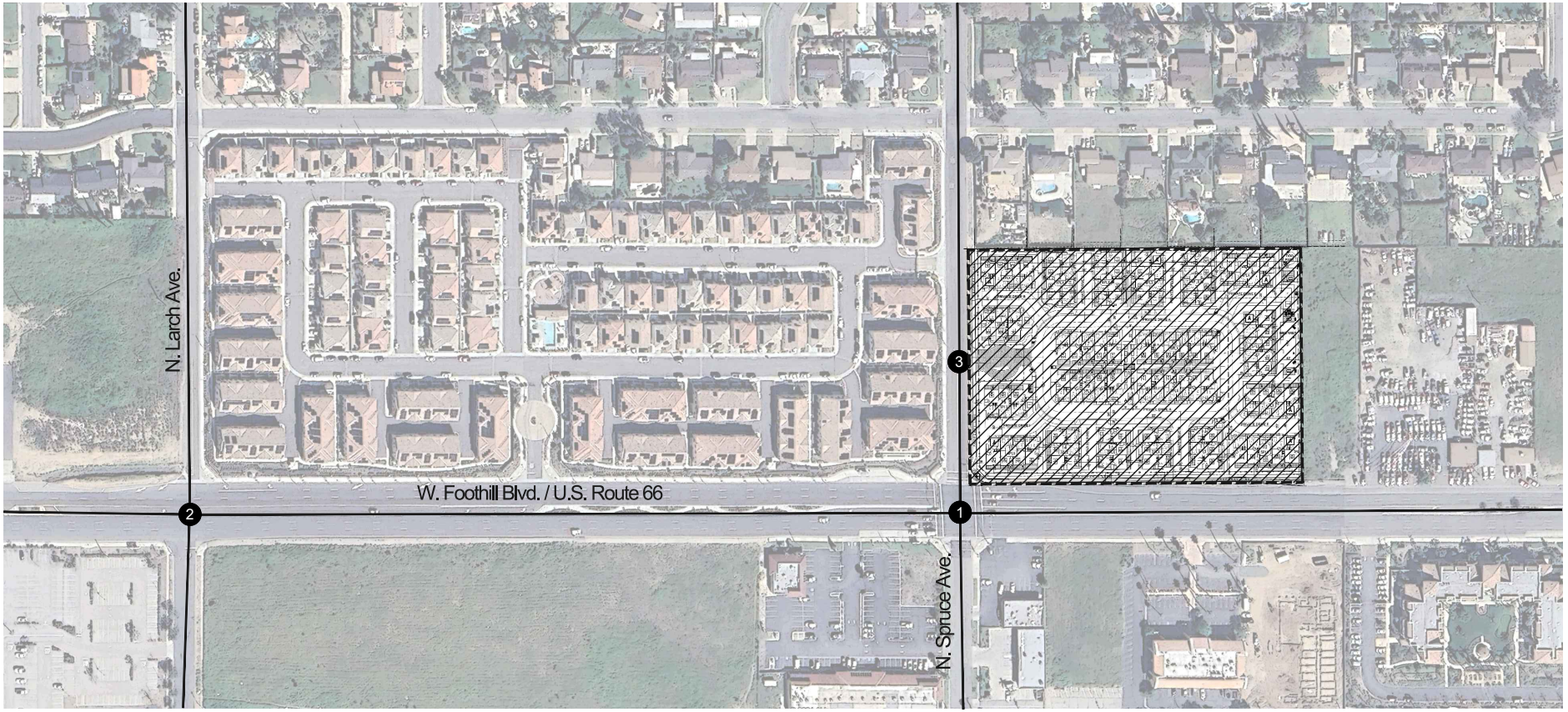
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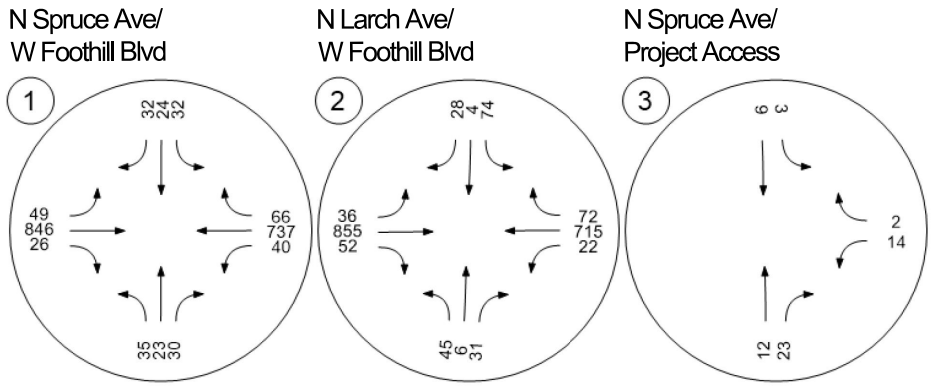
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N Spruce Ave/
Project Access
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14
12
23

APPENDIX

Appendix A: Glossary of Terminology
Appendix B: Scoping Agreement and City Documents
Appendix C: Existing Traffic Counts
Appendix D: HCM Analysis Sheets
Appendix E: Signal Warrant Analysis Report

APPENDIX A

GLOSSARY OF TERMINOLOGY

Glossary of Terminology

ACRONYMS:

Caltrans	California Department of Transportation
DU	Dwelling Unit
LOS	Level of Service
TSF	Thousand Square Feet

TERMS

CAPACITY – T*he maximum number of vehicles that can be reasonably expected to pass over a given section of a lane or a roadway in a given time period.*

CYCLE LENGTH – *The time period in seconds required for a traffic signal to complete one full cycle of indications.*

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 time consumed while traffic is impeded in its movement by some element over which it has no control, usually expressed in seconds per vehicle.*

FREE FLOW – *Volumes are well below capacity. Vehicles can maneuver freely, and travel is unimpeded by other traffic.*

LEVEL OF SERVICE – *A qualitative measure of a number of factors, which include speed and travel time, traffic interruptions, freedom to maneuver, safety, driving comfort and convenience, and operating costs.*

PEAK HOUR – *The 60 consecutive minutes with the highest number of vehicles.*

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.*

SIGHT DISTANCE – *The continuous length of roadway visible to a driver or roadway use.*

SIGNAL CYCLE – *The time period in seconds required for one complete sequence of signal indications.*

SIGNAL PHASE – *The part of the signal cycle allocated to one or more traffic movements.*

STARTING DELAY – *The delay experienced in initiating the movement of queued traffic from a stop to an average running speed through an intersection.*

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.*

TRIP – *The movement of a person or vehicle from one location (origin) to another (destination). For example, from home to store to home is two trips, not one.*

TRIP GENERATION RATE – *The quantity of trips produced and/or attracted by a specific land use stated in terms of units such as per dwelling, per acre, and per 1,000 square feet of floor space.*

APPENDIX B

SCOPING AGREEMENT AND CITY DOCUMENTS

SCOPING AGREEMENT FOR TRAFFIC IMPACT ANALYSIS

This following form shall be used to acknowledge preliminary approval of the scope for the traffic impact analysis (TIA) of the following project. The TIA must follow the City of Rialto Traffic Impact Analysis – Report Guidelines and Requirements, adopted by the City Council on _____.

City of Rialto

Traffic Impact Analysis

Scoping Agreement

Case No. Parcels 012836120 - 012836123

Related Cases -

SP No. _____

EIR No. _____

GPA No. _____

ZC No. _____

Project Name: NEC Foothill and Spruce

Project Address: Northeast Corner of W. Foothill Blvd. and N. Spruce Ave., City of Rialto

Project Description: Construction of 82 townhomes

	Consultant	Developer
Name:	TJW Engineering, Inc.	Warmington Residential
Address:	9841 Irvine Center Drive, Suite 200, Irvine, CA	3090 Pullman Street, Costa Mesa, CA
Telephone:	949-878-3509	714-434-4355
Fax:		

1. Trip Generation Source: ITE Trip Generation Manual, 11th Edition (2021)

Existing GP Land Use Foothill Central SP Proposed Land Use Foothill Central SP

Current Zoning: Foothill Central SP Proposed Zoning: Foothill Central SP

Total Daily Project Trips: 533

	Current Trip Generation			Proposed Trip Generation		
	In	Out	Total	In	Out	Total
AM Trips				8	25	33
PM Trips				26	16	42

Internal Trip Allowance Yes No (_____ % Trip Discount)

Pass-By Trip Allowance Yes No (_____ % Trip Discount)

For appropriate land uses, a pass-by trip discount may be allowed not to exceed 25%. Discount trips shall be indicated on a report figure for intersections and access locations.

2. Trip Geographic Distribution: N 10 % S 5 % E 45 % W 40 %

(Detailed exhibits of trip distribution must be attached with Trucks as a separate exhibit)

3. Background Growth Traffic

Project Completion Year: 2026 Annual Background Growth Rate: 2 %

Other Phase Years _____

Other area projects to be considered: City of Rialto to provide list of cumulative projects

(Contact Planning for Lists. Correlate projects to exhibit map and also indicate which projects have been included in study area forecasts for existing + background growth + project + cumulative)

Model/Forecast methodology: Highway Capacity Manual (HCM) 7th Edition

4. Study Intersections: (NOTE: Subject to revision after other projects, trip generation and distribution are determined, or comments from other agencies received.)

1. North Spruce Avenue/West Foothill Boulevard
2. North Larch Avenue/West Foothill Boulevard
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

5. Study Roadway Segments: (NOTE: Subject to revision after other projects, trip generation and distribution are determined, or comments from other agencies received.)

1. _____ 6. _____
2. _____ 7. _____
3. _____ 8. _____
4. _____ 9. _____
5. _____ 10. _____

6. Other Jurisdictional Impacts

Is this project within any other Agency's Sphere of Influence or within one-mile of another jurisdictional boundary?
NO

If so, name of Jurisdiction: _____

7. Site Plan (please attach 11" x 17" legible copy)

8. Specific issues to be addressed in the Study (in addition to the standard analysis described in the Guideline) (to be filled out by the City of Rialto Public Works Department) (NOTE: If the traffic study states that "a traffic signal is warranted" (or "a traffic signal appears to be warranted," or similar statement) at an existing un-signalized intersection under existing conditions, 8-hour approach traffic volume information must be submitted in addition to the peak hourly turning movement counts for that intersection.)

Existing Conditions, Opening Year No Project, and Opening Year With Project Scenarios.

Signal warrant evaluation for N Larch Ave/W Foothill Blvd.

Evaluate NB & SB left-turns at N Spruce Ave/W Foothill Blvd for permissive or protected operations.

Project is within a low generating VMT, therefore is screened from VMT analysis.

9. Existing Conditions

Traffic count data must be new or within one year. Provide traffic count dates if using other than new counts.

Date of counts: Will Collect New Counts

NOTE Fees are due and must be submitted with, or prior to submittal of this form. The City will not process the Scoping Agreement prior to the receipt of the processing fee.

Fees Paid: _____ Date _____

Recommended:

Scoping Agreement Submittal date _____

Scoping Agreement Resubmittal date 6/10/24

David Chew, PTP — June 10, 2024

Applicant/Engineer — Date

Land Use Concurrence:

6/24/24

Development Services Department — Date

Approved by:

Michael Lloyd, P.E. Contract Engineer 6/14/24

FOR
Public Works Department — Date

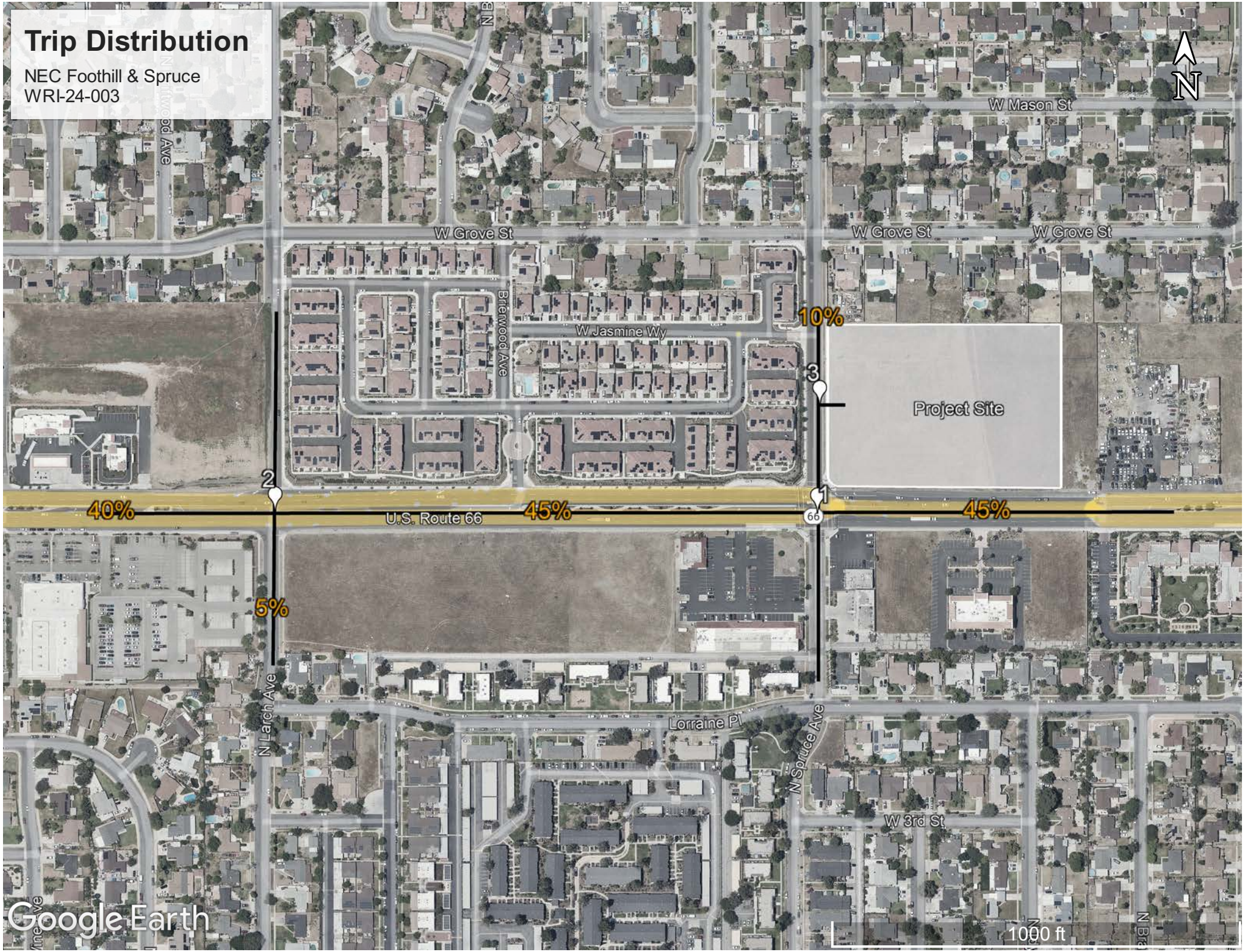
NOTE:

The Applicant/Engineer acknowledges that the Scoping Agreement is intended to assist in the preparation of any required TIA. It is preliminary in nature and the City does not have sufficient data to determine the ultimate conditions that may be imposed for the project. It does not provide nor limit the requirements imposed on the Project but is intended only to provide initial input into the parameters for review of the traffic generated by the Project and the initial areas to be considered and studied. Subsequent changes to scope of required analysis to be included in the TIA may be required by the Transportation Commission, Planning Commission, and/or the City Council upon Public Works Director/City Engineer review and approval.

