APPENDIX H

Traffic Impact Analysis

MODERN PACIFIC HOMES AT BOSTICK LITTON PALM TRAFFIC IMPACT ANALYSIS

City of Colton

January 29, 2019

gandini

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

MODERN PACIFIC HOMES AT BOSTICK LITTON PALM TRAFFIC IMPACT ANALYSIS

City of Colton

January 29, 2019

prepared by

Tom Huang, TE
Giancarlo Ganddini, TE, PTP

GANDDINI GROUP, INC.
550 Parkcenter Drive, Suite 202
Santa Ana, California 92705
714.795.3100 | www.ganddini.com

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EXECUTIVE SUMMARY

The purpose of this Traffic Impact Analysis is to provide an assessment of traffic operations resulting from development of the proposed Modern Pacific Homes at Bostick Litton Palm (Tenative Tract Map No. 18233) project and to identify measures necessary to mitigate potentially significant traffic impacts. This report analyzes traffic impacts for the anticipated project opening year in Year 2020 and for Buildout Year (2040) traffic conditions.

Although this is a technical report, every effort has been made to write the report clearly and concisely. To assist the reader with technical terms related to transportation engineering, a glossary is provided in Appendix A.

PROJECT DESCRIPTION

The project site is located west of Bostick Avenue between Litton Avenue and Palm Avenue in the City of Colton. The site is currently vacant. The project is proposing to subdivide the overall 242.8-acre vacant site for development a 49.4-acre portion consisting of 88 single-family detached residential dwelling units. No development is proposed on the approximate 193-acre remainder of the site to the west and north at this time.

The project will have access to La Cadena Drive via the two existing roadways of Litton Avenue and Palm Avenue. The project will construct project roadway connections to Litton Avenue, Bostick Avenue, and Palm Avenue.

The proposed project is anticipated to be constructed and fully operational by year 2020.

EXISTING CONDITIONS

The study intersections currently operate within acceptable Levels of Service during the peak hours for Existing conditions, except for the following study intersections that are projected to operate at unacceptable Levels of Service (see Table 1):

- La Cadena Drive/Maryknoll Drive – #6 (PM peak hour)
- Iowa Avenue/I-215 Northbound Ramps – #9 (AM & PM peak hours)

A traffic signal appears to currently be warranted at the following study intersection based upon the California Manual on Uniform Traffic Control Devices (2014), peak hour volume warrant (Warrant 3), for Existing conditions:

- La Cadena Drive/I-215 Northbound On-Ramp – #7

PROJECT TRIPS

The proposed project is forecast to generate a total of approximately 831 daily vehicle trips, including 66 vehicle trips during the morning peak hour and 88 vehicle trips during the evening peak hour.

FORECAST TRAFFIC OPERATIONS

Existing Plus Project Conditions: The proposed project is forecast to result in significant traffic impacts at the following study intersections for Existing Plus Project conditions, without improvements (see Table 4):

- La Cadena Drive/Maryknoll Drive – #6 (PM peak hour)
- La Cadena Drive/I-215 Southbound On-Ramp – #7 (PM peak hour)
- Iowa Avenue/I-215 Northbound Ramps – #9 (AM & PM peak hours)

Opening Year (2020) Without Project: The study intersections are projected to operate within acceptable Levels of Service (D or better) during the peak hours for Opening Year (2020) Without Project conditions, except for the following study intersections that are projected to operate at unacceptable Levels of Service (see Table 5):

- La Cadena Drive/Maryknoll Drive – #6 (AM & PM peak hours)
- La Cadena Drive/I-215 Southbound On-Ramp – #7 (AM & PM peak hours)
- Iowa Avenue/I-215 Northbound Ramps – #9 (AM & PM peak hours)

Opening Year (2020) With Project: The proposed project is forecast to result in significant traffic impacts at the following study intersections for Opening Year (2020) With Project conditions, without improvements (see Table 6):

- La Cadena Drive/Maryknoll Drive – #6 (AM & PM peak hours)
- La Cadena Drive/I-215 Southbound On-Ramp – #7 (AM & PM peak hours)
- Iowa Avenue/I-215 Northbound Ramps – #9 (AM & PM peak hours)

Buildout Year (2040) Without Project: The study intersections are projected to operate within acceptable Levels of Service during the peak hours for Buildout Year (2040) Without Project conditions, except for the following study intersections that are projected to operate at unacceptable Levels of Service (see Table 7):

- La Cadena Drive/Iowa Avenue – #5 (PM peak hour)
- La Cadena Drive/Maryknoll Drive – #6 (AM & PM peak hours)
- La Cadena Drive/I-215 Southbound On-Ramp – #7 (AM & PM peak hours)
- Iowa Avenue/I-215 Southbound Off-Ramp – #8 (AM peak hour)
- Iowa Avenue/I-215 Northbound Ramps – #9 (AM & PM peak hours)

Buildout Year (2040) With Project: The proposed project is forecast to result in significant traffic impacts at the following study intersections for Buildout Year (2040) With Project conditions, without improvements (see Table 8):

- La Cadena Drive/Iowa Avenue – #5 (PM peak hour)
- La Cadena Drive/Maryknoll Drive – #6 (AM & PM peak hours)
- La Cadena Drive/I-215 Southbound On-Ramp – #7 (AM & PM peak hours)
- Iowa Avenue/I-215 Southbound Off-Ramp – #8 (AM peak hour)
- Iowa Avenue/I-215 Northbound Ramps – #9 (AM & PM peak hours)

A traffic signal is projected to be warranted at the following study intersection based upon the California Manual on Uniform Traffic Control Devices (2014) peak hour volume warrant (Warrant 3), for Existing Plus Project conditions:

- La Cadena Drive/I-215 Northbound On-Ramp – #7

An additional traffic signal is projected to be warranted at the following study intersections based upon the California Manual on Uniform Traffic Control Devices (2014), peak hour volume warrant (Warrant 3), for Opening Year (2020) Without Project conditions:

- La Cadena Drive/Maryknoll Drive – #6

MITIGATION MEASURES

The following off-site improvements are recommended to address the Level of Service deficiency, for Existing Plus Project conditions and Opening Year (2020) With Project conditions:

- La Cadena Drive/Maryknoll Drive – #6
  - Install traffic signal
  - Add northbound left turn lane
  - Add southbound left turn lane

- La Cadena Drive/I-215 Southbound On-Ramp – #7
  - Install traffic signal

- Iowa Avenue/I-215 Northbound Ramps – #9
  - Add westbound right turn overlap phasing

The following additional off-site improvements are recommended to address the Level of Service deficiency, for Buildout Year (2040) With Project conditions:

- La Cadena Drive/Iowa Avenue – #5
  - Add second northbound through lane

- Iowa Avenue/I-215 Southbound Off-Ramp – #8
  - Add second eastbound right turn lane

Since this is a degradation of traffic level of service for the already impacted intersections during the "without project conditions", the project applicant should pay its fair share of the estimated cost to construct the identified mitigation measure improvements, either through an applicable Development Impact Fee program or through payment of in lieu fees.

With implementation of the identified mitigation measure improvements, the proposed project is forecast to result in no significant traffic impacts at the study intersections for the scenarios analyzed.

1. INTRODUCTION

This section describes the purpose of this traffic impact analysis, project location, proposed development, and study area. Figure 1 shows the project location map and Figure 2 illustrates the project site plan.

PURPOSE AND OBJECTIVES

The purpose of this traffic impact analysis is to provide an assessment of traffic operations resulting from development of the proposed Modern Pacific Homes at Bostick Litton Palm (Tenative Tract Map No. 18233) project and to identify measures necessary to mitigate potentially significant traffic impacts. This report analyzes traffic impacts for the anticipated project opening year in 2020 and long-range Buildout Year 2040.

Although this is a technical traffic impact analysis, effort has been made to write the report clearly and concisely. A glossary of terms is provided in Appendix A to assist the reader with terms related to transportation engineering.

PROJECT DESCRIPTION

The project site is located west of Bostick Avenue between Litton Avenue and Palm Avenue in the City of Colton. The site is currently vacant. The project is proposing to subdivide the overall 242.8-acre vacant site for development a 49.4-acre portion consisting of 88 single-family detached residential dwelling units. No development is proposed on the approximate 193-acre remainder of the site to the west and north at this time.

The project will have access to La Cadena Drive via the two existing roadways of Litton Avenue and Palm Avenue. The project will construct project roadway connections to Litton Avenue, Bostick Avenue, and Palm Avenue.

The proposed project is anticipated to be constructed and fully operational by year 2020.

STUDY AREA

Based on the study intersections identified in the approved scoping agreement (Appendix B), the study area consists of the following study intersections within the City of Colton and State of California Department of Transportation (Caltrans) jurisdictions:

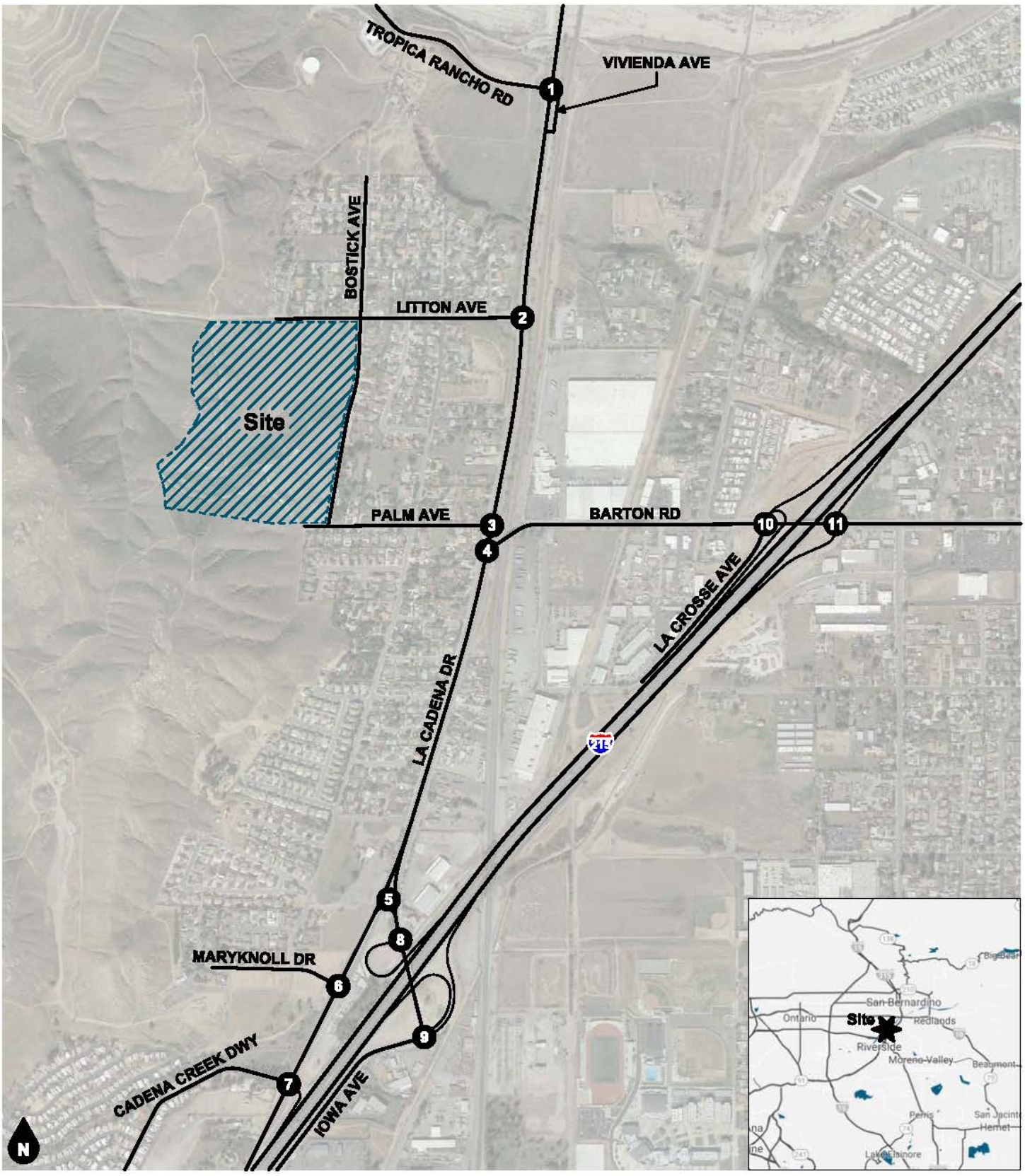
Study Intersections[1]	Jurisdiction
1. La Cadena Drive (NS) at Tropica Rancho Road (EW)	City of Colton
2. La Cadena Drive (NS) at Litton Avenue (EW)	City of Colton
3. La Cadena Drive (NS) at Palm Avenue (EW)	City of Colton
4. La Cadena Drive (NS) at Barton Road (EW)	City of Colton
5. La Cadena Drive (NS) at Iowa Avenue (EW)	City of Colton
6. La Cadena Drive (NS) at Maryknoll Drive (EW)	City of Colton
7. La Cadena Drive (NS) at I-215 Southbound On-Ramp (EW)	Caltrans
8. Iowa Avenue (NS) at I-215 Southbound Off-Ramp (EW)	Caltrans
9. Iowa Avenue (NS) at I-215 Northbound Ramps (EW)	Caltrans
10. I-215 Southbound Ramps (NS) at Barton Road (EW)	Caltrans
11. I-215 Northbound Ramps (NS) at Barton Road (EW)	Caltrans

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

ANALYSIS SCENARIOS

The following scenarios are analyzed during typical weekday morning and evening peak hour conditions:

- Existing Conditions
- Existing Plus Project Conditions
- Opening Year (2020) Without Project Conditions
- Opening Year (2020) With Project Conditions
- Buildout Year (2040) Without Project Conditions
- Buildout Year (2040) With Project Conditions



Legend

(#) Study Intersection

Figure 1
Project Location Map

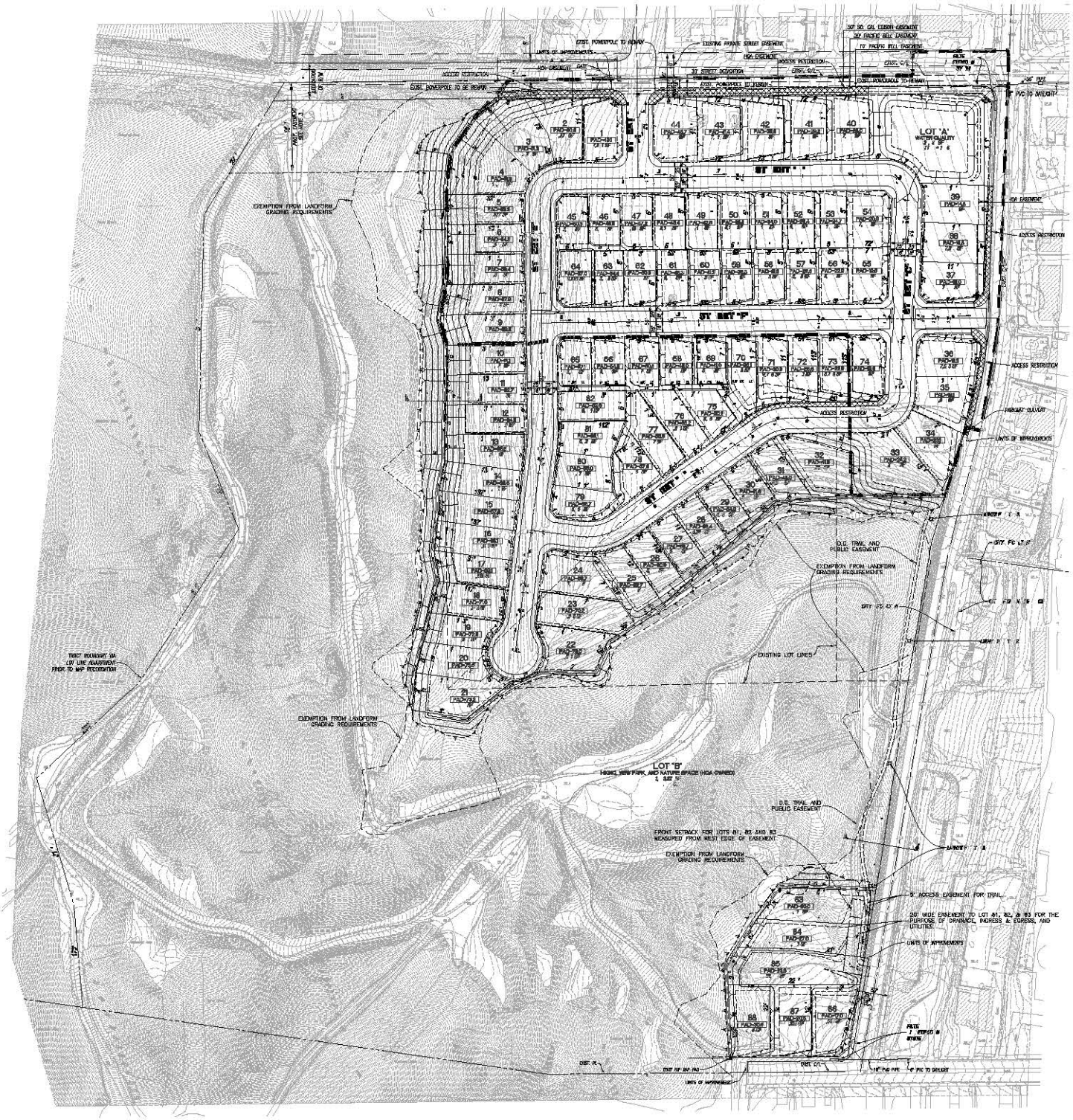


Figure 2
Site Plan

2. METHODOLOGY

This section discusses the analysis methodologies used to assess transportation facility performance as adopted by the respective jurisdictional agencies.

INTERSECTION DELAY METHODOLOGY

The technique used to assess the performance of intersections is known as the intersection delay methodology based on the procedures contained in the Highway Capacity Manual (Transportation Research Board, 6th Edition). The methodology considers the traffic volume and distribution of movements, traffic composition, geometric characteristics, and signalization details to calculate the average control delay per vehicle and corresponding Level of Service. Control delay is defined as the portion of delay attributed to the intersection traffic control (such as a traffic signal or stop sign) and includes initial deceleration, queue move-up time, stopped delay, and final acceleration delay. The intersection control delay is then correlated to Level of Service based on the following thresholds:

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

Source: Transportation Research Board, Highway Capacity Manual (6th Edition).

Level of Service is used to qualitatively describe the performance of a roadway facility, ranging from Level of Service A (free-flow conditions) to Level of Service F (extreme congestion and system failure). At intersections with traffic signal or all way stop control, Level of Service is determined by the average control delay for the overall intersection. At intersections with cross street stop control (i.e., one- or two-way stop control), Level of Service is determined by the average control delay for the worst individual movement (or movements sharing a single lane).

Intersection delay analysis was performed using the Vistro (Version 6.00-00) software. Saturation flow rates of 1,800 vehicles per hour of green for through and right turn lanes and 1,700 vehicles per lane for single left turn lanes, 1,600 vehicles per lane for dual left turn lanes, and 1,500 vehicles per lane for triple left turn lanes have been assumed for the capacity analysis. Measured peak hour factors have been applied for existing and near-term conditions. For General Plan Buildout (Year 2040), the peak hour factor has been adjusted to 0.95 to account for the effects of congestion on peak spreading in accordance with the County of San Bernardino Congestion Management Program.

PERFORMANCE STANDARDS

City of Colton. The City of Colton has established Level of Service D as the minimum acceptable Level of Service.

California Department of Transportation. As stated in the Guide for the Preparation of Traffic Impact Studies (State of California, 2002), "California Department of Transportation endeavors to maintain a target LOS [Level

of Service] at the transition between LOS "C" and LOS "D" on State highway facilities". The California Department of Transportation acknowledges this may not always be feasible and recommends consultation with the California Department of Transportation to determine the appropriate target Level of Service. For consistency with local requirements, this analysis defines Level of Service D as the minimum acceptable Level of Service for State Highway facilities.

THRESHOLDS OF SIGNIFICANCE

The identification of significant impacts is a requirement of the California Environmental Quality Act. The City of Colton General Plan and Circulation Element have been adopted in accordance with California Environmental Quality Act requirements, and any roadway improvements within the City of Colton that are consistent with these documents are not considered a significant impact, so long as the project contributes its "fair share" funding for improvements.

A traffic impact is considered significant if the project both: (i) contributes measurable traffic to and (ii) substantially and adversely changes the Level of Service at any off-site location projected to experience deficient operations (Level of Service E or F) under foreseeable cumulative conditions, where feasible improvements consistent with the City of Colton General Plan cannot be constructed.

3. EXISTING CONDITIONS

EXISTING ROADWAY SYSTEM

Figure 3 identifies the lane geometry and intersection traffic controls for Existing conditions based on a field survey of the study area. Regional access to the project area is provided by the Interstate 215 Freeway approximately 3,500 feet east of the project site. Key roadways providing local circulation include La Cadena Drive, Barton Road and Iowa Avenue.

It should be noted the reconfiguration of the I-215 Barton Road Interchange is currently under construction, and a roundabout will ultimately be constructed at the intersection of I-215 Southbound Ramps and La Crosse Avenue at Barton Road (Intersection #10). This analysis is based on the ultimate configuration of the I-215 Barton Road Interchange.

GENERAL PLAN CONTEXT

Figure 4 shows the City of Colton General Plan Circulation Element roadway classifications map. This figure shows the nature and extent of arterial and collector highways that are needed to adequately serve the ultimate development depicted by the Land Use Element of the General Plan. The City of Colton standard roadway cross-sections are illustrated on Figure 5.

TRANSIT SERVICE

Figure 6 shows Existing public transit facilities and routes in the project vicinity. As shown on Figure 6, the study area is currently served by the Omnitrans transit agency Route 325 along Barton Road.

BICYCLE FACILITIES

The City of Colton bike paths are illustrated on Figure 7.

EXISTING TRAFFIC VOLUMES

Figure 8 shows the Existing average daily traffic volumes. The Existing average daily traffic volumes have been factored from peak hour intersection turning movement volumes using the following formula for each intersection leg:

Evening Peak Hour (Approach Volume + Exit Volume) x 11.5[2] = Leg Volume.

The peak hour to daily volume factor was derived based on a comparison of the existing evening peak hour intersection turning movement volumes with sample 24-hour roadway segment volume counts collected in the study area. This is a conservative estimate and may over-estimate the average daily traffic volumes.

Existing peak hour volumes are based upon morning peak period and evening peak period intersection turning movement counts obtained in December 2018 during typical weekday conditions. The weekday morning peak period was counted between 7:00 AM and 9:00 AM, and the weekday evening peak period was counted between 4:00 PM and 6:00 PM. The actual peak hour within the peak period is the four consecutive 15 minute periods with the highest total volume when all movements are added together. Thus, the weekday evening peak hour at one intersection may be 4:45 PM to 5:45 PM if those four consecutive 15 minute periods have the highest combined volume. Intersection turning movement count worksheets are provided in Appendix C.

[2] Source: Approximate average evening peak hour K factor based on City of Colton 2014 Citywide Engineering and Traffic Survey.

Figure 9 and Figure 10 show the Existing morning peak hour and evening peak hour intersection turning movement volumes.

EXISTING LEVEL OF SERVICE

The intersection Levels of Service for Existing conditions have been calculated and are shown in Table 1. Existing intersection Level of Service worksheets are provided in Appendix D.

As shown in Table 1, the study intersections currently operate within acceptable Levels of Service during the peak hours for Existing conditions, except for the following study intersections that are projected to operate at unacceptable Levels of Service:

- La Cadena Drive/Maryknoll Drive – #6 (PM peak hour)
- Iowa Avenue/I-215 Northbound Ramps – #9 (AM & PM peak hours)

EXISTING TRAFFIC SIGNAL WARRANT ANALYSIS

A traffic signal appears to currently be warranted at the following study intersection based upon the California Manual on Uniform Traffic Control Devices (2014), peak hour volume warrant (Warrant 3), for Existing conditions:

- La Cadena Drive/I-215 Northbound On-Ramp – #7

Traffic signal warrant analysis worksheets are provided in Appendix E.

Table 1
Existing Intersection Levels of Service

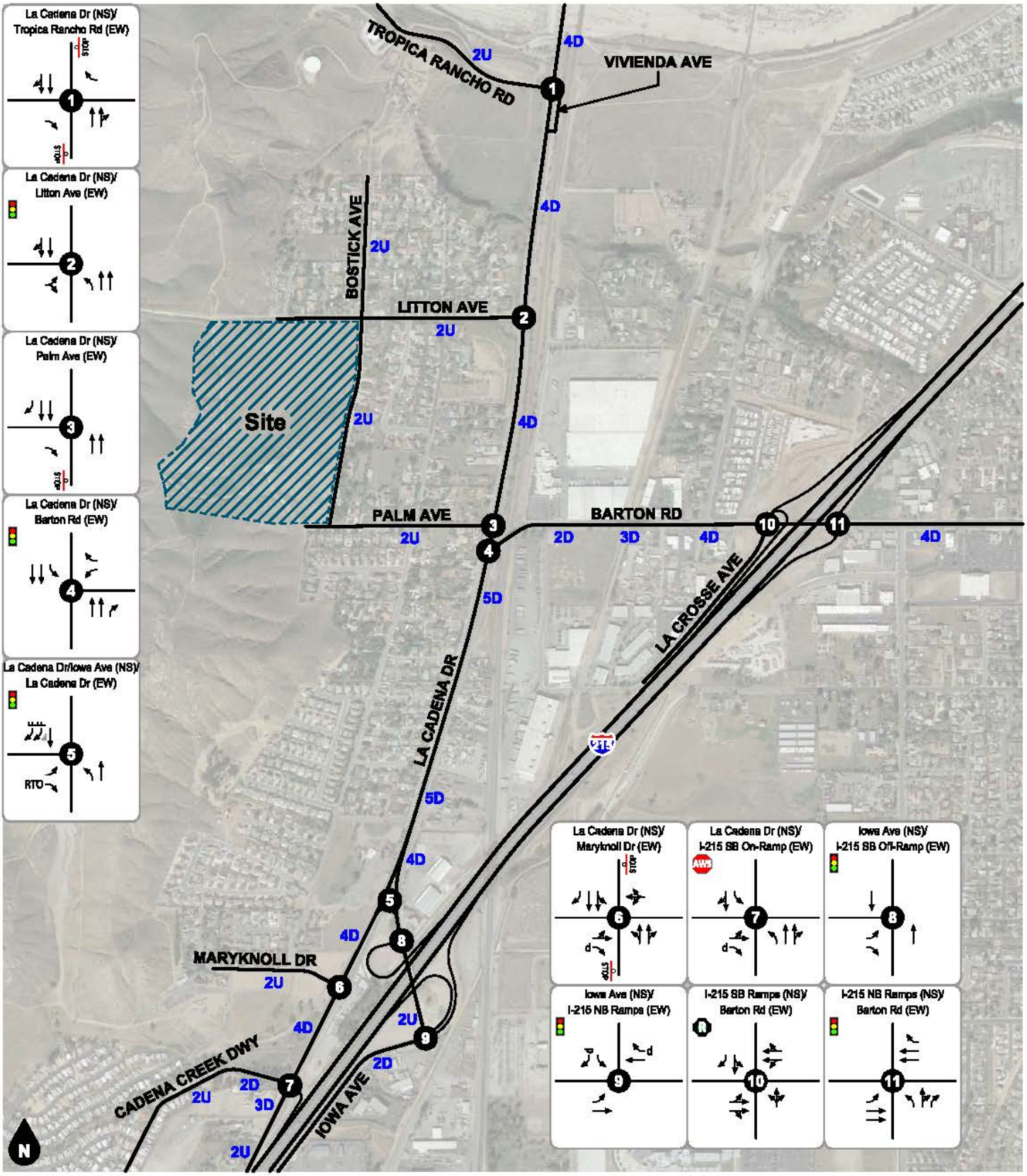
Study Intersection	Traffic Control[1]	AM Peak Hour		PM Peak Hour	
		Delay[2]	LOS[3]	Delay[2]	LOS[3]
1. La Cadena Dr at Tropica Rancho Rd	CSS	14.3	B	14.4	B
2. La Cadena Dr at Litton Ave	TS	7.1	A	5.5	A
3. La Cadena Dr at Palm Ave	CSS	14.7	B	14.9	B
4. La Cadena Dr at Barton Rd	TS	11.8	B	12.9	B
5. La Cadena Dr at Iowa Ave	TS	9.8	A	14.5	B
6. La Cadena Dr at Maryknoll Dr	CSS	30.0	D	41.2	E
7. La Cadena Dr at I-215 SB On-Ramp	AWS	29.8	D	34.1	D
8. Iowa Ave at I-215 SB Off-Ramp	TS	21.6	C	16.5	B
9. Iowa Ave at I-215 NB Ramps	TS	118.9	F	62.1	E
10. I-215 SB Ramps at Barton Rd	RBT	5.2	A	5.2	A
11. I-215 NB Ramps at Barton Rd	TS	11.9	B	12.6	B

Notes:

(1) TS = Traffic Signal; CSS = Cross Street Stop; AWS = All-Way Stop; RBT = Roundabout

(2) Delay is shown in seconds/vehicle. For intersections with traffic signal, all way stop control or roundabout, overall average intersection delay and LOS are shown. For intersections with cross street stop control, LOS is based on average delay of the worst individual lane (or movements sharing a lane).