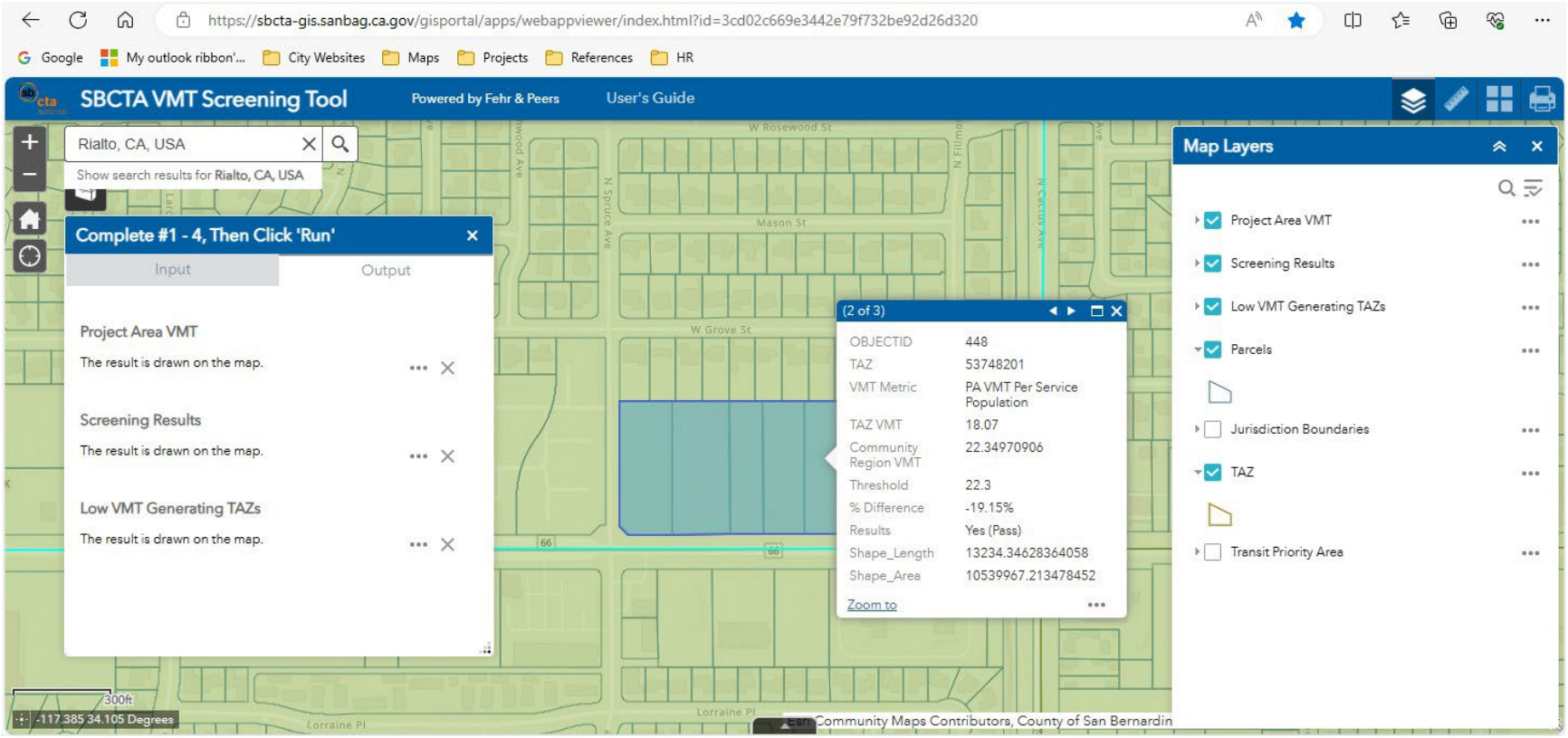
Table 1
Project Trip Generation

Proposed Land Use[1]	ITE Code	Qty	Unit[2]	Daily		AM Peak Hour					PM Peak Hour				
				Rate	Volume	Rate	In:Out Split	Volume			Rate	In:Out Split	Volume		
								In	Out	Total			In	Out	Total
Multifamily Housing (Low-Rise)	220(1)	82	DU	6.74	553	0.4	24:76	8	25	33	0.51	63:37	26	16	42

1: Trip generation are from the ITE Trip Generation Manual (11th Edition, 2021).
2: DU = Dwelling Units.


Trip Distribution
NEC Foothill & Spruce
WRI-24-003
N
W Mason St
W Grove St
W Grove St
W Grove St
Briarwood Ave
W Jasmine Wy
10%
3
Project Site
2
1
40%
U.S. Route 66
45%
66
45%
5%
N Larch Ave
Lorraine Pl
N Spruce Ave
W 3rd St
Google Earth
1000 ft

SBCTA VMT Screening Tool
Northeast Corner of West Foothill Boulevard & North Spruce Avenue



Architecture + Planning
17911 Von Karman Ave,
Suite 200
Irvine, CA 92614
949.851.2133
ktgy.com

Warmington Residential
3090 Pullman Street
Costa Mesa, CA 92626
714.434.4439

NEC FOOTHILL AND SPRUCE

RIALTO, CA KTGY # 2023-0709

Plot Date: 3/20/2024

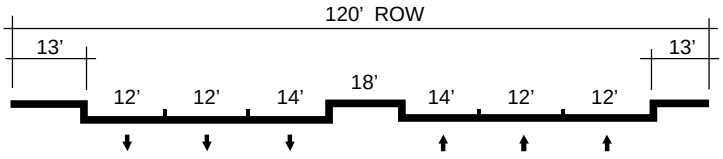
0 16 32 64

SITE PLAN
ARCHITECTURAL

A1.00

Major Arterial Highway

A Major Arterial Highway can accommodate six lanes of traffic and has a raised median. Driveway access to this roadway is typically limited to provide efficient high-volume flow. Bloomington Avenue is the only Major Arterial Highway in Rialto.

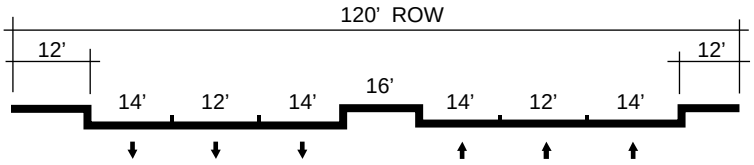


Major Arterial Highway

Major Arterial Highway

Major Arterial

Major Arterials are generally the largest of the local surface street roadways, linking freeways with local streets to accommodate larger volumes of through traffic moving at higher speeds than local streets. These facilities carry high traffic volumes and are primary thoroughfares that connect Rialto with adjacent cities and the regional highway system. Typically, Major Arterials have at least two lanes of travel in each direction, left-turn lanes at intersections, and parking lanes, and are designed to accommodate high speeds. To provide a sufficient level of safety and traffic flow, the number of driveways along Major Arterials is limited.



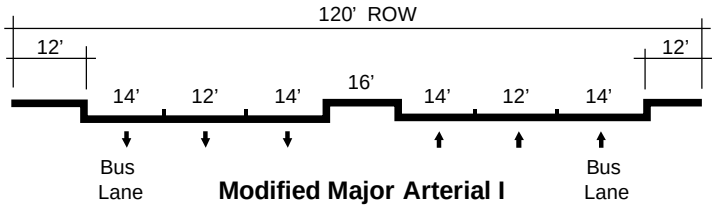
Major Arterial

There are four modified versions of the Major Arterial, each having slightly varying characteristics such a different number of vehicles lanes, widths, street parking, bike lanes, medians, or dedicated bus lanes.

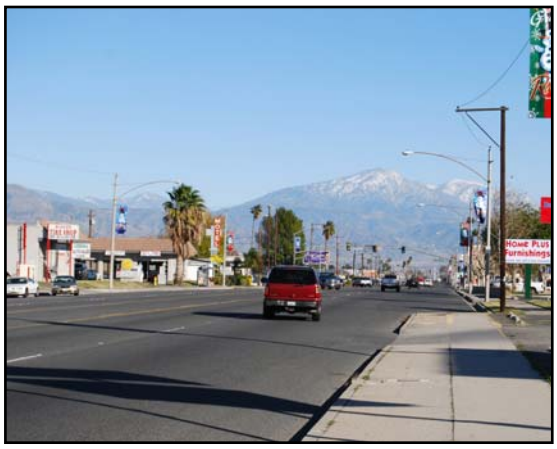
Major Arterial

Modified Major Arterial I

A Modified Major Arterial I has two lanes of travel in each direction, left-turn lanes at intersections, medians to accommodate high speeds, and two dedicated bus lanes. The Modified Major Arterial I only applies to Foothill Boulevard, where a planned Omnitrans Bus Rapid Transit line will operate.



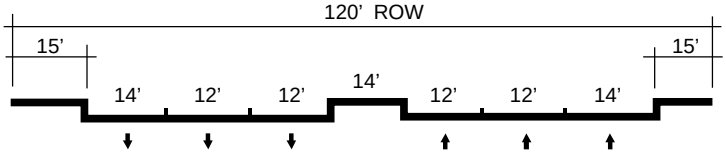
Modified Major Arterial I



Modified Major Arterial I

Modified Major Arterial II

A Modified Major Arterial II has three lanes of travel in each direction and medians. The extra travel lanes are meant to accommodate the heavy traffic flow on Riverside Avenue near the I-10 and I-15 freeway intersections.

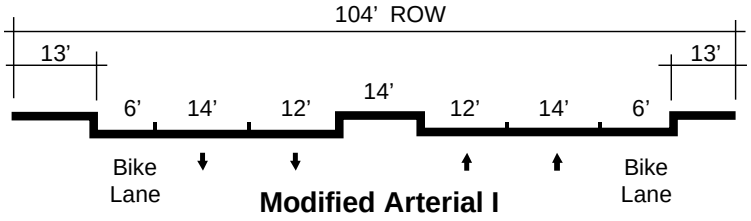


Modified Major Arterial II

Modified Major Arterial II

Modified Arterial I

A Modified Arterial I has two lanes of travel in each direction, medians, parking lanes, and bike lanes in both directions. The Modified Arterial I only applies to Riverside Avenue between Slover Avenue and the southern City boundary.

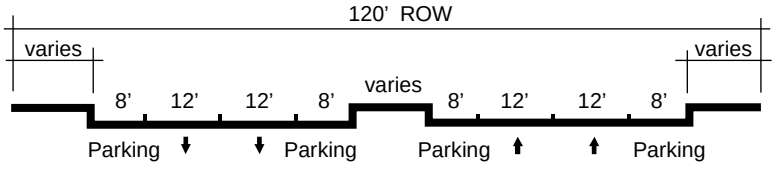


Modified Arterial I

Modified Arterial I

Modified Arterial II

A Modified Arterial II has at least two lanes of travel in each direction, medians, and on-street parking areas along the sidewalk and the median. These additional parking areas are meant to serve the Downtown area where this street classification applies. The wide sidewalks are meant to serve a pedestrian-friendly environment. Riverside Avenue through the Downtown is an example of a Modified Major Arterial II.

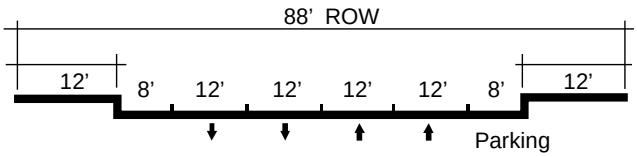


Modified Arterial II

Modified Arterial II

Secondary Arterials

Secondary Arterials have two lanes of travel in each direction and left-turn lanes, and typically accommodate or accommodate intermediate traffic speeds. Travel lanes must be narrower than on Major Arterials. Parking is often permitted along the curb. Although through traffic will utilize Secondary Arterials, their primary purpose is to link Local Streets with Major Arterials.

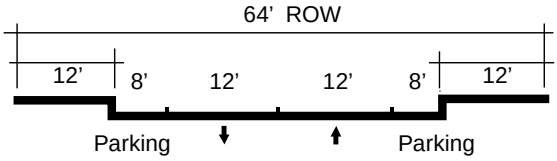


Secondary Arterial

Secondary Arterial

Collector Streets

Collector Streets provide a transition between Local Streets and higher-speed arterial roadways. These roadways typically have one travel lane in each direction and low design speeds. They provide parking along the curb as well. As their name implies, Collector Streets collect local traffic for delivery to Arterials.

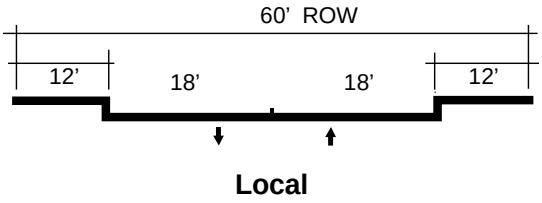


Collector

Collector Street

Local Streets

Local Streets are neighborhood roadways with one travel lane in each direction. They are narrower in width than Collector streets. Local Streets typically accommodate on-street parking and are designed for 25 mile-per-hour speeds. Through traffic is not encouraged on Local Streets.

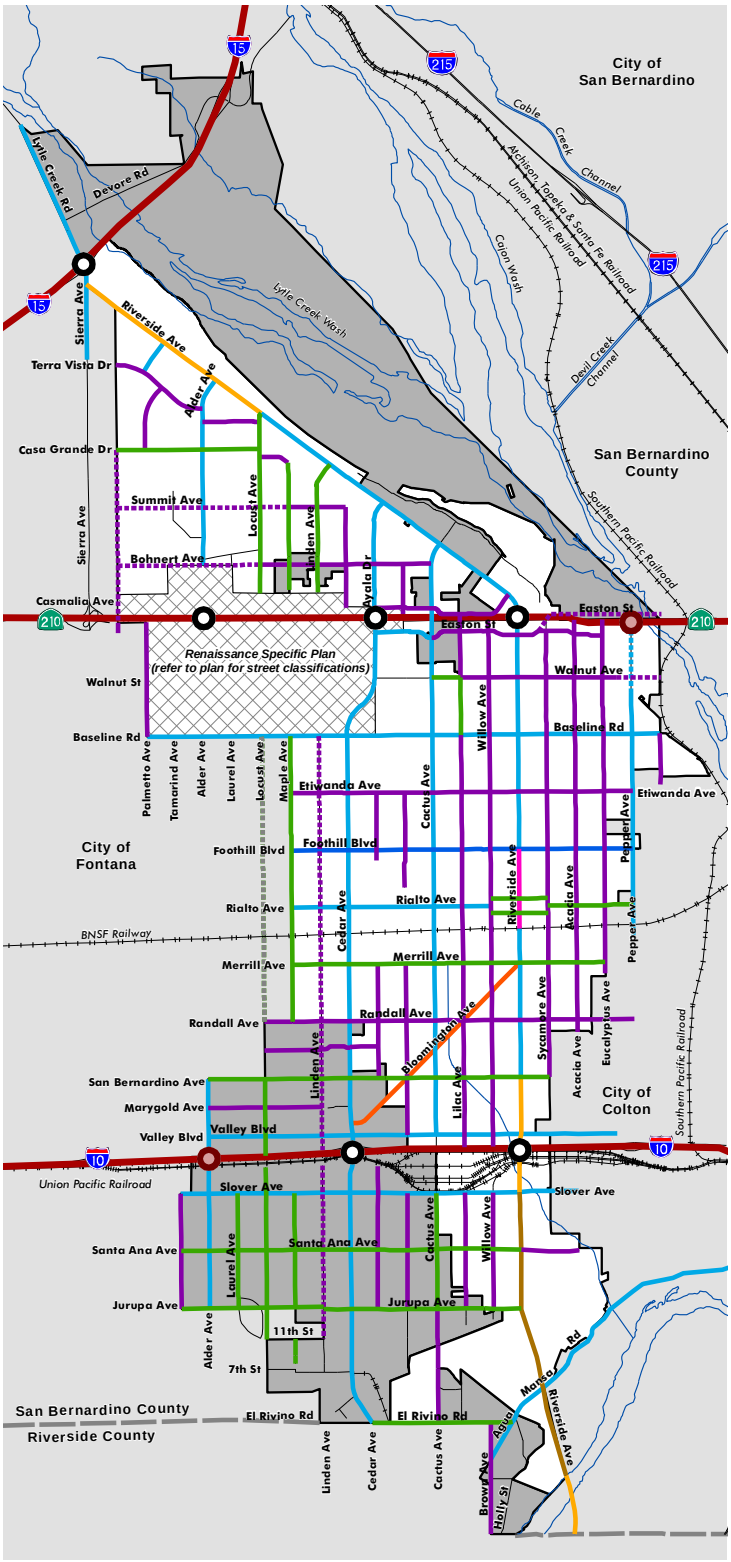


Local Street

Minimizing Local Congestion and Protecting Our Neighborhoods

The City of Rialto's Neighborhood Traffic Management Plan (NTMP) provides the City and its residents with options to address traffic-related impacts that involve local neighborhood streets. Such impacts include speeding, other vehicle code violations, high traffic volumes, and pedestrian and bicycle safety. The NTMP encourages the formation of traffic management associations in neighborhoods. The City's Capital Improvement Program (CIP) allocates annual funding for implementation of traffic improvements identified by the associations.

The NTMP includes the establishment of policy guidelines, opportunities for public participation, education and enforcement strategies, and the recommendation of traffic control devices and criteria for their use. The NTMP provides for traffic management that actively solicits resident involvement. Resident concerns that are recurrent around a specific issue would require the establishment of a more comprehensive plan to address the specific issue.



Street Classification

Existing right-of-ways are indicated with a solid line, proposed right-of-ways are indicated with a dotted line, and right-of-ways outside the planning area are indicated with a gray line.

- Freeway
- Major Arterial Highway
- Major Arterial
- Major Arterial
- Modified Major Arterial I
- Modified Major Arterial II
- Modified Arterial I
- Modified Arterial II
- Secondary Arterial
- Secondary Arterial
- Secondary Arterial
- Collector Street
- Collector Street

Freeway Interchanges

- Existing Interchange
- Planned Future Interchange

Base Map Features

- Rialto Incorporated Area
- Rialto Sphere of Influence
- County Boundary
- Local Road
- Railroad
- Hydrological Feature

Source: Iteris, Inc. (2008)

0 0.5 1 1.5 2 Miles

Exhibit 4.1 – Street Classifications

Accommodating Bicyclists and Pedestrians

Bikeway Classifications

Bikeways are classified in three categories as follows:

- A **Class I Bikeway (Bike Path)** is intended for the exclusive use of bicycles. While it may parallel a roadway, it is physically separated by distance or a vertical barrier.

- A **Class II Bikeway (Bike Lane)** shares the right-of-way with a roadway or walkway. It is indicated by a bikeway pictograph on the pavement and a continuous stripe on the pavement, or is separated by a continuous or intermittent curb or other low barrier.

- A **Class III Bikeway (Bike Route)** shares the right-of-way with a roadway or walkway. It is not indicated by a continuous stripe on the pavement or separated by any type of barrier, but it is identified as a bikeway with signage.

The schematic diagrams in **Exhibit 4.3** illustrate the width and features of each bikeway classification.

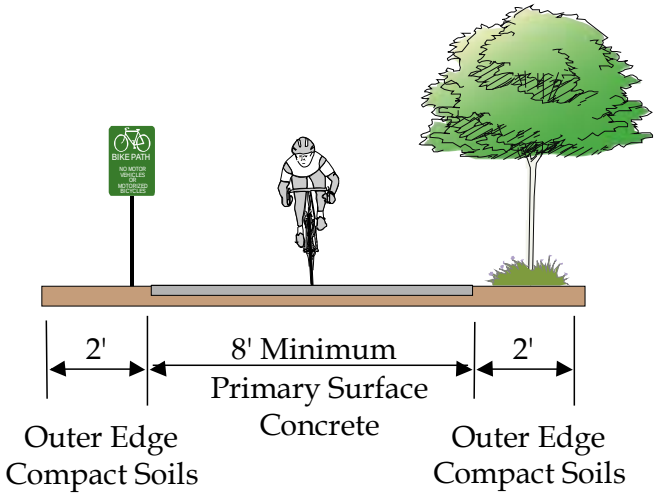
Bikeway Network

The Bikeway Master Plan illustrated in **Exhibit 4.4** promotes a safe and efficient network of bikeways for recreational and commuter use within the City. The planned bike network is not a contiguous network. Efforts should be made to expand the network and provide continuity within the City and to the networks of adjacent jurisdictions. Utility easements, flood control channels, and unused rail rights-of-way provide opportunities for locations of Class I bikeways. A "rails-to-trails" conversion of the former Pacific Electric Railroad right-of-way will be pursued once funding is acquired and all rail activities cease operation. The line is still active from the easterly city limits to Lilac Avenue. It serves a lumber yard at Lilac Avenue and Rialto Avenue. The rail line is inactive west of Lilac Avenue.

These routes are located both on street and off street to reduce bicycle conflicts with automobiles and pedestrians while maintaining connectivity. Continuing challenges for bikeways in Rialto include improved crossings over the SR-210 freeway, improvements at intersections, and improved cross-town connections and routes to schools.

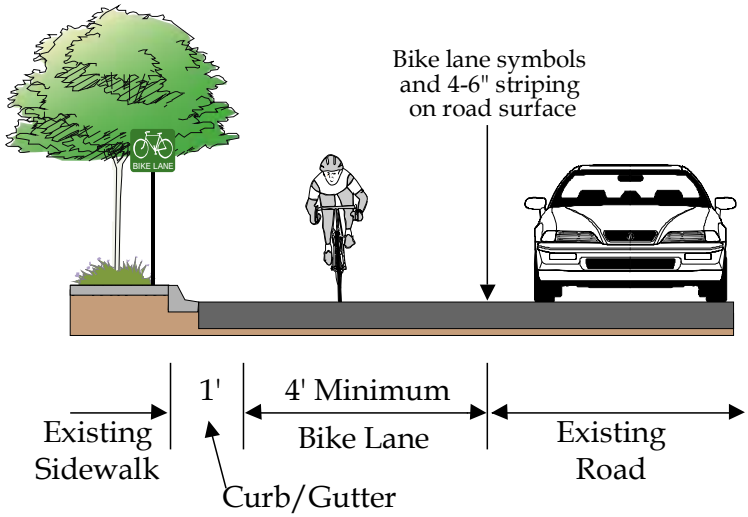
Class I (Bike Path)

Wider lanes recommended for high bike volumes or high levels of mixed use.



Class II (Bike Lane)

4' total width where curb occurs. Wider bike lane recommended for high bike volumes or if adjacent to on-street parking.



Class III (Bike Route)

No street striping or bike symbols.

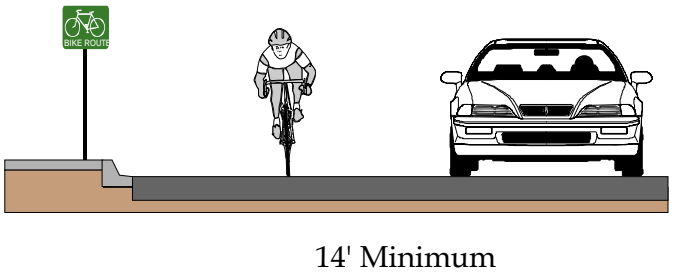
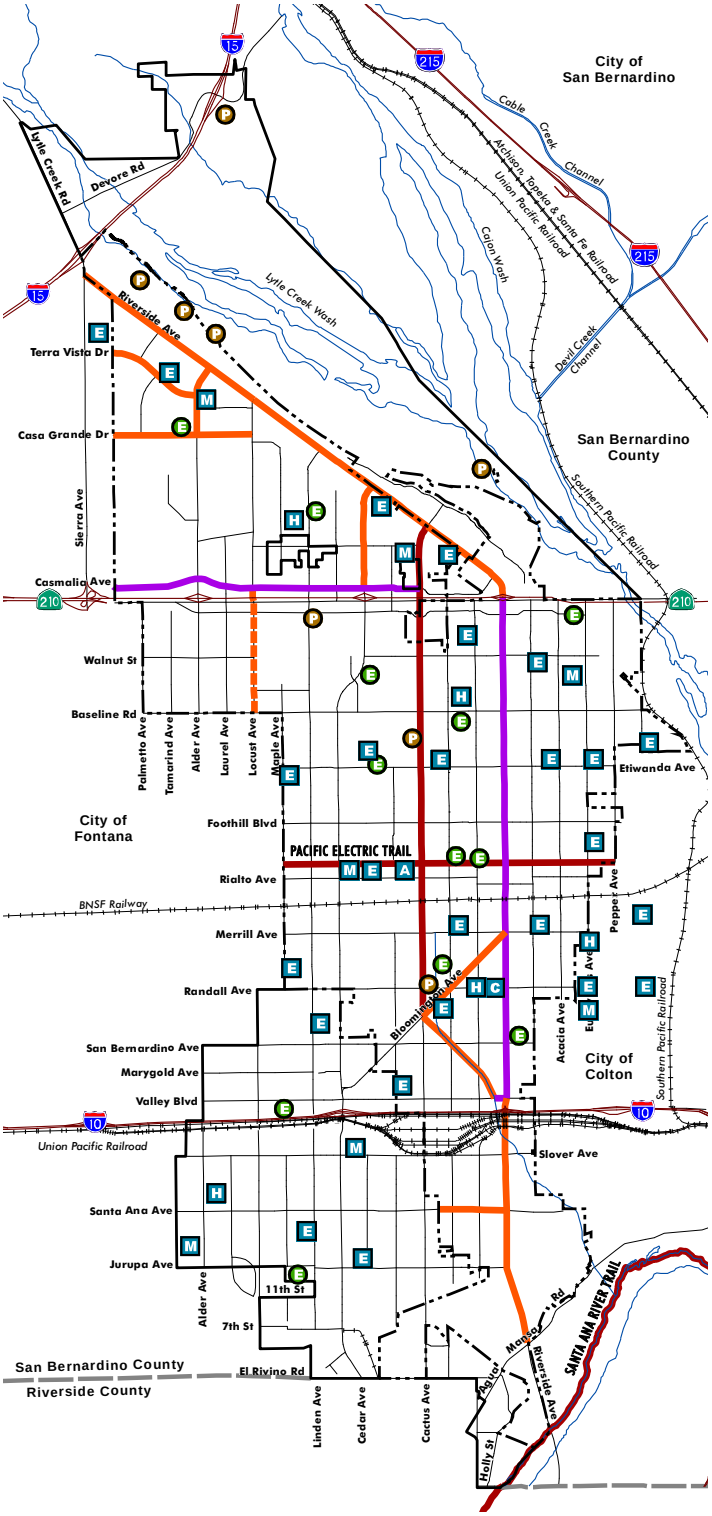


Exhibit 4.3 – Bicycle Facility Classifications



Bike Trails
- Class I - Bike Path
- Class II - Bike Lane
- Class II - Bike Lane (subject to change)
- Class III - Bike Route

Parks
- E Existing
- P Proposed

Education Facilities
- E Elementary School
- M Middle School
- A Alternative School
- H High School
- C Continuation High School

Base Map Features
- Rialto Incorporated Area
- Rialto Sphere of Influence
- County Boundary
- Freeway/Highway
- Local Roads
- Railroad
- Hydrological Features

Source: Iteris, Inc. (2007)

0 0.5 1 1.5 2 Miles

Exhibit 4.4 – Bicycle Routes

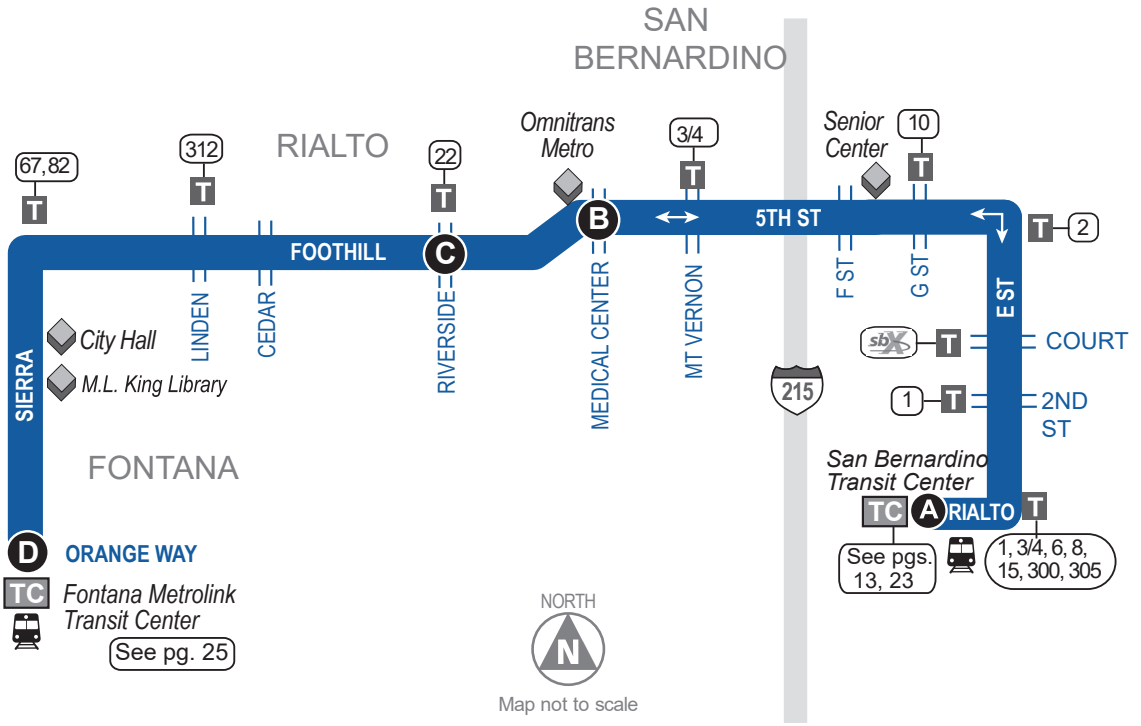
14 FONTANA - FOOTHILL - SAN BERNARDINO

Bus Route
Tripper Service
A Timepoint - Look for the matching symbol in the timetable section.
Metrolink Station
P Park-and-Ride
Point of Interest
H Medical Center
T Transfer Point
1,2 Connection Route(s)
TC Transit/Transfer Center

FREQUENCY

M-F	SAT	SUN
15/20	20	20

This Route connects with Arrow, Metrolink and sbX!



Traveling to Downtown San Bernardino?

Routes 1, 2, 3, 4, 6, 8, 10, 14, 15, 215, 305, SB Connect* (Route 300) and sbX get you there!

ROUTE 14: MONDAY - FRIDAY

WESTBOUND

SBTC*	5th & Medical Center	Foothill & Riverside	Fontana Metrolink
A	B	C	D
3:27	3:38	3:46	4:00
4:10	4:21	4:29	4:43
5:03	5:14	5:23	5:39
5:31	5:42	5:51	6:07
5:51	6:02	6:11	6:31
6:10	6:21	6:30	6:50
6:33	6:44	6:53	7:13
7:00	7:11	7:20	7:40
7:20	7:31	7:41	8:01
7:40	7:51	8:01	8:21
8:00	8:12	8:22	8:42
8:15	8:27	8:37	8:57
8:40	8:52	9:02	9:23
9:00	9:12	9:23	9:44
9:20	9:33	9:44	10:06
9:40	9:53	10:04	10:26
9:55	10:08	10:19	**10:41**
10:15	10:28	**10:39**	**11:01**
10:30	**10:43**	**10:54**	**11:16**
10:45	**10:58**	**11:09**	**11:31**
11:00	**11:13**	**11:24**	**11:46**
11:15	**11:28**	**11:39**	**12:01**
11:30	**11:43**	**11:54**	**12:16**
11:45	**11:59**	**12:10**	**12:33**
12:00	**12:14**	**12:25**	**12:48**
12:15	**12:29**	**12:40**	**1:03**
12:30	**12:44**	**12:55**	**1:18**
12:45	**12:59**	**1:10**	**1:33**
1:00	**1:13**	**1:24**	**1:47**
1:15	**1:28**	**1:39**	**2:02**
1:30	**1:43**	**1:54**	**2:17**
1:45	**1:58**	**2:09**	**2:32**
2:00	**2:13**	**2:24**	**2:47**
2:15	**2:28**	**2:39**	**3:02**
2:30	**2:43**	**2:54**	**3:17**
2:45	**2:58**	**3:09**	**3:32**
3:00	**3:13**	**3:24**	**3:47**
3:15	**3:28**	**3:39**	**4:02**
3:30	**3:43**	**3:54**	**4:17**
3:45	**3:59**	**4:10**	**4:33**
4:00	**4:14**	**4:25**	**4:48**
4:15	**4:29**	**4:40**	**5:03**
4:30	**4:44**	**4:55**	**5:18**
4:45	**4:59**	**5:10**	**5:33**
5:00	**5:13**	**5:24**	**5:45**
5:15	**5:28**	**5:39**	**6:00**
5:30	**5:43**	**5:54**	**6:15**
5:45	**5:58**	**6:09**	**6:30**
6:00	**6:13**	**6:24**	**6:45**
6:20	**6:31**	**6:41**	**7:00**
6:40	**6:51**	**7:01**	**7:20**
7:00	**7:11**	**7:21**	**7:39**
7:20	**7:31**	**7:41**	**7:59**
7:40	**7:51**	**8:01**	**8:19**
8:00	**8:11**	**8:21**	**8:39**
8:30	**8:41**	**8:51**	**9:09**
9:00	**9:11**	**9:21**	**9:39**
9:30	**9:41**	**9:51**	**10:09**
10:30	**10:41**	**10:50**	**11:05**

EASTBOUND

Fontana Metrolink	Foothill & Riverside	5th & Medical Center	SBTC*
D	C	B	A
4:20	4:34	4:42	4:53
5:05	5:19	5:27	5:38
5:55	6:11	6:20	6:34
6:15	6:31	6:40	6:54
6:40	6:56	7:05	7:19
6:55	7:11	7:20	7:34
7:20	7:36	7:45	7:59
7:42	7:59	8:08	8:22
8:05	8:22	8:31	8:45
8:25	8:42	8:51	9:05
8:45	9:02	9:11	9:25
9:05	9:26	9:36	9:50
9:30	9:51	10:01	10:15
9:50	10:11	10:21	10:35
10:10	10:31	10:41	**10:55**
10:25	**10:46**	**10:56**	**11:10**
10:40	**11:02**	**11:12**	**11:26**
10:50	**11:12**	**11:22**	**11:36**
11:10	**11:32**	**11:42**	**11:56**
11:25	**11:47**	**11:57**	**12:11**
11:40	**12:02**	**12:12**	**12:26**
11:55	**12:17**	**12:27**	**12:41**
12:10	**12:32**	**12:42**	**12:56**
12:25	**12:47**	**12:57**	**1:11**
12:40	**1:03**	**1:13**	**1:27**
12:55	**1:18**	**1:28**	**1:42**
1:10	**1:33**	**1:43**	**1:57**
1:25	**1:48**	**1:58**	**2:12**
1:40	**2:03**	**2:13**	**2:27**
1:55	**2:18**	**2:28**	**2:42**
2:10	**2:33**	**2:43**	**2:57**
2:25	**2:48**	**2:58**	**3:12**
2:40	**3:03**	**3:13**	**3:27**
2:55	**3:18**	**3:28**	**3:42**
3:10	**3:33**	**3:43**	**3:57**
3:25	**3:48**	**3:58**	**4:11**
3:40	**4:03**	**4:13**	**4:26**
3:55	**4:18**	**4:28**	**4:41**
4:10	**4:33**	**4:43**	**4:56**
4:25	**4:48**	**4:58**	**5:11**
4:40	**5:03**	**5:13**	**5:26**
4:55	**5:18**	**5:28**	**5:41**
5:10	**5:33**	**5:43**	**5:56**
5:25	**5:48**	**5:58**	**6:11**
5:40	**6:03**	**6:13**	**6:26**
5:55	**6:18**	**6:28**	**6:41**
6:10	**6:33**	**6:42**	**6:55**
6:25	**6:48**	**6:57**	**7:10**
6:40	**7:03**	**7:12**	**7:25**
6:55	**7:18**	**7:27**	**7:40**
7:25	**7:46**	**7:55**	**8:06**
7:55	**8:16**	**8:25**	**8:36**
8:25	**8:42**	**8:51**	**9:02**
9:00	**9:17**	**9:26**	**9:37**
9:30	**9:47**	**9:56**	**10:07**
10:03	**10:20**	**10:29**	**10:40**
10:40	**10:57**	**11:06**	**11:17**