(3) LOS = Level of Service



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- Traffic Signal
- All Way Stop
- Stop Sign
- #D #-Lane Divided Roadway
- #U #-Lane Undivided Roadway
- Existing Lane
- RTO Right Turn Overlap
- F Free Right Turn Lane
- d De Facto Right Turn Lane
- Roundabout

Figure 3
Existing Lane Geometry and Intersection Traffic Controls

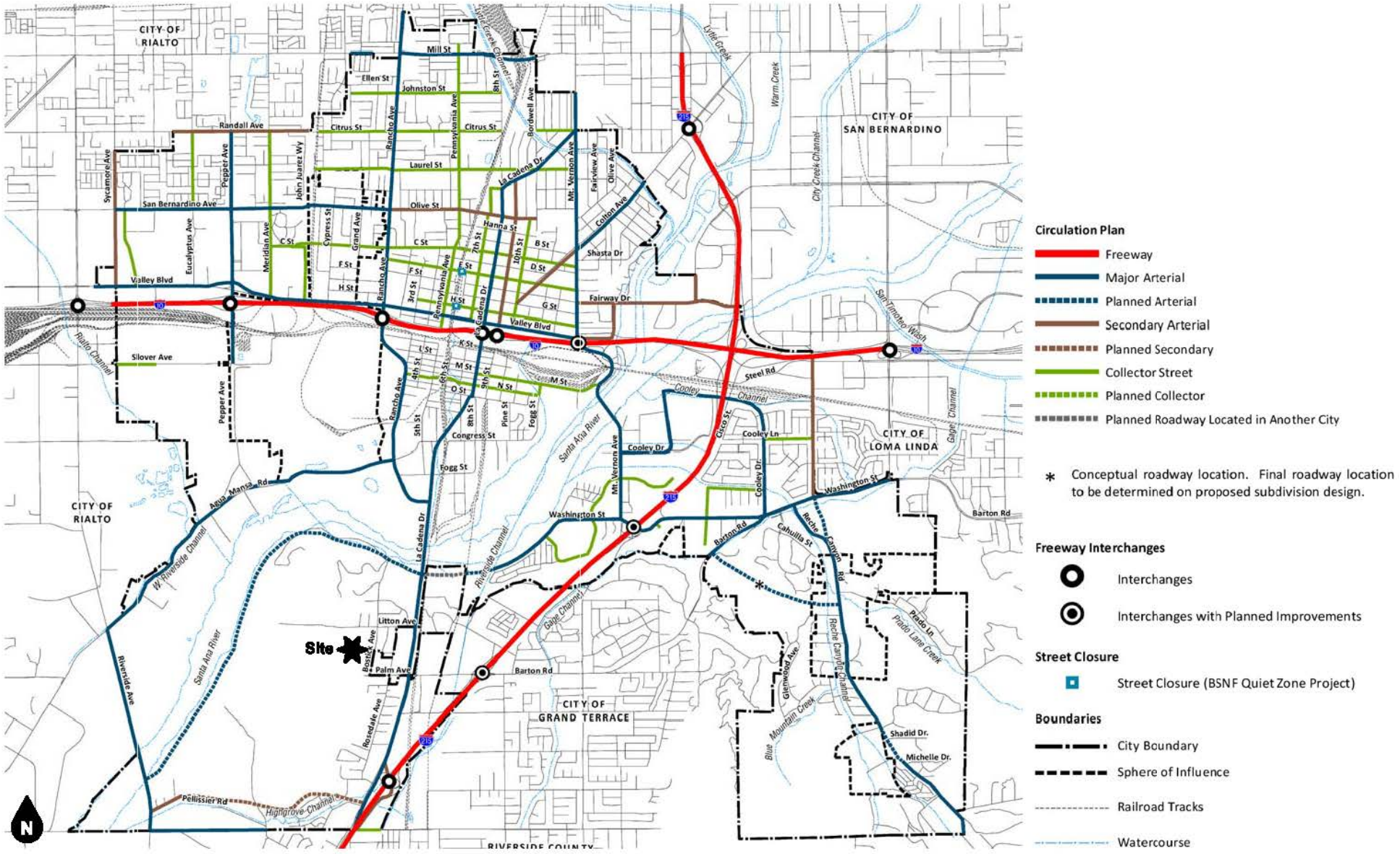


Figure 4
City of Colton General Plan Circulation Element

Source: City of Colton

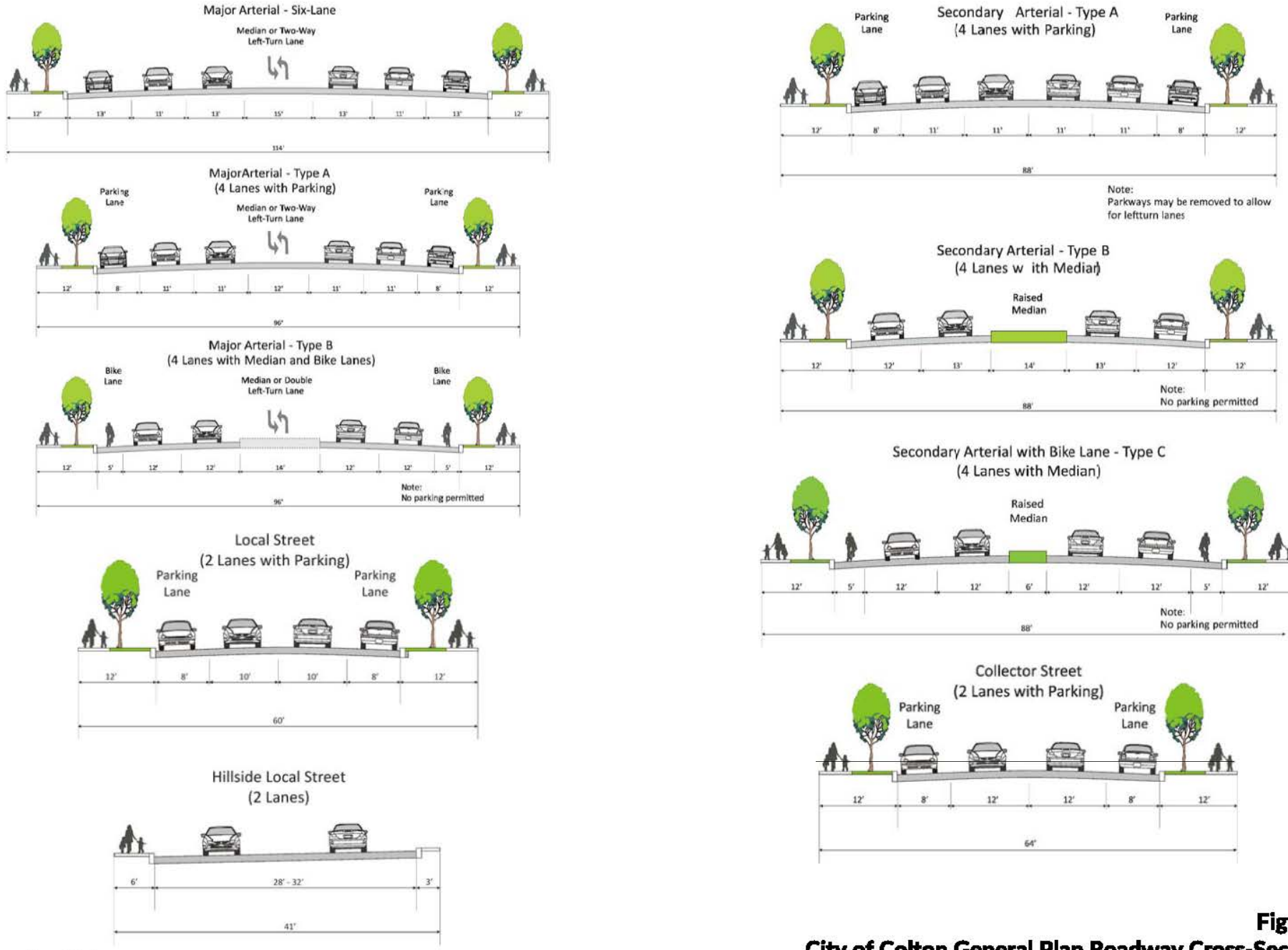
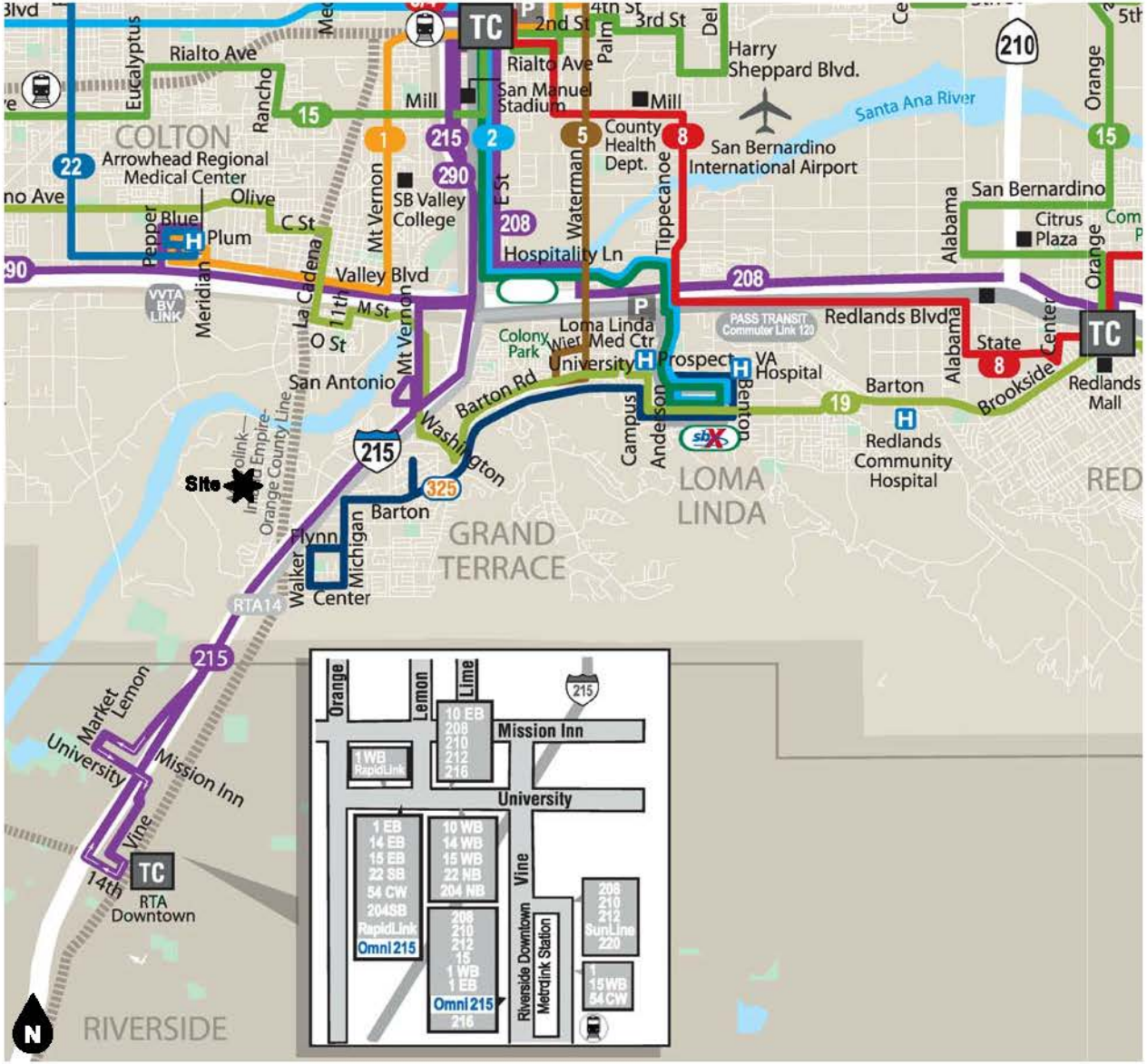


Figure 5
City of Colton General Plan Roadway Cross-Sections

Source: City of Colton



Omnitrans Routes

Route	Route Name
sbX	Palm/Kendall - CSUSB - VA Hospital
1	ARMC – San Bernardino Del Rosa
2	Cal St – E St – Loma Linda
3/4	Baseline – Highland – San Bdno
5	South Waterman – Del Rosa – Cal State
7	N San Bdno – Sierra Way – San Bdno
8	San Bdno – Mentone – Crafton Hills College
10	Fontana – Baseline – San Bernardino
11	San Bernardino – Muscoy – Cal State
14	Fontana – Foothill – San Bernardino
15	Fontana – San Bernardino/Highland – Redlands
19	Fontana – Colton – Redlands - Yucaipa
20	Fontana – Metrolink – Via Hemlock – Kaiser
22	North Rialto – Riverside Ave – ARMC
29	Bloomington – Valley Blvd – Kaiser
61	Fontana – Ontario Mills – ONT Airport - Pomona
66	Fontana – Foothill Blvd – Montclair
67	Chaffey College – Baseline – Fontana
80	ONT Airport - Vineyard Ave. – Chaffey College
81	Chino - Haven – Chaffey College
82	Rancho Cucamonga – Fortana – Sierra Lakes
83	Chino – Euclid Ave. – Upland
84	Chino - Mountain Ave. - Upland
85	Chino - Mortclair - Chaffey College
86	S. Ontario - Campus Ave. - San Antonio Hospital
88	Chino Hills - Ramona Ave. - Montclair
208	Yucaipa - Redlands - San Bernardino
215	Riverside - San Bernardino
290	San Bernardino - ARMC - Ontario Mills - Montclair
308/309/310	OmniGo Yucaipa
325	OmniGo Grand Terrace
365	OmniGo Chino/Chino Hills

Routes and schedules are subject to change without notice.

Source: Omnitrans

Figure 6
Existing Transit Routes

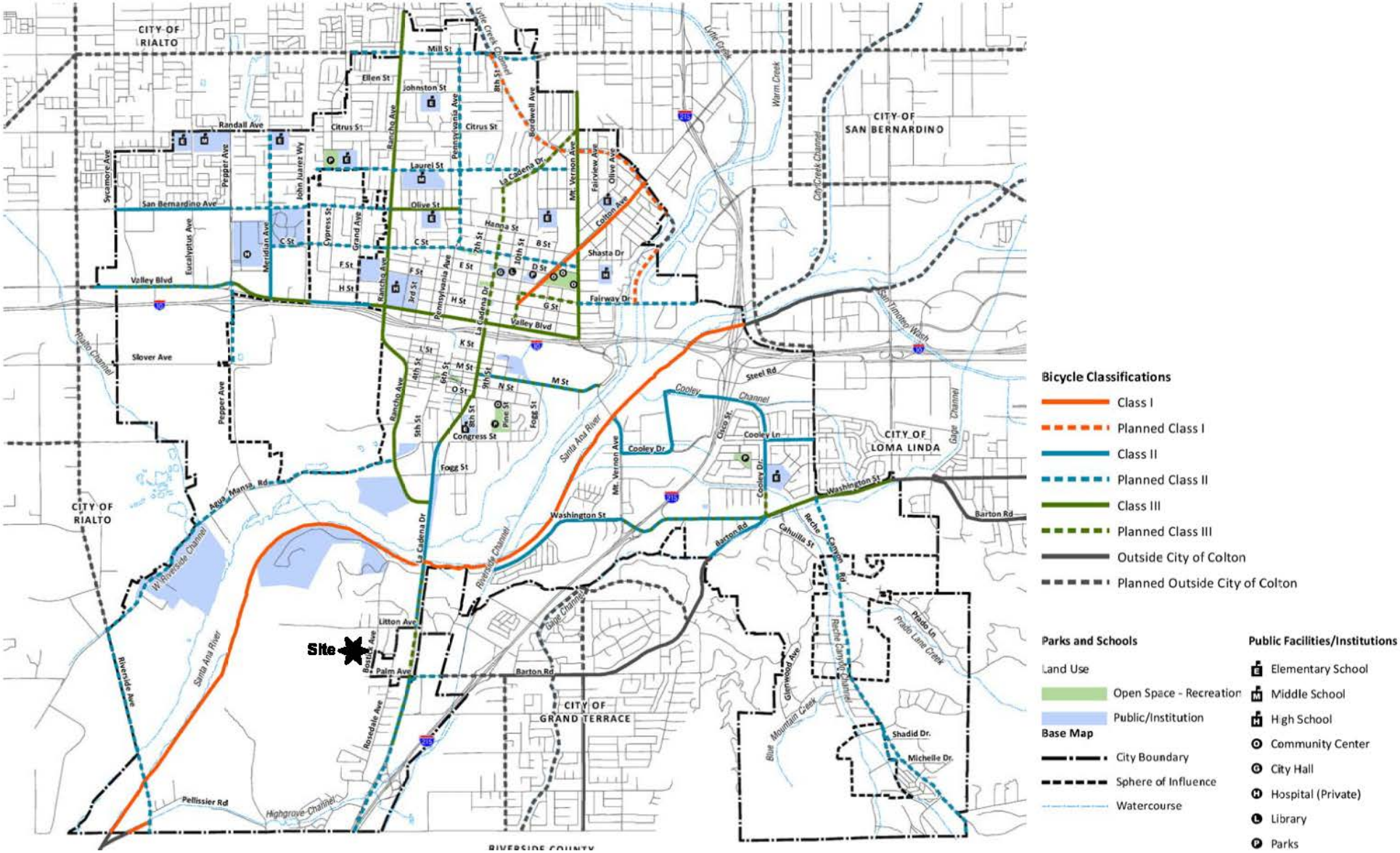
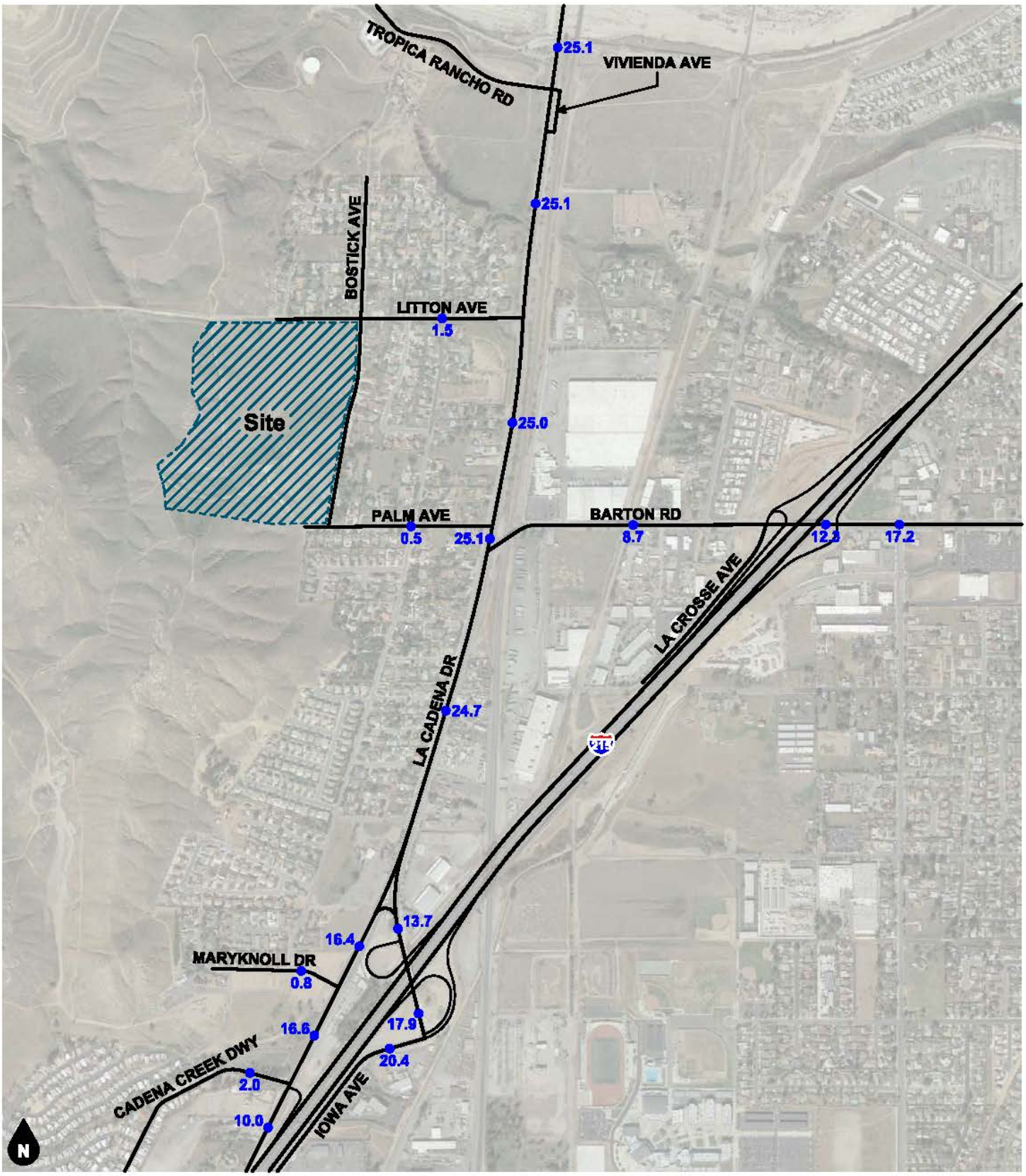


Figure 7
City of Colton General Plan Bike Routes

Source: City of Colton



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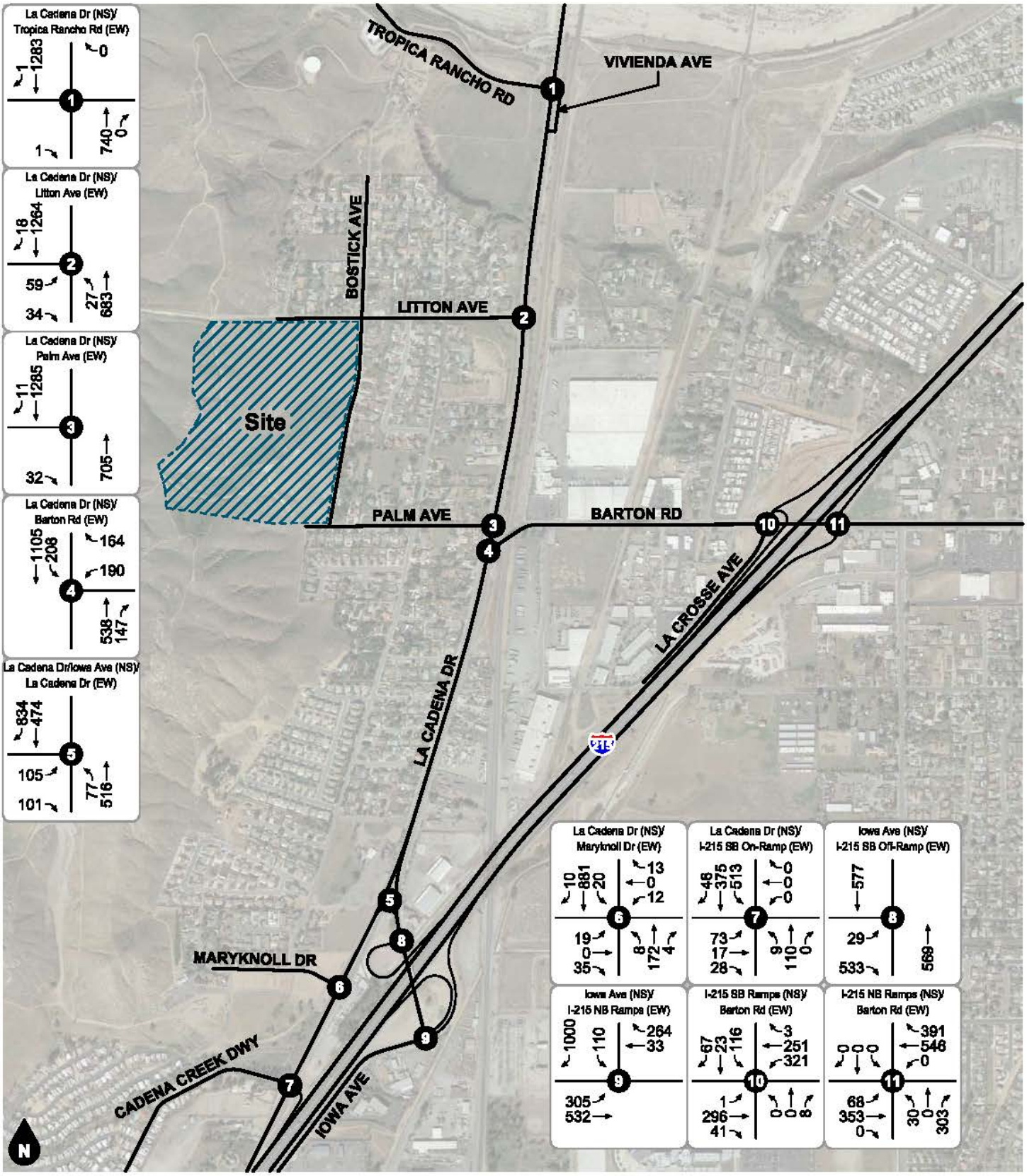
●## Vehicles Per Day (1,000's)

Figure 8
Existing Average Daily Traffic Volumes



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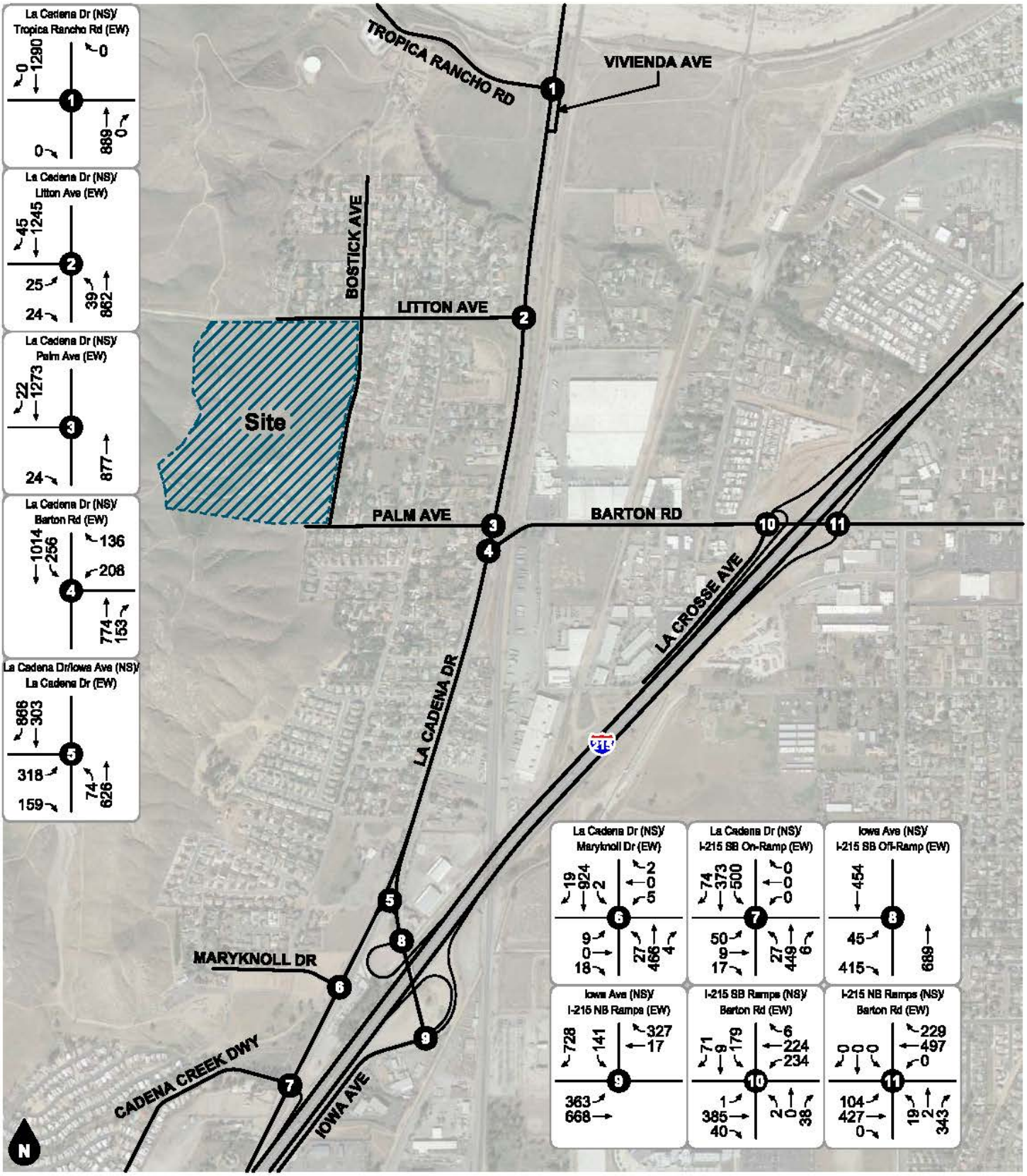
(#) Study Intersection

Figure 9
Existing AM Peak Hour Intersection Turning Movement Volumes



Legend

(#) Study Intersection

Figure 10
Existing PM Peak Hour Intersection Turning Movement Volumes

4. PROJECT TRIP FORECASTS

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

PROJECT TRIP GENERATION

Table 2 shows the project trip generation based upon trip generation rates obtained from the Institute of Transportation Engineers, Trip Generation Manual, 10th Edition, 2017, single-family detached housing land use (Land Use Code 210). Trip generation rates were determined for weekday daily trips, AM peak hour trips, and PM peak hour trips for the proposed land use. The number of trips forecast to be generated by the proposed use are determined by multiplying the trip generation rates by the land use quantity.

As shown in Table 2, the proposed project is forecast to generate a total of approximately 831 daily vehicle trips, including 66 vehicle trips during the morning peak hour and 88 vehicle trips during the evening peak hour.

PROJECT TRIP DISTRIBUTION AND ASSIGNMENT

Figure 11 shows the forecast directional outbound and inbound distribution patterns for the project generated trips. The project trip distribution patterns are based on review of existing volume data, surrounding land uses, designated truck routes, and the local and regional roadway facilities in the project vicinity.

Based on the identified project trip generation and distributions, project average daily traffic volumes have been calculated and shown on Figure 12. Project morning and evening peak hour intersection turning movement volumes expected from the project are depicted on Figure 13 and Figure 14, respectively.

PROJECT DESIGN FEATURES

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

Project Driveway at Litton Avenue (Opposite Terrace View Drive)
- Install northbound stop control.
- Construct the northbound approach to consist of one shared left-turn/right-turn lane.

Project Driveway at Bostick Avenue
- Install eastbound stop control.
- Construct the eastbound approach to consist of one shared left-turn/right-turn lane.