SBTC* is the San Bernardino Transit Center

ROUTE 14: SATURDAY

WESTBOUND

SBTC*	5th & Medical Center	Foothill & Riverside	Fontana Metrolink
A	B	C	D
6:10	6:21	6:31	6:51
6:35	6:46	6:56	7:16
6:55	7:06	7:16	7:36
7:35	7:46	7:56	8:16
7:55	8:06	8:16	8:36
8:15	8:26	8:36	8:56
8:35	8:46	8:56	9:16
8:55	9:06	9:16	9:36
9:15	9:26	9:36	9:56
9:35	9:46	9:56	10:16
9:55	10:06	10:16	10:36
10:15	10:27	10:38	11:01
10:35	10:47	10:58	11:21
10:55	11:07	11:18	**11:41**
11:15	11:27	11:38	**12:01**
11:35	**11:47**	**11:58**	**12:21**
11:55	**12:07**	**12:18**	**12:41**
12:15	**12:27**	**12:38**	**1:01**
12:35	**12:47**	**12:58**	**1:21**
12:55	**1:07**	**1:18**	**1:41**
1:15	**1:27**	**1:38**	**2:01**
1:35	**1:47**	**1:58**	**2:21**
1:55	**2:07**	**2:18**	**2:41**
2:15	**2:27**	**2:38**	**2:59**
2:35	**2:47**	**2:58**	**3:19**
2:55	**3:07**	**3:18**	**3:39**
3:15	**3:27**	**3:38**	**3:59**
3:35	**3:47**	**3:58**	**4:19**
3:55	**4:07**	**4:18**	**4:39**
4:15	**4:27**	**4:38**	**4:59**
4:35	**4:47**	**4:58**	**5:19**
4:55	**5:07**	**5:18**	**5:39**
5:15	**5:27**	**5:38**	**5:59**
5:35	**5:47**	**5:58**	**6:19**
5:55	**6:07**	**6:18**	**6:39**
6:15	**6:27**	**6:38**	**6:59**
6:35	**6:47**	**6:58**	**7:19**
6:55	**7:06**	**7:15**	**7:34**
7:15	**7:26**	**7:35**	**7:54**
7:35	**7:46**	**7:55**	**8:14**
7:55	**8:06**	**8:15**	**8:34**
8:15	**8:26**	**8:35**	**8:54**
8:45	**8:56**	**9:05**	**9:24**
9:20	**9:31**	**9:40**	**9:59**

EASTBOUND

Fontana Metrolink	Foothill & Riverside	5th & Medical Center	SBTC*
D	C	B	A
5:55	6:08	6:16	6:29
6:15	6:28	6:36	6:49
7:05	7:18	7:26	7:39
7:25	7:43	7:51	8:04
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8:25	8:43	8:51	9:04
8:45	9:03	9:11	9:24
9:05	9:23	9:31	9:44
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9:45	10:03	10:12	10:25
10:05	10:23	10:32	10:45
10:25	10:45	10:54	11:07
10:45	11:07	11:16	11:29
11:05	11:27	11:36	**11:49**
11:25	**11:47**	**11:56**	**12:09**
11:45	**12:07**	**12:16**	**12:29**
12:05	**12:27**	**12:36**	**12:49**
12:25	**12:47**	**12:56**	**1:09**
12:45	**1:07**	**1:16**	**1:29**
1:05	**1:27**	**1:36**	**1:49**
1:25	**1:47**	**1:56**	**2:09**
1:45	**2:07**	**2:16**	**2:29**
2:05	**2:27**	**2:36**	**2:49**
2:25	**2:47**	**2:56**	**3:09**
2:45	**3:07**	**3:16**	**3:29**
3:05	**3:26**	**3:35**	**3:48**
3:25	**3:46**	**3:55**	**4:08**
3:45	**4:06**	**4:15**	**4:28**
4:05	**4:26**	**4:35**	**4:48**
4:25	**4:46**	**4:55**	**5:08**
4:45	**5:06**	**5:15**	**5:28**
5:05	**5:26**	**5:35**	**5:48**
5:25	**5:46**	**5:55**	**6:08**
5:45	**6:06**	**6:15**	**6:28**
6:05	**6:26**	**6:35**	**6:48**
6:25	**6:46**	**6:55**	**7:08**
6:45	**7:06**	**7:15**	**7:28**
7:05	**7:26**	**7:35**	**7:48**
7:25	**7:46**	**7:55**	**8:08**
7:45	**8:06**	**8:15**	**8:28**
8:05	**8:26**	**8:35**	**8:48**
8:25	**8:46**	**8:55**	**9:08**
8:45	**9:06**	**9:15**	**9:28**
9:05	**9:22**	**9:31**	**9:44**
9:35	**9:52**	**10:01**	**10:14**
10:08	**10:25**	**10:34**	**10:47**

SBTC* is the San Bernardino Transit Center

ROUTE 14: SUNDAY

SBTC*	5th & Medical Center	Foothill & Riverside	Fontana Metrolink	Fontana Metrolink	Foothill & Riverside	5th & Medical Center	SBTC*
A	B	C	D	D	C	B	A
WESTBOUND				**EASTBOUND**			
				6:24	6:42	6:51	7:02
				7:05	7:23	7:32	7:43
6:35	6:45	6:55	7:13	7:25	7:43	7:52	8:03
7:05	7:15	7:25	7:43	7:45	8:03	8:12	8:23
7:25	7:35	7:45	8:03	8:05	8:23	8:32	8:43
7:45	7:55	8:05	8:23	8:25	8:43	8:52	9:03
				8:45	9:03	9:12	9:23
8:15	8:25	8:35	8:53	9:05	9:23	9:32	9:43
8:35	8:45	8:55	9:13	9:25	9:43	9:52	10:03
8:55	9:05	9:15	9:35	9:45	10:03	10:12	10:23
9:15	9:25	9:35	9:55	10:05	10:25	10:34	10:46
9:35	9:45	9:55	10:15	10:25	10:45	10:54	11:06
9:55	10:05	10:15	10:35	10:45	11:05	11:14	11:26
10:15	10:26	10:36	10:56	11:05	11:25	11:34	**11:46**
10:35	10:46	10:56	11:16	11:25	**11:45**	**11:54**	**12:06**
10:55	11:06	11:16	11:36	**11:45**	**12:05**	**12:14**	**12:26**
11:15	11:26	11:36	**11:56**	**12:05**	**12:25**	**12:34**	**12:46**
11:35	**11:46**	**11:56**	**12:16**	**12:25**	**12:45**	**12:54**	**1:06**
11:55	**12:06**	**12:16**	**12:36**	**12:45**	**1:05**	**1:14**	**1:26**
12:15	**12:26**	**12:36**	**12:56**	**1:05**	**1:25**	**1:34**	**1:46**
12:35	**12:46**	**12:56**	**1:16**	**1:25**	**1:45**	**1:54**	**2:06**
12:55	**1:06**	**1:16**	**1:36**	**1:45**	**2:05**	**2:14**	**2:26**
1:15	**1:26**	**1:36**	**1:56**	**2:05**	**2:26**	**2:35**	**2:46**
1:35	**1:46**	**1:56**	**2:16**	**2:25**	**2:46**	**2:55**	**3:06**
1:55	**2:06**	**2:16**	**2:36**	**2:45**	**3:06**	**3:15**	**3:26**
2:15	**2:26**	**2:36**	**2:56**	**3:05**	**3:26**	**3:35**	**3:46**
2:35	**2:46**	**2:56**	**3:16**	**3:25**	**3:46**	**3:55**	**4:06**
2:55	**3:06**	**3:16**	**3:36**	**3:45**	**4:06**	**4:15**	**4:26**
3:15	**3:26**	**3:36**	**3:56**	**4:05**	**4:26**	**4:35**	**4:46**
3:35	**3:46**	**3:56**	**4:16**	**4:25**	**4:46**	**4:55**	**5:06**
3:55	**4:06**	**4:16**	**4:36**	**4:45**	**5:06**	**5:15**	**5:26**
4:15	**4:26**	**4:36**	**4:55**	**5:05**	**5:26**	**5:35**	**5:46**
4:35	**4:46**	**4:56**	**5:15**	**5:25**	**5:46**	**5:55**	**6:06**
4:55	**5:06**	**5:16**	**5:35**	**5:45**	**6:06**	**6:15**	**6:26**
5:15	**5:26**	**5:36**	**5:55**				
5:35	**5:46**	**5:56**	**6:15**	**6:15**	**6:33**	**6:41**	**6:52**
5:55	**6:06**	**6:16**	**6:35**	**6:45**	**7:03**	**7:11**	**7:22**
6:20	**6:31**	**6:41**	**7:00**	**7:05**	**7:23**	**7:31**	**7:42**
6:50	**7:01**	**7:11**	**7:30**	**7:45**	**8:03**	**8:11**	**8:22**
7:20	**7:31**	**7:41**	**8:00**				

SBTC* is the San Bernardino Transit Center

APPENDIX C

EXISTING TRAFFIC COUNTS

INTERSECTION TURNING MOVEMENT COUNTS

T012524

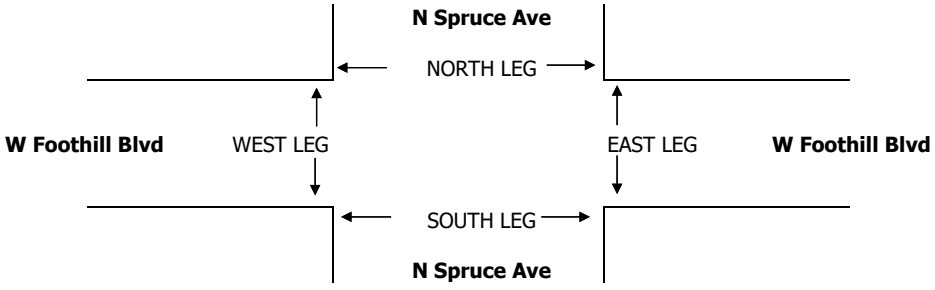
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	Rialto	PROJECT #:	SC4769
Tue, Jun 18, 24	NORTH & SOUTH:	N Spruce Ave	LOCATION #:	1
	EAST & WEST:	W Foothill Blvd	CONTROL:	SIGNAL

NOTES:

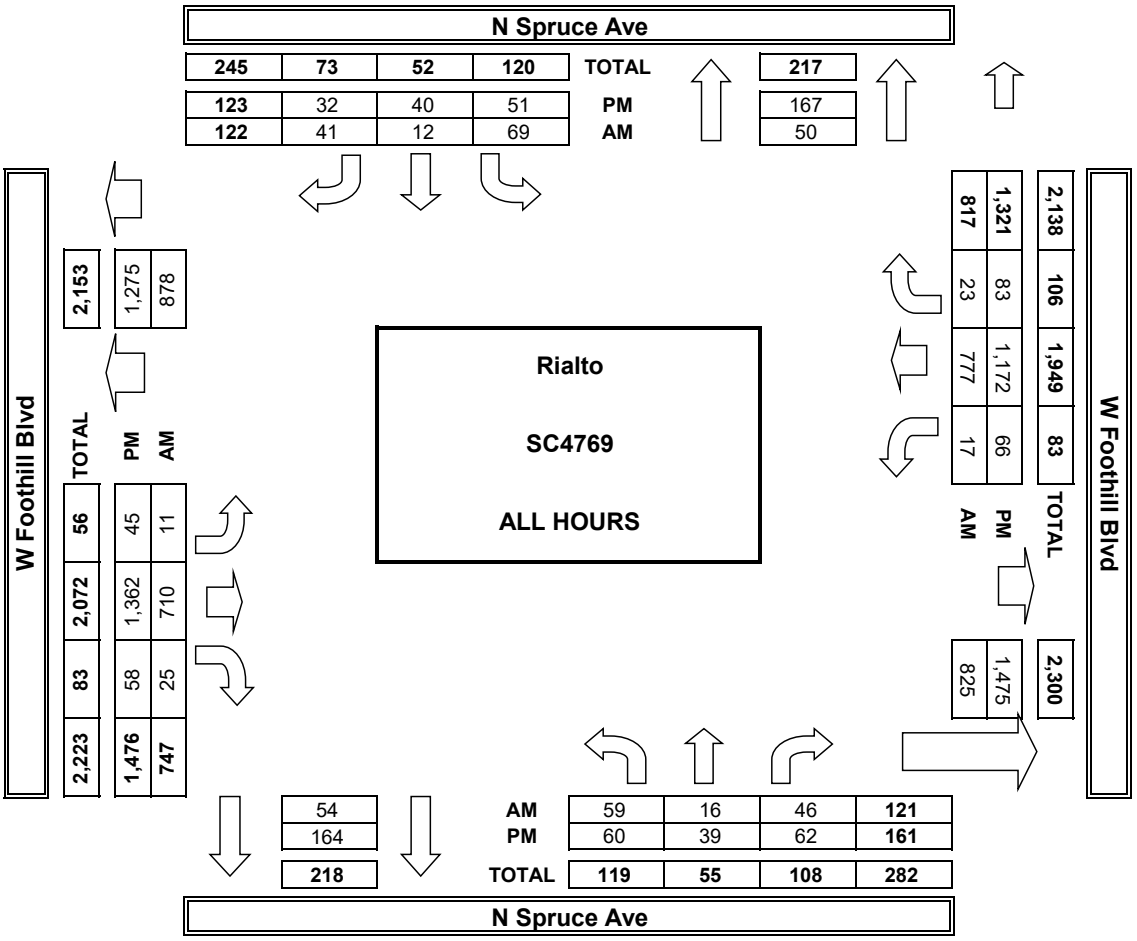
AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

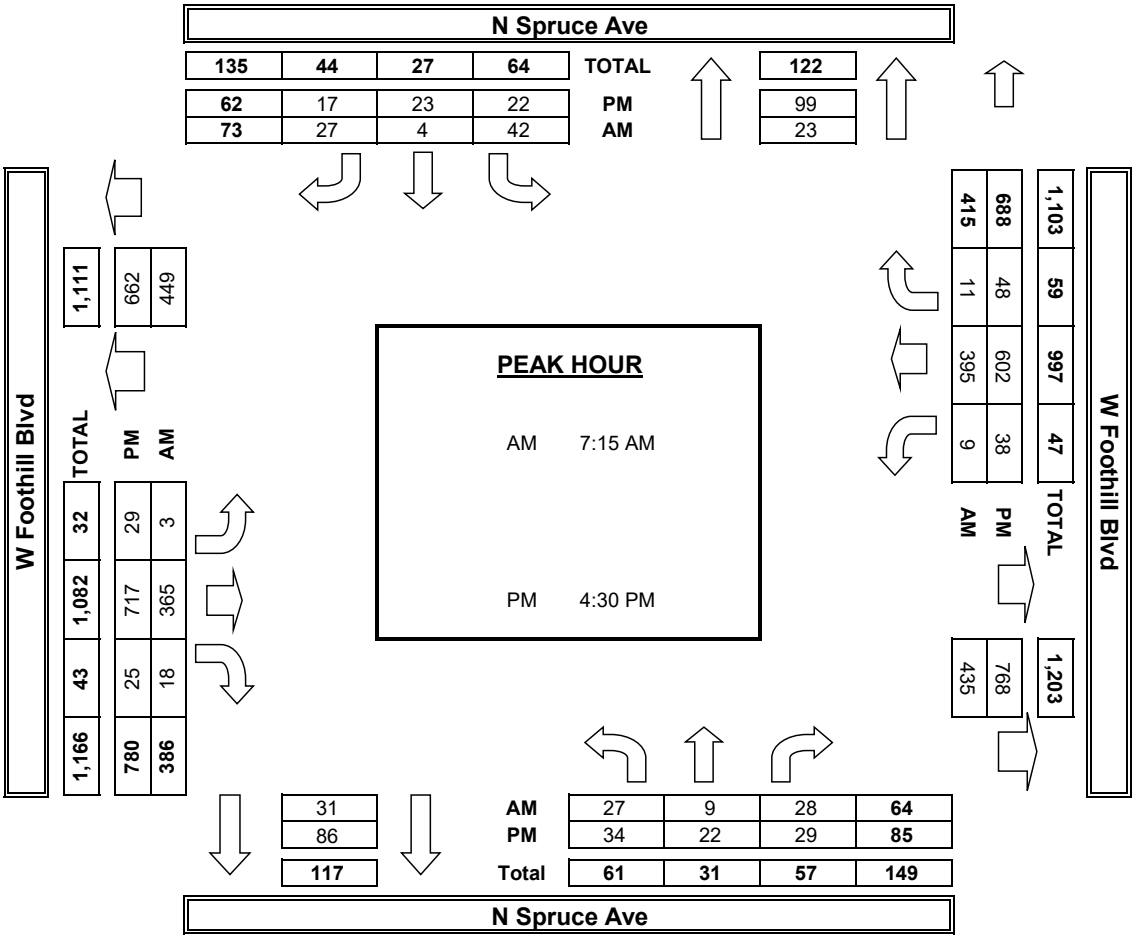
		NORTHBOUND N Spruce Ave			SOUTHBOUND N Spruce Ave			EASTBOUND W Foothill Blvd			WESTBOUND W Foothill Blvd			
	LANES:	NL 0	NT 1	NR 0	SL 0	ST 1	SR 0	EL 1	ET 3	ER 0	WL 1	WT 2	WR 1	TOTAL
AM	7:00 AM	14	4	5	7	2	6	1	66	2	2	68	2	179
	7:15 AM	8	1	8	12	1	10	1	86	2	0	88	4	221
	7:30 AM	7	3	13	13	2	3	0	102	6	2	83	1	235
	7:45 AM	5	4	5	8	0	8	1	82	4	3	134	2	256
	8:00 AM	7	1	2	9	1	6	1	95	6	4	90	4	226
	8:15 AM	7	1	5	8	3	1	3	80	1	1	105	4	219
	8:30 AM	6	1	6	6	1	4	2	96	1	4	105	3	235
	8:45 AM	5	1	2	6	2	3	2	103	3	1	104	3	235
	VOLUMES	59	16	46	69	12	41	11	710	25	17	777	23	1,807
	APPROACH %	49%	13%	38%	57%	10%	34%	1%	95%	3%	2%	95%	3%	
	APP/DEPART	121	/	50	122	/	54	747	/	825	817	/	878	0
	BEGIN PEAK HR		7:15 AM											
	VOLUMES	27	9	28	42	4	27	3	365	18	9	395	11	938
	APPROACH %	42%	14%	44%	58%	5%	37%	1%	95%	5%	2%	95%	3%	
	PEAK HR FACTOR		0.696			0.793			0.894			0.746		0.916
	APP/DEPART	64	/	23	73	/	31	386	/	435	415	/	449	0
PM	4:00 PM	6	2	5	4	2	1	3	169	7	4	147	9	359
	4:15 PM	6	9	10	5	5	4	3	175	7	7	146	7	384
	4:30 PM	11	3	8	4	4	3	8	194	5	10	148	11	409
	4:45 PM	8	6	9	5	5	4	9	175	6	9	151	12	399
	5:00 PM	10	7	7	4	6	6	6	149	10	8	149	10	372
	5:15 PM	5	6	5	9	8	4	6	199	4	11	154	15	426
	5:30 PM	7	2	7	9	7	6	6	156	12	5	142	12	371
	5:45 PM	7	4	11	11	3	4	4	145	7	12	135	7	350
	VOLUMES	60	39	62	51	40	32	45	1,362	58	66	1,172	83	3,081
	APPROACH %	37%	24%	39%	41%	33%	26%	3%	92%	4%	5%	89%	6%	
	APP/DEPART	161	/	167	123	/	164	1,476	/	1,475	1,321	/	1,275	0
	BEGIN PEAK HR		4:30 PM											
	VOLUMES	34	22	29	22	23	17	29	717	25	38	602	48	1,615
	APPROACH %	40%	26%	34%	35%	37%	27%	4%	92%	3%	6%	88%	7%	
	PEAK HR FACTOR		0.885			0.738			0.924			0.956		0.946
	APP/DEPART	85	/	99	62	/	86	780	/	768	688	/	662	0



AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T012524

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

DATE: Tue, Jun 18, 24

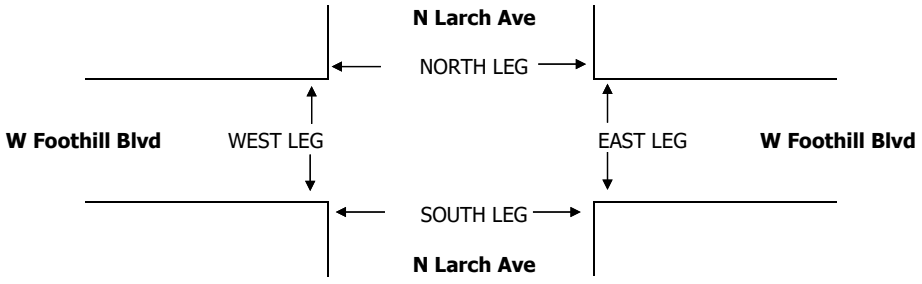
LOCATION: Rialto
NORTH & SOUTH: N Larch Ave
EAST & WEST: W Foothill Blvd

PROJECT #: SC4769
LOCATION #: 2
CONTROL: STOP N/S

NOTES:

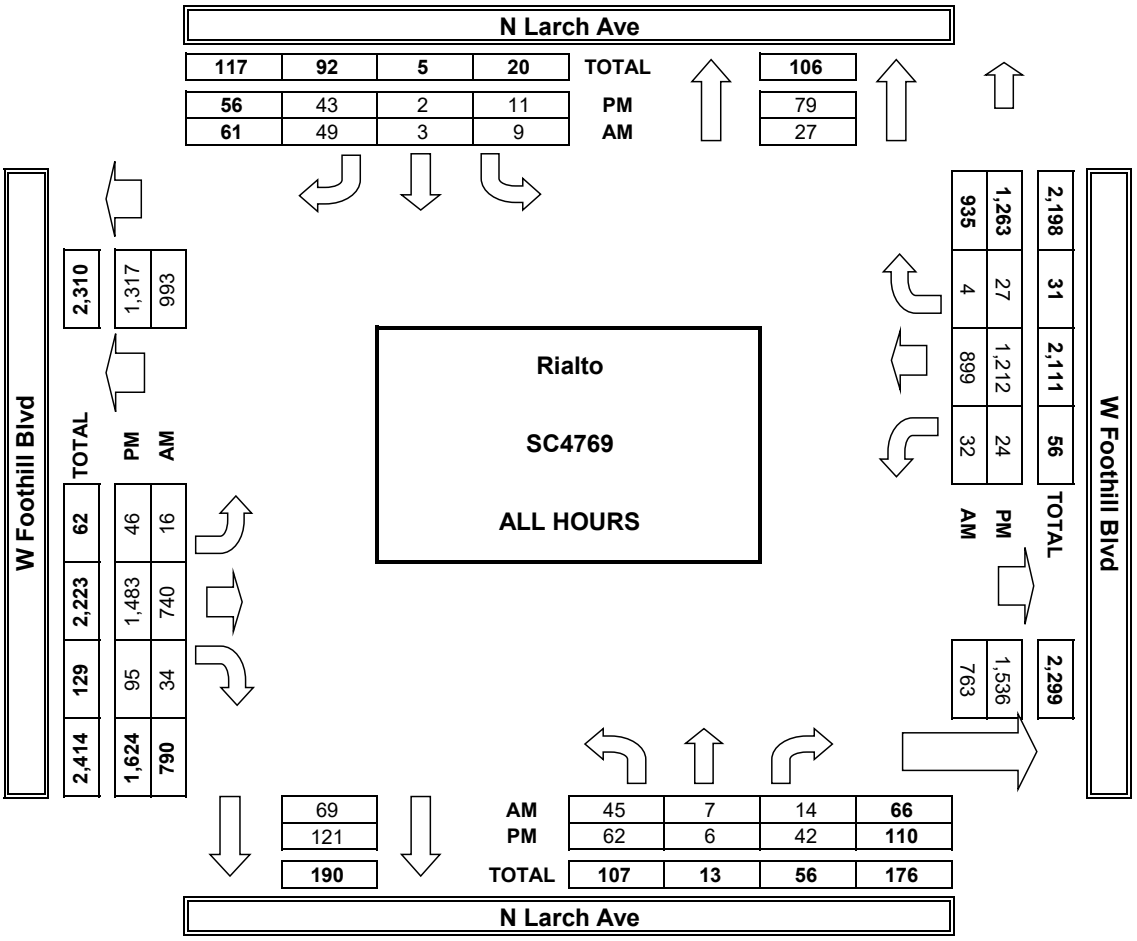
AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

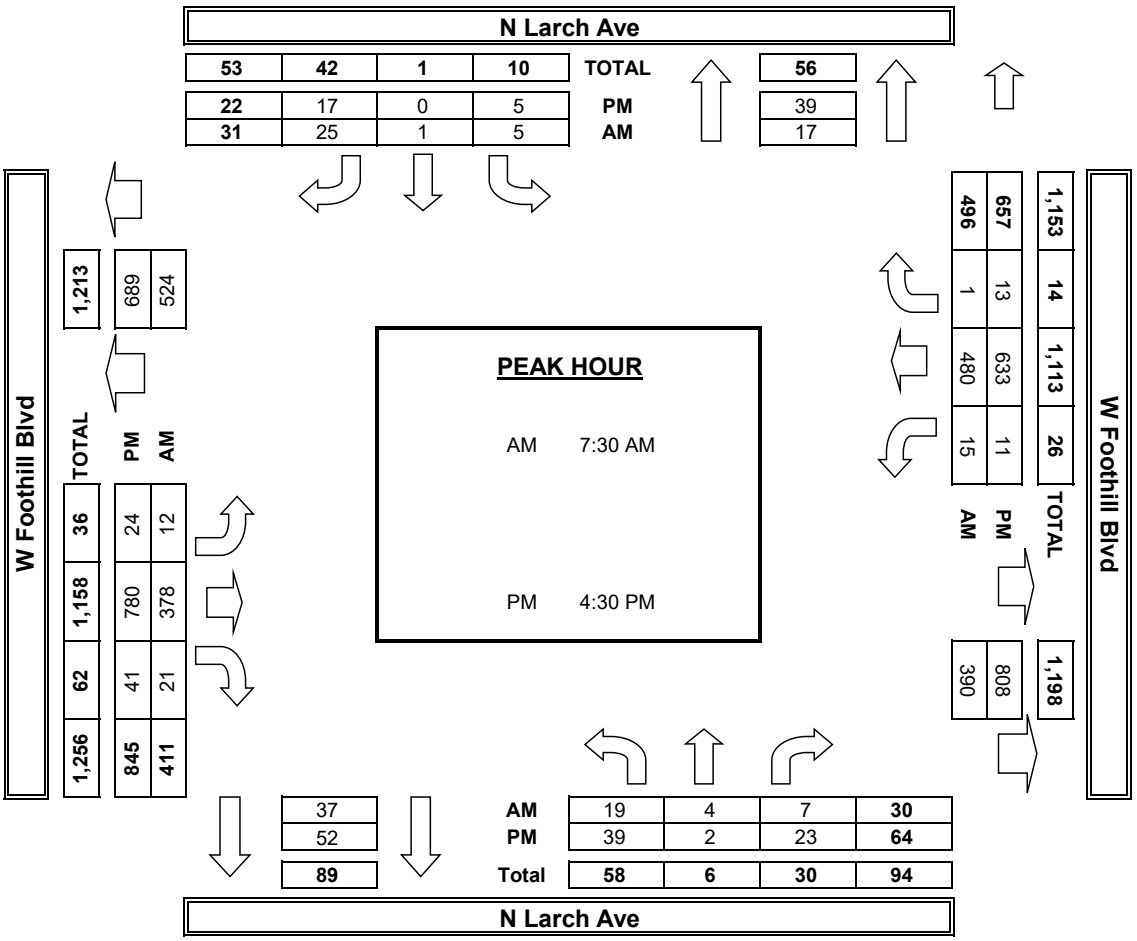
		NORTHBOUND N Larch Ave			SOUTHBOUND N Larch Ave			EASTBOUND W Foothill Blvd			WESTBOUND W Foothill Blvd			
	LANES:	NL 0	NT 1	NR 0	SL 0	ST 1	SR 0	EL 1	ET 3	ER 0	WL 0	WT 2	WR 1	TOTAL
AM	7:00 AM	8	1	1	1	0	5	0	74	3	4	97	0	194
	7:15 AM	8	0	2	0	1	6	0	83	2	7	99	1	209
	7:30 AM	2	2	1	1	1	9	3	115	6	5	104	0	249
	7:45 AM	11	1	3	1	0	7	2	76	6	3	143	1	254
	8:00 AM	3	1	2	1	0	5	5	100	5	1	118	0	241
	8:15 AM	3	0	1	2	0	4	2	87	4	6	115	0	224
	8:30 AM	7	2	4	2	0	8	2	91	2	4	112	1	235
	8:45 AM	3	0	0	1	1	5	2	114	6	2	111	1	246
	VOLUMES	45	7	14	9	3	49	16	740	34	32	899	4	1,852
	APPROACH %	68%	11%	21%	15%	5%	80%	2%	94%	4%	3%	96%	0%	
	APP/DEPART	66	/	27	61	/	69	790	/	763	935	/	993	0
	BEGIN PEAK HR		7:30 AM											
	VOLUMES	19	4	7	5	1	25	12	378	21	15	480	1	968
	APPROACH %	63%	13%	23%	16%	3%	81%	3%	92%	5%	3%	97%	0%	
	PEAK HR FACTOR		0.500			0.705			0.829			0.844		0.953
	APP/DEPART	30	/	17	31	/	37	411	/	390	496	/	524	0
PM	4:00 PM	5	0	2	0	2	4	5	187	13	5	145	4	372
	4:15 PM	9	0	5	1	0	7	5	178	12	5	154	3	379
	4:30 PM	3	2	7	2	0	4	6	207	13	3	149	1	397
	4:45 PM	13	0	6	2	0	3	7	204	9	3	160	5	412
	5:00 PM	12	0	5	1	0	6	5	159	9	1	166	3	367
	5:15 PM	11	0	5	0	0	4	6	210	10	4	158	4	412
	5:30 PM	4	1	6	4	0	7	5	166	16	2	145	3	359
	5:45 PM	5	3	6	1	0	8	7	172	13	1	135	4	355
	VOLUMES	62	6	42	11	2	43	46	1,483	95	24	1,212	27	3,053
	APPROACH %	56%	5%	38%	20%	4%	77%	3%	91%	6%	2%	96%	2%	
	APP/DEPART	110	/	79	56	/	121	1,624	/	1,536	1,263	/	1,317	0
	BEGIN PEAK HR		4:30 PM											
	VOLUMES	39	2	23	5	0	17	24	780	41	11	633	13	1,588
	APPROACH %	61%	3%	36%	23%	0%	77%	3%	92%	5%	2%	96%	2%	
	PEAK HR FACTOR		0.842			0.786			0.935			0.966		0.964
	APP/DEPART	64	/	39	22	/	52	845	/	808	657	/	689	0



AimTD LLC

TURNING MOVEMENT COUNTS





APPENDIX D

HCM ANALYSIS WORKSHEETS

EXISTING
TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 1: N Spruce Ave/W Foothill Blvd

Control Type:	Signalized	Delay (sec / veh):	21.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.216

Intersection Setup

Name	North Spruce Avenue			North Spruce Avenue			West Foothill Boulevard			West Foothill Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	145.00	100.00	110.00
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]	25.00			25.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	North Spruce Avenue			North Spruce Avenue			West Foothill Boulevard			West Foothill Boulevard		
Base Volume Input [veh/h]	27	9	28	42	4	27	3	365	18	9	395	11
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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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]	27	9	28	42	4	27	3	365	18	9	395	11
Peak Hour Factor	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160
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]	7	2	8	11	1	7	1	100	5	2	108	3
Total Analysis Volume [veh/h]	29	10	31	46	4	29	3	398	20	10	431	12
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 Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	0	0	10	0	5	10	0	5	10	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	33	0	0	33	0	10	18	0	9	17	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	21	0	0	7	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		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	C	C	L	C	C	L	C	R
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	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	37	37	0	10	10	1	11	11
g / C, Green / Cycle	0.62	0.62	0.01	0.17	0.17	0.01	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.04	0.05	0.00	0.08	0.08	0.01	0.12	0.01
s, saturation flow rate [veh/h]	1566	1510	1810	3618	1854	1810	3618	1615
c, Capacity [veh/h]	1055	1031	11	600	308	27	632	282
d1, Uniform Delay [s]	4.53	4.55	29.77	22.65	22.68	29.36	23.26	20.64
k, delay calibration	0.50	0.50	0.11	0.11	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
d2, Incremental Delay [s]	0.12	0.14	12.85	0.55	1.09	8.29	1.31	0.06
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	0.07	0.08	0.27	0.46	0.46	0.37	0.68	0.04
d, Delay for Lane Group [s/veh]	4.65	4.70	42.62	23.20	23.77	37.65	24.57	20.70
Lane Group LOS	A	A	D	C	C	D	C	C
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.30	0.35	0.08	1.55	1.66	0.19	2.56	0.13
50th-Percentile Queue Length [ft/ln]	7.59	8.64	1.94	38.83	41.48	4.73	63.89	3.14
95th-Percentile Queue Length [veh/ln]	0.55	0.62	0.14	2.80	2.99	0.34	4.60	0.23
95th-Percentile Queue Length [ft/ln]	13.67	15.56	3.49	69.90	74.67	8.52	114.99	5.64