Table 2
Project Trip Generation

Trip Generation Rates										
Project				AM Peak Hour			PM Peak Hour			
No.	Land Use	Code[1]	Units[2]	In %	Out %	Total	In %	Out %	Total	Daily
1	Single-Family Detached Housing	ITE 210	DU	25%	75%	0.74	63%	37%	0.99	9.44

Trips Generated									
Project			AM Peak Hour			PM Peak Hour			
No.	Land Use	Quantity[2]	In	Out	Total	In	Out	Total	Daily
1	Single-Family Detached Housing	88 DU	17	49	66	55	33	88	831

Notes:

(1) ITE = Institute of Transportation Engineers, Trip Generation Manual, 10th Edition, 2017; 210 = Land Use Code

(2) DU = Dwelling Units

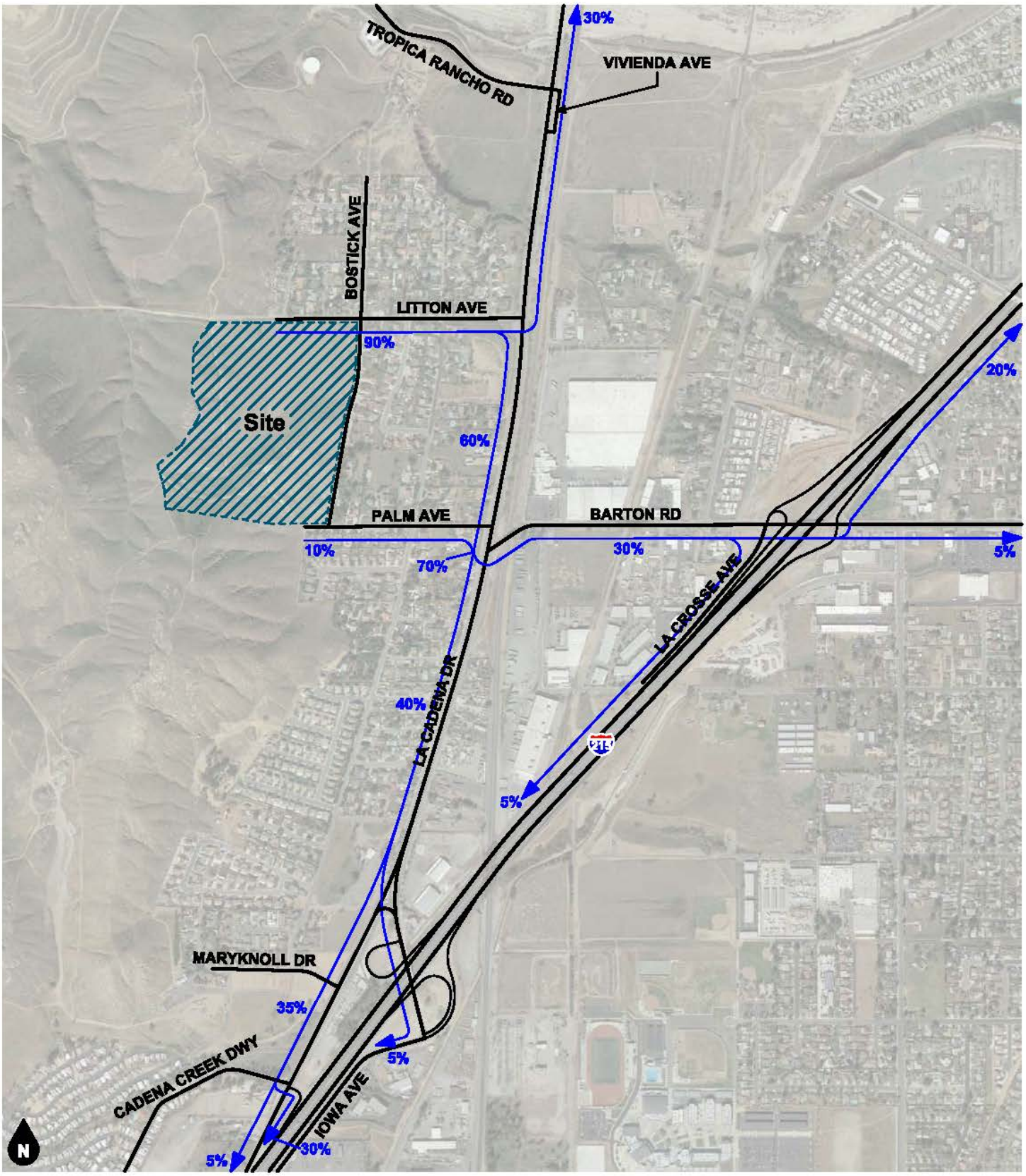
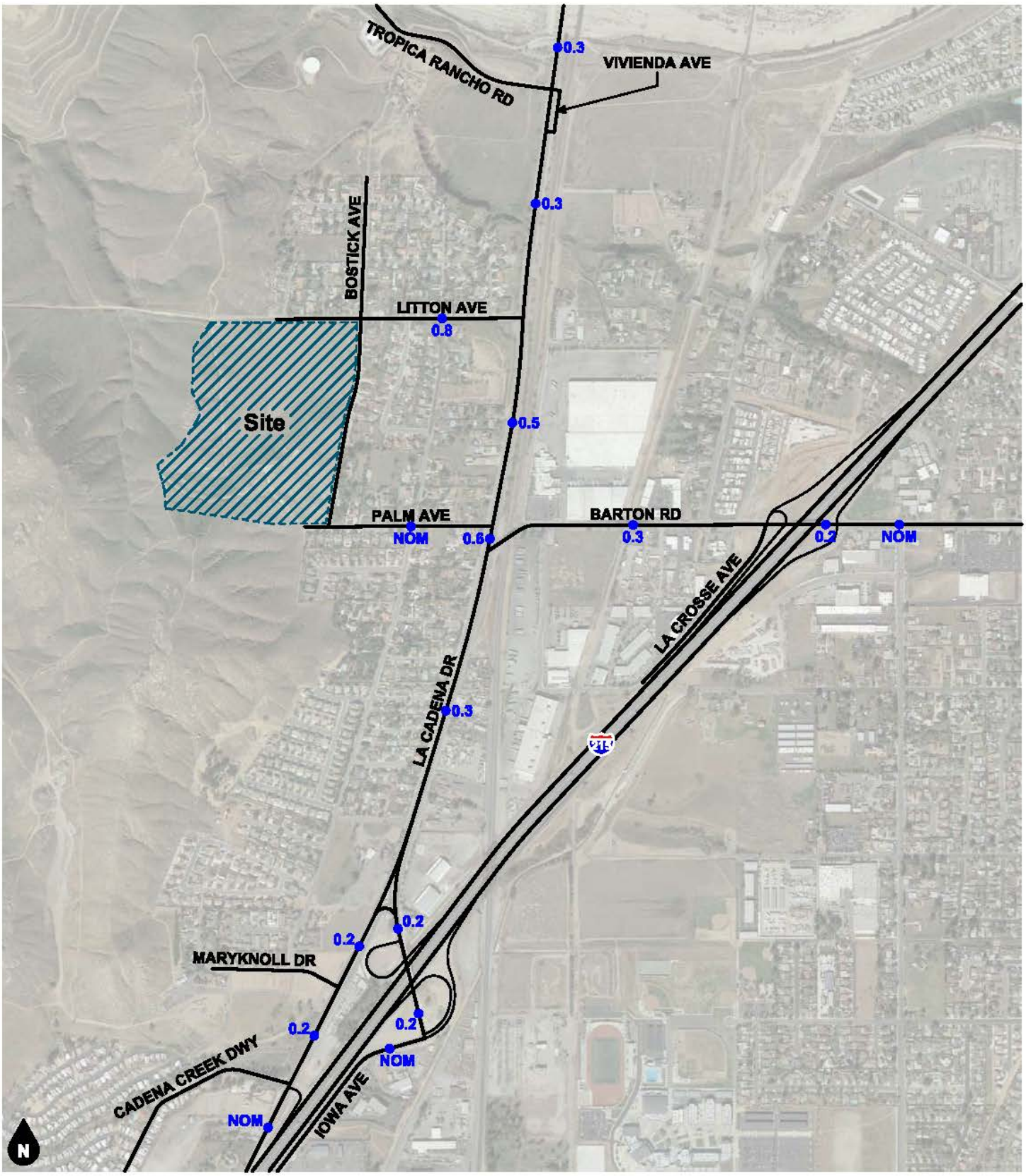
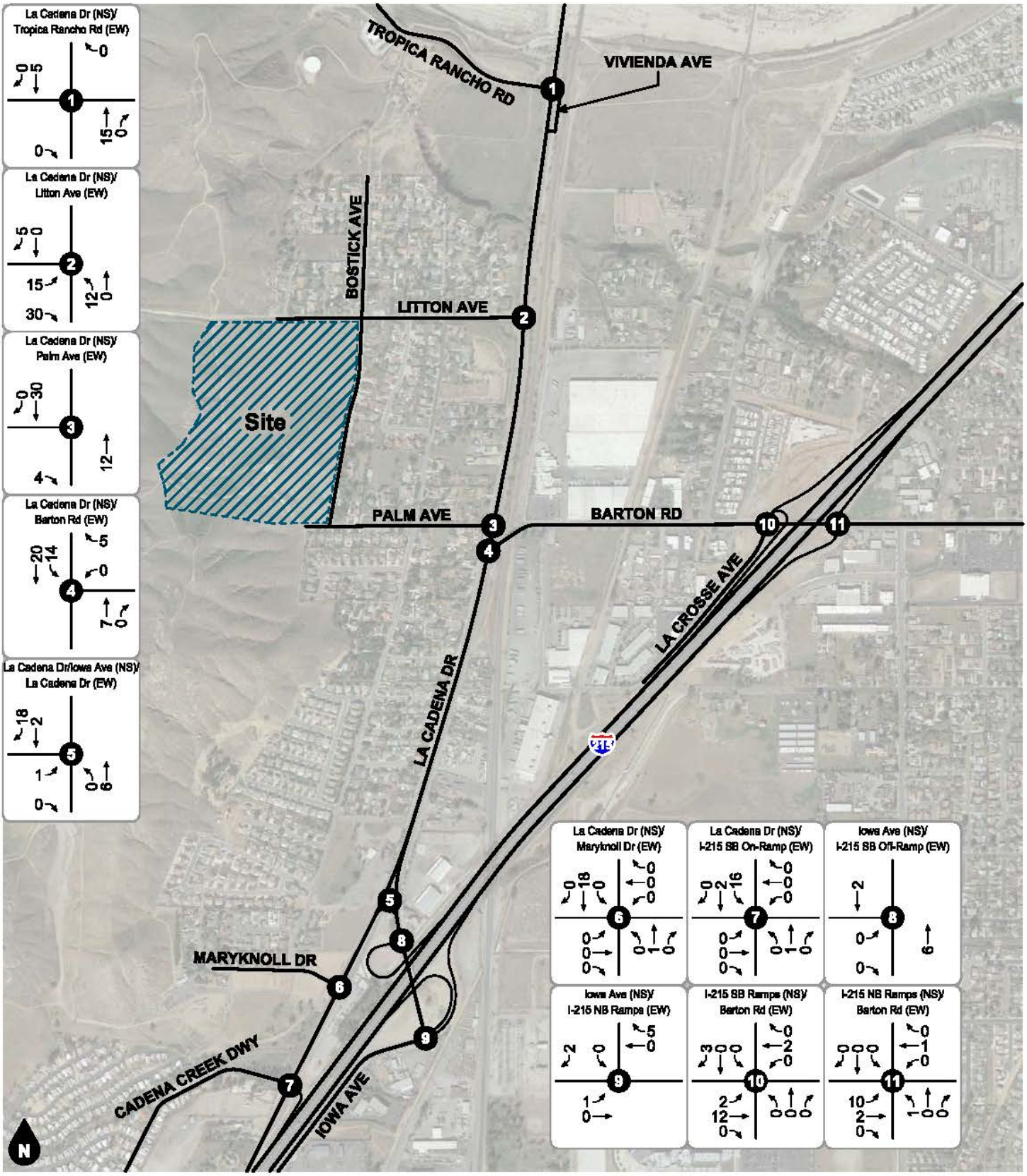


Figure 11
Project Trip Distribution



Legend
●## Vehicles Per Day (1,000's)
NOM Nominal; Less Than 50 Vehicles Per Day

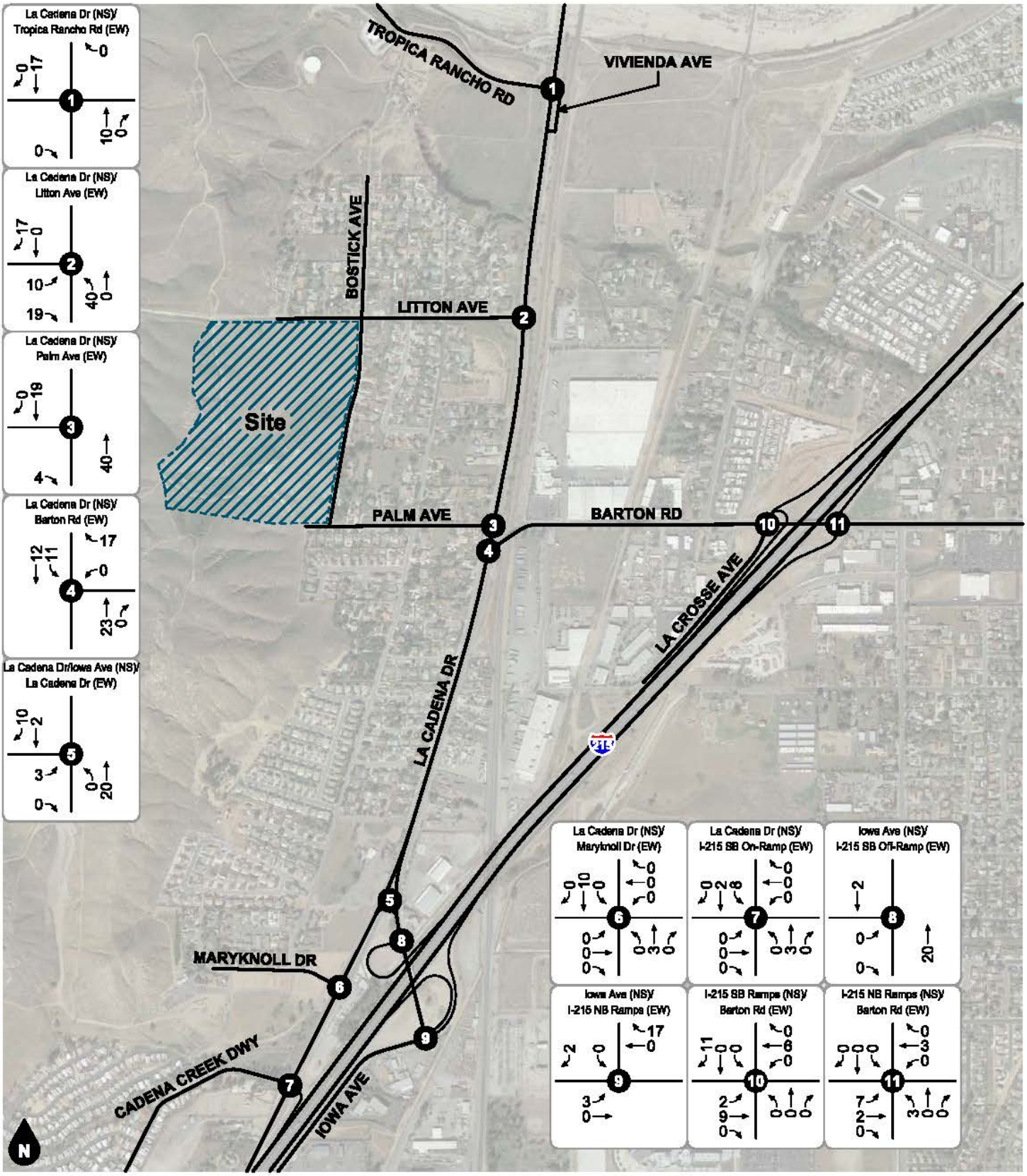
Figure 12
Project Average Daily Traffic Volumes



Legend

(#) Study Intersection

Figure 13
Project AM Peak Hour Intersection Turning Movement Volumes



Legend

(#) Study Intersection

Figure 14
Project PM Peak Hour Intersection Turning Movement Volumes

5. FUTURE VOLUME FORECASTS

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

CUMULATIVE TRIPS

Ambient Growth Rate

To account for ambient growth on roadways, existing traffic volumes were increased by a growth rate of one percent (1%) per year over two years for Opening Year (2020) conditions.

Other Development

To account for trips generated by future development, trips generated by pending or approved other development projects in the City of Colton were added to the study area. Table 3 shows the trip generation summary for other development projects.

Figure 15 shows the forecast average daily traffic volumes for the other development. Figure 16 and Figure 17 show the forecast morning and evening peak hour intersection turning movement volumes for trips generated by other developments.

BUILDOUT YEAR (2040) PROJECTIONS

The average daily traffic volume forecasts have been determined using the growth increment approach on the San Bernardino Transportation Analysis Model (SBTAM) Year 2012 and Year 2040 average daily traffic volume forecasts. This difference defines the growth in volumes over the 28 year period. The incremental growth in average daily traffic volume has been factored to reflect the forecast growth between Year 2018 and Year 2040. For this purpose, linear growth between the Year 2012 base condition and the forecast Year 2040 condition was assumed. Since the increment between Year 2018 and Year 2040 is 22 years of the 28 year time frame, a factor of 0.79 (i.e., 22/28) was used.

To derive morning and evening peak hour intersection turning movement volumes, the traffic volume growth forecasts were further refined using a spreadsheet program developed by the Federal Highway Administration and consistent with traffic volume forecasting procedures outlined in the National Cooperative Highway Research Program Report 255. The spreadsheet program uses a linear programming algorithm to calculate future turning movements based on the relationship of existing intersection turning movements and forecast model growth. The forecast turning movements developed by the spreadsheet program were reviewed for reasonableness and adjusted as necessary to ensure traffic growth. The end results of the post-processing procedures are future traffic volumes suitable for analysis. The traffic model forecasting calculation worksheets are shown in Appendix F.

ANALYSIS SCENARIO VOLUME FORECASTS

Existing Plus Project

Existing Plus Project volume forecasts were derived by adding the project generated trips to Existing volumes. Existing Plus Project average daily traffic volumes are shown on Figure 18. Existing Plus Project morning and evening peak hour intersection turning movement volumes are shown on Figure 19 and Figure 20.

Opening Year (2020) Without Project

To develop Opening Year (2020) Without Project volume forecasts, Existing volumes were combined with ambient growth and trips generated by other developments. Opening Year (2020) Without Project average daily traffic volumes are shown on Figure 21. Opening Year (2020) Without Project morning and evening peak hour intersection turning movement volumes are shown Figure 22 and Figure 23.

Opening Year (2020) With Project

Opening Year (2020) With Project volume forecasts were developed by adding project generated trips to the Opening Year (2020) Without Project forecast. Opening Year (2020) With Project average daily traffic volumes are shown on Figure 24. Opening Year (2020) With Project morning and evening peak hour intersection turning movement volumes are shown on Figure 25 and Figure 26.

Buildout Year (2040) Without Project

Buildout Year (2040) Without Project volume forecasts were derived from the SBTAM travel demand model and post-processing procedures previously described in this section. Buildout Year (2040) Without Project average daily traffic volumes are shown on Figure 27. Buildout Year (2040) Without Project morning and evening peak hour intersection turning movement volumes are shown Figure 28 and Figure 29.

Buildout Year (2040) With Project

Buildout Year (2040) With Project volume forecasts were developed by adding project generated trips to the Buildout Year (2040) Without Project forecast. Buildout Year (2040) With Project average daily traffic volumes are shown on Figure 30. Buildout Year (2040) With Project morning and evening peak hour intersection turning movement volumes are shown on Figure 31 and Figure 32.

Table 3 (1 of 3)
Other Development Trip Generation

Trip Generation Rates									
			AM Peak Hour			PM Peak Hour			Daily
Land Use	Source[1]	Units[2]	% In	% Out	Rate	% In	% Out	Rate	Rate
General Light Industrial	TSF	ITE 110	88%	12%	0.70	13%	87%	0.63	4.96
Industrial Park	TSF	ITE 130	81%	19%	0.40	21%	79%	0.4	3.37
Warehousing	TSF	ITE 150	77%	23%	0.17	27%	73%	0.19	1.74
Mini Warehousing	TSF	ITE 151	60%	40%	0.10	47%	53%	0.17	1.51
Single-Family Detached Residential	DU	ITE 210	25%	75%	0.74	69%	31%	0.99	9.44
Multifamily Housing (Low-Rise)	DU	ITE 220	23%	77%	0.46	63%	37%	0.56	7.32
Assisted Living	Beds	ITE 254	63%	37%	0.19	38%	62%	0.26	2.60
Hotel	Rooms	ITE 310	59%	41%	0.47	51%	49%	0.6	8.36
Junior/Community College	ST	ITE 540	62%	38%	0.11	48%	52%	0.11	1.15
Church	Seats	ITE 560	50%	50%	0.01	40%	60%	0.03	0.44
General Office	TSF	ITE 710	86%	14%	1.16	16%	84%	1.15	9.74
Medical/Dental Office	TSF	ITE 720	78%	22%	2.78	28%	72%	3.46	34.80
Shopping Center	TSF	ITE 820	62%	38%	0.94	48%	52%	3.81	37.75
Tire Store	TSF	ITE 848	64%	36%	2.72	43%	57%	3.98	28.52
Supermarket	TSF	ITE 850	60%	40%	3.82	51%	49%	9.24	106.78
High-Turnover (Sit-Down) Restaurant	TSF	ITE 932	55%	45%	9.94	62%	38%	9.77	112.18
Fast-Food Restaurant With Drive-Thru	TSF	ITE 934	51%	49%	40.19	52%	48%	32.67	470.95
Automobile Care Center	TSF	ITE 942	66%	34%	2.25	48%	52%	3.11	23.72
Gasoline Service Station	FP	ITE945	50%	50%	10.28	50%	50%	14.03	172.01
Truck Terminal	TSF		40%	60%	0.09	50%	50%	0.08	10.00

Trips Generated									
			AM Peak Hour			PM Peak Hour			
Land Use	Quantity	Units[2]	In	Out	Total	In	Out	Total	Daily
City of Colton									
Roquet Ranch Specific Plan	-	-	238	581	819	617	374	991	10,021
Hillwood	236.512	TSF	31	9	40	12	33	45	412
Tropica Warehouse	266.030	TSF	35	11	46	13	37	50	463
CUSM (300 N. Pepper Av.)	150	ST	14	3	17	9	8	17	173
1601 W. Valley Blvd.	NA	Rooms	-	-	-	-	-	-	-
	NA	FP	-	-	-	-	-	-	-
1600 Agua Mansa Road	805.500	TSF	105	32	137	40	113	153	1,402
Cal-Med Surgery Center (1281 W. C St.)	NA	TSF	-	-	-	-	-	-	-
Valley Orange Ent. (1600 W. Valley Blvd.)	8	FP	41	41	82	56	56	112	1,376
Diesel Injection (1610 Fairway Dr.)	1.350	TSF	2	1	3	2	2	4	32
New Juan Colorado Family Restaurant (195 W. Valley Bl.)	NA	TSF	-	-	-	-	-	-	-
1175 S. Mt. Vernon Av.	104.000	TSF	104	17	121	19	101	120	1,013
495 W. Valley Bl.	NA	Seats	-	-	-	-	-	-	-

Table 3 (2 of 3)
Other Development Trip Generation

Land Use	Quantity	Units[2]	Trips Generated						
			AM Peak Hour			PM Peak Hour			
			In	Out	Total	In	Out	Total	Daily
Smart & Final Extra (1023 N. Mt. Vernon)	27.870	TSF	64	43	107	131	126	257	2,976
	4.400	TSF	90	87	177	75	69	144	2,072
839 Fairway Dr.	103	Beds	12	7	19	10	16	26	268
1601 Fairway Dr.	178.980	TSF	57	14	71	14	57	71	603
1550 E. Washington St.	120	Seats	1	-	1	1	2	3	53
1559 Steel Rd.	60.000	TSF	19	5	24	5	19	24	202
1603 Steel Rd.	159.271	TSF	51	13	64	13	51	64	537
785 E. M Street	20.600	TSF	13	2	15	2	11	13	102
Colton Iron Metal (790 E. M St.)	156.816	TSF	97	13	110	13	86	99	778
644-660 Laurel Lane	7	DU	1	4	5	4	3	7	66
1200 Jefferson Ln.	NA	TSF	-	-	-	-	-	-	-
602 Agua Mansa Rd.	19.919	TSF	1	1	2	1	1	2	199
1395 Washington St.	NA	TSF	-	-	-	-	-	-	-
County of Riverside									
TR28957	36	DU	7	20	27	22	13	35	340
TR32989	29	DU	6	16	22	18	11	29	274
TR32291	69	DU	13	38	51	43	26	69	651
CUP03718	19.988	TSF	12	2	14	2	11	13	99
PP24798	2.400	TSF	1	1	2	4	5	9	91
	3.405	TSF	3	1	4	1	3	4	33
	2.961	TSF	2	1	3	5	6	11	112
PP25482	2.632	TSF	3	-	3	-	3	3	26
Trucks Sales Facility (PP25505)	1.952	TSF	2	-	2	-	2	2	19
	6.000	TSF	-	-	-	-	1	1	9
TR36668 (Bixby Highgrove)	201	DU	38	111	149	125	74	199	1,897
City of Grand Terrance									
SA-14-03	1	DU	-	1	1	1	-	1	9
TT18071 (Karger Pico Tract)	18	DU	3	10	13	11	7	18	170
SA 13-05	1	DU	-	1	1	1	-	1	9
Site and Architectural Review 1204	12	DU	1	4	5	4	3	7	88
Grand Terrace Town Square Master Plan	209.611	TSF	122	75	197	384	415	799	7,913
SA-07-07	65.730	TSF	38	24	62	120	130	250	2,481
SA 14-05; SA 14-07	1	DU	-	1	1	1	-	1	9
SA 14-06	1	DU	-	1	1	1	-	1	9
Barton Plaza Commercial Center (Phase 2)	16.251	TSF	16	3	19	3	16	19	158
SA 15-01	1.800	TSF	2	-	2	-	2	2	18
SA 15-06 ACUP15-07 E15-08	2.870	TSF	6	2	8	3	7	10	100
SA 15-07 E15-09	1.800	TSF	1	1	2	3	4	7	68
SA 15-04 E15-07	8.800	TSF	9	1	10	2	9	11	86

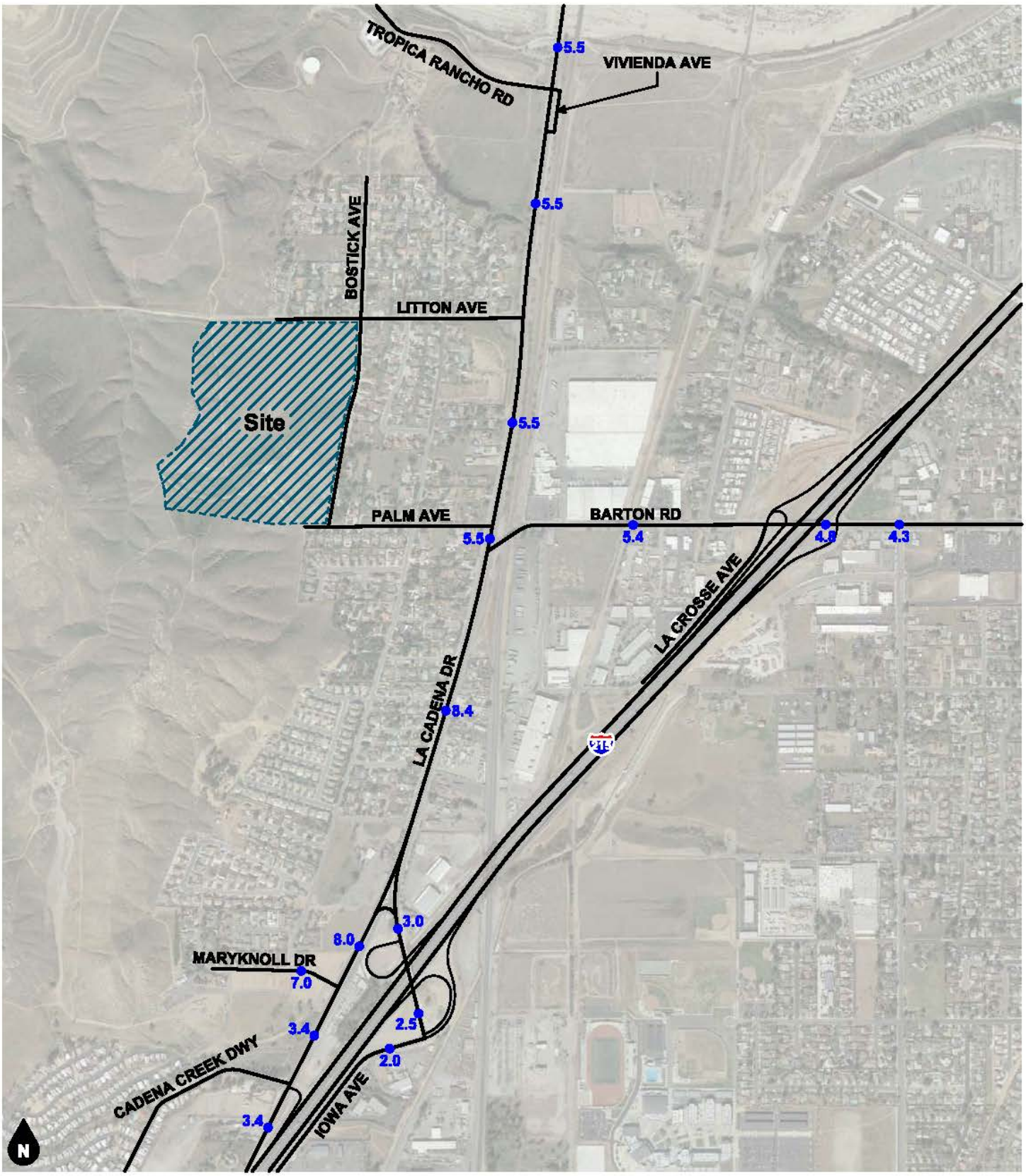
Table 3 (3 of 3)
Other Development Trip Generation

Trips Generated									
			AM Peak Hour			PM Peak Hour			
Land Use	Quantity	Units[2]	In	Out	Total	In	Out	Total	Daily
SA 15-05; ACUP15-06; V15-02	1	TSF	1	-	1	-	1	1	14
TTM 15-01; SA 15-03; E15-05	12	DU	2	7	9	7	4	11	113
SA05-19-A1; E15-06	35	DU	4	12	16	12	7	19	256
City of Riverside									
R31 P15-0812	61	DU	7	21	28	21	13	34	447
P13-0956; P13;0959; P13-0960; P13-0963; P13-0964 P13-0965; P13-0966	1461.449	TSF	468	117	585	117	468	585	4,925
R38 P14-1033; P14-1034	308.000	TSF	40	12	52	15	43	58	536
Total Other Development Trips Generated			**1,783**	**1,367**	**3,150**	**1,963**	**2,449**	**4,412**	**43,708**

Notes:

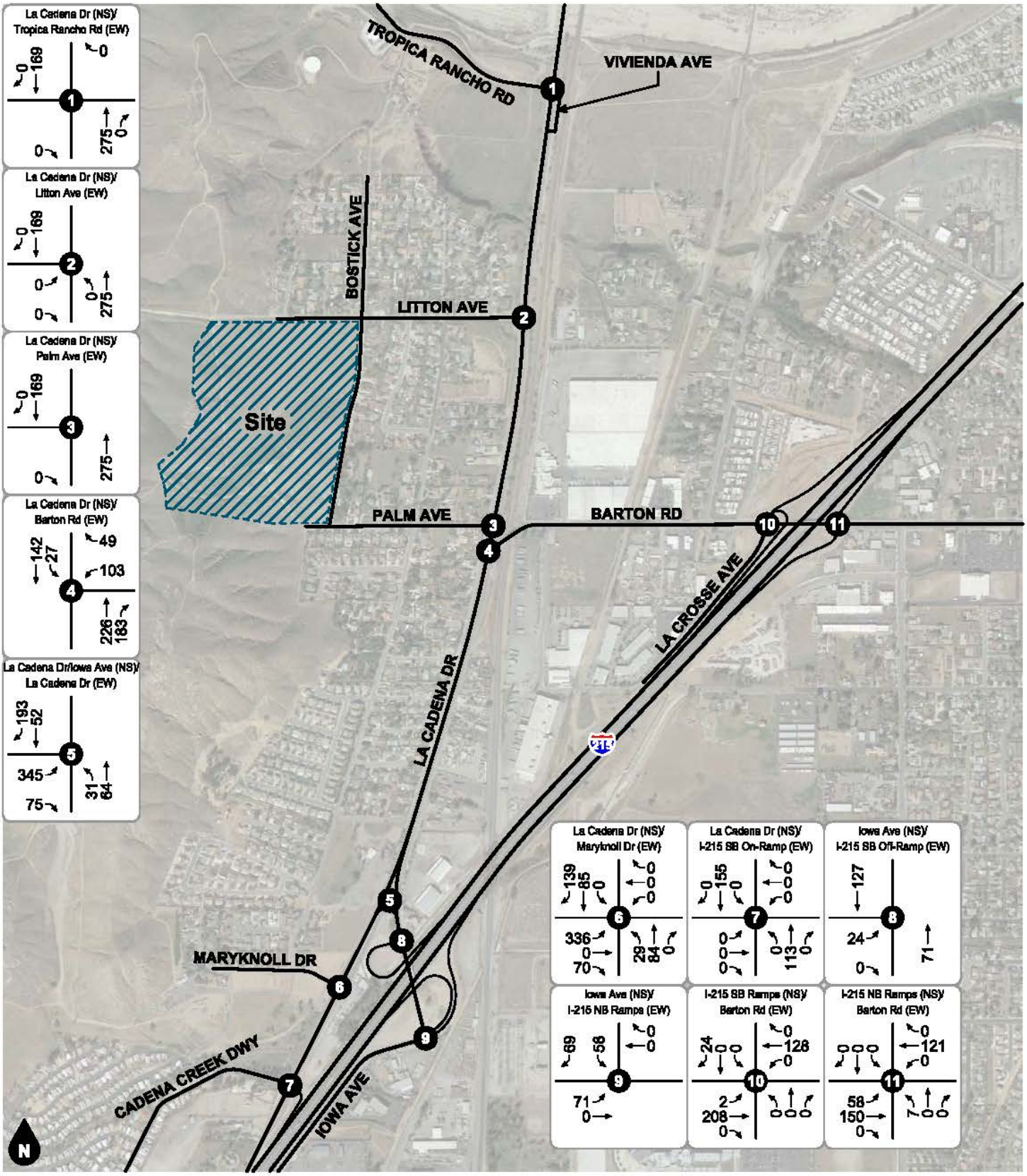
(1) ITE = Institute of Transportation Engineers, Trip Generation Manual, 10th Edition, 2017; ### = Land Use Code.

(2) DU = Dwelling Units; TSF = Thousand Square Feet; ST = Students; FP = Vehicle Fueling Positions.



Legend
●## Vehicles Per Day (1,000's)

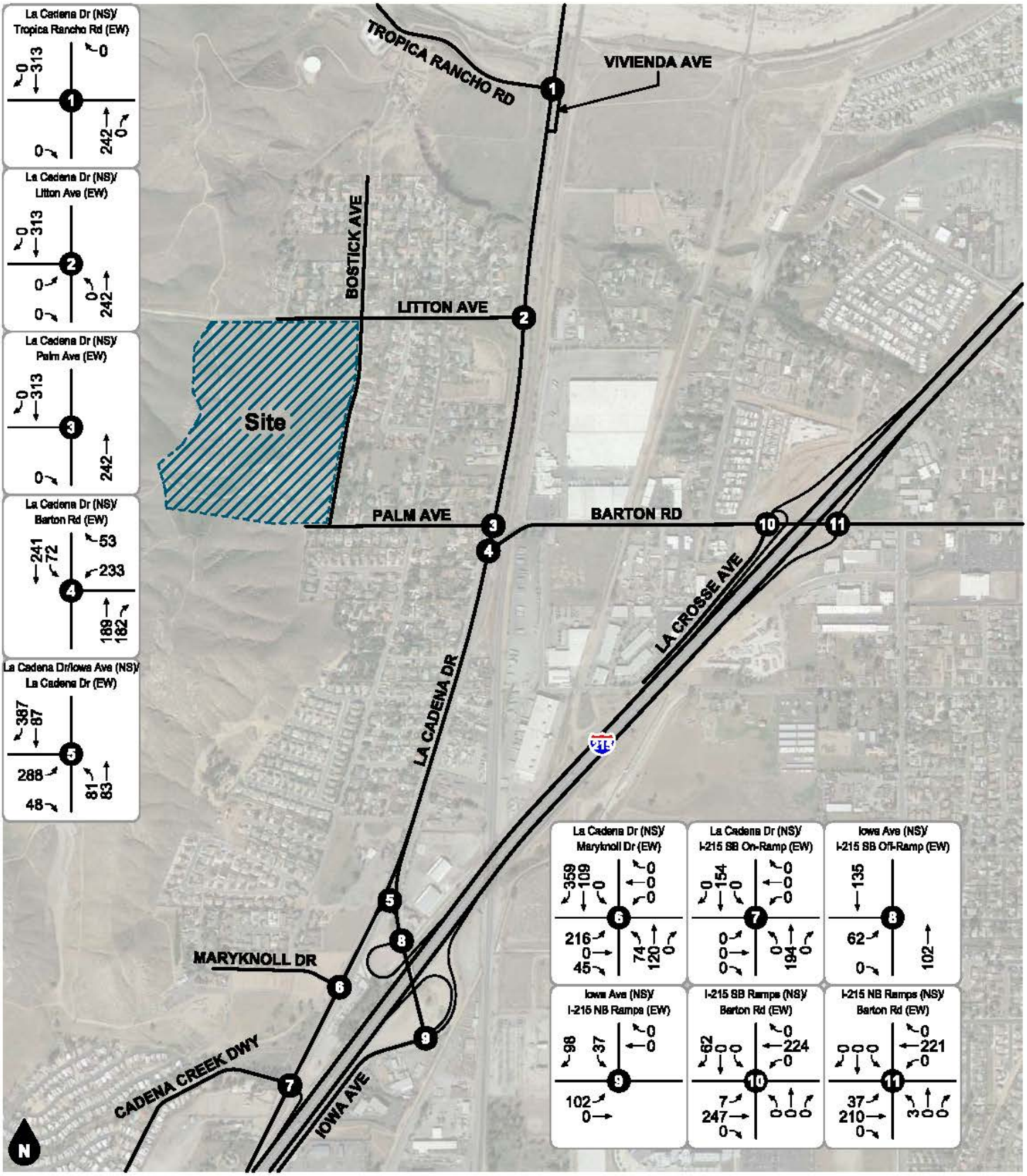
Figure 15
Other Development Average Daily Traffic Volumes



Legend

(#) Study Intersection

Figure 16
Other Development
AM Peak Hour Intersection Turning Movement Volumes



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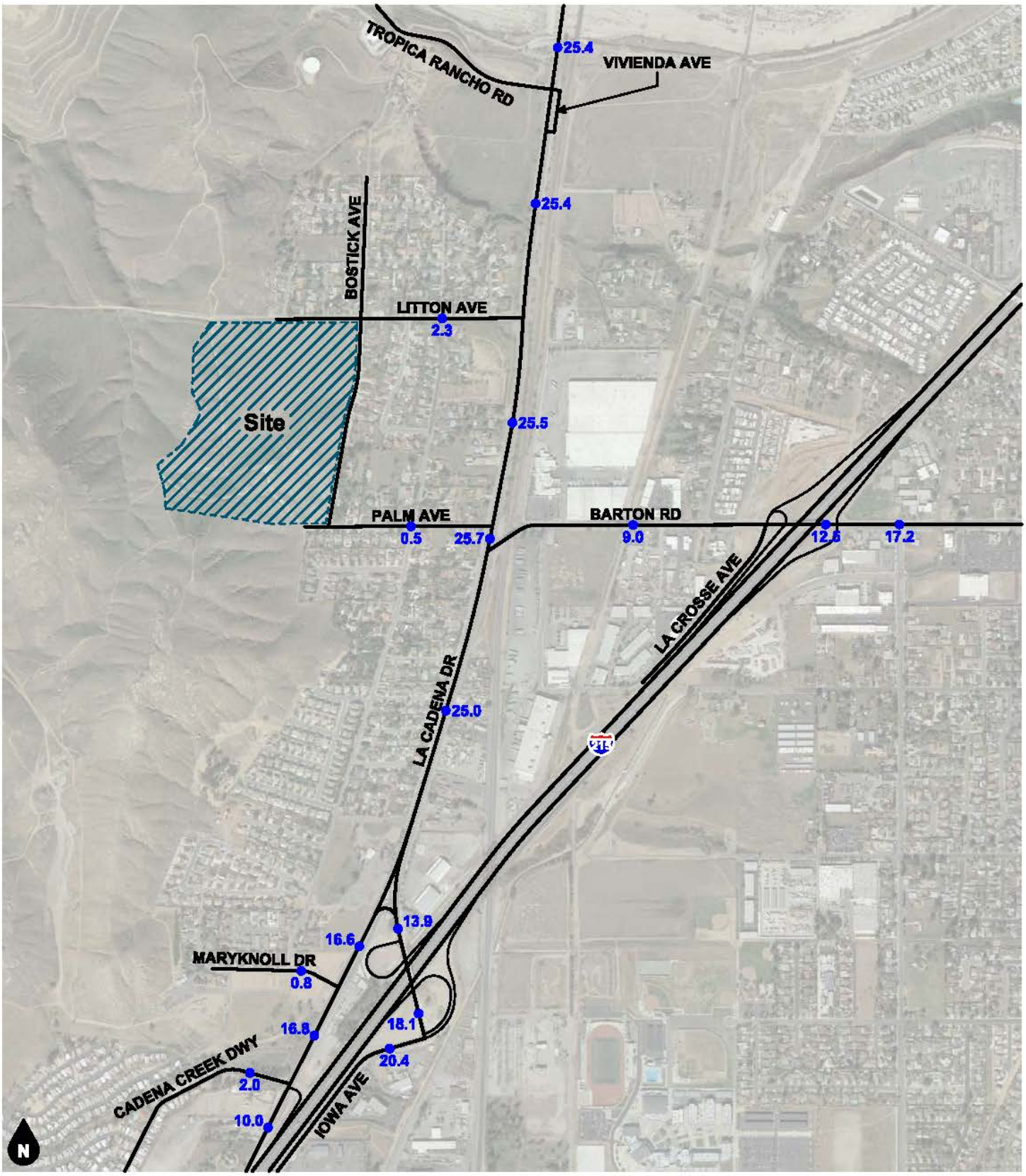
(#) Study Intersection

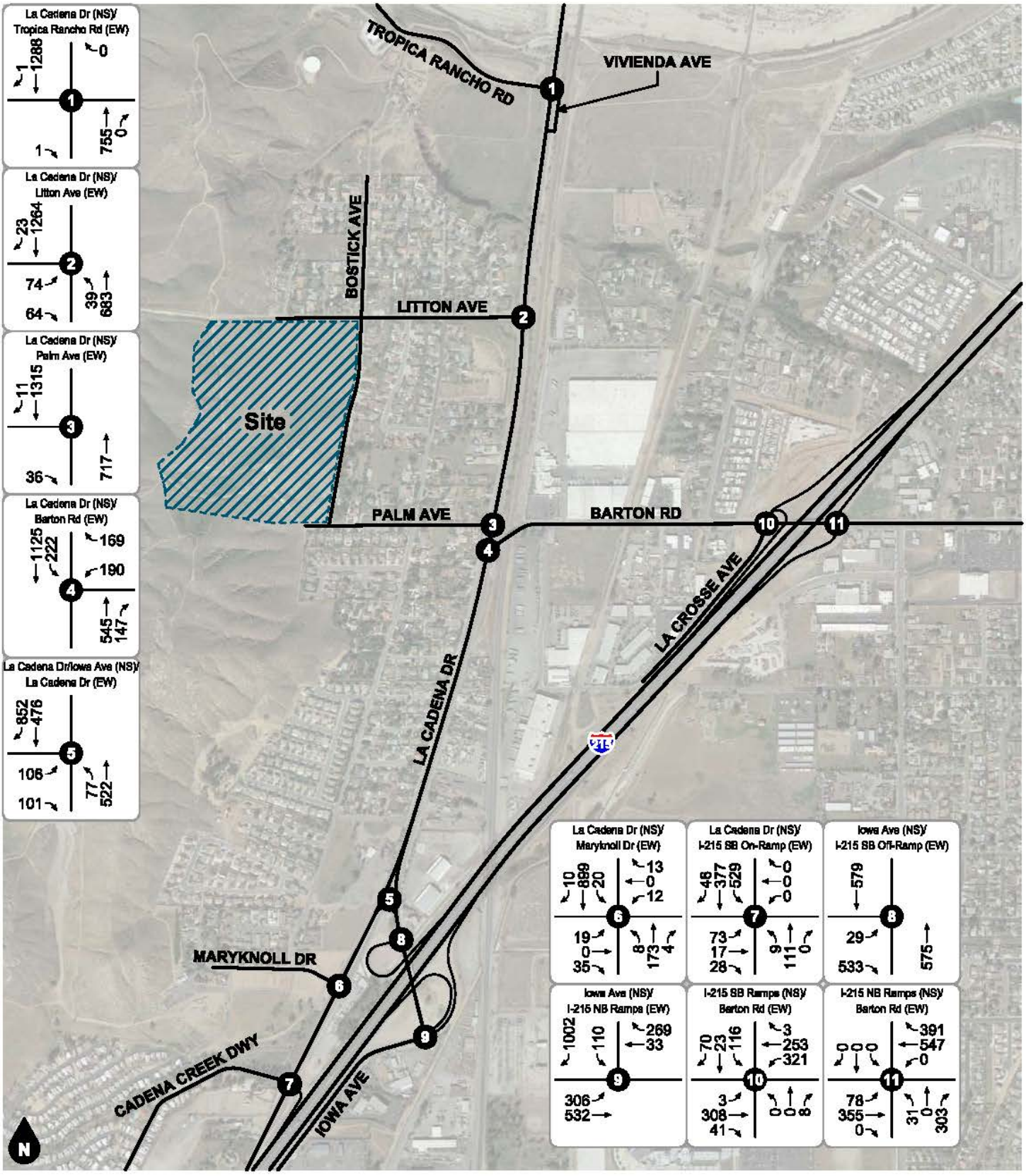
Figure 17
Other Development
PM Peak Hour Intersection Turning Movement Volumes



Legend

●## Vehicles Per Day (1,000's)

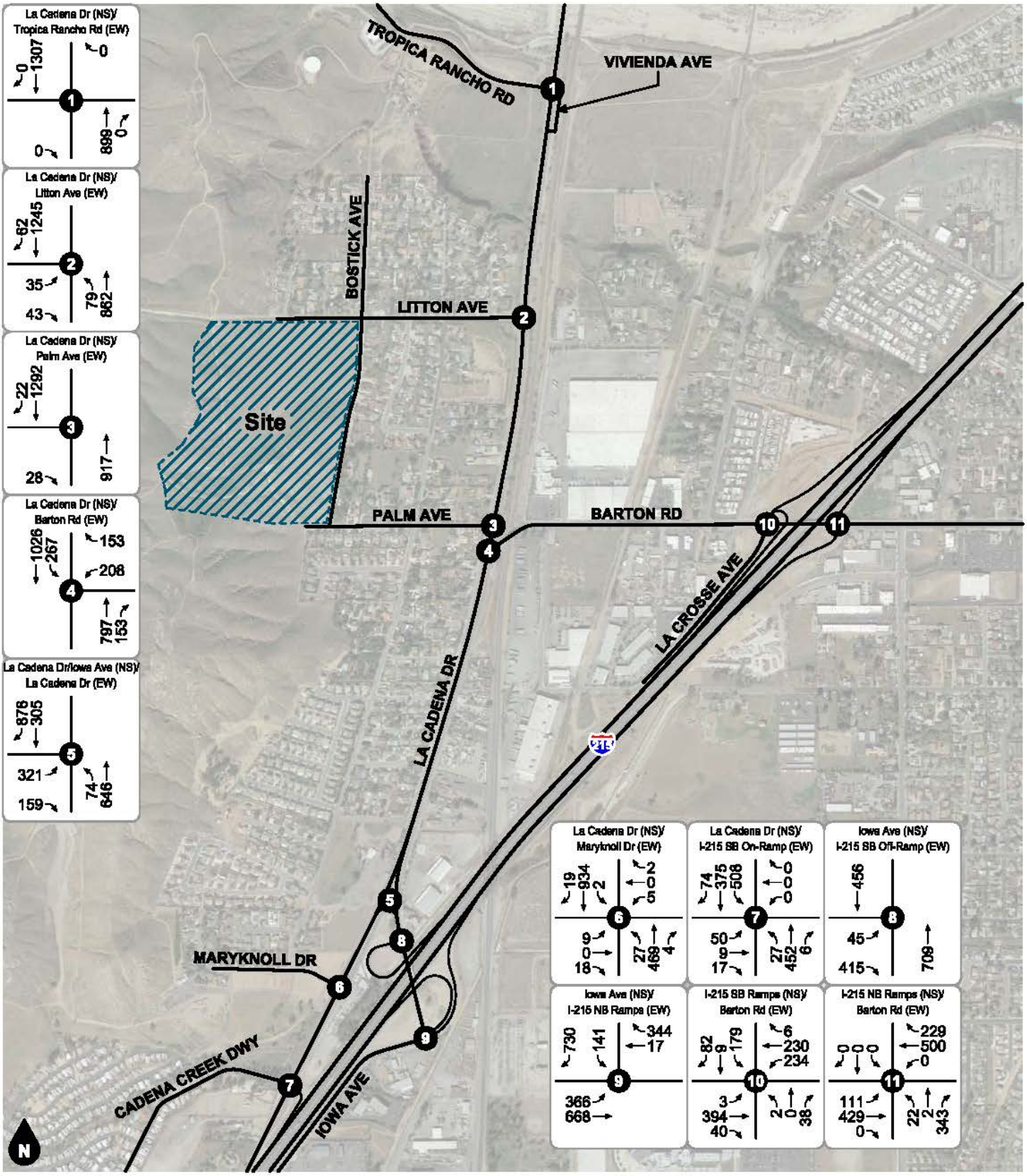
Figure 18
Existing Plus Project Average Daily Traffic Volumes



Legend

Study Intersection

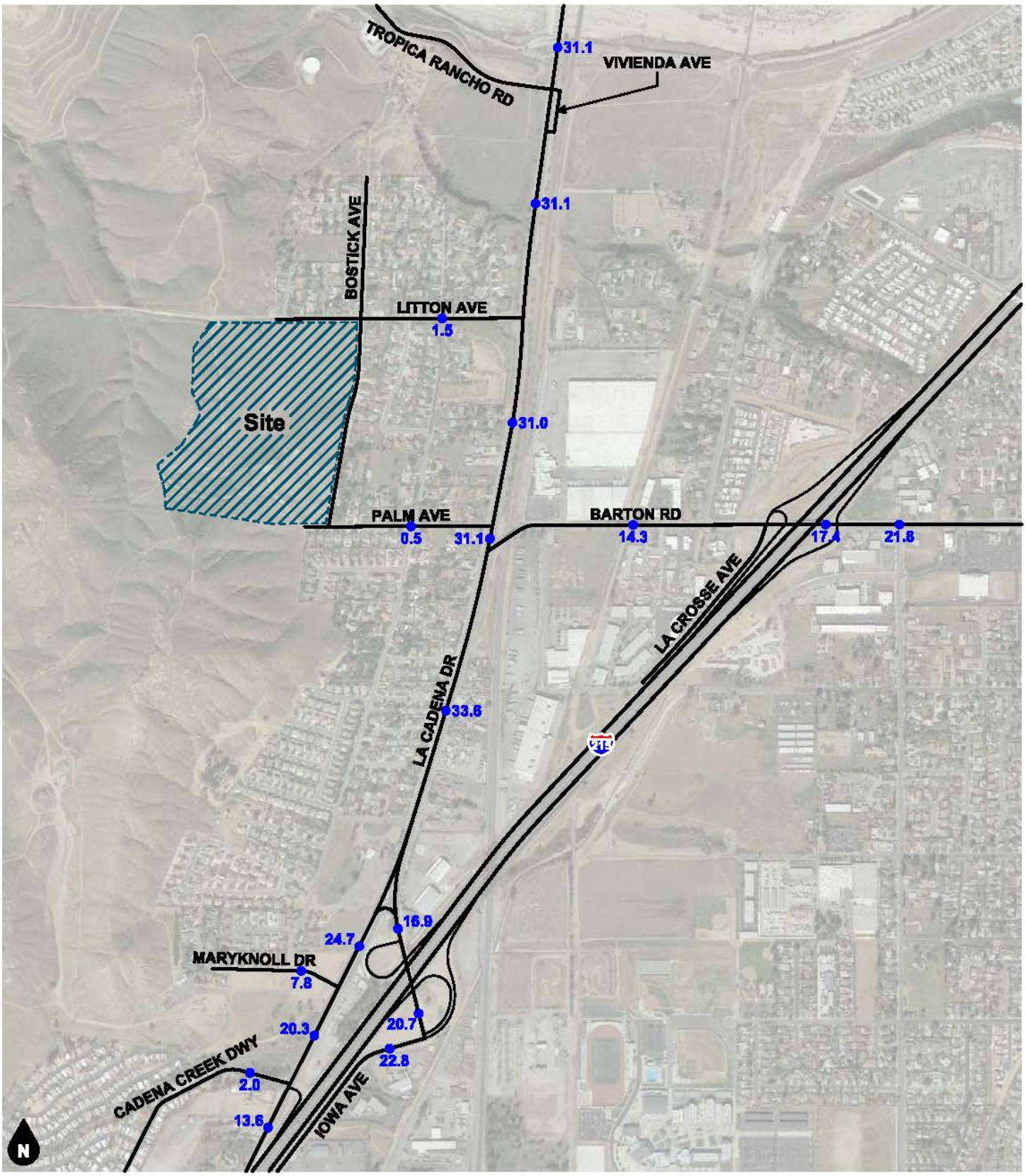
Figure 19
Existing Plus Project
AM Peak Hour Intersection Turning Movement Volumes



Legend

(#) Study Intersection

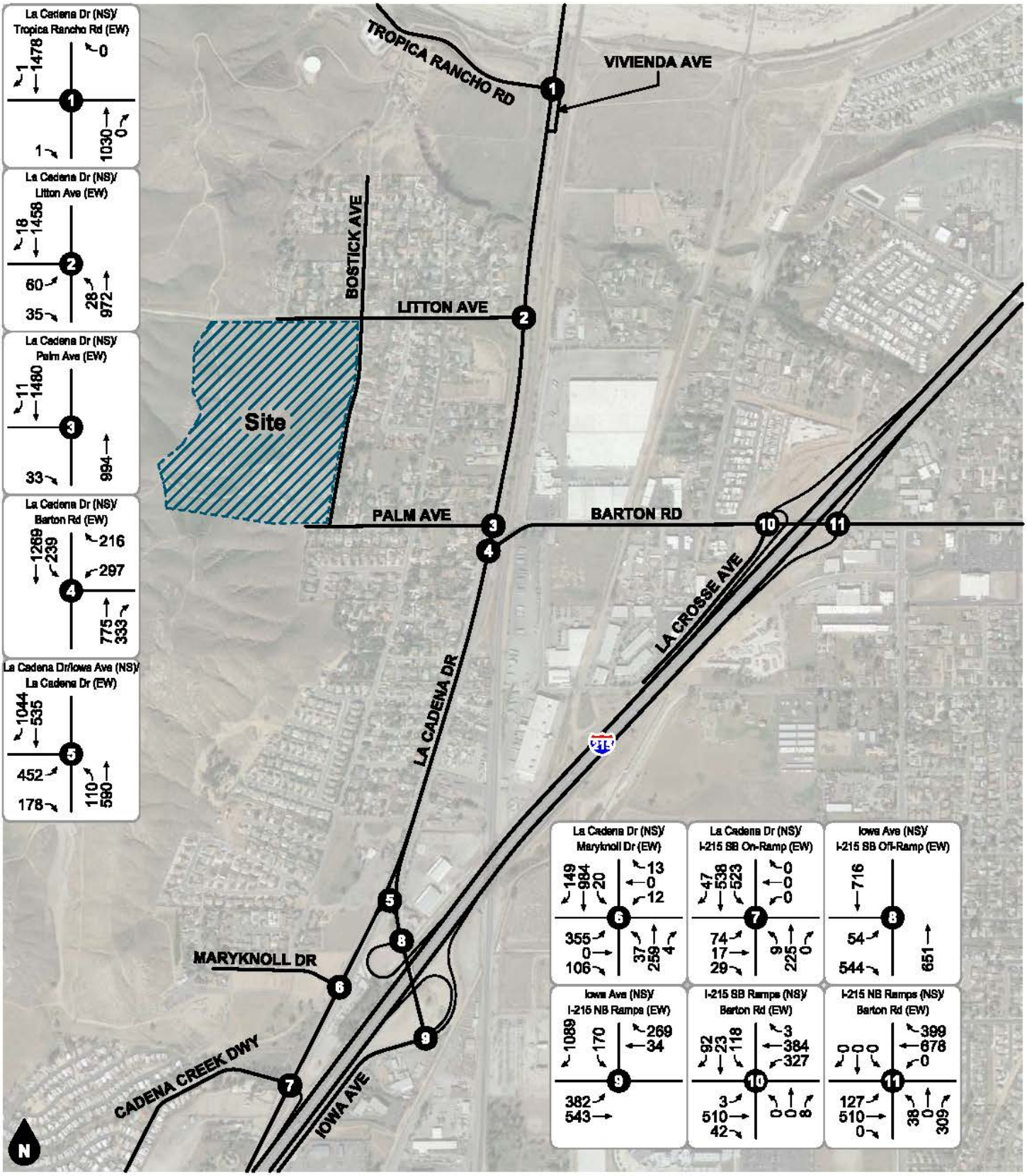
Figure 20
Existing Plus Project
PM Peak Hour Intersection Turning Movement Volumes



Legend

●## Vehicles Per Day (1,000's)

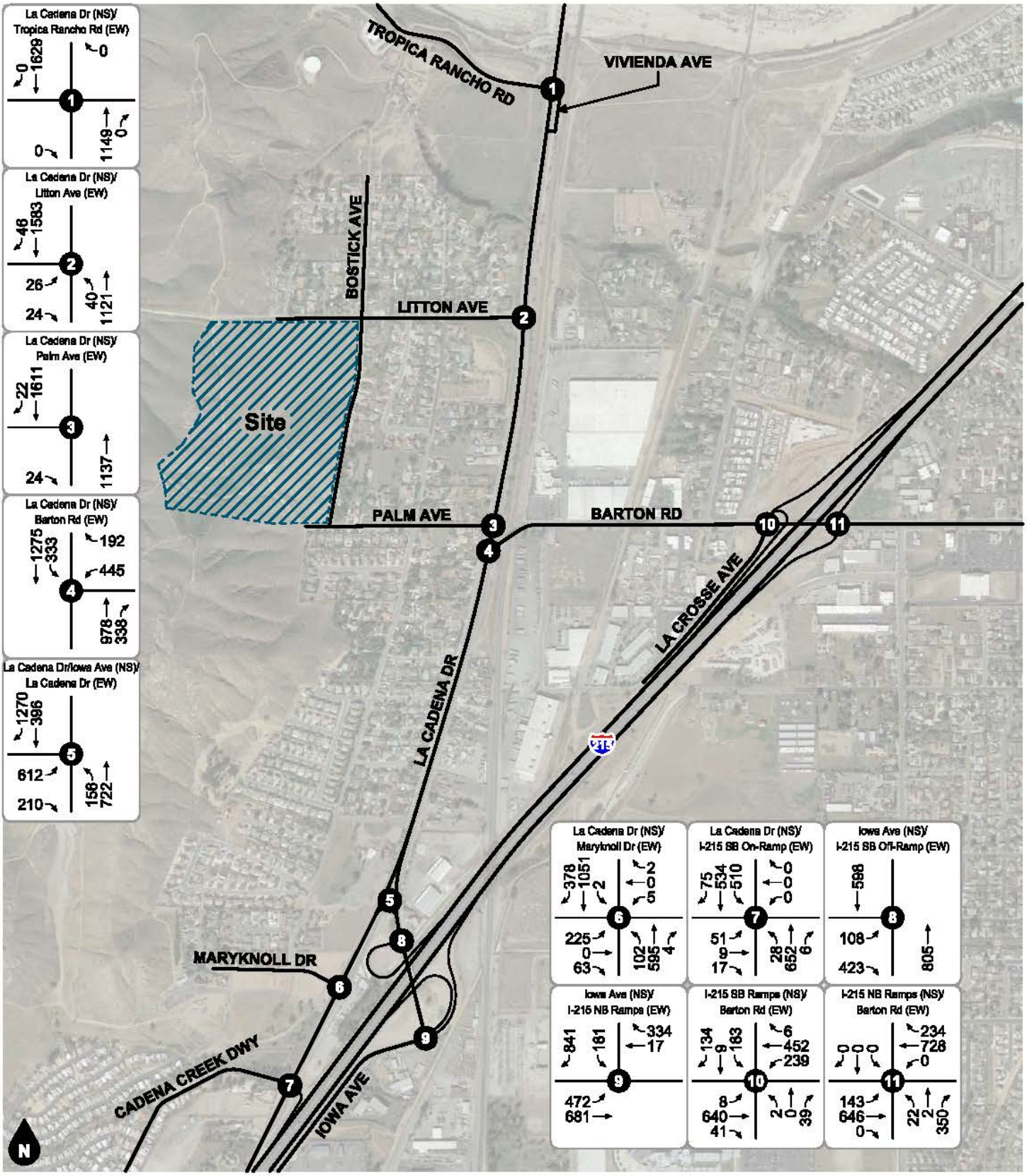
Figure 21
Opening Year (2020) Without Project Average Daily Traffic Volumes



Legend

(#) Study Intersection

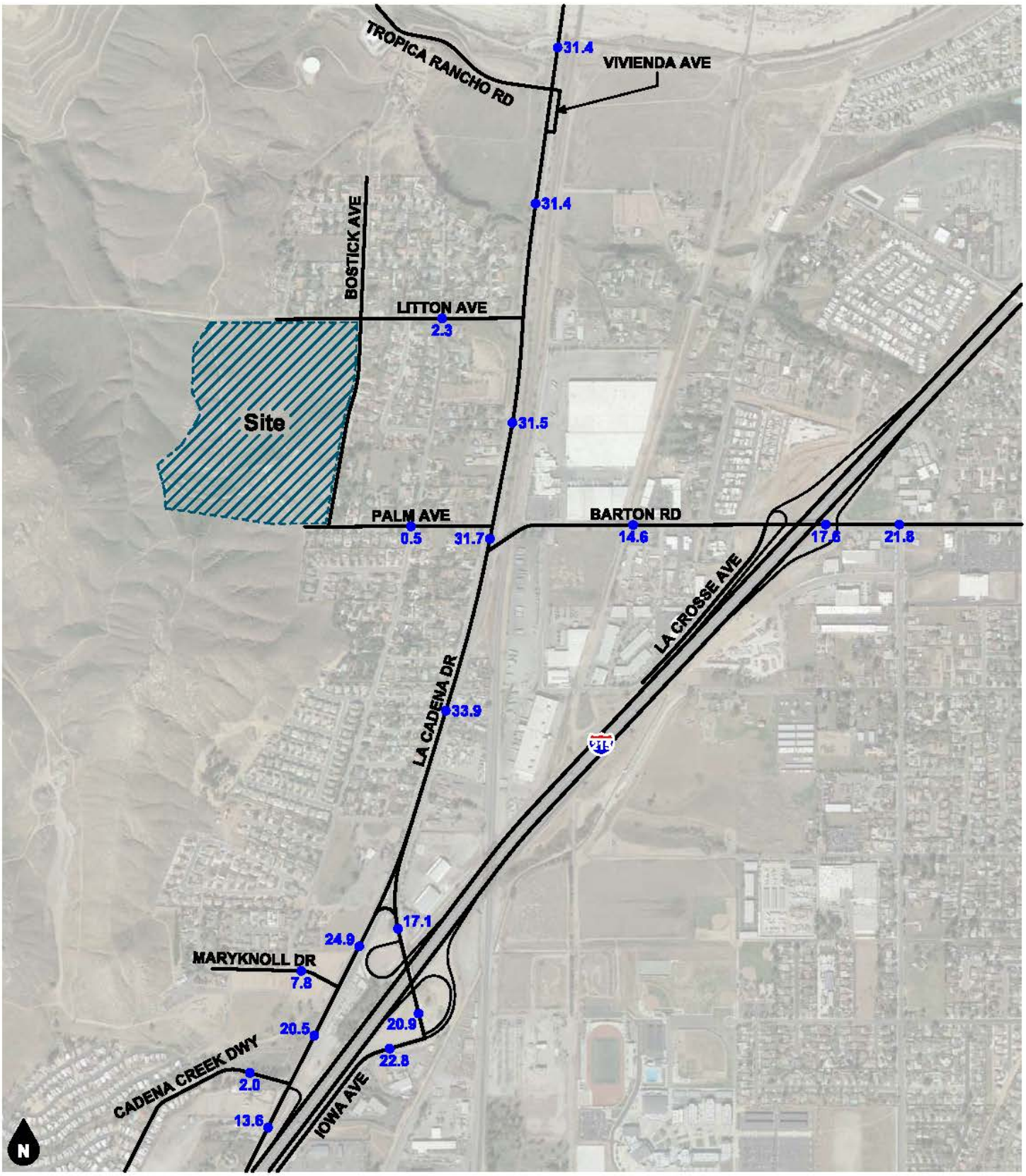
Figure 22
Opening Year (2020) Without Project
AM Peak Hour Intersection Turning Movement Volumes