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	4.65	4.65	4.65	4.70	4.70	4.70	42.62	23.37	23.77	37.65	24.57	20.70
Movement LOS	A	A	A	A	A	A	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	4.65			4.70			23.53			24.75		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	21.33											
Intersection LOS	C											
Intersection V/C	0.216											

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]	21.72	21.72	21.72	21.72
l_p,int, Pedestrian LOS Score for Intersectio	1.738	1.738	2.827	2.856
Crosswalk LOS	A	A	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	965	965	466	433
d_b, Bicycle Delay [s]	8.04	8.04	17.67	18.45
l_b,int, Bicycle LOS Score for Intersection	1.675	1.690	1.791	1.933
Bicycle LOS	A	A	A	A

Sequence

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

Intersection Level Of Service Report
Intersection 2: N Larch Ave/W Foothill Blve

Control Type:	Two-way stop	Delay (sec / veh):	20.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.016

Intersection Setup

Name	North Larch Avenue			North Larch Avenue			West Foothill Boulevard			West Foothill Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	125.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	North Larch Avenue			North Larch Avenue			West Foothill Boulevard			West Foothill Boulevard		
Base Volume Input [veh/h]	19	4	7	5	1	25	12	378	21	15	480	1
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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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
Total Hourly Volume [veh/h]	19	4	7	5	1	25	12	378	21	15	480	1
Peak Hour Factor	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530
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]	5	1	2	1	0	7	3	99	6	4	126	0
Total Analysis Volume [veh/h]	20	4	7	5	1	26	13	397	22	16	504	1
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	2	2	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.02	0.01	0.01	0.00	0.04	0.01	0.00	0.00	0.02	0.01	0.00
d_M, Delay for Movement [s/veh]	15.49	20.43	11.09	15.62	20.23	11.02	8.41	0.00	0.00	9.93	0.00	0.00
Movement LOS	C	C	B	C	C	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.26	0.26	0.26	0.19	0.19	0.19	0.04	0.00	0.00	0.07	0.00	0.00
95th-Percentile Queue Length [ft/ln]	6.51	6.51	6.51	4.67	4.67	4.67	0.92	0.00	0.00	1.64	0.00	0.00
d_A, Approach Delay [s/veh]	15.13			12.03			0.25			0.30		
Approach LOS	C			B			A			A		
d_I, Intersection Delay [s/veh]	1.10											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 1: N Spruce Ave/W Foothill Blvd

Control Type:	Signalized	Delay (sec / veh):	22.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.312

Intersection Setup

Name	North Spruce Avenue			North Spruce Avenue			West Foothill Boulevard			West Foothill Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	145.00	100.00	110.00
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]	25.00			25.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	North Spruce Avenue			North Spruce Avenue			West Foothill Boulevard			West Foothill Boulevard		
Base Volume Input [veh/h]	34	22	29	22	23	17	29	717	25	38	602	48
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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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]	34	22	29	22	23	17	29	717	25	38	602	48
Peak Hour Factor	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460
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	6	8	6	6	4	8	189	7	10	159	13
Total Analysis Volume [veh/h]	36	23	31	23	24	18	31	758	26	40	636	51
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 Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	0	0	10	0	5	10	0	5	10	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	33	0	0	33	0	11	18	0	9	16	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	7	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		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	C	C	L	C	C	L	C	R
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	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	33	33	2	13	13	3	13	13
g / C, Green / Cycle	0.55	0.55	0.03	0.21	0.21	0.04	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.06	0.04	0.02	0.14	0.14	0.02	0.18	0.03
s, saturation flow rate [veh/h]	1591	1626	1810	3618	1868	1810	3618	1615
c, Capacity [veh/h]	959	976	65	751	388	77	776	346
d1, Uniform Delay [s]	6.41	6.31	28.45	22.03	22.04	28.19	22.52	19.16
k, delay calibration	0.50	0.50	0.11	0.11	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
d2, Incremental Delay [s]	0.19	0.13	5.37	1.13	2.20	5.25	2.21	0.19
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	0.09	0.07	0.48	0.69	0.69	0.52	0.82	0.15
d, Delay for Lane Group [s/veh]	6.60	6.45	33.83	23.16	24.24	33.44	24.73	19.36
Lane Group LOS	A	A	C	C	C	C	C	B
Critical Lane Group	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.51	0.36	0.49	2.96	3.18	0.61	3.83	0.51
50th-Percentile Queue Length [ft/ln]	12.78	9.06	12.13	73.89	79.46	15.30	95.72	12.72
95th-Percentile Queue Length [veh/ln]	0.92	0.65	0.87	5.32	5.72	1.10	6.89	0.92
95th-Percentile Queue Length [ft/ln]	23.00	16.31	21.84	133.00	143.03	27.54	172.29	22.89

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	6.60	6.60	6.60	6.45	6.45	6.45	33.83	23.51	24.24	33.44	24.73	19.36
Movement LOS	A	A	A	A	A	A	C	C	C	C	C	B
d_A, Approach Delay [s/veh]	6.60			6.45			23.92			24.83		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	22.72											
Intersection LOS	C											
Intersection V/C	0.312											

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]	21.72	21.72	21.72	21.72
l_p,int, Pedestrian LOS Score for Intersectio	1.769	1.765	2.975	2.965
Crosswalk LOS	A	A	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	965	965	466	399
d_b, Bicycle Delay [s]	8.04	8.04	17.67	19.24
l_b,int, Bicycle LOS Score for Intersection	1.708	1.667	2.008	2.159
Bicycle LOS	A	A	B	B

Sequence

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

Intersection Level Of Service Report
Intersection 2: N Larch Ave/W Foothill Blve

Control Type:	Two-way stop	Delay (sec / veh):	44.7
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.019

Intersection Setup

Name	North Larch Avenue			North Larch Avenue			West Foothill Boulevard			West Foothill Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	125.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	North Larch Avenue			North Larch Avenue			West Foothill Boulevard			West Foothill Boulevard		
Base Volume Input [veh/h]	39	2	23	5	0	17	24	780	41	11	633	13
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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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
Total Hourly Volume [veh/h]	39	2	23	5	0	17	24	780	41	11	633	13
Peak Hour Factor	0.9640	0.9640	0.9640	0.9640	0.9640	0.9640	0.9640	0.9640	0.9640	0.9640	0.9640	0.9640
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]	10	1	6	1	0	4	6	202	11	3	164	3
Total Analysis Volume [veh/h]	40	2	24	5	0	18	25	809	43	11	657	13
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	2	2	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.21	0.02	0.05	0.02	0.00	0.03	0.03	0.01	0.00	0.02	0.01	0.00
d_M, Delay for Movement [s/veh]	29.53	44.70	17.91	22.30	39.93	11.77	8.98	0.00	0.00	12.89	0.00	0.00
Movement LOS	D	E	C	C	E	B	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	1.09	1.09	1.09	0.17	0.17	0.17	0.08	0.00	0.00	0.07	0.00	0.00
95th-Percentile Queue Length [ft/ln]	27.30	27.30	27.30	4.33	4.33	4.33	2.07	0.00	0.00	1.80	0.00	0.00
d_A, Approach Delay [s/veh]	25.76			14.06			0.26			0.21		
Approach LOS	D			B			A			A		
d_I, Intersection Delay [s/veh]	1.45											
Intersection LOS	E											

OPENING YEAR
TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 1: N Spruce Ave/W Foothill Blvd

Control Type:	Signalized	Delay (sec / veh):	21.6
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.277

Intersection Setup

Name	North Spruce Avenue			North Spruce Avenue			West Foothill Boulevard			West Foothill Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	145.00	100.00	110.00
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]	25.00			25.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	North Spruce Avenue			North Spruce Avenue			West Foothill Boulevard			West Foothill Boulevard		
Base Volume Input [veh/h]	27	9	28	42	4	27	3	365	18	9	395	11
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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404
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	4	0	8	5	102	0	0	98	1
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]	28	9	29	48	4	36	8	482	19	9	509	12
Peak Hour Factor	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160
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	2	8	13	1	10	2	132	5	2	139	3
Total Analysis Volume [veh/h]	31	10	32	52	4	39	9	526	21	10	556	13
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 Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	0	0	10	0	5	10	0	5	10	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	33	0	0	33	0	10	18	0	9	17	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	7	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		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	C	C	L	C	C	L	C	R
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	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	36	36	1	12	12	1	12	12
g / C, Green / Cycle	0.59	0.59	0.01	0.19	0.19	0.01	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.05	0.06	0.00	0.10	0.10	0.01	0.15	0.01
s, saturation flow rate [veh/h]	1560	1516	1810	3618	1863	1810	3618	1615
c, Capacity [veh/h]	1009	990	25	700	361	27	704	314
d1, Uniform Delay [s]	5.22	5.29	29.41	21.73	21.75	29.36	23.05	19.67
k, delay calibration	0.50	0.50	0.11	0.11	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
d2, Incremental Delay [s]	0.14	0.19	8.71	0.59	1.15	8.29	2.03	0.05
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	0.07	0.10	0.36	0.51	0.52	0.37	0.79	0.04
d, Delay for Lane Group [s/veh]	5.36	5.48	38.12	22.32	22.90	37.65	25.08	19.72
Lane Group LOS	A	A	D	C	C	D	C	B
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.35	0.47	0.17	1.99	2.12	0.19	3.37	0.13
50th-Percentile Queue Length [ft/ln]	8.85	11.70	4.37	49.76	53.09	4.73	84.19	3.28
95th-Percentile Queue Length [veh/ln]	0.64	0.84	0.31	3.58	3.82	0.34	6.06	0.24
95th-Percentile Queue Length [ft/ln]	15.92	21.07	7.86	89.57	95.56	8.52	151.53	5.90

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	5.36	5.36	5.36	5.48	5.48	5.48	38.12	22.50	22.90	37.65	25.08	19.72
Movement LOS	A	A	A	A	A	A	D	C	C	D	C	B
d_A, Approach Delay [s/veh]	5.36			5.48			22.77			25.17		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	21.60											
Intersection LOS	C											
Intersection V/C	0.277											

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]	21.72	21.72	21.72	21.72
l_p,int, Pedestrian LOS Score for Intersectio	1.739	1.747	2.893	2.925
Crosswalk LOS	A	A	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	965	965	466	433
d_b, Bicycle Delay [s]	8.04	8.04	17.67	18.45
l_b,int, Bicycle LOS Score for Intersection	1.680	1.716	1.865	2.037
Bicycle LOS	A	A	A	B

Sequence

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

Intersection Level Of Service Report
Intersection 2: N Larch Ave/W Foothill Blve

Control Type:	Two-way stop	Delay (sec / veh):	30.5
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.030

Intersection Setup

Name	North Larch Avenue			North Larch Avenue			West Foothill Boulevard			West Foothill Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	125.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	North Larch Avenue			North Larch Avenue			West Foothill Boulevard			West Foothill Boulevard		
Base Volume Input [veh/h]	19	4	7	5	1	25	12	378	21	15	480	1
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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	6	6	9	82	5	13	11	16	3	3	41	62
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	26	10	16	87	6	39	23	409	25	19	540	63
Peak Hour Factor	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530
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]	7	3	4	23	2	10	6	107	7	5	142	17
Total Analysis Volume [veh/h]	27	10	17	91	6	41	24	429	26	20	567	66
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	2	2	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.05	0.03	0.32	0.03	0.07	0.03	0.00	0.00	0.03	0.01	0.00
d_M, Delay for Movement [s/veh]	18.97	26.57	12.64	25.21	30.55	18.43	8.85	0.00	0.00	10.16	0.00	0.00
Movement LOS	C	D	B	D	D	C	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	0.59	0.59	0.59	1.98	1.98	1.98	0.08	0.00	0.00	0.09	0.00	0.00
95th-Percentile Queue Length [ft/ln]	14.81	14.81	14.81	49.54	49.54	49.54	1.92	0.00	0.00	2.15	0.00	0.00
d_A, Approach Delay [s/veh]	18.39			23.43			0.44			0.31		
Approach LOS	C			C			A			A		
d_I, Intersection Delay [s/veh]	3.51											
Intersection LOS	D											

Intersection Level Of Service Report
Intersection 1: N Spruce Ave/W Foothill Blvd

Control Type:	Signalized	Delay (sec / veh):	27.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.313

Intersection Setup

Name	North Spruce Avenue			North Spruce Avenue			West Foothill Boulevard			West Foothill Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	145.00	100.00	110.00
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]	25.00			25.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	North Spruce Avenue			North Spruce Avenue			West Foothill Boulevard			West Foothill Boulevard		
Base Volume Input [veh/h]	34	22	29	22	23	17	29	717	25	38	602	48
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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404
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	2	0	0	0	0	0	0	0	4
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]	35	23	30	25	24	18	30	746	26	40	626	54
Peak Hour Factor	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460
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	6	8	7	6	5	8	197	7	11	165	14
Total Analysis Volume [veh/h]	37	24	32	26	25	19	32	789	27	42	662	57
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 Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	0	0	10	0	5	10	0	5	10	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	33	0	0	33	0	11	18	0	9	16	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	7	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		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	C	C	L	C	C	L	C	R
C, Cycle Length [s]	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
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	41	41	2	14	14	3	15	15
g / C, Green / Cycle	0.58	0.58	0.03	0.21	0.21	0.04	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.06	0.04	0.02	0.15	0.15	0.02	0.18	0.04
s, saturation flow rate [veh/h]	1588	1612	1810	3618	1868	1810	3618	1615
c, Capacity [veh/h]	999	1012	62	738	381	74	763	340
d1, Uniform Delay [s]	6.40	6.31	33.28	26.07	26.08	33.00	26.71	22.62
k, delay calibration	0.50	0.50	0.11	0.11	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
d2, Incremental Delay [s]	0.18	0.13	6.65	1.40	2.71	6.74	3.19	0.23
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	0.09	0.07	0.52	0.73	0.73	0.57	0.87	0.17
d, Delay for Lane Group [s/veh]	6.58	6.44	39.93	27.47	28.79	39.73	29.89	22.85
Lane Group LOS	A	A	D	C	C	D	C	C
Critical Lane Group	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.59	0.43	0.60	3.83	4.10	0.78	5.01	0.70
50th-Percentile Queue Length [ft/ln]	14.65	10.85	15.06	95.69	102.62	19.44	125.30	17.59
95th-Percentile Queue Length [veh/ln]	1.05	0.78	1.08	6.89	7.39	1.40	8.68	1.27
95th-Percentile Queue Length [ft/ln]	26.37	19.53	27.11	172.24	184.71	34.99	217.09	31.66

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	6.58	6.58	6.58	6.44	6.44	6.44	39.93	27.89	28.79	39.73	29.89	22.85
Movement LOS	A	A	A	A	A	A	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	6.58			6.44			28.37			29.91		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	27.02											
Intersection LOS	C											
Intersection V/C	0.313											

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]	26.59	26.59	26.59	26.59
l_p,int, Pedestrian LOS Score for Intersectio	1.780	1.778	2.999	2.993
Crosswalk LOS	A	A	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	828	828	400	343
d_b, Bicycle Delay [s]	12.02	12.02	22.42	24.04
l_b,int, Bicycle LOS Score for Intersection	1.713	1.675	2.026	2.187
Bicycle LOS	A	A	B	B

Sequence

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

Intersection Level Of Service Report
Intersection 2: N Larch Ave/W Foothill Blve

Control Type:	Two-way stop	Delay (sec / veh):	57.1
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.066