Legend

Study Intersection

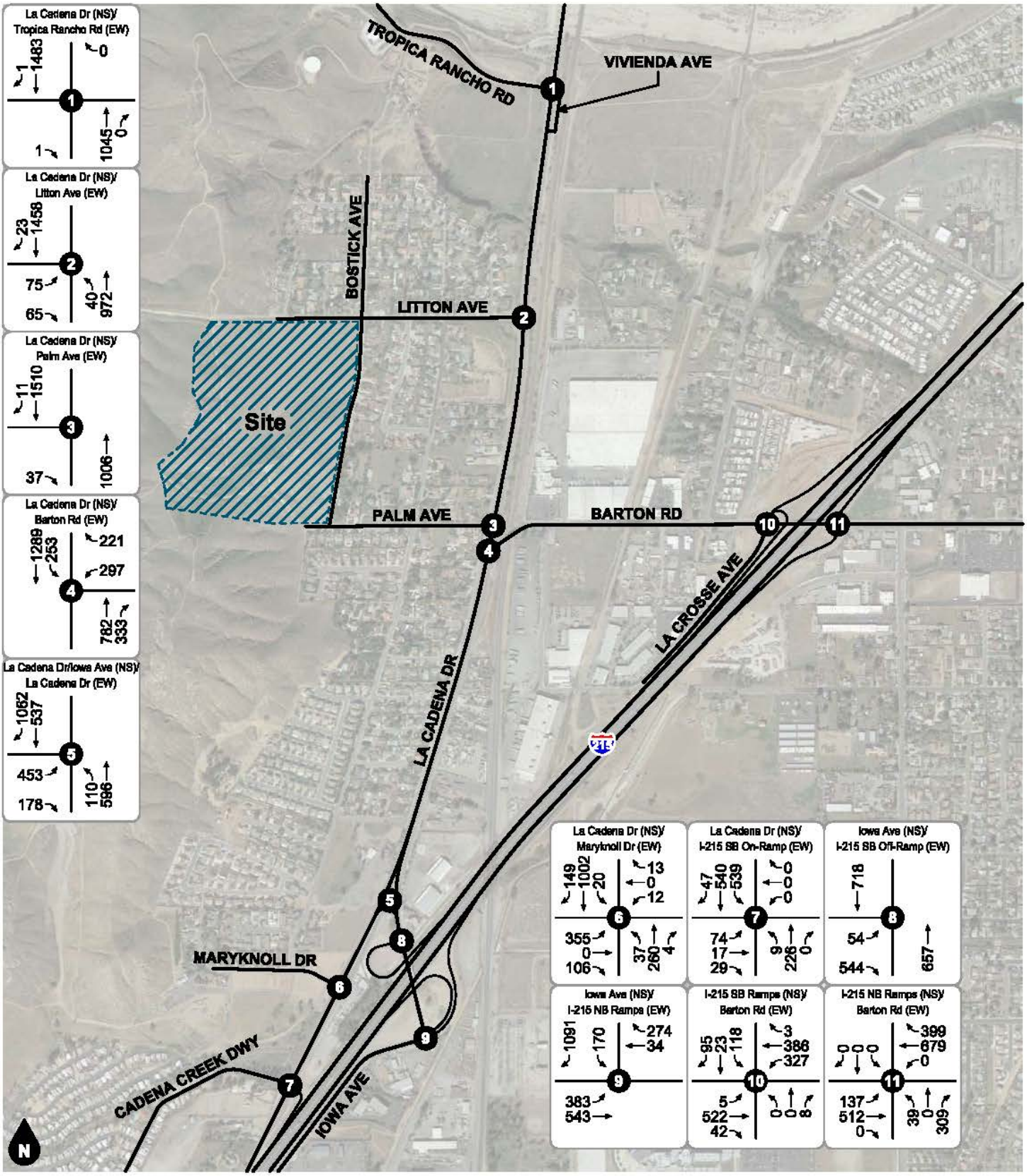
Figure 23
Opening Year (2020) Without Project
PM Peak Hour Intersection Turning Movement Volumes



Legend

●## Vehicles Per Day (1,000's)

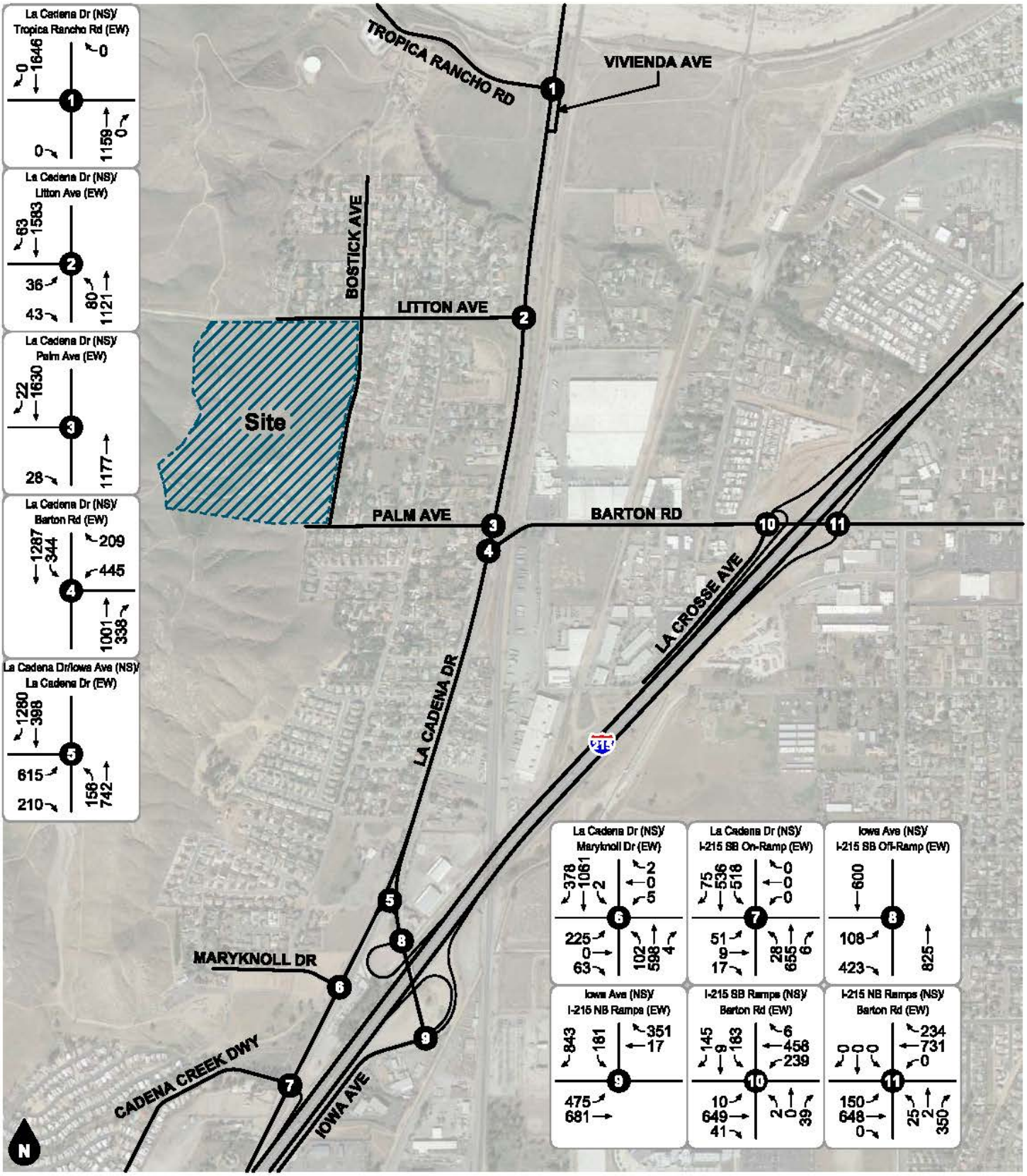
Figure 24
Opening Year (2020) With Project Average Daily Traffic Volumes



Legend

(#) Study Intersection

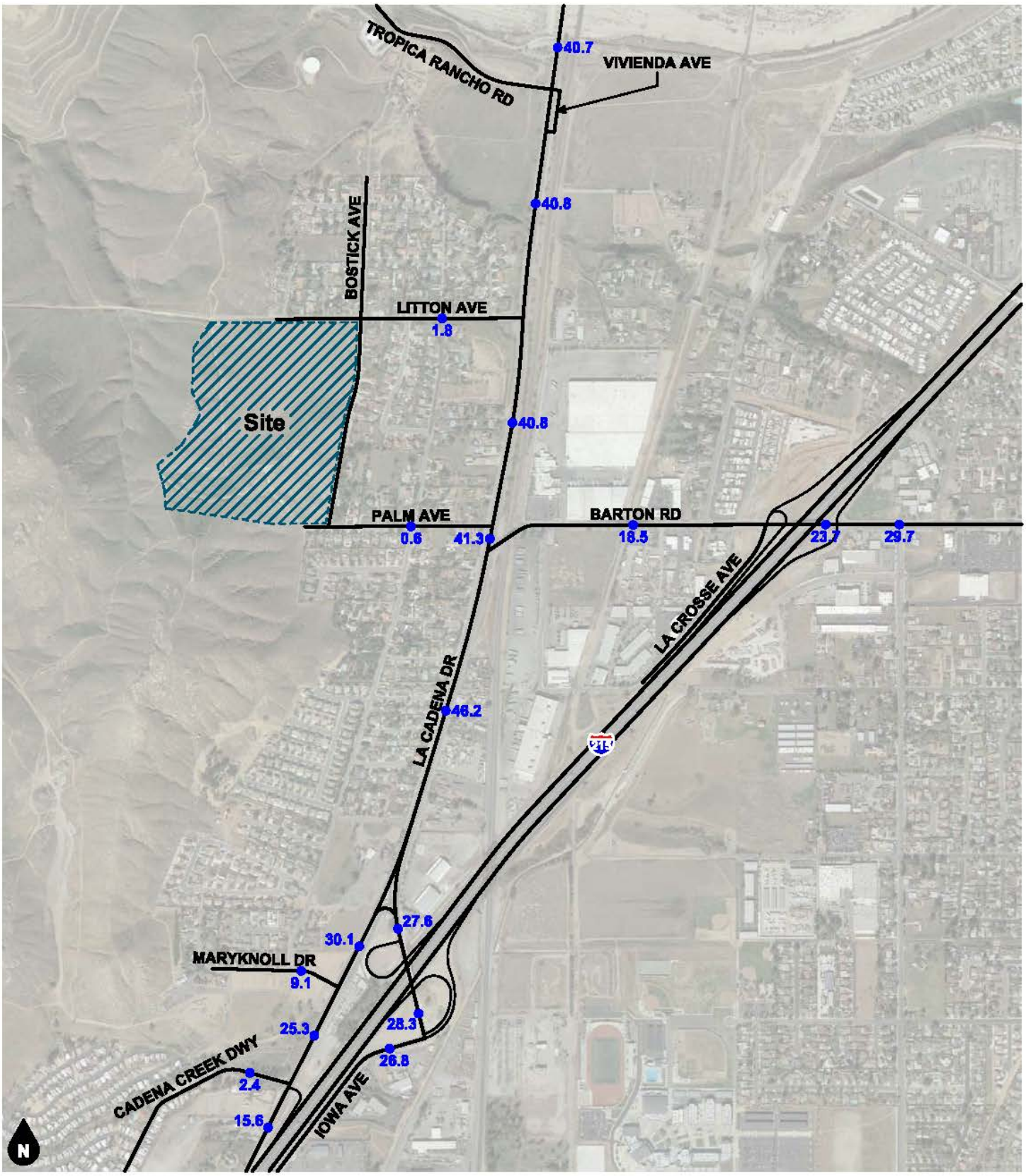
Figure 25
Opening Year (2020) With Project
AM Peak Hour Intersection Turning Movement Volumes



Legend

Study Intersection

Figure 26
Opening Year (2020) With Project
PM Peak Hour Intersection Turning Movement Volumes

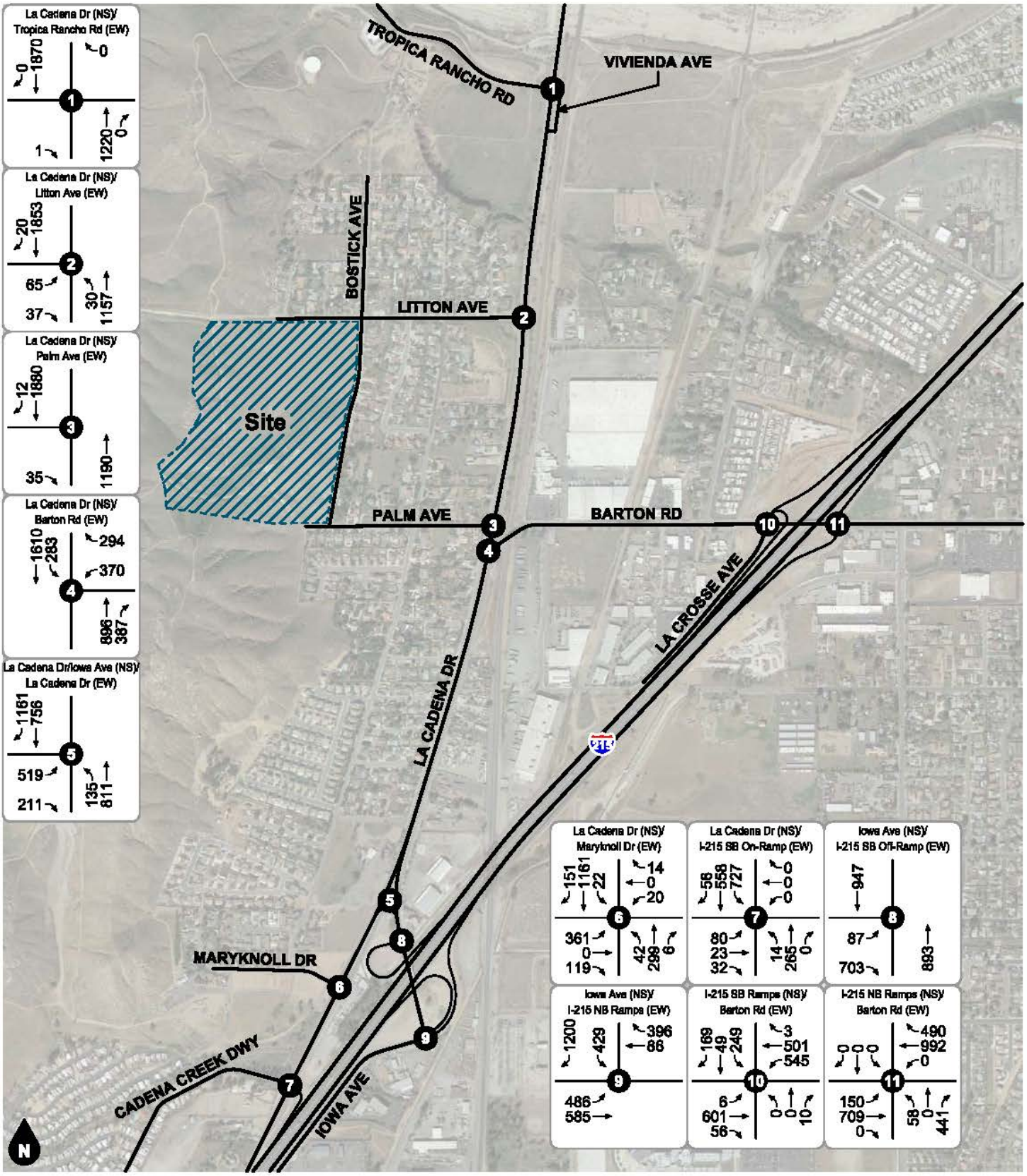


Legend

●## Vehicles Per Day (1,000's)

Figure 27

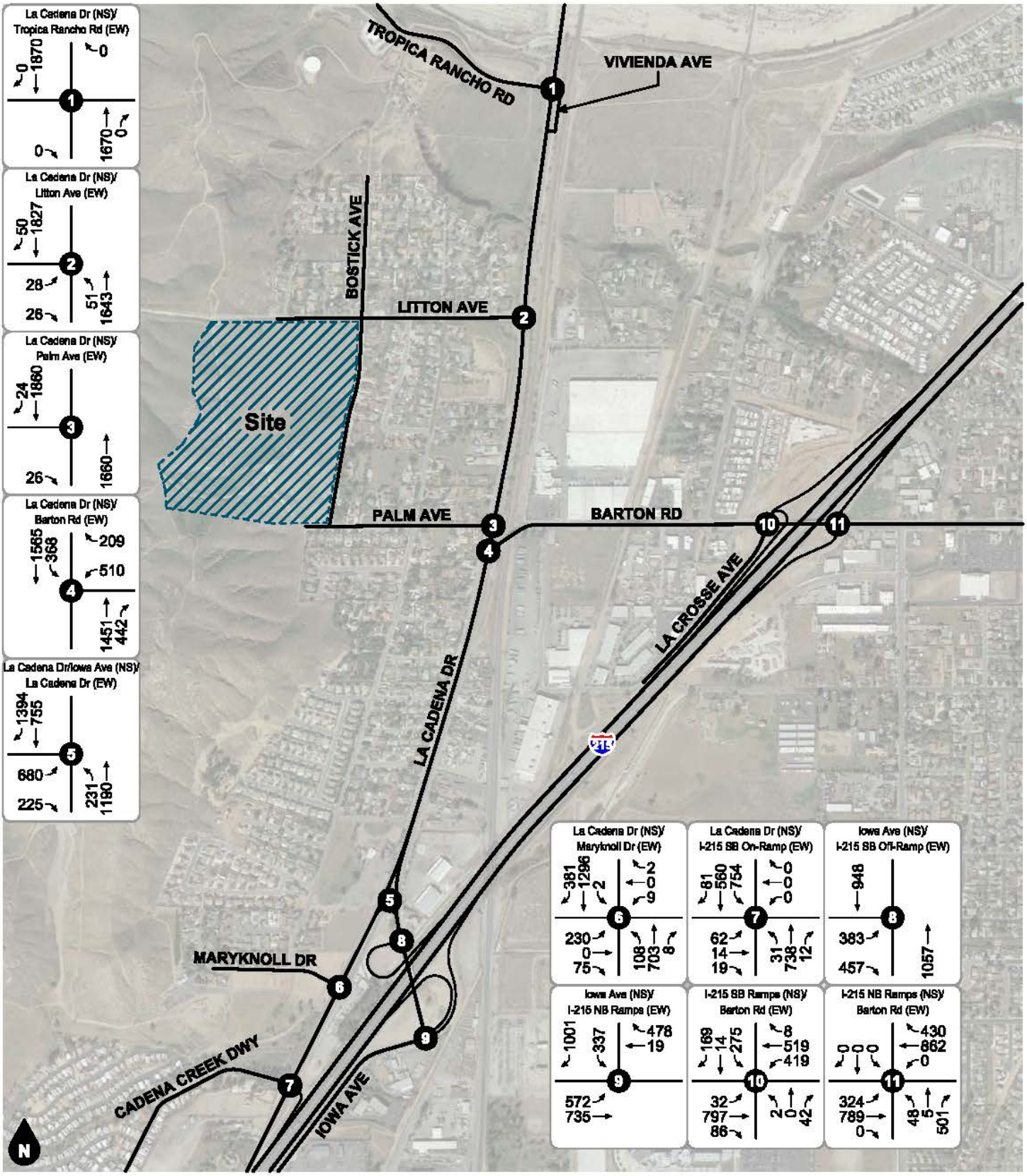
Buildout Year (2040) Without Project Average Daily Traffic Volumes



Legend

Study Intersection

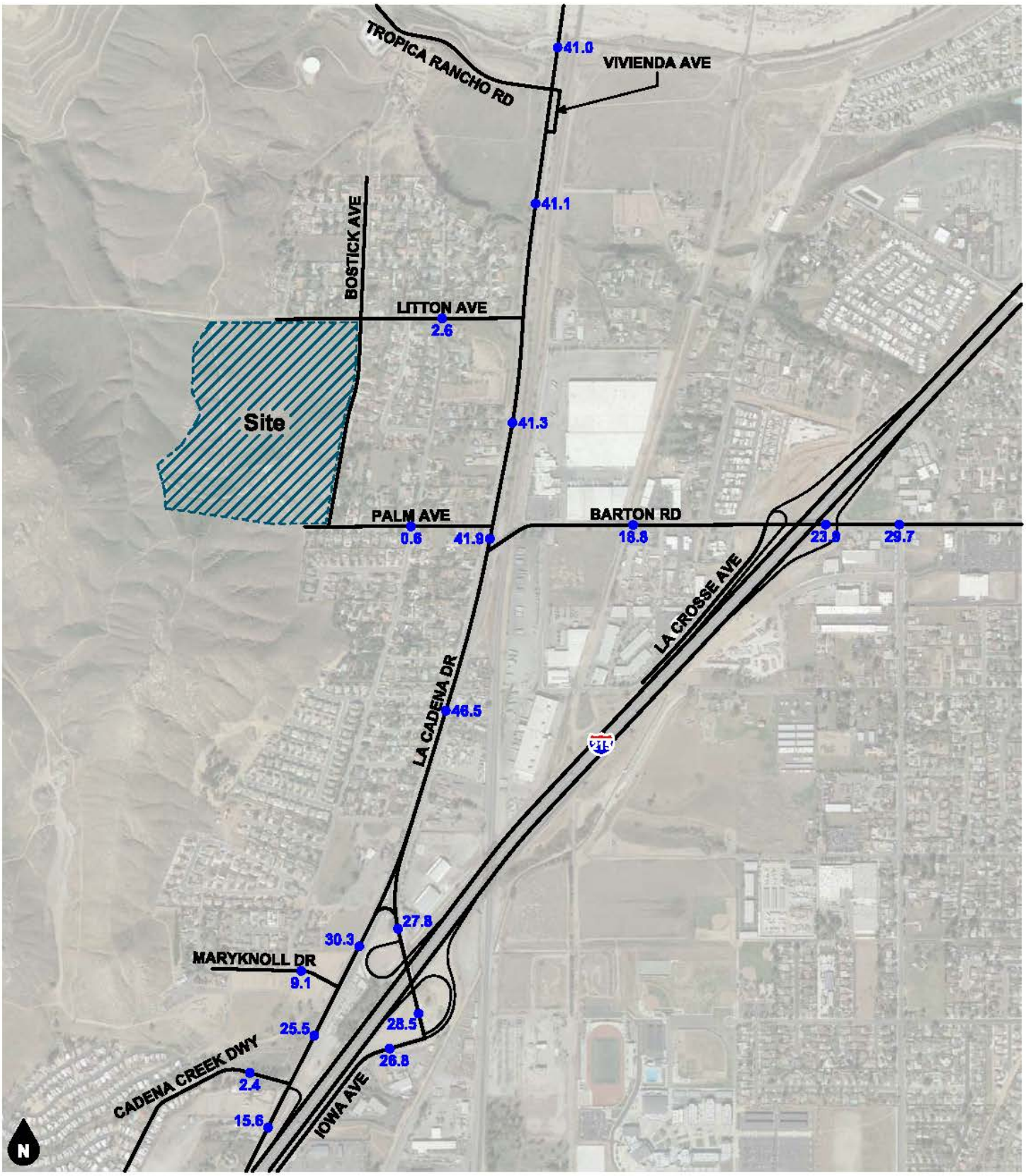
Figure 28
Buildout Year (2040) Without Project
AM Peak Hour Intersection Turning Movement Volumes



Legend

(#) Study Intersection

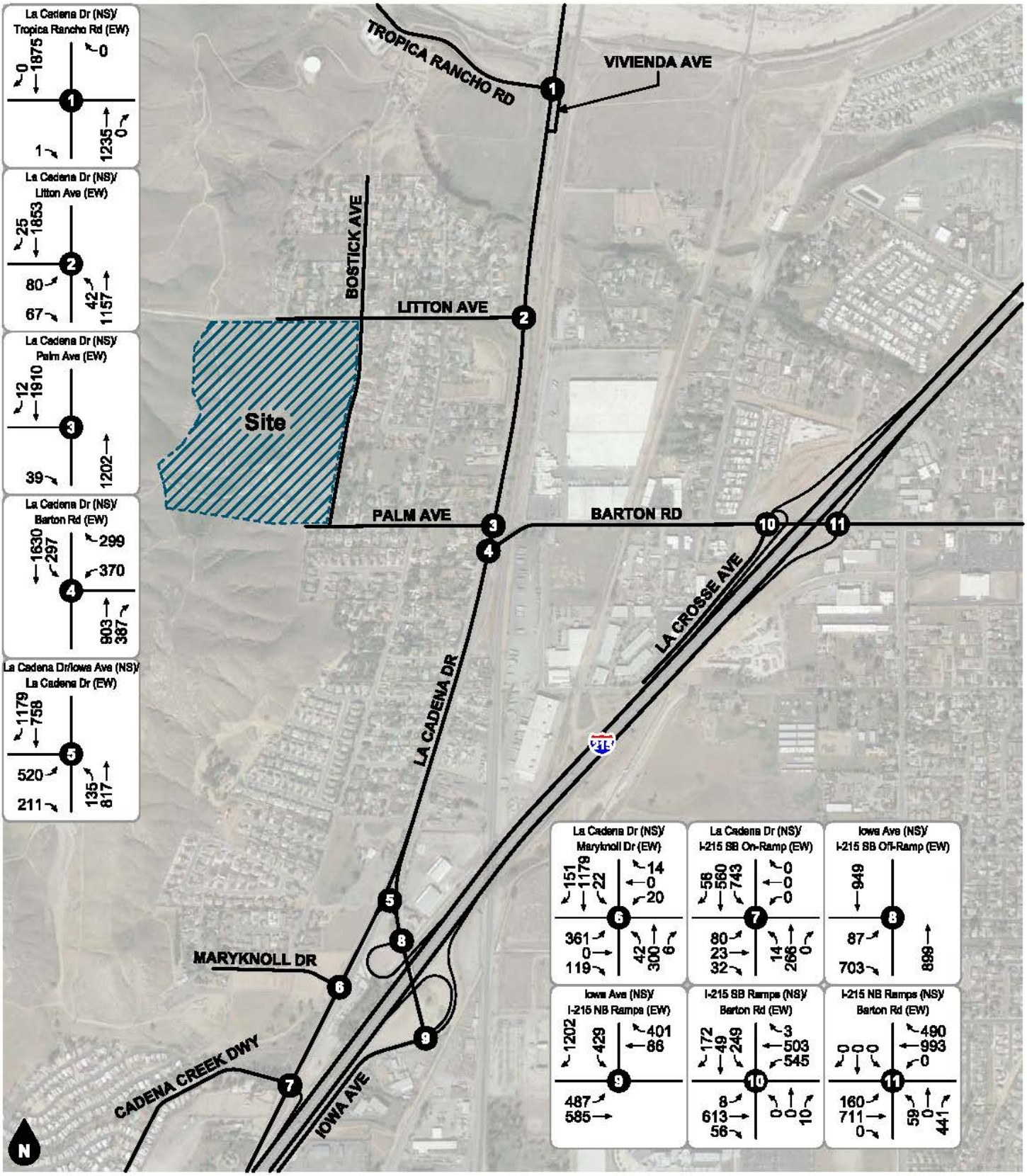
Figure 29
Buildout Year (2040) Without Project
PM Peak Hour Intersection Turning Movement Volumes



Legend

●## Vehicles Per Day (1,000's)

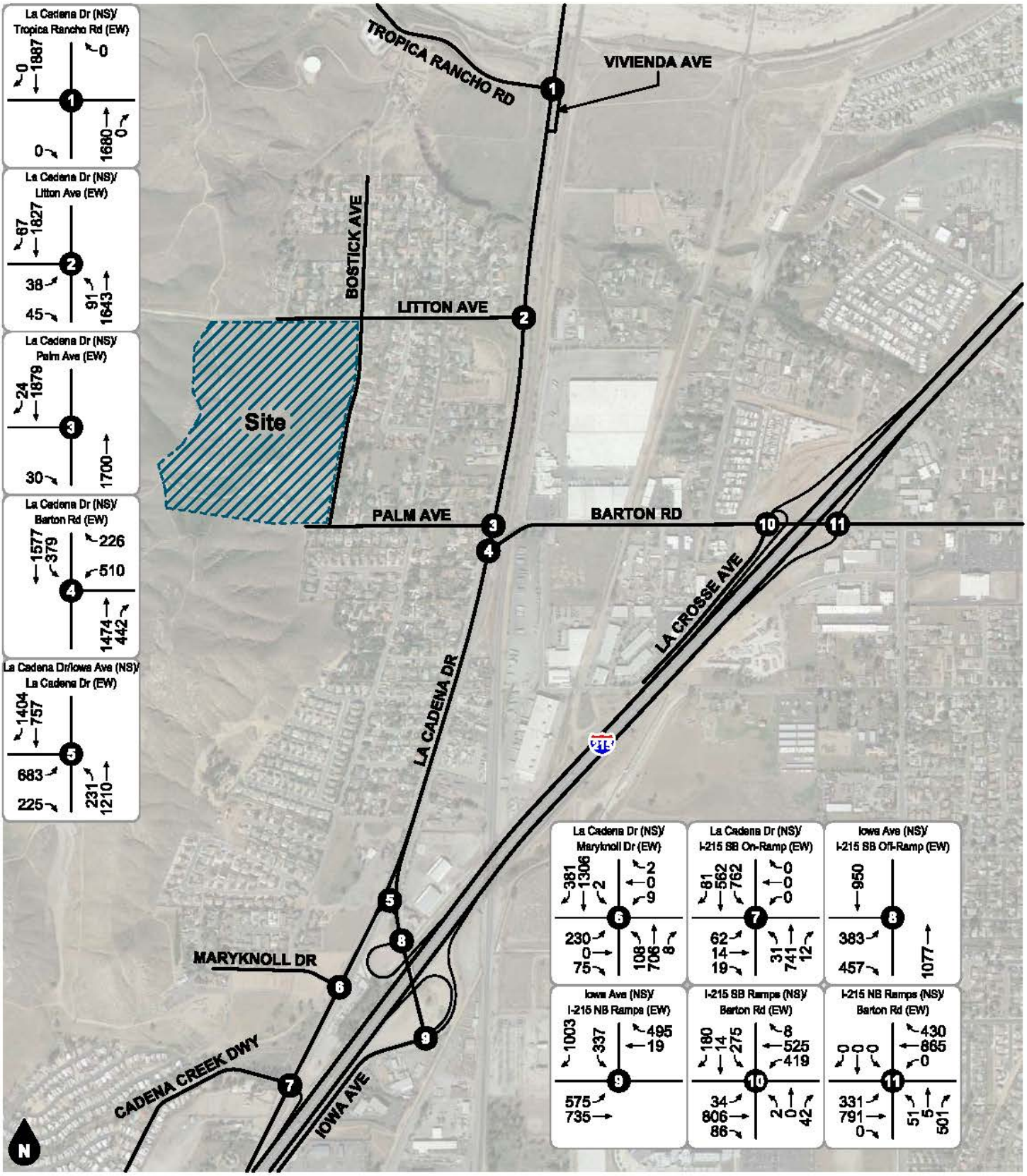
Figure 30
Buildout Year (2040) With Project Average Daily Traffic Volumes



Legend

(#) Study Intersection

Figure 31
Buildout Year (2040) With Project
AM Peak Hour Intersection Turning Movement Volumes



Legend

(#) Study Intersection

Figure 32
Buildout Year (2040) With Project
PM Peak Hour Intersection Turning Movement Volumes

6. FUTURE OPERATIONAL ANALYSIS

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

EXISTING PLUS PROJECT

Intersection Levels of Service

The average delay and Levels of Service for Existing Plus Project conditions are shown in Table 4. As shown in Table 4, the study intersections are forecast to operate within acceptable Levels of Service during the peak hours for Existing Plus Project traffic conditions, except for the following study intersection that is projected to operate at unacceptable Levels of Service:

- La Cadena Drive/Maryknoll Drive – #6 (PM peak hour)
- La Cadena Drive/I-215 Southbound On-Ramp – #7 (PM peak hour)
- Iowa Avenue/I-215 Northbound Ramps – #9 (AM & PM peak hours)

Significant Impact Evaluation

Table 4 evaluates the project impact at the study intersections for Existing Plus Project conditions. As shown in Table 4, the proposed project is forecast to result in significant traffic impacts at the following study intersection for Existing Plus Project conditions, without improvements:

- La Cadena Drive/Maryknoll Drive – #6 (PM peak hour)
- La Cadena Drive/I-215 Southbound On-Ramp – #7 (PM peak hour)
- Iowa Avenue/I-215 Northbound Ramps – #9 (AM & PM peak hours)

For Existing Plus Project conditions, the following improvements are needed to address the impacted intersections:

- La Cadena Drive/Maryknoll Drive – #6
  - Install traffic signal
  - Add northbound left turn lane
  - Add southbound left turn lane
- La Cadena Drive/I-215 Southbound On-Ramp – #7
  - Install traffic signal
- Iowa Avenue/I-215 Northbound Ramps – #9
  - Add westbound right turn overlap phasing

OPENING YEAR (2020) WITHOUT PROJECT

Intersection Levels of Service

The average delay and Levels of Service for Opening Year (2020) Without Project conditions are shown in Table 5. As shown in Table 5, the study intersections are forecast to operate within acceptable Levels of Service during the peak hours for Opening Year (2020) Without Project conditions, except for the following study intersection that is projected to operate at unacceptable Levels of Service:

- La Cadena Drive/Maryknoll Drive – #6 (AM & PM peak hours)
- La Cadena Drive/I-215 Southbound On-Ramp – #7 (AM & PM peak hours)
- Iowa Avenue/I-215 Northbound Ramps – #9 (AM & PM peak hours)

OPENING YEAR (2020) WITH PROJECT

Intersection Levels of Service

The average delay and Levels of Service for Opening Year (2020) With Project conditions are shown in Table 6. As shown in Table 6, the study intersections are projected to operate within acceptable Levels of Service during the peak hours for Opening Year (2020) With Project conditions, except for the following study intersection that is projected to operate at unacceptable Levels of Service:

- La Cadena Drive/Maryknoll Drive – #6 (AM & PM peak hours)
- La Cadena Drive/I-215 Southbound On-Ramp – #7 (AM & PM peak hours)
- Iowa Avenue/I-215 Northbound Ramps – #9 (AM & PM peak hours)

Significant Impact Evaluation

Table 6 evaluates the project impact at the study intersections for Opening Year (2020) With Project conditions. As shown in Table 6, the proposed project is forecast to result in significant traffic impacts at the following study intersection for Opening Year (2020) With Project conditions, without improvements:

- La Cadena Drive/Maryknoll Drive – #6 (AM & PM peak hours)
- La Cadena Drive/I-215 Southbound On-Ramp – #7 (AM & PM peak hours)
- Iowa Avenue/I-215 Northbound Ramps – #9 (AM & PM peak hours)

For Opening Year (2020) With Project conditions, the following improvements are needed to address the impacted intersections:

- La Cadena Drive/Maryknoll Drive – #6
  - Install traffic signal
  - Add northbound left turn lane
  - Add southbound left turn lane

- La Cadena Drive/I-215 Southbound On-Ramp – #7
  - Install traffic signal

- Iowa Avenue/I-215 Northbound Ramps – #9
  - Add westbound right turn overlap phasing

Since this is a degradation of traffic level of service for the already impacted intersections during the "without project conditions", the project applicant should pay its fair share of fees to an applicable program for the required mitigation measure improvements.

BUILDOUT YEAR (2040) WITHOUT PROJECT

Intersection Levels of Service

The average delay and Levels of Service for Buildout Year (2040) Without Project conditions are shown in Table 7. As shown in Table 7, the study intersections are forecast to operate within acceptable Levels of

Service during the peak hours for Buildout Year (2020) Without Project conditions, except for the following study intersections that are projected to operate at unacceptable Levels of Service:

- La Cadena Drive/Iowa Avenue – #5 (PM peak hour)
- La Cadena Drive/Maryknoll Drive – #6 (AM & PM peak hours)
- La Cadena Drive/I-215 Southbound On-Ramp – #7 (AM & PM peak hours)
- Iowa Avenue/I-215 Southbound Off-Ramp – #8 (AM & PM peak hours)
- Iowa Avenue/I-215 Northbound Ramps – #9 (AM & PM peak hours)

BUILDOUT YEAR (2040) WITH PROJECT

Intersection Levels of Service

The average delay and Levels of Service for Buildout Year (2040) With Project conditions are shown in Table 8. As shown in Table 8, the study intersections are projected to operate within acceptable Levels of Service (D or better) during the peak hours for Buildout Year (2040) With Project conditions, except for the following study intersections that are projected to operate at unacceptable Levels of Service (E or F):

- La Cadena Drive/Iowa Avenue – #5 (PM peak hour)
- La Cadena Drive/Maryknoll Drive – #6 (AM & PM peak hours)
- La Cadena Drive/I-215 Southbound On-Ramp – #7 (AM & PM peak hours)
- Iowa Avenue/I-215 Southbound Off-Ramp – #8 (AM & PM peak hours)
- Iowa Avenue/I-215 Northbound Ramps – #9 (AM & PM peak hours)

Significant Impact Evaluation

Table 8 evaluates the project impact at the study intersections for Buildout Year (2040) With Project conditions. As shown in Table 8, the proposed project is forecast to result in significant traffic impacts at the following study intersections for Buildout Year (2040) With Project conditions, without improvements:

- La Cadena Drive/Iowa Avenue – #5 (PM peak hour)
- La Cadena Drive/Maryknoll Drive – #6 (AM & PM peak hours)
- La Cadena Drive/I-215 Southbound On-Ramp – #7 (AM & PM peak hours)
- Iowa Avenue/I-215 Southbound Off-Ramp – #8 (AM peak hour)
- Iowa Avenue/I-215 Northbound Ramps – #9 (AM & PM peak hours)

For Buildout Year (2040) With Project conditions, the following improvements are needed to address the impacted intersections:

- La Cadena Drive/Iowa Avenue – #5
  - Add second northbound through lane

- La Cadena Drive/Maryknoll Drive – #6
  - Install traffic signal
  - Add northbound left turn lane
  - Add southbound left turn lane

- La Cadena Drive/I-215 Southbound On-Ramp – #7
  - Install traffic signal

- Iowa Avenue/I-215 Southbound Off-Ramp – #8
  - Add second eastbound right turn lane

- Iowa Avenue/I-215 Northbound Ramps – #9
  - Add westbound right turn overlap phasing

Since this is a degradation of traffic level of service for the already impacted intersections during the "without project conditions", the project applicant should pay its fair share of the estimated cost to construct the identified mitigation measure improvements, either through an applicable Development Impact Fee program or through payment of in lieu fees.

FUTURE TRAFFIC SIGNAL WARRANT ANALYSIS

A traffic signal is projected to be warranted at the following study intersection based upon the California Manual on Uniform Traffic Control Devices (2014) peak hour volume warrant (Warrant 3), for Existing Plus Project conditions:

- La Cadena Drive/I-215 Northbound On-Ramp – #7

An additional traffic signal is projected to be warranted at the following study intersections based upon the California Manual on Uniform Traffic Control Devices (2014), peak hour volume warrant (Warrant 3), for Opening Year (2020) Without Project conditions:

- La Cadena Drive/Maryknoll Drive – #6

Traffic signal warrant analysis worksheets are provided in Appendix E.

Table 4
Existing Plus Project Intersection Levels of Service and Significant Impact Evaluation

Study Intersection	Traffic Control[1]	AM Peak Hour					PM Peak Hour				
		Without Project		With Project		Significant Impact?	Without Project		With Project		Significant Impact?
		Delay[2]	LOS[3]	Delay[2]	LOS[3]		Delay[2]	LOS[3]	Delay[2]	LOS[3]	
1. La Cadena Dr at Tropica Rancho Rd	CSS	14.3	B	14.4	B	No	14.4	B	14.5	B	No
2. La Cadena Dr at Litton Ave	TS	7.1	A	9.3	A	No	5.5	A	7.7	A	No
3. La Cadena Dr at Palm Ave	CSS	14.7	B	15.1	C	No	14.9	B	15.2	C	No
4. La Cadena Dr at Barton Rd	TS	11.8	B	12.0	B	No	12.9	B	13.3	B	No
5. La Cadena Dr at Iowa Ave	TS	9.8	A	9.8	A	No	14.5	B	14.6	B	No
6. La Cadena Dr at Maryknoll Dr	CSS	30.0	D	31.0	D	No	41.2	E	42.0	E	Yes
•Install TS, add NB Left, add SB Left	TS	-	-	3.9	A	No	-	-	2.4	A	No
7. La Cadena Dr at I-215 SB On-Ramp	AWS	29.8	D	32.9	D	No	34.1	D	36.2	E	Yes
•Install Traffic Signal	TS	-	-	17.2	B	No	-	-	16.5	B	No
8. Iowa Ave at I-215 SB Off-Ramp	TS	21.6	C	21.7	C	No	16.5	B	16.9	B	No
9. Iowa Ave at I-215 NB Ramps	TS	118.9	F	120.6	F	Yes	62.1	E	65.5	E	Yes
•Add WB Right Turn Overlap	TS	-	-	15.4	B	No	-	-	12.3	B	No
10. I-215 SB Ramps at Barton Rd	RBT	5.2	A	5.2	A	No	5.2	A	5.2	A	No
11. I-215 NB Ramps at Barton Rd	TS	11.9	B	12.1	B	No	12.6	B	12.7	B	No

Notes:

(1) TS = Traffic Signal; CSS = Cross Street Stop; AWS = All-Way Stop; RBT = Roundabout

(2) Delay is shown in seconds/vehicle. For intersections with traffic signal, all way stop control or roundabout, overall average intersection delay and LOS are shown. For intersections with cross street stop control, LOS is based on average delay of the worst individual lane (or movements sharing a lane).

(3) LOS = Level of Service

Table 5
Opening Year (2020) Without Project Intersection Levels of Service

Study Intersection	Traffic Control[1]	AM Peak Hour		PM Peak Hour	
		Delay[2]	LOS[3]	Delay[2]	LOS[3]
1. La Cadena Dr at Tropica Rancho Rd	CSS	16.0	C	17.4	C
2. La Cadena Dr at Litton Ave	TS	7.3	A	6.0	A
3. La Cadena Dr at Palm Ave	CSS	16.5	C	18.4	C
4. La Cadena Dr at Barton Rd	TS	15.1	B	24.5	C
5. La Cadena Dr at Iowa Ave	TS	20.1	C	27.0	C
6. La Cadena Dr at Maryknoll Dr	CSS	1229.3	F	1932.6	F
7. La Cadena Dr at I-215 SB On-Ramp	AWS	55.9	F	74.3	F
8. Iowa Ave at I-215 SB Off-Ramp	TS	29.8	C	20.4	C
9. Iowa Ave at I-215 NB Ramps	TS	156.7	F	102.0	F
10. I-215 SB Ramps at Barton Rd	RBT	6.3	A	6.7	A
11. I-215 NB Ramps at Barton Rd	TS	12.5	B	12.9	B

Notes:

(1) TS = Traffic Signal; CSS = Cross Street Stop; AWS = All-Way Stop; RBT = Roundabout

(2) Delay is shown in seconds/vehicle. For intersections with traffic signal, all way stop control or roundabout, overall average intersection delay and LOS are shown. For intersections with cross street stop control, LOS is based on average delay of the worst individual lane (or movements sharing a lane).

(3) LOS = Level of Service

Table 6
Opening Year (2020) With Project
Intersection Levels of Service and Significant Impact Evaluation

Study Intersection	Traffic Control[1]	AM Peak Hour					PM Peak Hour				
		Without Project		With Project		Significant Impact?	Without Project		With Project		Significant Impact?
		Delay[2]	LOS[3]	Delay[2]	LOS[3]		Delay[2]	LOS[3]	Delay[2]	LOS[3]	
1. La Cadena Dr at Tropica Rancho Rd	CSS	16.0	C	16.0	C	No	17.4	C	17.6	C	No
2. La Cadena Dr at Litton Ave	TS	7.3	A	9.8	A	No	6.0	A	8.4	A	No
3. La Cadena Dr at Palm Ave	CSS	16.5	C	17.0	C	No	18.4	C	18.9	C	No
4. La Cadena Dr at Barton Rd	TS	15.1	B	15.4	B	No	24.5	C	25.6	C	No
5. La Cadena Dr at Iowa Ave	TS	20.1	C	20.2	C	No	27.0	C	28.1	C	No
6. La Cadena Dr at Maryknoll Dr	CSS	1229.3	F	1287.1	F	Yes	1932.6	F	1992.0	F	Yes
•Install TS, add NB Left, add SB Left	TS	-	-	19.7	B	No	-	-	10.6	B	No
7. La Cadena Dr at I-215 SB On-Ramp	AWS	55.9	F	60.1	F	Yes	74.3	F	76.6	F	Yes
•Install Traffic Signal	TS	-	-	18.1	B	No	-	-	17.3	B	No
8. Iowa Ave at I-215 SB Off-Ramp	TS	29.8	C	30.0	C	No	20.4	C	21.1	C	No
9. Iowa Ave at I-215 NB Ramps	TS	156.7	F	158.4	F	Yes	102.0	F	106.2	F	Yes
•Add WB Right Turn Overlap	TS	-	-	19.0	B	No	-	-	13.9	B	No
10. I-215 SB Ramps at Barton Rd	RBT	6.3	A	6.3	A	No	6.7	A	6.8	A	No
11. I-215 NB Ramps at Barton Rd	TS	12.5	B	12.7	B	No	12.9	B	13.0	B	No

Notes:

(1) TS = Traffic Signal; CSS = Cross Street Stop; AWS = All-Way Stop; RBT = Roundabout

(2) Delay is shown in seconds/vehicle. For intersections with traffic signal, all way stop control or roundabout, overall average intersection delay and LOS are shown. For intersections with cross street stop control, LOS is based on average delay of the worst individual lane (or movements sharing a lane).

(3) LOS = Level of Service

Table 7
Buildout Year (2040) Without Project Intersection Levels of Service

Study Intersection	Traffic Control[1]	AM Peak Hour		PM Peak Hour	
		Delay[2]	LOS[3]	Delay[2]	LOS[3]
1. La Cadena Dr at Tropica Rancho Rd	CSS	19.4	C	19.3	C
2. La Cadena Dr at Litton Ave	TS	8.3	A	6.4	A
3. La Cadena Dr at Palm Ave	CSS	21.6	C	20.9	C
4. La Cadena Dr at Barton Rd	TS	18.0	B	45.7	D
5. La Cadena Dr at Iowa Ave	TS	33.1	C	80.6	F
6. La Cadena Dr at Maryknoll Dr	CSS	1947.8	F	4029.5	F
7. La Cadena Dr at I-215 SB On-Ramp	AWS	113.1	F	163.3	F
8. Iowa Ave at I-215 SB Off-Ramp	TS	69.0	E	34.9	C
9. Iowa Ave at I-215 NB Ramps	TS	179.5	F	157.9	F
10. I-215 SB Ramps at Barton Rd	RBT	11.4	B	11.8	B
11. I-215 NB Ramps at Barton Rd	TS	14.2	B	17.7	B

Notes:

(1) TS = Traffic Signal; CSS = Cross Street Stop; AWS = All-Way Stop; RBT = Roundabout

(2) Delay is shown in seconds/vehicle. For intersections with traffic signal, all way stop control or roundabout, overall average intersection delay and LOS are shown. For intersections with cross street stop control, LOS is based on average delay of the worst individual lane (or movements sharing a lane).

(3) LOS = Level of Service

Table 8
Buildout Year (2040) With Project
Intersection Levels of Service and Significant Impact Evaluation

Study Intersection	Traffic Control[1]	AM Peak Hour					PM Peak Hour				
		Without Project		With Project		Significant Impact?	Without Project		With Project		Significant Impact?
		Delay[2]	LOS[3]	Delay[2]	LOS[3]		Delay[2]	LOS[3]	Delay[2]	LOS[3]	
1. La Cadena Dr at Tropica Rancho Rd	CSS	19.4	C	19.5	C	No	19.3	C	19.5	C	No
2. La Cadena Dr at Litton Ave	TS	8.3	A	11.0	B	No	6.4	A	8.6	A	No
3. La Cadena Dr at Palm Ave	CSS	21.6	C	22.5	C	No	20.9	C	21.6	C	No
4. La Cadena Dr at Barton Rd	TS	18.0	B	18.5	B	No	45.7	D	48.5	D	No
5. La Cadena Dr at Iowa Ave	TS	33.1	C	35.6	D	No	80.6	F	82.6	F	Yes
•Add 2nd NB Thru	TS	-	-	28.8	C	No	-	-	42.1	D	No
6. La Cadena Dr at Maryknoll Dr	CSS	1947.8	F	2032.5	F	Yes	4029.5	F	4151.6	F	Yes
•Install TS, add NB Left, add SB Left	TS	-	-	20.6	C	No	-	-	10.1	B	No
7. La Cadena Dr at I-215 SB On-Ramp	AWS	113.1	F	119.7	F	Yes	163.3	F	167.1	F	Yes
•Install Traffic Signal	TS	-	-	18.8	B	No	-	-	47.0	D	No
8. Iowa Ave at I-215 SB Off-Ramp	TS	69.0	E	69.8	E	Yes	34.9	C	36.9	D	No
•Add 2nd EB Right	TS	-	-	22.4	C	No	-	-	32.3	C	No
9. Iowa Ave at I-215 NB Ramps	TS	179.5	F	181.4	F	Yes	157.9	F	162.5	F	Yes
•Add WB Right Turn Overlap	TS	-	-	23.7	C	No	-	-	29.9	C	No
10. I-215 SB Ramps at Barton Rd	RBT	11.4	B	11.5	B	No	11.8	B	12.0	B	No
11. I-215 NB Ramps at Barton Rd	TS	14.2	B	14.4	B	No	17.7	B	17.9	B	No

Notes:

(1) TS = Traffic Signal; CSS = Cross Street Stop; AWS = All-Way Stop; RBT = Roundabout

(2) Delay is shown in seconds/vehicle. For intersections with traffic signal, all way stop control or roundabout, overall average intersection delay and LOS are shown. For intersections with cross street stop control, LOS is based on average delay of the worst individual lane (or movements sharing a lane).

(3) LOS = Level of Service

7. CONCLUSIONS

MITIGATION MEASURES

The following off-site improvements are recommended to address the Level of Service deficiency, for Existing Plus Project conditions and Opening Year (2020) With Project conditions:

- La Cadena Drive/Maryknoll Drive – #6
  - Install traffic signal
  - Add northbound left turn lane
  - Add southbound left turn lane

- La Cadena Drive/I-215 Southbound On-Ramp – #7
  - Install traffic signal

- Iowa Avenue/I-215 Northbound Ramps – #9
  - Add westbound right turn overlap phasing

The following additional off-site improvements are recommended to address the Level of Service deficiency, for Buildout Year (2040) With Project conditions:

- La Cadena Drive/Iowa Avenue – #5
  - Add second northbound through lane

- Iowa Avenue/I-215 Southbound Off-Ramp – #8
  - Add second eastbound right turn lane

Since this is a degradation of traffic level of service for the already impacted intersections during the "without project conditions", the project applicant should pay its fair share of the estimated cost to construct the identified mitigation measure improvements, either through an applicable Development Impact Fee program or through payment of in lieu fees.

IMPROVEMENT COST ESTIMATE

Improvements that will eliminate all anticipated roadway operational deficiencies throughout the study area have been identified for Existing Plus Project, Opening Year (2020) and Buildout Year (2040) traffic conditions. The improvements were determined through the operations analysis.

The approximate costs for the Buildout Year (2040) improvements have generally been estimated using cost guidelines in the Congestion Management Program Handbook (see Appendix G). A unit cost of $400,000 for installation of a traffic signal has been substituted for the somewhat lower value cited in the Congestion Management Program materials.

The needed intersection improvements and resulting costs are summarized in Table 9 for the study intersections. The total cost of needed intersection improvements for the existing roadway network is $1,140,000. It should be noted these cost estimates are calculated based on a rough order of magnitude unit cost for reference use only in this traffic study.

PROJECT FAIR SHARE CONTRIBUTION

The project fair share contributions have also been calculated for Buildout Year (2040) improvement locations. The project share of cost has been based on the proportion of project peak hour intersection turning

movement volumes contributed to the improvement location relative to the total new peak hour Buildout Year (2040) intersection turning movement volumes.

Table 10 presents a summary of improvement cost and project cost shares at the Buildout Year (2040) study intersection improvement locations. The intersection fair share cost calculations are typically based on the higher of the weekday morning weekday evening and Saturday mid-day peak hour traffic volumes. As shown in Table 10, the project's fair share percentages of identified study intersection costs are approximately 0.8% to 3.2%. The project's fair share cost is approximately $26,060. It should be noted these cost estimates are calculated based on a rough order of magnitude unit cost for reference use only in this traffic study. The fair share calculations are intended only for the discussion purposes of this traffic impact analysis, and do not imply any legal responsibility or formula for contributions or mitigation.

As mitigation for the potential traffic impacts, the proposed project shall contribute through an adopted traffic impact fee program in addition to any fair share contributions shown within the traffic study which are not covered within this fee program

SITE ACCESS

The following improvements will be constructed by the project to provide project site access:

Project Driveway at Litton Avenue (Opposite Terrace View Drive)
- Install northbound stop control.
- Construct the northbound approach to consist of one shared left-turn/right-turn lane.

Project Driveway at Bostick Avenue
- Install eastbound stop control.
- Construct the eastbound approach to consist of one shared left-turn/right-turn lane.

GENERAL RECOMMENDATIONS

Figure 33 summarizes the circulation recommendations for the proposed project.

All roadway design, traffic signing and striping, and traffic control improvements relating to the proposed project should be constructed in accordance with applicable engineering standards and to the satisfaction of the City of Colton.

Site-adjacent roadways should be constructed or repaired at their ultimate half-section width, including landscaping and parkway improvements in conjunction with development, or as otherwise required by the City of Colton.

On-site traffic signing and striping plans should be submitted for City of Colton approval in conjunction with detailed construction plans for the project.

The final grading, landscaping, and street improvement plans should demonstrate that sight distance standards are met in accordance with applicable City of Colton/California Department of Transportation sight distance standards.

As is the case for any roadway design, the City of Colton should periodically review traffic operations in the vicinity of the project once the project is constructed to assure that the traffic operations are satisfactory.

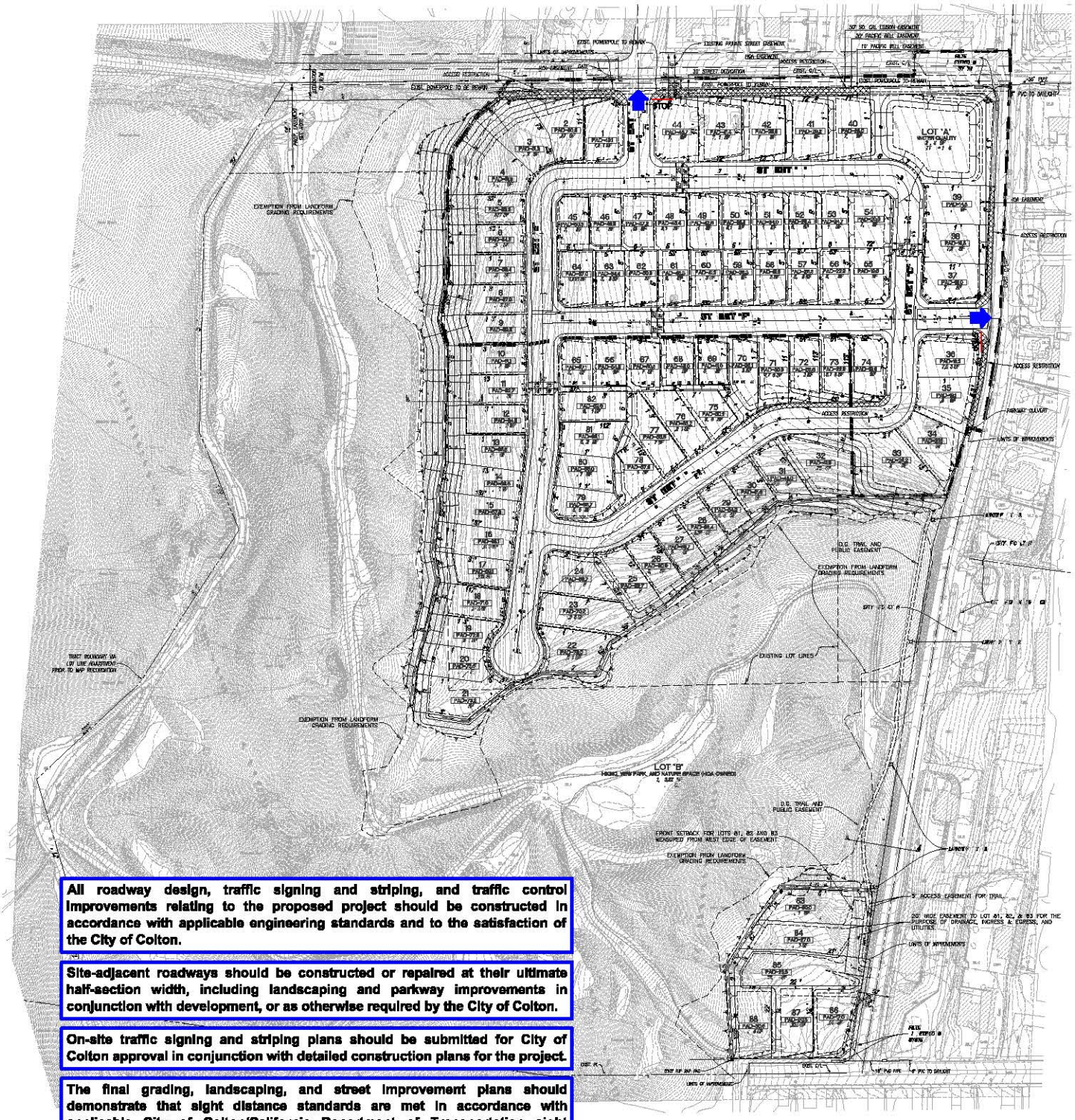
Table 9
Summary of Intersection Improvements and Cost Estimates

Intersection	Improvements	Funding	Cost[1]
5. La Cadena Dr at Iowa Ave	2nd NB Thru Lane	Fair Share	$ 180,000
	Subtotal Cost		**$ 180,000**
6. La Cadena Dr at Maryknoll Dr	Install Traffic Signal	Fair Share	$ 400,000
	Add NB Left Turn Lane	Fair Share	$ 50,000
	Add SB Left Turn Lane	Fair Share	$ 50,000
	Subtotal Cost		**$ 500,000**
7. La Cadena Dr at I-215 SB On-Ramp	Install Traffic Signal	Fair Share	$ 400,000
	Subtotal Cost		**$ 400,000**
8. Iowa Ave at I-215 SB Off-Ramp	Add 2nd EB Right Turn Lane	Fair Share	$ 50,000
	Subtotal Cost		**$ 50,000**
9. Iowa Ave at I-215 NB Ramps	Add WB Right Turn Overlap Phasing	Fair Share	$ 10,000
	Subtotal Cost		**$ 10,000**
Overall Total Cost			**$ 1,140,000**

Notes:
(1) Cost estimate based on values from Appendix G, Preliminary Construction Cost Estimates For Congestion Management Plan, San Bernardino Association of Governments (2003). Costs estimates are sensitive to the quantity and location of work specified for a given installation. These values represent the relative magnitude of the cost and should be verified through the bidding process.

Table 10
Project Fair Share Intersection Traffic Contribution

Intersection	Cost	Peak Hour	Intersection Turning Movement Volumes				Project % of New Traffic	Project Fair Share Cost
			Existing	Buildout Year (2040) With Project	Project	Total New		
5. La Cadena Dr at Iowa Ave	$ 180,000	AM	2,107	3,620	27	1,513	1.8%	$ 3,212
		PM	2,346	4,510	35	2,164	1.6%	
6. La Cadena Dr at Maryknoll Dr	$ 500,000	AM	1,174	2,214	19	1,040	1.8%	$ 9,135
		PM	1,476	2,827	13	1,351	1.0%	
7. La Cadena Dr at I-215 SB On-Ramp	$ 400,000	AM	1,171	1,774	19	603	3.2%	$ 12,604
		PM	1,505	2,284	13	779	1.7%	
8. Iowa Ave at I-215 SB Off-Ramp	$ 50,000	AM	1,708	2,638	8	930	0.9%	$ 870
		PM	1,603	2,867	22	1,264	1.7%	
9. Iowa Ave at I-215 NB Ramps	$ 10,000	AM	2,244	3,190	8	946	0.8%	$ 239
		PM	2,244	3,164	22	920	2.4%	
Overall Total Cost	$ 1,140,000						Project Fair Share	$ 26,060



All roadway design, traffic signing and striping, and traffic control improvements relating to the proposed project should be constructed in accordance with applicable engineering standards and to the satisfaction of the City of Colton.

Site-adjacent roadways should be constructed or repaired at their ultimate half-section width, including landscaping and parkway improvements in conjunction with development, or as otherwise required by the City of Colton.

On-site traffic signing and striping plans should be submitted for City of Colton approval in conjunction with detailed construction plans for the project.

The final grading, landscaping, and street improvement plans should demonstrate that sight distance standards are met in accordance with applicable City of Colton/California Department of Transportation sight distance standards.

As is the case for any roadway design, the City of Colton should periodically review traffic operations in the vicinity of the project once the project is constructed to assure that the traffic operations are satisfactory.