Intersection Setup

Name	North Larch Avenue			North Larch Avenue			West Foothill Boulevard			West Foothill Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	125.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	North Larch Avenue			North Larch Avenue			West Foothill Boulevard			West Foothill Boulevard		
Base Volume Input [veh/h]	39	2	23	5	0	17	24	780	41	11	633	13
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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	4	4	0	0	4	10	11	0	9	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	45	6	24	5	4	28	36	812	52	11	659	14
Peak Hour Factor	0.9640	0.9640	0.9640	0.9640	0.9640	0.9640	0.9640	0.9640	0.9640	0.9640	0.9640	0.9640
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]	12	2	6	1	1	7	9	211	13	3	171	4
Total Analysis Volume [veh/h]	47	6	25	5	4	29	37	842	54	11	684	15
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	2	2	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.30	0.07	0.05	0.03	0.04	0.05	0.04	0.01	0.00	0.02	0.01	0.00
d_M, Delay for Movement [s/veh]	40.37	57.07	25.24	26.24	46.62	13.03	9.14	0.00	0.00	13.28	0.00	0.00
Movement LOS	E	F	D	D	E	B	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	1.86	1.86	1.86	0.42	0.42	0.42	0.13	0.00	0.00	0.08	0.00	0.00
95th-Percentile Queue Length [ft/ln]	46.46	46.46	46.46	10.41	10.41	10.41	3.19	0.00	0.00	1.90	0.00	0.00
d_A, Approach Delay [s/veh]	36.80			18.30			0.36			0.21		
Approach LOS	E			C			A			A		
d_I, Intersection Delay [s/veh]	2.30											
Intersection LOS	F											

OPENING YEAR PLUS PROJECT
TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 1: N Spruce Ave/W Foothill Blvd

Control Type:	Signalized	Delay (sec / veh):	25.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.288

Intersection Setup

Name	North Spruce Avenue			North Spruce Avenue			West Foothill Boulevard			West Foothill Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	145.00	100.00	110.00
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]	25.00			25.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	North Spruce Avenue			North Spruce Avenue			West Foothill Boulevard			West Foothill Boulevard		
Base Volume Input [veh/h]	27	9	28	42	4	27	3	365	18	9	395	11
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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404
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	15	0	19	8	102	0	0	98	5
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]	28	9	29	59	4	47	11	482	19	9	509	16
Peak Hour Factor	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160
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	2	8	16	1	13	3	132	5	2	139	4
Total Analysis Volume [veh/h]	31	10	32	64	4	51	12	526	21	10	556	17
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 Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	0	0	10	0	5	10	0	5	10	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	33	0	0	33	0	9	18	0	9	18	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	7	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		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	C	C	L	C	C	L	C	R
C, Cycle Length [s]	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
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	44	44	1	13	13	1	13	13
g / C, Green / Cycle	0.63	0.63	0.02	0.19	0.19	0.01	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.05	0.08	0.01	0.10	0.10	0.01	0.15	0.01
s, saturation flow rate [veh/h]	1552	1511	1810	3618	1863	1810	3618	1615
c, Capacity [veh/h]	1045	1025	30	682	351	26	674	301
d1, Uniform Delay [s]	5.12	5.26	34.13	25.64	25.66	34.25	27.43	23.46
k, delay calibration	0.50	0.50	0.11	0.11	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
d2, Incremental Delay [s]	0.13	0.23	8.34	0.64	1.25	9.06	2.63	0.08
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	0.07	0.12	0.40	0.53	0.53	0.38	0.82	0.06
d, Delay for Lane Group [s/veh]	5.25	5.49	42.47	26.27	26.91	43.31	30.06	23.54
Lane Group LOS	A	A	D	C	C	D	C	C
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.39	0.65	0.26	2.46	2.61	0.22	4.20	0.21
50th-Percentile Queue Length [ft/ln]	9.73	16.37	6.38	61.45	65.30	5.51	104.98	5.33
95th-Percentile Queue Length [veh/ln]	0.70	1.18	0.46	4.42	4.70	0.40	7.56	0.38
95th-Percentile Queue Length [ft/ln]	17.51	29.46	11.48	110.61	117.55	9.92	188.96	9.59

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	5.25	5.25	5.25	5.49	5.49	5.49	42.47	26.47	26.91	43.31	30.06	23.54
Movement LOS	A	A	A	A	A	A	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	5.25			5.49			26.83			30.10		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	25.18											
Intersection LOS	C											
Intersection V/C	0.288											

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]	26.61	26.61	26.61	26.61
l_p,int, Pedestrian LOS Score for Intersectio	1.748	1.768	2.905	2.954
Crosswalk LOS	A	A	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	828	828	400	400
d_b, Bicycle Delay [s]	12.03	12.03	22.43	22.43
l_b,int, Bicycle LOS Score for Intersection	1.680	1.756	1.867	2.041
Bicycle LOS	A	A	A	B

Sequence

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

Intersection Level Of Service Report
Intersection 2: N Larch Ave/W Foothill Blve

Control Type:	Two-way stop	Delay (sec / veh):	31.3
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.031

Intersection Setup

Name	North Larch Avenue			North Larch Avenue			West Foothill Boulevard			West Foothill Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	125.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	North Larch Avenue			North Larch Avenue			West Foothill Boulevard			West Foothill Boulevard		
Base Volume Input [veh/h]	19	4	7	5	1	25	12	378	21	15	480	1
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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	6	6	9	82	5	13	11	19	3	4	51	62
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	26	10	16	87	6	39	23	412	25	20	550	63
Peak Hour Factor	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530
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]	7	3	4	23	2	10	6	108	7	5	144	17
Total Analysis Volume [veh/h]	27	10	17	91	6	41	24	432	26	21	577	66
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	2	2	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.05	0.03	0.33	0.03	0.07	0.03	0.00	0.00	0.03	0.01	0.00
d_M, Delay for Movement [s/veh]	19.22	27.08	12.73	25.85	31.33	18.85	8.88	0.00	0.00	10.18	0.00	0.00
Movement LOS	C	D	B	D	D	C	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	0.60	0.60	0.60	2.04	2.04	2.04	0.08	0.00	0.00	0.09	0.00	0.00
95th-Percentile Queue Length [ft/ln]	15.08	15.08	15.08	50.91	50.91	50.91	1.94	0.00	0.00	2.26	0.00	0.00
d_A, Approach Delay [s/veh]	18.63			24.01			0.44			0.32		
Approach LOS	C			C			A			A		
d_I, Intersection Delay [s/veh]	3.55											
Intersection LOS	D											

Intersection Level Of Service Report
Intersection 3: N Spruce Ave/Project Access

Control Type:	Two-way stop	Delay (sec / veh):	8.7
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.022

Intersection Setup

Name	North Spruce Avenue		North Spruce Avenue		Project Access	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		25.00		15.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	North Spruce Avenue		North Spruce Avenue		Project Access	
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	6	7	1	12	22	3
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]	6	7	1	12	22	3
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	2	0	3	6	1
Total Analysis Volume [veh/h]	6	7	1	12	22	3
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	7.23	0.00	8.70	8.43
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.08	0.08
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.05	0.05	1.91	1.91
d_A, Approach Delay [s/veh]	0.00		0.56		8.67	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	4.39					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 1: N Spruce Ave/W Foothill Blvd

Control Type:	Signalized	Delay (sec / veh):	28.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.356

Intersection Setup

Name	North Spruce Avenue			North Spruce Avenue			West Foothill Boulevard			West Foothill Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	145.00	100.00	110.00
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]	25.00			25.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	North Spruce Avenue			North Spruce Avenue			West Foothill Boulevard			West Foothill Boulevard		
Base Volume Input [veh/h]	34	22	29	22	23	17	29	717	25	38	602	48
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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404
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	9	0	14	19	100	0	0	111	16
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]	35	23	30	32	24	32	49	846	26	40	737	66
Peak Hour Factor	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460
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	6	8	8	6	8	13	224	7	11	195	17
Total Analysis Volume [veh/h]	37	24	32	34	25	34	52	894	27	42	779	70
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]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	0	0	10	0	5	10	0	5	10	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	33	0	0	33	0	9	28	0	9	28	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	7	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		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	C	C	L	C	C	L	C	R
C, Cycle Length [s]	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	45	45	3	20	20	3	20	20
g / C, Green / Cycle	0.56	0.56	0.04	0.25	0.25	0.04	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.06	0.06	0.03	0.17	0.17	0.02	0.22	0.04
s, saturation flow rate [veh/h]	1581	1592	1810	3618	1872	1810	3618	1615
c, Capacity [veh/h]	945	949	80	916	474	71	898	401
d1, Uniform Delay [s]	8.27	8.27	37.66	26.83	26.84	37.83	28.84	23.65
k, delay calibration	0.50	0.50	0.11	0.11	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
d2, Incremental Delay [s]	0.21	0.21	8.54	0.83	1.60	7.54	2.71	0.20
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	0.10	0.10	0.65	0.66	0.66	0.59	0.87	0.17
d, Delay for Lane Group [s/veh]	8.47	8.47	46.21	27.66	28.44	45.37	31.54	23.86
Lane Group LOS	A	A	D	C	C	D	C	C
Critical Lane Group	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.76	0.76	1.13	4.77	5.05	0.91	6.74	0.97
50th-Percentile Queue Length [ft/ln]	18.97	18.97	28.14	119.21	126.13	22.63	168.58	24.18
95th-Percentile Queue Length [veh/ln]	1.37	1.37	2.03	8.35	8.73	1.63	11.00	1.74
95th-Percentile Queue Length [ft/ln]	34.15	34.15	50.65	208.74	218.23	40.73	275.04	43.52

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	8.47	8.47	8.47	8.47	8.47	8.47	46.21	27.91	28.44	45.37	31.54	23.86
Movement LOS	A	A	A	A	A	A	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	8.47			8.47			28.91			31.59		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	28.22											
Intersection LOS	C											
Intersection V/C	0.356											

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]	31.53	31.53	31.53	31.53
l_p,int, Pedestrian LOS Score for Intersectio	1.787	1.808	3.065	3.068
Crosswalk LOS	A	A	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	725	725	600	600
d_b, Bicycle Delay [s]	16.27	16.27	19.62	19.62
l_b,int, Bicycle LOS Score for Intersection	1.713	1.713	2.095	2.295
Bicycle LOS	A	A	B	B

Sequence

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

Intersection Level Of Service Report
Intersection 2: N Larch Ave/W Foothill Blve

Control Type:	Two-way stop	Delay (sec / veh):	83.8
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.055

Intersection Setup

Name	North Larch Avenue			North Larch Avenue			West Foothill Boulevard			West Foothill Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	125.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	North Larch Avenue			North Larch Avenue			West Foothill Boulevard			West Foothill Boulevard		
Base Volume Input [veh/h]	39	2	23	5	0	17	24	780	41	11	633	13
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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	4	4	7	69	4	10	11	43	9	11	56	58
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	45	6	31	74	4	28	36	855	52	22	715	72
Peak Hour Factor	0.9640	0.9640	0.9640	0.9640	0.9640	0.9640	0.9640	0.9640	0.9640	0.9640	0.9640	0.9640
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]	12	2	8	19	1	7	9	222	13	6	185	19
Total Analysis Volume [veh/h]	47	6	32	77	4	29	37	887	54	23	742	75
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	2	2	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.35	0.09	0.07	0.52	0.06	0.05	0.05	0.01	0.00	0.05	0.01	0.00
d_M, Delay for Movement [s/veh]	52.20	78.45	33.06	58.37	83.79	40.87	9.60	0.00	0.00	13.98	0.00	0.00
Movement LOS	F	F	D	F	F	E	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	2.49	2.49	2.49	3.51	3.51	3.51	0.14	0.00	0.00	0.17	0.00	0.00
95th-Percentile Queue Length [ft/ln]	62.32	62.32	62.32	87.87	87.87	87.87	3.54	0.00	0.00	4.29	0.00	0.00
d_A, Approach Delay [s/veh]	46.85			54.68			0.36			0.38		
Approach LOS	E			F			A			A		
d_I, Intersection Delay [s/veh]	5.30											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 3: N Spruce Ave/Project Access

Control Type:	Two-way stop	Delay (sec / veh):	8.7
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.014

Intersection Setup

Name	North Spruce Avenue		North Spruce Avenue		Project Access	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		25.00		15.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	North Spruce Avenue		North Spruce Avenue		Project Access	
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	12	23	3	9	14	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]	12	23	3	9	14	2
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	6	1	2	4	1
Total Analysis Volume [veh/h]	12	23	3	9	14	2
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	7.27	0.00	8.75	8.46
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.01	0.01	0.05	0.05
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.14	0.14	1.24	1.24
d_A, Approach Delay [s/veh]	0.00		1.82		8.71	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	2.56					
Intersection LOS	A					

OPENING YEAR PLUS PROJECT
PLUS SIGNALIZATION OF LARCH & FOOTHILL
TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 2: N Larch Ave/W Foothill Blve

Control Type:	Signalized	Delay (sec / veh):	9.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.287

Intersection Setup

Name	North Larch Avenue			North Larch Avenue			West Foothill Boulevard			West Foothill Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	125.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	North Larch Avenue			North Larch Avenue			West Foothill Boulevard			West Foothill Boulevard		
Base Volume Input [veh/h]	19	4	7	5	1	25	12	378	21	15	480	1
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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	6	6	9	82	5	13	11	19	3	4	51	62
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]	26	10	16	87	6	39	23	412	25	20	550	63
Peak Hour Factor	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530
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]	7	3	4	23	2	10	6	108	7	5	144	17
Total Analysis Volume [veh/h]	27	10	17	91	6	41	24	432	26	21	577	66
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	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	12.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	0	0	10	0	5	10	0	5	10	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	14	0	0	14	0	10	19	0	27	36	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	7	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		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	C	C	L	C	C	L	C	R
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	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	9	2	37	37	2	37	37
g / C, Green / Cycle	0.15	0.15	0.03	0.62	0.62	0.03	0.62	0.62
(v / s)_i Volume / Saturation Flow Rate	0.04	0.10	0.01	0.09	0.09	0.01	0.18	0.05
s, saturation flow rate [veh/h]	1535	1452	1629	3256	1661	1629	3256	1454
c, Capacity [veh/h]	322	319	48	2026	1034	44	2016	900
d1, Uniform Delay [s]	22.40	23.67	28.75	4.73	4.74	28.86	5.30	4.57
k, delay calibration	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
d2, Incremental Delay [s]	0.24	0.92	7.69	0.16	0.31	8.01	0.36	0.16
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	0.43	0.50	0.15	0.15	0.48	0.29	0.07
d, Delay for Lane Group [s/veh]	22.64	24.60	36.44	4.89	5.05	36.87	5.66	4.73
Lane Group LOS	C	C	D	A	A	D	A	A
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.66	1.82	0.41	0.46	0.52	0.36	0.99	0.21
50th-Percentile Queue Length [ft/ln]	16.62	45.48	10.14	11.44	12.93	9.06	24.72	5.37
95th-Percentile Queue Length [veh/ln]	1.20	3.27	0.73	0.82	0.93	0.65	1.78	0.39
95th-Percentile Queue Length [ft/ln]	29.92	81.87	18.26	20.59	23.27	16.30	44.50	9.67

Movement, Approach, & Intersection Results

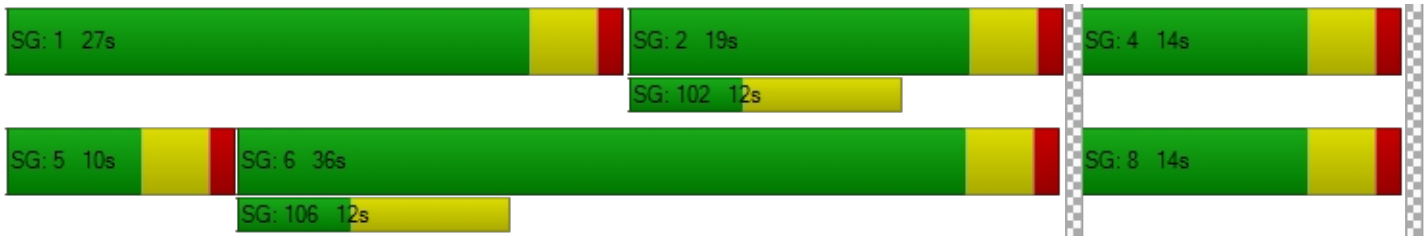
d_M, Delay for Movement [s/veh]	22.64	22.64	22.64	24.60	24.60	24.60	36.44	4.94	5.05	36.87	5.66	4.73
Movement LOS	C	C	C	C	C	C	D	A	A	D	A	A
d_A, Approach Delay [s/veh]	22.64			24.60			6.51			6.55		
Approach LOS	C			C			A			A		
d_I, Intersection Delay [s/veh]	9.05											
Intersection LOS	A											
Intersection V/C	0.287											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0	0.0
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]	21.72	21.72	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	1.739	1.792	0.000	0.000
Crosswalk LOS	A	A	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	333	333	499	1065
d_b, Bicycle Delay [s]	20.87	20.87	16.91	6.56
l_b,int, Bicycle LOS Score for Intersection	1.649	1.787	1.825	2.107
Bicycle LOS	A	A	A	B

Sequence

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



Intersection Level Of Service Report
Intersection 2: N Larch Ave/W Foothill Blve

Control Type:	Signalized	Delay (sec / veh):	8.1
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.405