N

Legend

STOP Stop Sign

Full Access Driveway

Figure 33
Circulation Recommendations

APPENDICES

Appendix A Glossary

Appendix B Scoping Agreement

Appendix C Volume Count Worksheets

Appendix D Level of Service Worksheets

Appendix E Traffic Signal Warrant Analysis

Appendix F Traffic Model Forecasting Worksheets

Appendix G Preliminary Construction Cost Estimates for Congestion Management Program

APPENDIX A

GLOSSARY

GLOSSARY OF TERMS

ACRONYMS

AC	Acres
ADT	Average Daily Traffic
Caltrans	California Department of Transportation
DU	Dwelling Unit
ICU	Intersection Capacity Utilization
LOS	Level of Service
TSF	Thousand Square Feet
V/C	Volume/Capacity
VMT	Vehicle Miles Traveled

TERMS

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

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

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

CAPACITY: The 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.

CHANNELIZATION: The separation or regulation of conflicting traffic movements into definite paths of travel by the use of pavement markings, raised islands, or other suitable means to facilitate the safe and orderly movements of both vehicles and pedestrians.

CLEARANCE INTERVAL: Nearly same as yellow time. If there is an all red interval after the end of a yellow, then that is also added into the clearance interval.

CONTROL DELAY: The component of delay, typically expressed in seconds per vehicle, resulting from the type of traffic control at an intersection. Control delay is measured by comparison with the uncontrolled condition; it includes delay incurred by slowing down, stopping/waiting, and speeding up.

CORDON: An imaginary line around an area across which vehicles, persons, or other items are counted (in and out).

CORNER SIGHT DISTANCE: The minimum sight distance required by the driver of a vehicle to cross or enter the lanes of the major roadway without requiring approaching traffic travelling at a given speed to radically alter their speed or trajectory. Corner sight distance is measured from the driver's eye at 42 inches above the pavement to an object height of 36 inches above the pavement in the center of the nearest approach lane.

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

CUL-DE-SAC: A local street open at one end only and with special provisions for turning around.

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.

DEMAND RESPONSIVE SIGNAL: Same as traffic-actuated signal.

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

DETECTOR: A device that responds to a physical stimulus and transmits a resulting impulse to the signal controller.

DESIGN SPEED: A speed selected for purposes of design. Features of a highway, such as curvature, superelevation, and sight distance (upon which the safe operation of vehicles is dependent) are correlated to design speed.

DIRECTIONAL SPLIT: The percent of traffic in the peak direction at any point in time.

DIVERSION: The rerouting of peak hour traffic to avoid congestion.

FORCED FLOW: Opposite of free flow.

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

GAP: Time or distance between successive vehicles in a traffic stream, rear bumper to front bumper.

HEADWAY: Time or distance spacing between successive vehicles in a traffic stream, front bumper to front bumper.

INTERCONNECTED SIGNAL SYSTEM: A number of intersections that are connected to achieve signal progression.

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.

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

MINIMUM ACCEPTABLE GAP: Smallest time headway between successive vehicles in a traffic stream into which another vehicle is willing and able to cross or merge.

MULTI-MODAL: More than one mode; such as automobile, bus transit, rail rapid transit, and bicycle transportation modes.

OFFSET: The time interval in seconds between the beginning of green at one intersection and the beginning of green at an adjacent intersection.

PLATOON: A closely grouped component of traffic that is composed of several vehicles moving, or standing ready to move, with clear spaces ahead and behind.

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

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

PRETIMED SIGNAL: A type of traffic signal that directs traffic to stop and go on a predetermined time schedule without regard to traffic conditions. Also, fixed time signal.

PROGRESSION: A term used to describe the progressive movement of traffic through several signalized intersections.

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

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

SCREEN-LINE: An imaginary line or physical feature across which all trips are counted, normally to verify the validity of mathematical traffic models.

SHARED/RECIPROCAL PARKING AGREEMENT: A written binding document executed between property owners to provide a designated number of off-street parking stalls within a designated area to be available for specified businesses or land uses.

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

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.

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

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

STOPPING SIGHT DISTANCE: The minimum distance required by the driver of a vehicle on the major roadway travelling at a given speed to bring the vehicle to a stop after an object on the road becomes visible. Stopping sight distance is measured from the driver's eye at 42 inches above the pavement to an object height of 6 inches above the pavement.

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-END: One end of a trip at either the origin or destination (i.e., each trip has two trip-ends). A trip-end occurs when a person, object, or message is transferred to or from a vehicle.

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.

TRUCK: A vehicle having dual tires on one or more axles, or having more than two axles.

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

UNBALANCED FLOW: Heavier traffic flow in one direction than the other. On a daily basis, most facilities have balanced flow. During the peak hours, flow is seldom balanced in an urban area.

VEHICLE MILES OF TRAVEL: A measure of the amount of usage of a section of highway, obtained by multiplying the average daily traffic by length of facility in miles.

APPENDIX B

SCOPING AGREEMENT

SCOPING AGREEMENT FOR TRAFFIC IMPACT STUDY

This form acknowledges the City of Colton Engineering Division requirements for traffic impact analysis of the following project. The analysis must comply with SANBAG CMP TIA Guidelines, as applicable.

Case No. Tentative Tract Map No. 18233; DAP-001-378

Related Cases: _____

_____

APN(S): 0275-071-15; 0275-081-01; 0275-081-02; & 0163-351-25

_____

Project Name: Modern Pacific Homes at Bostick Litton Palm

Project Address: West of Bostick Avenue between Litton Avenue and Palm Avenue

Project Description: 88 single-family detached residential dwelling units

Project Size: The project is proposing to re-subdivide the overall 242.8-acre vacant site for development a 49.39-acre portion consisting of 88 single-family detached residential dwelling units. No development is proposed on the approximate 193-acre remainder of the site to the west and north at this time.

	Traffic Consultant	Developer
Name:	Tom Huang	Collin Ramsey
	Ganddini Group, Inc.	Dudek & Associates, Inc.
Address:	550 Parkcenter Drive, # 202	27372 Calle Arroyo
	Santa Ana, CA 92705	San Juan Capistrano, CA 92624
Telephone:	(714) 795-3100 x 102	(949) 295-7757
e-mail:	tom@ganddini.com	cramsey@dudek.com

A. Technical Methodology

Technical methodology to comply with SANBAG CMP guidelines. However, mitigation on nonstate facilities to maintain LOS D threshold.

Traffic count data must be current or within previous 12 months. Provide traffic count dates. New traffic counts will be conducted.

B. Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, 10th Edition, 2017. (See Table 1)

Current GP Land Use: VLDR & LDR Proposed Land Use: _____

Current Zoning: V-L Proposed Zoning: _____

	Current Trip Generation			Proposed Trip Generation		
	In	Out	Total	In	Out	Total
AM Trips:	0	0	0	17	49	66
PM Trips:	0	0	0	55	33	88

Internal Trip Allowance: No

Pass-By Trip Allowance: No

Traffic impact study to quantify change in project trip generation in comparison with pre-existing uses on project site when fully occupied.

C. Trip Geographic Distribution: To be submitted for approval by city staff. Cite source. Attach exhibit of detailed assignment. (**See Figure 3**)

D. Scenario Analysis

Project year of completion: 2020

Phase Year(s) N/A

Annual Ambient Growth rate: 1.0%

City staff to provide cumulative background projects list.

Scenarios:

Existing Conditions
Year of project completion: 1) No Project; 2) With Project.
Twenty-year forecast: 1) No Project; 2) With Project.

E. Preliminary Study Intersections: (See SANBAG CMP guidelines or comments from other agencies.) – **See Figure 1**

1. La Cadena Drive @ Tropica Rancho Road
2. La Cadena Drive @ Litton Avenue
3. La Cadena Drive @ Palm Avenue
4. La Cadena Drive @ Barton Road

5. La Cadena Drive @ Iowa Avenue
6. La Cadena Drive @ Maryknoll Drive
7. La Cadena Drive @ Cadena Creek Driveway – I-215 Southbound On-Ramp
8. Iowa Avenue @ I-215 Southbound Off-Ramp
9. Iowa Avenue @ I-215 Northbound Ramps
10. La Crosse Avenue @ Barton Road
11. La Crosse Avenue @ I-215 Southbound Ramps
12. La Crosse Avenue @ I-215 Northbound Ramps

F. Preliminary Study Roadway Segments: (See SANBAG CMP guidelines or comments from other agencies.)

1. La Cadena Drive, north of Litton Avenue
2. La Cadena Drive, Litton Avenue to Palm Avenue
3. La Cadena Drive, Barton Road to Iowa Avenue
4. La Cadena Drive, Iowa Avenue to Maryknoll Drive
5. La Cadena Drive, Maryknoll Drive to I-215 Southbound On-Ramp
6. Barton Road, La Cadena Drive to La Crosse Avenue

G. Freeways - See SANBAG CMP guidelines.

H. Other Jurisdictional Impacts

Is this project within a one-mile radius of City or County boundaries? ☒ Yes ☐ No

If so, name of City Jurisdiction: City of Grand Terrace

I. Site Plan (please attach reduced copy) – **See Figure 2**

J. Specific issues to be addressed in the Study

Recommended by:		Approved Scoping Agreement:	
Tom Huang	11/30/18		
Consultant's Representative	Date	City of Colton	Date
18-0176		Engineering Division	

Table 1
Project Trip Generation

Trip Generation Rates										
Project				Weekday AM Peak			Weekday PM Peak			Weekday Daily
No.	Land Use	Code[1]	Units[2]	In %	Out %	Total	In %	Out %	Total	
1	Single-Family Detached Housing	ITE 210	DU	25%	75%	0.74	63%	37%	0.99	9.44

Trips Generated									
Project			Weekday AM Peak			Weekday PM Peak			Weekday Daily
No.	Land Use	Quantity[2]	In	Out	Total	In	Out	Total	
1	Single-Family Detached Housing	88 DU	17	49	66	55	33	88	831

Notes:

(1) ITE = Institute of Transportation Engineers, Trip Generation Manual, 10th Edition, 2017; 210 = Land Use Code

(2) DU = Dwelling Units



Legend

(#) Study Intersection

Figure 1
Project Location Map

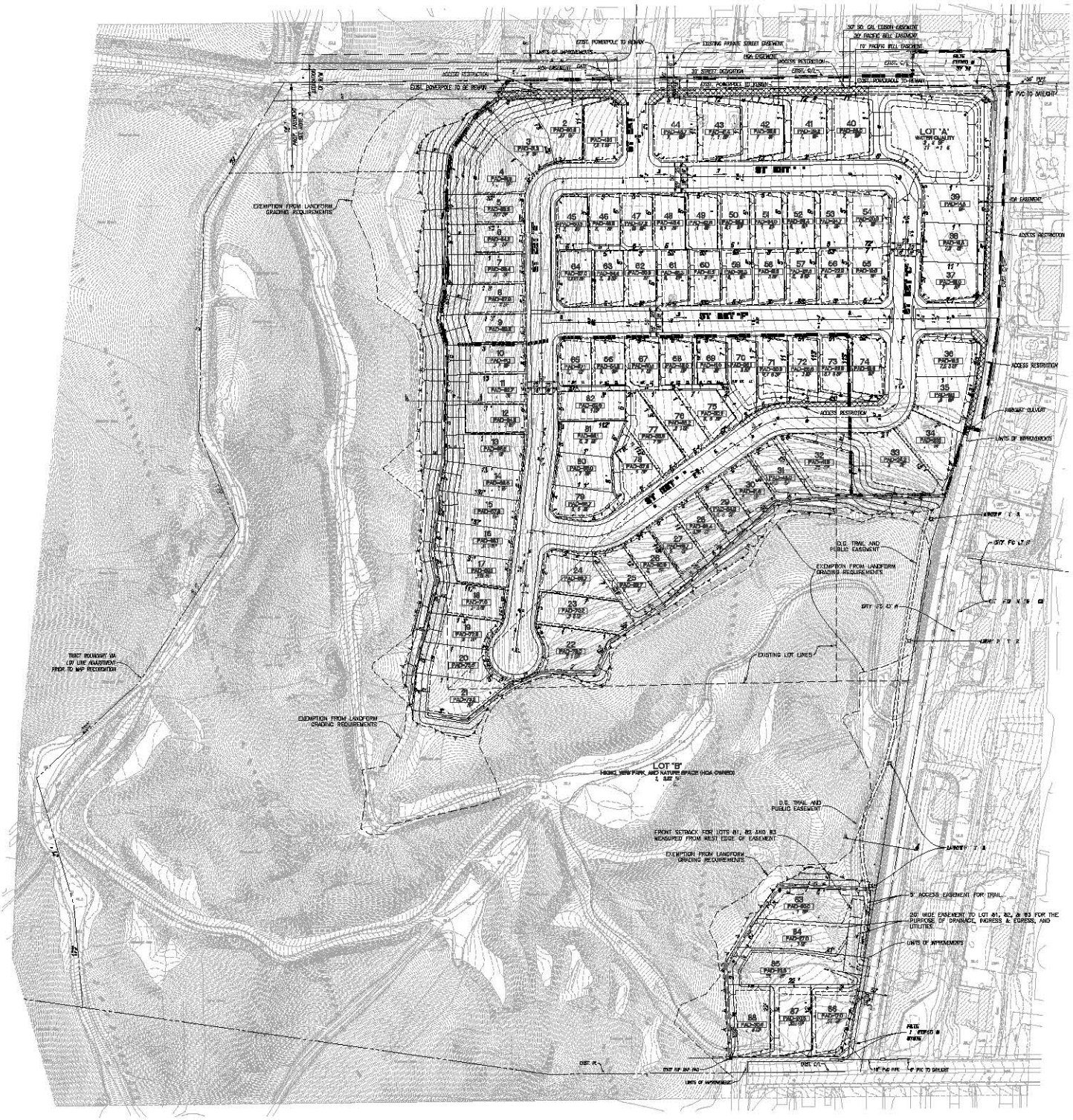
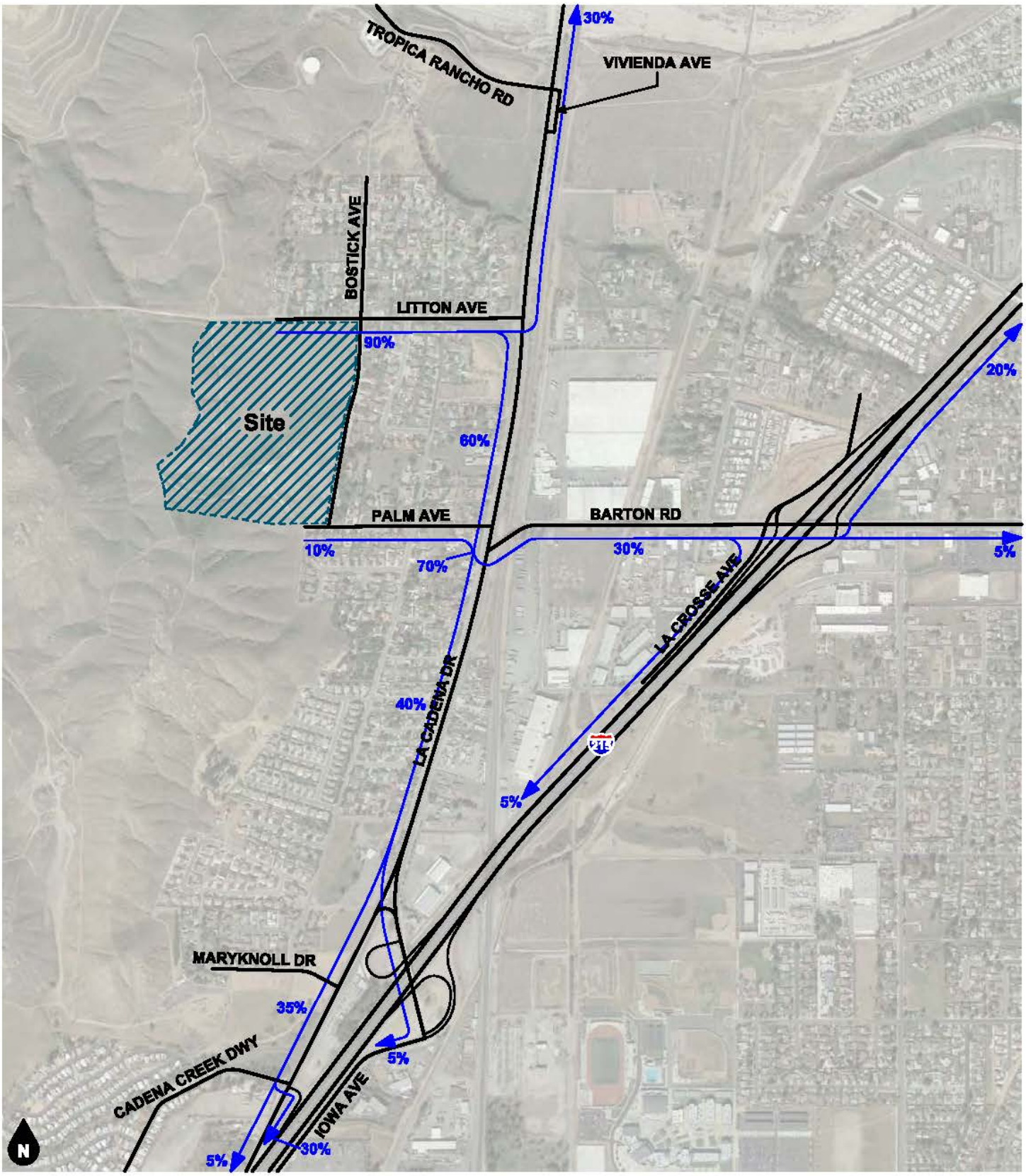


Figure 2
Site Plan



Legend

10% Percent To/From Project

Figure 3
Project Trip Distribution

APPENDIX C

VOLUME COUNT WORKSHEETS

INTERSECTION TURNING MOVEMENT COUNTS

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

DATE: Wed, Dec 12, 18

LOCATION: Colton
NORTH & SOUTH: La Cadena
EAST & WEST: Tropica Rancho

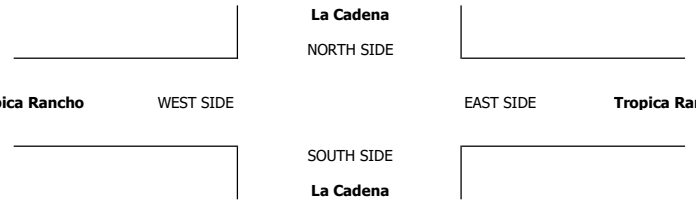
PROJECT #: SC
LOCATION #: 1
CONTROL: STOP E/W

NOTES:

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

Add U-Turns to Left Turns

		NORTHBOUND La Cadena			SOUTHBOUND La Cadena			EASTBOUND Tropica Rancho			WESTBOUND Tropica Rancho				U-TURNS				
	LANES:	NL X	NT 2	NR X	SL X	ST 2	SR 0	EL X	ET X	ER 0	WL X	WT X	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	0	167	0	0	284	0	0	0	0	0	0	0	451	0	0	0	0	0
	7:15 AM	0	182	0	0	296	0	0	0	0	0	0	0	478	0	0	0	0	0
	7:30 AM	0	171	0	0	349	1	0	0	1	0	0	0	522	0	0	0	0	0
	7:45 AM	0	156	0	0	279	0	0	0	0	0	0	0	435	0	0	0	0	0
	8:00 AM	0	114	0	0	249	0	0	0	0	0	0	0	363	0	0	0	0	0
	8:15 AM	0	100	0	0	160	0	0	0	1	0	0	0	261	0	0	0	0	0
	8:30 AM	0	98	0	0	143	0	0	0	0	0	0	0	241	0	0	0	0	0
	8:45 AM	0	89	0	0	137	2	0	0	1	0	0	0	229	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	1,077	0	0	1,897	3	0	0	3	0	0	0	2,980	0	0	0	0	0
	APPROACH %	0%	100%	0%	0%	100%	0%	0%	0%	100%	0%	0%	0%						
	APP/DEPART	1,077	/	1,077	1,900	/	1,900	3	/	0	0	/	3	0					
	BEGIN PEAK HR		7:00 AM																
	VOLUMES	0	676	0	0	1,208	1	0	0	1	0	0	0	1,886					
	APPROACH %	0%	100%	0%	0%	100%	0%	0%	0%	100%	0%	0%	0%						
	PEAK HR FACTOR		0.929			0.864			0.250			0.000		0.903					
	APP/DEPART	676	/	676	1,209	/	1,209	1	/	0	0	/	1	0					
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	227	0	0	344	0	0	0	0	0	0	0	571	0	0	0	0	0
	4:15 PM	0	162	0	0	292	0	0	0	0	0	0	0	454	0	0	0	0	0
	4:30 PM	0	208	0	0	299	2	0	0	1	0	0	0	510	0	0	0	0	0
	4:45 PM	0	212	0	0	316	0	0	0	0	0	0	0	528	0	0	0	0	0
	5:00 PM	0	216	0	0	326	0	0	0	0	0	0	0	542	0	0	0	0	0
	5:15 PM	0	208	0	0	297	0	0	0	0	0	0	0	505	0	0	0	0	0
	5:30 PM	0	216	0	0	300	0	0	0	0	0	0	0	516	0	0	0	0	0
	5:45 PM	0	169	0	0	343	2	0	0	1	0	0	0	515	0	0	0	0	0
	VOLUMES	0	1,618	0	0	2,517	4	0	0	2	0	0	0	4,141	0	0	0	0	0
	APPROACH %	0%	100%	0%	0%	100%	0%	0%	0%	100%	0%	0%	0%						
	APP/DEPART	1,618	/	1,618	2,521	/	2,519	2	/	0	0	/	4	0					
	BEGIN PEAK HR		4:45 PM																
	VOLUMES	0	852	0	0	1,239	0	0	0	0	0	0	0	2,091					
	APPROACH %	0%	100%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%						
	PEAK HR FACTOR		0.986			0.950			0.000			0.000		0.964					
	APP/DEPART	852	/	852	1,239	/	1,239	0	/	0	0	/	0	0					



		ALL PED AND BIKE					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

INTERSECTION TURNING MOVEMENT COUNTS

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

DATE: Wed, Dec 12, 18

LOCATION: Colton
NORTH & SOUTH: La Cadena
EAST & WEST: Litton

PROJECT #: SC
LOCATION #: 2
CONTROL: SIGNAL

NOTES:

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

☐ Add U-Turns to Left Turns

		NORTHBOUND (La Cadena)			SOUTHBOUND (La Cadena)			EASTBOUND (Litton)			WESTBOUND (Litton)			
	LANES:	NL 1	NT 2	NR X	SL X	ST 2	SR 0	EL 0	ET X	ER 0	WL X	WT X	WR X	TOTAL
AM	7:00 AM	4	157	0	0	279	4	10	0	6	0	0	0	460
	7:15 AM	4	165	0	0	293	3	18	0	8	0	0	0	491
	7:30 AM	5	155	0	0	342	7	16	0	7	0	0	0	532
	7:45 AM	9	144	0	0	277	2	12	0	9	0	0	0	453
	8:00 AM	12	104	0	0	246	2	11	0	2	0	0	0	377
	8:15 AM	3	90	0	0	155	6	10	0	10	0	0	0	274
	8:30 AM	3	91	0	0	141	2	7	0	6	0	0	0	250
	8:45 AM	6	84	0	0	133	5	6	0	5	0	0	0	239
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	46	990	0	0	1,866	31	90	0	53	0	0	0	3,082
	APPROACH %	4%	95%	0%	0%	98%	2%	63%	0%	37%	0%	0%	0%	
	APP/DEPART	1,042	/	1,080	1,897	/	1,925	143	/	0	0	/	77	0
	BEGIN PEAK HR		7:00 AM											
	VOLUMES	22	621	0	0	1,191	16	56	0	30	0	0	0	1,938
	APPROACH %	3%	96%	0%	0%	99%	1%	65%	0%	35%	0%	0%	0%	
	PEAK HR FACTOR		0.954			0.865			0.827			0.000		0.909
	APP/DEPART	645	/	677	1,207	/	1,223	86	/	0	0	/	38	0
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	10	221	0	0	331	13	6	0	8	0	0	0	589
	4:15 PM	4	158	0	0	283	9	5	0	1	0	0	0	460
	4:30 PM	4	202	0	0	287	13	7	0	5	0	0	0	518
	4:45 PM	11	206	0	0	307	8	5	0	4	0	0	0	541
	5:00 PM	6	209	0	0	311	15	7	0	9	0	0	0	557
	5:15 PM	13	204	0	0	283	13	5	0	5	0	0	0	523
	5:30 PM	7	209	0	0	291	9	7	0	5	0	0	0	528
	5:45 PM	18	166	0	0	336	8	4	0	2	0	0	0	534
	VOLUMES	73	1,575	0	0	2,429	88	46	0	39	0	0	0	4,262
	APPROACH %	4%	95%	0%	0%	96%	3%	54%	0%	46%	0%	0%	0%	
	APP/DEPART	1,659	/	1,622	2,518	/	2,479	85	/	0	0	/	161	0
	BEGIN PEAK HR		4:45 PM											
	VOLUMES	37	828	0	0	1,192	45	24	0	23	0	0	0	2,156
	APPROACH %	4%	95%	0%	0%	96%	4%	51%	0%	49%	0%	0%	0%	
	PEAK HR FACTOR		0.994			0.949			0.734			0.000		0.966
	APP/DEPART	871	/	853	1,238	/	1,221	47	/	0	0	/	82	0

U-TURNS

	NB	SB	EB	WB	TTL
	0	0	0	0	
7:00 AM	1	0	0	0	1
7:15 AM	0	0	0	0	0
7:30 AM	1	0	0	0	1
7:45 AM	0	0	0	0	0
8:00 AM	2	0	0	0	2
8:15 AM	1	0	0	0	1
8:30 AM	1	0	0	0	1
8:45 AM	0	0	0	0	0
9:00 AM	0	0	0	0	0
9:15 AM	0	0	0	0	0
9:30 AM	0	0	0	0	0
9:45 AM	0	0	0	0	0
	6	0	0	0	6
03:00 PM	0	0	0	0	0
3:15 PM	0	0	0	0	0
3:30 PM	0	0	0	0	0
3:45 PM	0	0	0	0	0
4:00 PM	1	0	0	0	1
4:15 PM	1	0	0	0	1
4:30 PM	1	0	0	0	1
4:45 PM	2	1	0	0	3
5:00 PM	1	0	0	0	1
5:15 PM	1	0	0	0	1
5:30 PM	2	0	0	0	2
5:45 PM	2	0	0	0	2
	11	1	0	0	12

La Cadena

NORTH SIDE

Litton WEST SIDE — EAST SIDE **Litton**

SOUTH SIDE

La Cadena

		ALL PED AND BIKE					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

INTERSECTION TURNING MOVEMENT COUNTS

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

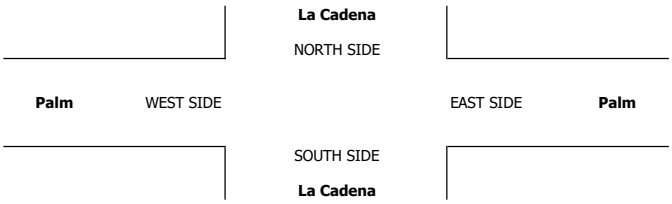
DATE:	LOCATION:	Colton	PROJECT #:	SC
Wed, Dec 12, 18	NORTH & SOUTH:	La Cadena	LOCATION #:	3
	EAST & WEST:	Palm	CONTROL:	STOP E

NOTES:

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

☑ Add U-Turns to Left Turns

		NORTHBOUND (La Cadena)			SOUTHBOUND (La Cadena)			EASTBOUND (Palm)			WESTBOUND (Palm)				U-TURNS				
	LANES:	NL X	NT 2	NR X	SL X	ST 2	SR 1	EL X	ET X	ER 0	WL X	WT X	WR X	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	0	163	0	0	279	1	0	0	7	0	0	0	450	0	0	0	0	0
	7:15 AM	0	169	0	0	290	7	0	0	10	0	0	0	476	0	0	0	0	0
	7:30 AM	0	167	0	0	326	1	0	0	6	0	0	0	500	0	0	0	0	0
	7:45 AM	0	145	0	0	317	2	0	0	9	0	0	0	473	0	0	0	0	0
	8:00 AM	0	119	0	0	239	2	0	0	6	0	0	0	366	0	0	0	0	0
	8:15 AM	0	100	0	0	178	1	0	0	9	0	0	0	288	0	0	0	0	0
	8:30 AM	0	94	0	0	135	3	0	0	5	0	0	0	237	0	0	0	0	0
	8:45 AM	0	87	0	0	152	0	0	0	6	0	0	0	245	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	1,044	0	0	1,916	17	0	0	58	0	0	0	3,035					
	APPROACH %	0%	100%	0%	0%	99%	1%	0%	0%	100%	0%	0%	0%						
	APP/DEPART	1,044	/	1,044	1,933	/	1,974	58	/	0	0	/	17	0	0	0	0	0	0
	BEGIN PEAK HR		7:00 AM																
	VOLUMES	0	644	0	0	1,212	11	0	0	32	0	0	0	1,899					
	APPROACH %	0%	100%	0%	0%	99%	1%	0%	0%	100%	0%	0%	0%						
	PEAK HR FACTOR		0.953			0.935			0.800			0.000		0.950					
	APP/DEPART	644	/	644	1,223	/	1,244	32	/	0	0	/	11	0					
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	226	0	0	344	3	0	0	6	0	0	0	579	0	0	0	0	0
	4:15 PM	0	171	0	0	289	3	0	0	5	0	0	0	468	0	0	0	0	0
	4:30 PM	0	210	0	0	285	6	0	0	6	0	0	0	507	0	0	0	0	0
	4:45 PM	0	217	0	0	299	8	0	0	5	0	0	0	529	0	0	0	0	0
	5:00 PM	0	203	0	0	309	6	0	0	5	0	0	0	523	0	0	0	0	0
	5:15 PM	0	233	0	0	293	6	0	0	8	0	0	0	540	0	0	0	0	0
	5:30 PM	0	214	0	0	279	6	0	0	4	0	0	0	503	0	0	0	0	0
	5:45 PM	0	187	0	0	341	4	0	0	7	0	0	0	539	0	0	0	0	0
	VOLUMES	0	1,661	0	0	2,439	42	0	0	46	0	0	0	4,188					
	APPROACH %	0%	100%	0%	0%	98%	2%	0%	0%	100%	0%	0%	0%						
	APP/DEPART	1,661	/	1,661	2,481	/	2,485	46	/	0	0	/	42	0	0	0	0	0	0
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	0	837	0	0	1,222	22	0	0	24	0	0	0	2,105					
	APPROACH %	0%	100%	0%	0%	98%	2%	0%	0%	100%	0%	0%	0%						
	PEAK HR FACTOR		0.898			0.901			0.750			0.000		0.975					
	APP/DEPART	837	/	837	1,244	/	1,246	24	/	0	0	/	22	0					



		ALL PED AND BIKE					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

INTERSECTION TURNING MOVEMENT COUNTS

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

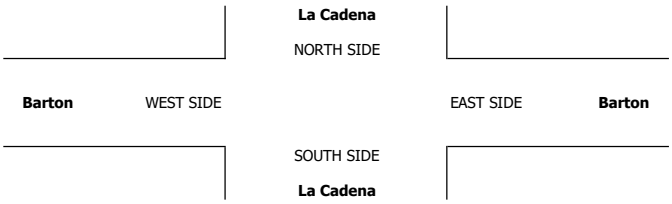
DATE:	LOCATION:	Colton	PROJECT #:	SC
Wed, Dec 12, 18	NORTH & SOUTH:	La Cadena	LOCATION #:	4
	EAST & WEST:	Barton	CONTROL:	SIGNAL