Intersection Setup

Name	North Larch Avenue			North Larch Avenue			West Foothill Boulevard			West Foothill Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	125.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	North Larch Avenue			North Larch Avenue			West Foothill Boulevard			West Foothill Boulevard		
Base Volume Input [veh/h]	39	2	23	5	0	17	24	780	41	11	633	13
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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	4	4	7	69	4	10	11	43	9	11	56	58
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]	45	6	31	74	4	28	36	855	52	22	715	72
Peak Hour Factor	0.9640	0.9640	0.9640	0.9640	0.9640	0.9640	0.9640	0.9640	0.9640	0.9640	0.9640	0.9640
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]	12	2	8	19	1	7	9	222	13	6	185	19
Total Analysis Volume [veh/h]	47	6	32	77	4	29	37	887	54	23	742	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	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	0	0	10	0	5	10	0	5	10	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	14	0	0	14	0	9	37	0	9	37	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	7	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		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	C	C	L	C	C	L	C	R
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	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	8	8	2	38	38	44	37	37
g / C, Green / Cycle	0.14	0.14	0.04	0.63	0.63	0.73	0.62	0.62
(v / s)_i Volume / Saturation Flow Rate	0.06	0.07	0.02	0.19	0.19	0.04	0.23	0.05
s, saturation flow rate [veh/h]	1539	1492	1629	3256	1660	637	3256	1454
c, Capacity [veh/h]	311	313	66	2051	1046	583	2012	898
d1, Uniform Delay [s]	23.38	23.74	28.33	5.09	5.10	2.60	5.68	4.63
k, delay calibration	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
d2, Incremental Delay [s]	0.47	0.67	7.23	0.38	0.75	0.03	0.52	0.18
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	0.27	0.35	0.56	0.30	0.30	0.04	0.37	0.08
d, Delay for Lane Group [s/veh]	23.85	24.41	35.57	5.48	5.85	2.62	6.20	4.81
Lane Group LOS	C	C	D	A	A	A	A	A
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.09	1.43	0.60	1.02	1.15	0.02	1.37	0.25
50th-Percentile Queue Length [ft/ln]	27.20	35.87	14.90	25.39	28.67	0.57	34.32	6.19
95th-Percentile Queue Length [veh/ln]	1.96	2.58	1.07	1.83	2.06	0.04	2.47	0.45
95th-Percentile Queue Length [ft/ln]	48.96	64.56	26.82	45.69	51.60	1.02	61.77	11.14

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	23.85	23.85	23.85	24.41	24.41	24.41	35.57	5.59	5.85	2.62	6.20	4.81
Movement LOS	C	C	C	C	C	C	D	A	A	A	A	A
d_A, Approach Delay [s/veh]	23.85			24.41			6.74			5.98		
Approach LOS	C			C			A			A		
d_I, Intersection Delay [s/veh]	8.11											
Intersection LOS	A											
Intersection V/C	0.405											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0	0.0
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]	21.72	21.72	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	1.785	1.788	0.000	0.000
Crosswalk LOS	A	A	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	333	333	1098	1098
d_b, Bicycle Delay [s]	20.87	20.87	6.10	6.10
l_b,int, Bicycle LOS Score for Intersection	1.700	1.741	2.098	2.253
Bicycle LOS	A	A	B	B

Sequence

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

OPENING YEAR PLUS PROJECT
PLUS PROTECTED LEFT TURNS AT SPRUCE & FOOTHILL
TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 1: N Spruce Ave/W Foothill Blvd

Control Type:	Signalized	Delay (sec / veh):	23.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.276

Intersection Setup

Name	North Spruce Avenue			North Spruce Avenue			West Foothill Boulevard			West Foothill Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	145.00	100.00	110.00
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]	25.00			25.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	North Spruce Avenue			North Spruce Avenue			West Foothill Boulevard			West Foothill Boulevard		
Base Volume Input [veh/h]	27	9	28	42	4	27	3	365	18	9	395	11
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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404
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	15	0	19	8	102	0	0	98	5
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]	28	9	29	59	4	47	11	482	19	9	509	16
Peak Hour Factor	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160
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	2	8	16	1	13	3	132	5	2	139	4
Total Analysis Volume [veh/h]	31	10	32	64	4	51	12	526	21	10	556	17
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 Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	33	0	9	33	0	9	19	0	19	29	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	7	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	L	C	L	C	C	L	C	R
C, Cycle Length [s]	60	60	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	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	28	3	29	1	12	12	1	12	12
g / C, Green / Cycle	0.03	0.46	0.06	0.48	0.02	0.20	0.20	0.01	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.02	0.03	0.04	0.03	0.01	0.10	0.10	0.01	0.15	0.01
s, saturation flow rate [veh/h]	1810	1675	1810	1633	1810	3618	1863	1810	3618	1615
c, Capacity [veh/h]	63	773	101	788	29	733	377	25	724	323
d1, Uniform Delay [s]	28.50	8.95	27.79	8.34	29.30	21.24	21.25	29.40	22.73	19.44
k, delay calibration	0.11	0.50	0.11	0.50	0.11	0.11	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
d2, Incremental Delay [s]	5.77	0.13	6.35	0.17	8.77	0.51	1.01	9.76	1.74	0.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.49	0.05	0.63	0.07	0.41	0.49	0.50	0.40	0.77	0.05
d, Delay for Lane Group [s/veh]	34.26	9.08	34.14	8.51	38.07	21.75	22.26	39.17	24.47	19.51
Lane Group LOS	C	A	C	A	D	C	C	D	C	B
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.53	0.30	1.05	0.38	0.22	1.96	2.08	0.20	3.32	0.17
50th-Percentile Queue Length [ft/ln]	13.14	7.51	26.20	9.41	5.61	48.92	52.09	4.90	82.92	4.26
95th-Percentile Queue Length [veh/ln]	0.95	0.54	1.89	0.68	0.40	3.52	3.75	0.35	5.97	0.31
95th-Percentile Queue Length [ft/ln]	23.66	13.51	47.17	16.93	10.10	88.06	93.76	8.81	149.26	7.66

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	34.26	9.08	9.08	34.14	8.51	8.51	38.07	21.91	22.26	39.17	24.47	19.51
Movement LOS	C	A	A	C	A	A	D	C	C	D	C	B
d_A, Approach Delay [s/veh]	19.77			22.29			22.27			24.58		
Approach LOS	B			C			C			C		
d_I, Intersection Delay [s/veh]	23.14											
Intersection LOS	C											
Intersection V/C	0.276											

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]	21.71	21.71	21.71	21.71
l_p,int, Pedestrian LOS Score for Intersectio	1.950	1.964	2.853	2.854
Crosswalk LOS	A	A	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	965	965	499	832
d_b, Bicycle Delay [s]	8.04	8.04	16.91	10.24
l_b,int, Bicycle LOS Score for Intersection	1.680	1.756	1.867	2.041
Bicycle LOS	A	A	A	B

Sequence

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

Intersection Level Of Service Report
Intersection 1: N Spruce Ave/W Foothill Blvd

Control Type:	Signalized	Delay (sec / veh):	25.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.360

Intersection Setup

Name	North Spruce Avenue			North Spruce Avenue			West Foothill Boulevard			West Foothill Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	145.00	100.00	110.00
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]	25.00			25.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	North Spruce Avenue			North Spruce Avenue			West Foothill Boulevard			West Foothill Boulevard		
Base Volume Input [veh/h]	34	22	29	22	23	17	29	717	25	38	602	48
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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404
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	9	0	14	19	100	0	0	111	16
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]	35	23	30	32	24	32	49	846	26	40	737	66
Peak Hour Factor	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460
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	6	8	8	6	8	13	224	7	11	195	17
Total Analysis Volume [veh/h]	37	24	32	34	25	34	52	894	27	42	779	70
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 Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	33	0	9	33	0	9	34	0	14	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	7	0	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	L	C	L	C	C	L	C	R
C, Cycle Length [s]	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
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	30	2	30	3	19	19	3	18	18
g / C, Green / Cycle	0.04	0.43	0.04	0.43	0.05	0.27	0.27	0.04	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.02	0.03	0.02	0.03	0.03	0.17	0.17	0.02	0.22	0.04
s, saturation flow rate [veh/h]	1810	1726	1810	1725	1810	3618	1872	1810	3618	1615
c, Capacity [veh/h]	68	738	64	733	84	969	501	74	949	424
d1, Uniform Delay [s]	33.15	11.88	33.24	11.99	32.82	22.58	22.59	33.02	24.31	19.94
k, delay calibration	0.11	0.50	0.11	0.50	0.11	0.11	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
d2, Incremental Delay [s]	6.55	0.20	6.54	0.21	7.19	0.67	1.29	6.65	1.83	0.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.54	0.08	0.53	0.08	0.62	0.63	0.63	0.57	0.82	0.17
d, Delay for Lane Group [s/veh]	39.69	12.08	39.77	12.21	40.01	23.25	23.88	39.67	26.15	20.12
Lane Group LOS	D	B	D	B	D	C	C	D	C	C
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.73	0.53	0.68	0.56	0.96	3.90	4.13	0.78	5.49	0.80
50th-Percentile Queue Length [ft/ln]	18.29	13.27	16.89	14.08	23.97	97.60	103.36	19.42	137.27	19.88
95th-Percentile Queue Length [veh/ln]	1.32	0.96	1.22	1.01	1.73	7.03	7.44	1.40	9.33	1.43
95th-Percentile Queue Length [ft/ln]	32.92	23.88	30.40	25.34	43.15	175.68	186.05	34.96	233.34	35.78

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	39.69	12.08	12.08	39.77	12.21	12.21	40.01	23.45	23.88	39.67	26.15	20.12
Movement LOS	D	B	B	D	B	B	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	23.07			22.28			24.35			26.31		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	25.05											
Intersection LOS	C											
Intersection V/C	0.360											

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]	26.61	26.61	26.61	26.61
l_p,int, Pedestrian LOS Score for Intersectio	1.980	1.994	3.006	3.012
Crosswalk LOS	A	A	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	828	828	856	999
d_b, Bicycle Delay [s]	12.03	12.03	11.45	8.77
l_b,int, Bicycle LOS Score for Intersection	1.713	1.713	2.095	2.295
Bicycle LOS	A	A	B	B

Sequence

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

APPENDIX E

SIGNAL WARRANT ANALYSIS

PEAK HOUR VOLUME WARRANT
URBAN CONDITIONS

Peak Hour: AM

Scenario: OYCP

Major Street: West Foothill Boulevard

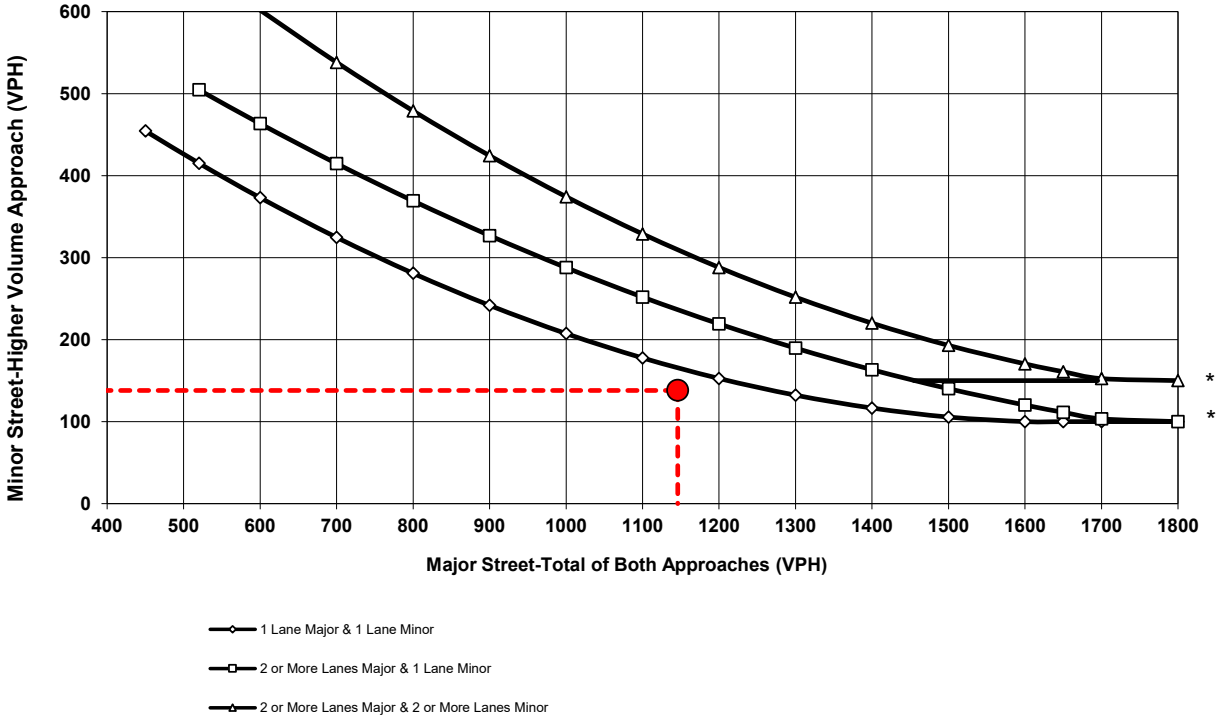
Minor Street: North Larch Avenue

Total of Both Approaches (VPH): 1146
Number of Approach Lanes: 3

Higher Volume Approach (VPH): 138
Number of Approach Lanes: 1

SIGNAL WARRANT NOT SATISFIED

Figure 4C-3. Peak Hour Warrant (Urban)



* Note:
150 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: MUTCD 2014 California Supplement Including Revision 3 (March 9, 2018)

OYCP Conditions
AM Peak Hour Volume Warrant
West Foothill Boulevard / North Larch Avenue

PEAK HOUR VOLUME WARRANT
URBAN CONDITIONS

Peak Hour: PM

Scenario: OYCP

Major Street: West Foothill Boulevard

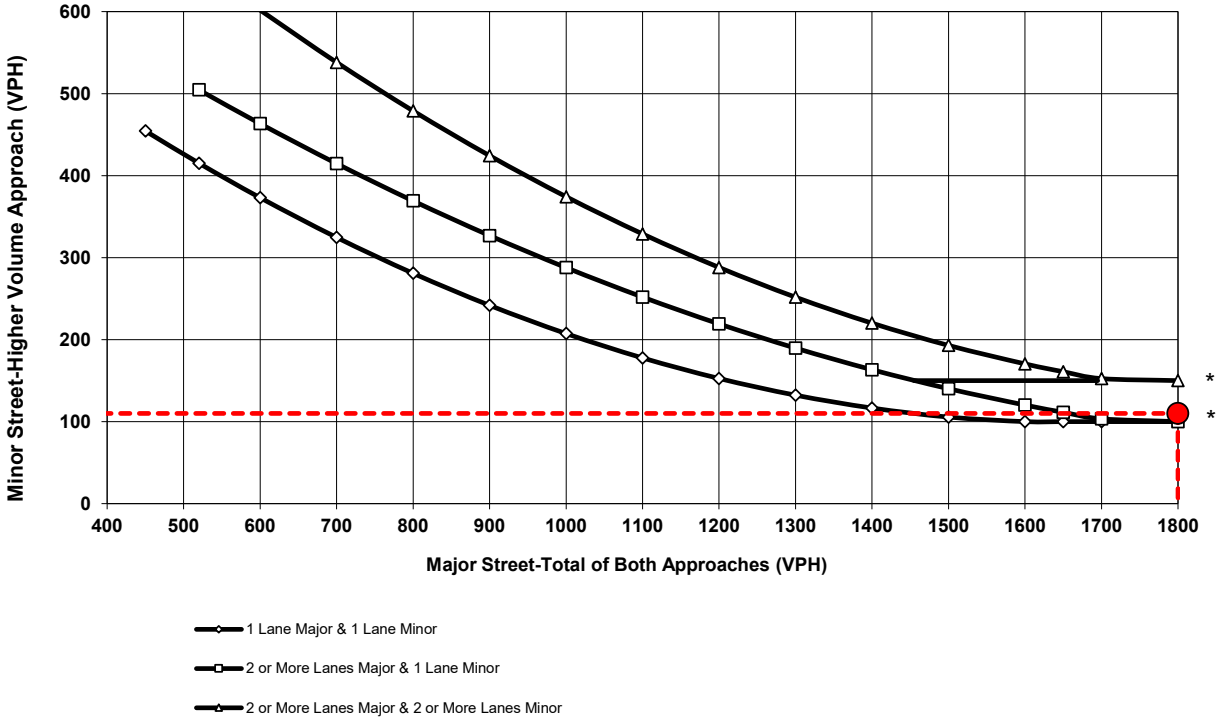
Minor Street: North Larch Avenue

Total of Both Approaches (VPH): 1808
Number of Approach Lanes: 3

Higher Volume Approach (VPH): 110
Number of Approach Lanes: 1

SIGNAL WARRANT SATISFIED

Figure 4C-3. Peak Hour Warrant (Urban)



* Note:
150 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: MUTCD 2014 California Supplement Including Revision 3 (March 9, 2018)

OYCP Conditions
PM Peak Hour Volume Warrant
West Foothill Boulevard / North Larch Avenue