NOTES:

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

☐ Add U-Turns to Left Turns

		NORTHBOUND (La Cadena)			SOUTHBOUND (La Cadena)			EASTBOUND (Barton)			WESTBOUND (Barton)				U-TURNS				
	LANES:	NL X	NT 2	NR 1	SL 1	ST 2	SR X	EL X	ET X	ER X	WL 1	WT X	WR 1	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	0	137	24	36	250	0	0	0	0	31	0	26	504	0	0	0	0	0
	7:15 AM	0	131	40	54	246	0	0	0	0	51	0	38	560	0	0	0	0	0
	7:30 AM	0	119	35	47	282	0	0	0	0	50	0	45	578	0	3	0	0	3
	7:45 AM	0	104	34	57	269	0	0	0	0	34	0	41	539	0	0	0	0	0
	8:00 AM	0	80	25	38	207	0	0	0	0	34	0	39	423	0	0	0	0	0
	8:15 AM	0	83	26	31	155	0	0	0	0	20	0	16	331	0	1	0	0	1
	8:30 AM	0	72	12	23	116	0	0	0	0	23	0	21	267	0	1	0	0	1
	8:45 AM	0	64	17	25	132	0	0	0	0	21	0	22	281	0	1	0	0	1
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	790	213	311	1,657	0	0	0	0	264	0	248	3,489	0	6	0	0	6
	APPROACH %	0%	79%	21%	16%	84%	0%	0%	0%	0%	52%	0%	48%						
	APP/DEPART	1,003	/	1,044	1,974	/	1,921	0	/	524	512	/	0	0					
	BEGIN PEAK HR		7:00 AM																
	VOLUMES	0	491	133	194	1,047	0	0	0	0	166	0	150	2,184					
	APPROACH %	0%	79%	21%	16%	84%	0%	0%	0%	0%	53%	0%	47%						
	PEAK HR FACTOR		0.912			0.937			0.000			0.832		0.940					
	APP/DEPART	624	/	644	1,244	/	1,213	0	/	327	316	/	0	0					
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	196	32	56	294	0	0	0	0	41	0	30	649	0	0	0	0	0
	4:15 PM	0	143	38	50	244	0	0	0	0	40	0	28	543	0	0	0	0	0
	4:30 PM	0	178	40	63	228	0	0	0	0	50	0	32	591	0	0	0	0	0
	4:45 PM	0	180	42	73	231	0	0	0	0	43	0	37	606	0	0	0	0	0
	5:00 PM	0	176	38	64	250	0	0	0	0	74	0	27	629	0	0	0	0	0
	5:15 PM	0	200	30	49	251	0	0	0	0	32	0	32	594	1	1	0	0	2
	5:30 PM	0	192	37	69	214	0	0	0	0	42	0	22	576	0	0	0	0	0
	5:45 PM	0	158	30	57	290	0	0	0	0	47	0	28	610	0	1	0	0	1
	VOLUMES	0	1,423	287	481	2,002	0	0	0	0	369	0	236	4,801	1	2	0	0	3
	APPROACH %	0%	83%	17%	19%	81%	0%	0%	0%	0%	61%	0%	39%						
	APP/DEPART	1,711	/	1,661	2,485	/	2,372	0	/	768	605	/	0	0					
	BEGIN PEAK HR		4:30 PM																
	VOLUMES	0	734	150	249	960	0	0	0	0	199	0	128	2,422					
	APPROACH %	0%	83%	17%	21%	79%	0%	0%	0%	0%	61%	0%	39%						
	PEAK HR FACTOR		0.958			0.963			0.000			0.809		0.963					
	APP/DEPART	885	/	863	1,210	/	1,160	0	/	399	327	/	0	0					



		ALL PED AND BIKE					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

INTERSECTION TURNING MOVEMENT COUNTS

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

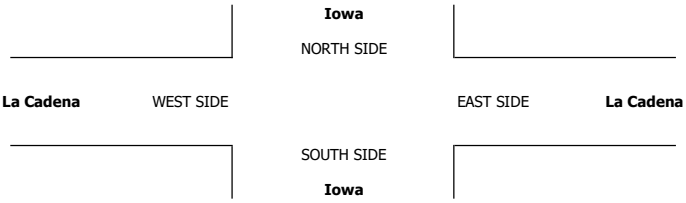
DATE:	LOCATION:	Colton	PROJECT #:	SC
Wed, Dec 12, 18	NORTH & SOUTH:	Iowa	LOCATION #:	5
	EAST & WEST:	La Cadena	CONTROL:	SIGNAL

NOTES:

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

☑ Add U-Turns to Left Turns

		NORTHBOUND (Iowa)			SOUTHBOUND (Iowa)			EASTBOUND (La Cadena)			WESTBOUND (La Cadena)				U-TURNS				
	LANES:	NL 1	NT 1	NR X	SL X	ST 1	SR 2	EL 1	ET X	ER 1	WL X	WT X	WR X	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	14	134	0	0	127	171	27	0	31	0	0	0	504	0	0	0	0	0
	7:15 AM	18	142	0	0	102	187	19	0	20	0	0	0	488	0	0	0	0	0
	7:30 AM	22	92	0	0	116	223	20	0	22	0	0	0	495	0	0	0	0	0
	7:45 AM	12	101	0	0	105	197	32	0	15	0	0	0	462	0	0	0	0	0
	8:00 AM	16	85	0	0	75	164	14	0	13	0	0	0	367	0	0	0	0	0
	8:15 AM	26	82	0	0	48	124	14	0	10	0	0	0	304	0	0	0	0	0
	8:30 AM	7	63	0	0	37	115	15	0	21	0	0	0	258	0	0	0	0	0
	8:45 AM	17	70	0	0	45	113	18	0	21	0	0	0	284	1	0	0	0	1
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	132	769	0	0	655	1,294	159	0	153	0	0	0	3,162	1	0	0	0	1
	APPROACH %	15%	85%	0%	0%	34%	66%	51%	0%	49%	0%	0%	0%						
	APP/DEPART	901	/	928	1,949	/	809	312	/	0	0	/	1,425	0					
	BEGIN PEAK HR		7:00 AM																
	VOLUMES	66	469	0	0	450	778	98	0	88	0	0	0	1,949					
	APPROACH %	12%	88%	0%	0%	37%	63%	53%	0%	47%	0%	0%	0%						
	PEAK HR FACTOR		0.836			0.906			0.802			0.000		0.967					
	APP/DEPART	535	/	567	1,228	/	538	186	/	0	0	/	844	0					
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	10	175	0	0	85	241	63	0	29	0	0	0	603	0	0	0	0	0
	4:15 PM	20	130	0	0	68	197	46	0	26	0	0	0	487	0	0	0	0	0
	4:30 PM	18	156	0	0	65	197	69	0	42	0	0	0	547	0	0	0	0	0
	4:45 PM	19	149	0	0	70	198	73	0	37	0	0	0	546	0	0	0	0	0
	5:00 PM	19	140	0	0	66	229	80	0	45	0	0	0	579	0	0	0	0	0
	5:15 PM	11	147	0	0	84	202	85	0	26	0	0	0	555	0	0	0	0	0
	5:30 PM	10	147	0	0	77	168	77	0	21	0	0	0	500	0	0	0	0	0
	5:45 PM	16	130	0	0	83	226	65	0	16	0	0	0	536	0	0	0	0	0
	VOLUMES	123	1,174	0	0	598	1,658	558	0	242	0	0	0	4,353	0	0	0	0	0
	APPROACH %	9%	91%	0%	0%	27%	73%	70%	0%	30%	0%	0%	0%						
	APP/DEPART	1,297	/	1,732	2,256	/	840	800	/	0	0	/	1,781	0					
	BEGIN PEAK HR		4:30 PM																
	VOLUMES	67	592	0	0	285	826	307	0	150	0	0	0	2,227					
	APPROACH %	10%	90%	0%	0%	26%	74%	67%	0%	33%	0%	0%	0%						
	PEAK HR FACTOR		0.947			0.942			0.914			0.000		0.962					
	APP/DEPART	659	/	899	1,111	/	435	457	/	0	0	/	893	0					



		ALL PED AND BIKE					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

INTERSECTION TURNING MOVEMENT COUNTS

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

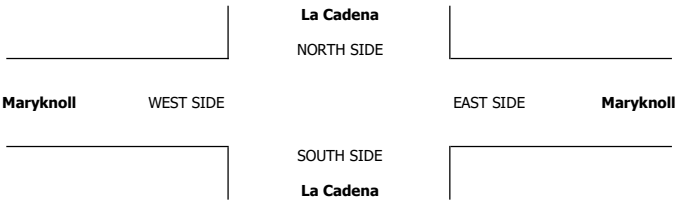
DATE:	LOCATION:	Colton	PROJECT #:	SC
Wed, Dec 12, 18	NORTH & SOUTH:	La Cadena	LOCATION #:	6
	EAST & WEST:	Maryknoll	CONTROL:	STOP E/W

NOTES:

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

☑ Add U-Turns to Left Turns

		NORTHBOUND La Cadena			SOUTHBOUND La Cadena			EASTBOUND Maryknoll			WESTBOUND Maryknoll				U-TURNS				
	LANES:	NL 0	NT 2	NR 0	SL 0	ST 2	SR 1	EL 0	ET 1	ER 0	WL 0	WT 1	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	1	49	1	6	164	2	6	0	8	2	0	4	243	0	2	0	0	2
	7:15 AM	2	34	0	3	208	4	4	0	12	3	0	1	271	1	2	0	0	3
	7:30 AM	1	33	1	4	235	1	6	0	9	1	0	0	291	0	1	0	0	1
	7:45 AM	3	40	1	2	211	3	2	0	5	1	0	3	271	0	0	0	0	0
	8:00 AM	1	23	1	4	172	4	2	0	4	3	0	0	214	0	1	0	0	1
	8:15 AM	0	23	1	1	147	4	2	0	5	3	1	0	187	0	0	0	0	0
	8:30 AM	3	31	2	1	113	6	0	0	5	1	0	3	165	0	1	0	0	1
	8:45 AM	2	35	1	3	123	4	3	0	6	0	0	2	179	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	13	268	8	24	1,373	28	25	0	54	14	1	13	1,821	1	7	0	0	8
	APPROACH %	4%	93%	3%	2%	96%	2%	32%	0%	68%	50%	4%	46%						
	APP/DEPART	289	/	313	1,425	/	1,442	79	/	25	28	/	41	0					
	BEGIN PEAK HR		7:00 AM																
	VOLUMES	7	156	3	15	818	10	18	0	34	7	0	8	1,076					
	APPROACH %	4%	94%	2%	2%	97%	1%	35%	0%	65%	47%	0%	53%						
	PEAK HR FACTOR		0.814			0.878			0.813			0.625		0.924					
	APP/DEPART	166	/	187	843	/	860	52	/	13	15	/	16	0					
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	5	91	0	0	248	6	1	0	3	1	0	0	355	0	0	0	0	0
	4:15 PM	5	67	1	2	215	6	4	0	5	0	0	1	306	0	0	0	0	0
	4:30 PM	6	108	1	0	219	6	2	0	4	1	0	1	348	0	0	0	0	0
	4:45 PM	8	106	1	1	210	2	3	0	5	1	0	1	338	1	0	0	0	1
	5:00 PM	7	124	1	0	238	5	1	0	3	0	0	0	379	0	0	0	0	0
	5:15 PM	5	108	0	0	204	5	3	0	5	0	0	0	330	0	0	0	0	0
	5:30 PM	5	97	0	1	176	5	1	0	4	0	0	0	289	0	1	0	0	1
	5:45 PM	2	80	0	0	226	0	1	0	1	1	0	0	311	0	0	0	0	0
	VOLUMES	43	781	4	4	1,736	35	16	0	30	4	0	3	2,656	1	1	0	0	2
	APPROACH %	5%	94%	0%	0%	98%	2%	35%	0%	65%	57%	0%	43%						
	APP/DEPART	828	/	801	1,775	/	1,771	46	/	7	7	/	77	0					
	BEGIN PEAK HR		4:30 PM																
	VOLUMES	26	446	3	1	871	18	9	0	17	2	0	2	1,395					
	APPROACH %	5%	94%	1%	0%	98%	2%	35%	0%	65%	50%	0%	50%						
	PEAK HR FACTOR		0.900			0.916			0.813			0.500		0.920					
	APP/DEPART	475	/	457	890	/	891	26	/	4	4	/	43	0					



		ALL PED AND BIKE					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

INTERSECTION TURNING MOVEMENT COUNTS

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

DATE: Wed, Dec 12, 18

LOCATION: Colton
NORTH & SOUTH: La Cadena
EAST & WEST: I-215 SB Ramp

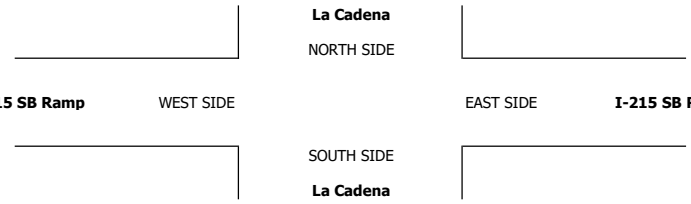
PROJECT #: SC
LOCATION #: 7
CONTROL: STOP ALL

NOTES:

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

Add U-Turns to Left Turns

		NORTHBOUND La Cadena			SOUTHBOUND La Cadena			EASTBOUND I-215 SB Ramp			WESTBOUND I-215 SB Ramp				U-TURNS				
	LANES:	NL 1	NT 2	NR 0	SL 1	ST 1	SR 0	EL 0	ET 1	ER 0	WL X	WT X	WR X	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	2	26	0	95	67	10	22	6	7	0	0	0	235	0	0	0	0	0
	7:15 AM	4	15	0	118	93	10	20	5	8	0	0	0	273	0	0	0	0	0
	7:30 AM	2	22	0	132	104	14	17	4	9	0	0	0	304	0	0	0	0	0
	7:45 AM	1	32	0	118	90	10	13	1	4	0	0	0	269	0	0	0	0	0
	8:00 AM	2	17	0	97	70	12	10	3	1	0	0	0	212	0	1	0	0	1
	8:15 AM	3	12	0	88	59	7	11	5	4	0	0	0	189	0	0	0	0	0
	8:30 AM	2	26	0	73	38	11	11	2	1	0	0	0	164	0	1	0	0	1
	8:45 AM	2	16	0	79	37	10	20	1	0	0	0	0	165	0	1	0	0	1
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	18	166	0	800	558	84	124	27	34	0	0	0	1,811	0	3	0	0	3
	APPROACH %	10%	90%	0%	55%	39%	6%	67%	15%	18%	0%	0%	0%						
	APP/DEPART	184	/	293	1,442	/	592	185	/	824	0	/	102	0					
	BEGIN PEAK HR		7:00 AM																
	VOLUMES	9	95	0	463	354	44	72	16	28	0	0	0	1,081					
	APPROACH %	9%	91%	0%	54%	41%	5%	62%	14%	24%	0%	0%	0%						
	PEAK HR FACTOR		0.788			0.861			0.829			0.000		0.889					
	APP/DEPART	104	/	167	861	/	382	116	/	479	0	/	53	0					
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	6	80	0	150	95	12	12	0	4	0	0	0	359	1	0	0	0	1
	4:15 PM	6	72	1	110	93	10	10	1	4	0	0	0	307	1	0	0	0	1
	4:30 PM	8	109	2	115	84	17	8	2	2	0	0	0	347	0	0	0	0	0
	4:45 PM	8	102	1	111	93	17	15	2	7	0	0	0	356	0	0	0	0	0
	5:00 PM	9	119	1	127	98	16	14	1	2	0	0	0	387	1	0	0	0	1
	5:15 PM	2	96	1	113	78	22	11	4	6	0	0	0	333	0	1	0	0	1
	5:30 PM	8	83	2	93	74	10	9	2	6	0	0	0	287	1	1	0	0	2
	5:45 PM	6	69	0	135	85	13	15	2	2	0	0	0	327	1	0	0	0	1
	VOLUMES	53	730	8	954	700	117	94	14	33	0	0	0	2,703	5	2	0	0	7
	APPROACH %	7%	92%	1%	54%	40%	7%	67%	10%	23%	0%	0%	0%						
	APP/DEPART	791	/	826	1,771	/	738	141	/	974	0	/	165	0					
	BEGIN PEAK HR		4:30 PM																
	VOLUMES	27	426	5	466	353	72	48	9	17	0	0	0	1,423					
	APPROACH %	6%	93%	1%	52%	40%	8%	65%	12%	23%	0%	0%	0%						
	PEAK HR FACTOR		0.888			0.924			0.771			0.000		0.919					
	APP/DEPART	458	/	475	891	/	371	74	/	479	0	/	98	0					



		ALL PED AND BIKE					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

INTERSECTION TURNING MOVEMENT COUNTS

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

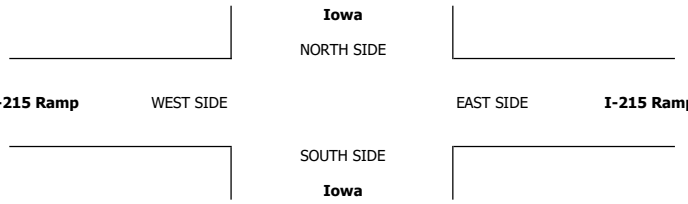
DATE:	LOCATION:	Colton	PROJECT #:	SC
Wed, Dec 12, 18	NORTH & SOUTH:	Iowa	LOCATION #:	8
	EAST & WEST:	I-215 Ramp	CONTROL:	SIGNAL

NOTES:

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

Add U-Turns to Left Turns

		NORTHBOUND Iowa			SOUTHBOUND Iowa			EASTBOUND I-215 Ramp			WESTBOUND I-215 Ramp				U-TURNS				
	LANES:	NL X	NT 1	NR X	SL X	ST 1	SR X	EL 1	ET X	ER 1	WL X	WT X	WR X	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	0	154	0	0	154	0	7	0	106	0	0	0	421	0	0	0	0	0
	7:15 AM	0	153	0	0	111	0	4	0	134	0	0	0	402	0	0	0	0	0
	7:30 AM	0	104	0	0	154	0	7	0	114	0	0	0	379	0	0	0	0	0
	7:45 AM	0	99	0	0	118	0	7	0	134	0	0	0	358	0	0	0	0	0
	8:00 AM	0	88	0	0	83	0	9	0	121	0	0	0	301	0	0	0	0	0
	8:15 AM	0	97	0	0	52	0	10	0	111	0	0	0	270	0	0	0	0	0
	8:30 AM	0	62	0	0	62	0	4	0	67	0	0	0	195	0	0	0	0	0
	8:45 AM	0	91	0	0	75	0	6	0	77	0	0	0	249	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	848	0	0	809	0	54	0	864	0	0	0	2,575	0	0	0	0	0
	APPROACH %	0%	100%	0%	0%	100%	0%	6%	0%	94%	0%	0%	0%						
	APP/DEPART	848	/	902	809	/	1,673	918	/	0	0	/	0	0					
	BEGIN PEAK HR		7:00 AM																
	VOLUMES	0	510	0	0	537	0	25	0	488	0	0	0	1,560					
	APPROACH %	0%	100%	0%	0%	100%	0%	5%	0%	95%	0%	0%	0%						
	PEAK HR FACTOR		0.828			0.872			0.910			0.000		0.926					
	APP/DEPART	510	/	535	537	/	1,025	513	/	0	0	/	0	0					
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	174	0	0	120	0	8	0	72	0	0	0	374	0	0	0	0	0
	4:15 PM	0	147	0	0	93	0	10	0	92	0	0	0	342	0	0	0	0	0
	4:30 PM	0	156	0	0	106	0	15	0	105	0	0	0	382	0	0	0	0	0
	4:45 PM	0	166	0	0	104	0	11	0	100	0	0	0	381	0	0	0	0	0
	5:00 PM	0	142	0	0	106	0	5	0	85	0	0	0	338	0	0	0	0	0
	5:15 PM	0	155	0	0	113	0	7	0	98	0	0	0	373	0	0	0	0	0
	5:30 PM	0	148	0	0	104	0	11	0	89	0	0	0	352	0	0	0	0	0
	5:45 PM	0	139	0	0	93	0	5	0	78	0	0	0	315	0	0	0	0	0
	VOLUMES	0	1,227	0	0	839	0	72	0	719	0	0	0	2,857	0	0	0	0	0
	APPROACH %	0%	100%	0%	0%	100%	0%	9%	0%	91%	0%	0%	0%						
	APP/DEPART	1,227	/	1,299	839	/	1,558	791	/	0	0	/	0	0					
	BEGIN PEAK HR		4:00 PM																
	VOLUMES	0	643	0	0	423	0	44	0	369	0	0	0	1,479					
	APPROACH %	0%	100%	0%	0%	100%	0%	11%	0%	89%	0%	0%	0%						
	PEAK HR FACTOR		0.924			0.881			0.860			0.000		0.968					
	APP/DEPART	643	/	687	423	/	792	413	/	0	0	/	0	0					



		ALL PED AND BIKE					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

INTERSECTION TURNING MOVEMENT COUNTS

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

DATE: Wed, Dec 12, 18

LOCATION: Colton
NORTH & SOUTH: Iowa
EAST & WEST: I-215 Ramp

PROJECT #: SC
LOCATION #: 9
CONTROL: SIGNAL

NOTES:

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

Add U-Turns to Left Turns

		NORTHBOUND Iowa			SOUTHBOUND Iowa			EASTBOUND I-215 Ramp			WESTBOUND I-215 Ramp				U-TURNS				
	LANES:	NL X	NT X	NR X	SL 0	ST X	SR 0	EL 1	ET 1	ER X	WL X	WT 0.5	WR 0.5	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	0	0	0	25	0	235	80	125	0	0	11	74	550	0	0	0	0	0
	7:15 AM	0	0	0	23	0	222	90	129	0	0	5	63	532	0	0	0	0	0
	7:30 AM	0	0	0	33	0	235	67	124	0	0	4	37	500	0	0	0	0	0
	7:45 AM	0	0	0	18	0	234	44	107	0	0	8	55	466	0	0	0	0	0
	8:00 AM	0	0	0	14	0	190	38	99	0	0	6	50	397	0	0	0	0	0
	8:15 AM	0	0	0	13	0	150	55	112	0	0	9	42	381	0	0	0	0	0
	8:30 AM	0	0	0	24	0	105	27	83	0	0	10	35	284	0	0	0	0	0
	8:45 AM	0	0	0	26	0	126	44	97	0	0	11	47	351	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	176	0	1,497	445	876	0	0	64	403	3,461	0	0	0	0	0
	APPROACH %	0%	0%	0%	11%	0%	89%	34%	66%	0%	0%	14%	86%						
	APP/DEPART	0	/	848	1,673	/	0	1,321	/	1,052	467	/	1,561	0					
	BEGIN PEAK HR		7:00 AM																
	VOLUMES	0	0	0	99	0	926	281	485	0	0	28	229	2,048					
	APPROACH %	0%	0%	0%	10%	0%	90%	37%	63%	0%	0%	11%	89%						
	PEAK HR FACTOR		0.000			0.956			0.874			0.756		0.931					
	APP/DEPART	0	/	510	1,025	/	0	766	/	584	257	/	954	0					
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	0	0	31	0	161	86	149	0	0	6	88	521	0	0	0	0	0
	4:15 PM	0	0	0	27	0	158	74	169	0	0	3	73	504	0	0	0	0	0
	4:30 PM	0	0	0	41	0	170	90	145	0	0	2	66	514	0	0	0	0	0
	4:45 PM	0	0	0	33	0	171	91	153	0	0	3	75	526	0	0	0	0	0
	5:00 PM	0	0	0	49	0	142	73	132	0	0	3	69	468	0	0	0	0	0
	5:15 PM	0	0	0	27	0	184	77	161	0	0	3	78	530	0	0	0	0	0
	5:30 PM	0	0	0	22	0	171	76	139	0	0	6	72	486	0	0	0	0	0
	5:45 PM	0	0	0	22	0	149	60	112	0	0	6	79	428	0	0	0	0	0
	VOLUMES	0	0	0	252	0	1,306	627	1,160	0	0	32	600	3,977	0	0	0	0	0
	APPROACH %	0%	0%	0%	16%	0%	84%	35%	65%	0%	0%	5%	95%						
	APP/DEPART	0	/	1,227	1,558	/	0	1,787	/	1,412	632	/	1,338	0					
	BEGIN PEAK HR		4:00 PM																
	VOLUMES	0	0	0	132	0	660	341	616	0	0	14	302	2,065					
	APPROACH %	0%	0%	0%	17%	0%	83%	36%	64%	0%	0%	4%	96%						
	PEAK HR FACTOR		0.000			0.938			0.981			0.840		0.981					
	APP/DEPART	0	/	643	792	/	0	957	/	748	316	/	674	0					

Iowa

NORTH SIDE

I-215 Ramp WEST SIDE EAST SIDE **I-215 Ramp**

SOUTH SIDE

Iowa

		ALL PED AND BIKE					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

INTERSECTION TURNING MOVEMENT COUNTS

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

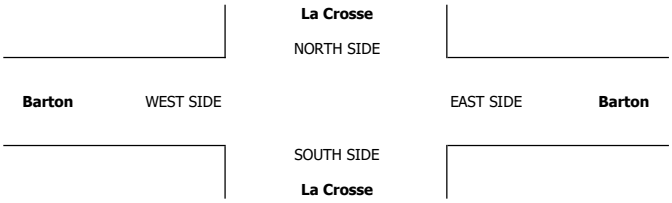
DATE:	LOCATION:	Colton	PROJECT #:	SC
Wed, Dec 12, 18	NORTH & SOUTH:	La Crosse	LOCATION #:	10
	EAST & WEST:	Barton	CONTROL:	SIGNAL

NOTES:

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

☑ Add U-Turns to Left Turns

		NORTHBOUND (La Crosse)			SOUTHBOUND (La Crosse)			EASTBOUND (Barton)			WESTBOUND (Barton)				U-TURNS				
	LANES:	NL 0	NT 1	NR 0	SL 0	ST 1	SR 0	EL 0	ET 1	ER 0	WL 0	WT 1	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	0	0	2	38	5	19	1	61	3	69	53	1	252	0	0	0	0	0
	7:15 AM	0	0	0	23	3	13	0	73	9	90	69	0	280	0	0	0	0	0
	7:30 AM	0	0	3	20	6	9	0	63	12	78	63	0	254	0	0	0	0	0
	7:45 AM	0	0	3	32	9	17	0	79	7	69	51	1	268	0	0	0	0	0
	8:00 AM	1	0	3	35	12	22	0	48	14	51	37	0	223	0	0	0	0	0
	8:15 AM	1	0	8	23	14	14	0	53	5	51	42	0	211	0	0	0	0	0
	8:30 AM	0	0	5	32	8	14	0	38	11	55	30	0	193	0	0	0	0	0
	8:45 AM	0	0	6	39	7	6	1	37	6	44	36	1	183	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	2	0	30	242	64	114	2	452	67	507	381	3	1,864	0	0	0	0	0
	APPROACH %	6%	0%	94%	58%	15%	27%	0%	87%	13%	57%	43%	0%						
	APP/DEPART	32	/	5	420	/	638	521	/	724	891	/	497	0					
	BEGIN PEAK HR		7:00 AM																
	VOLUMES	0	0	8	113	23	58	1	276	31	306	236	2	1,054					
	APPROACH %	0%	0%	100%	58%	12%	30%	0%	90%	10%	56%	43%	0%						
	PEAK HR FACTOR		0.667			0.782			0.895			0.855		0.941					
	APP/DEPART	8	/	3	194	/	360	308	/	397	544	/	294	0					
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	0	10	40	3	13	0	87	10	74	61	1	299	0	0	0	0	0
	4:15 PM	0	0	9	50	1	15	0	86	13	57	48	2	281	0	0	0	0	0
	4:30 PM	2	0	5	45	2	17	0	93	8	59	57	2	290	0	0	0	0	0
	4:45 PM	0	0	11	37	2	21	1	109	6	38	51	1	277	0	0	0	0	0
	5:00 PM	1	1	8	46	2	21	0	69	6	64	64	2	284	0	0	0	0	0
	5:15 PM	0	0	6	35	2	14	1	83	6	75	53	0	275	0	0	0	0	0
	5:30 PM	0	0	4	30	2	14	0	120	9	57	53	1	290	0	0	0	0	0
	5:45 PM	0	0	1	31	1	13	0	71	6	77	64	1	265	0	0	0	0	0
	VOLUMES	3	1	54	314	15	128	2	718	64	501	451	10	2,261	0	0	0	0	0
	APPROACH %	5%	2%	93%	69%	3%	28%	0%	92%	8%	52%	47%	1%						
	APP/DEPART	58	/	13	457	/	580	784	/	1,086	962	/	582	0					
	BEGIN PEAK HR		4:00 PM																
	VOLUMES	2	0	35	172	8	66	1	375	37	228	217	6	1,147					
	APPROACH %	5%	0%	95%	70%	3%	27%	0%	91%	9%	51%	48%	1%						
	PEAK HR FACTOR		0.841			0.932			0.890			0.829		0.959					
	APP/DEPART	37	/	7	246	/	273	413	/	582	451	/	285	0					



		ALL PED AND BIKE					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

INTERSECTION TURNING MOVEMENT COUNTS

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

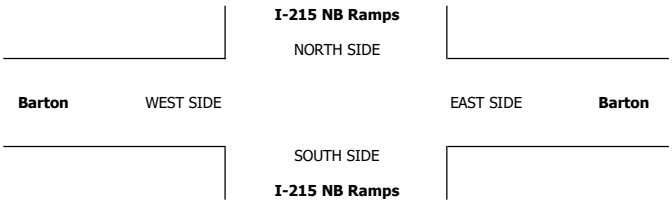
DATE:	LOCATION:	Colton	PROJECT #:	SC
Wed, Dec 12, 18	NORTH & SOUTH:	I-215 NB Ramps	LOCATION #:	12
	EAST & WEST:	Barton	CONTROL:	SIGNAL

NOTES:

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

☐ Add U-Turns to Left Turns

		NORTHBOUND (I-215 NB Ramps)			SOUTHBOUND (I-215 NB Ramps)			EASTBOUND (Barton)			WESTBOUND (Barton)				U-TURNS				
	LANES:	NL 1	NT X	NR 1	SL X	ST X	SR X	EL 0	ET 1	ER X	WL X	WT 1	WR 1	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	5	0	59	0	0	0	14	87	0	0	118	93	376	0	0	0	0	0
	7:15 AM	7	0	82	0	0	0	13	83	0	0	152	104	441	0	0	0	0	0
	7:30 AM	6	0	83	0	0	0	11	75	0	0	135	88	398	0	0	0	0	0
	7:45 AM	4	0	64	0	0	0	21	93	0	0	118	92	392	0	0	0	0	0
	8:00 AM	8	0	63	0	0	0	11	75	0	0	80	51	288	0	0	0	1	1
	8:15 AM	11	0	64	0	0	0	19	65	0	0	82	43	284	0	0	1	0	1
	8:30 AM	3	0	44	0	0	0	17	56	0	0	82	53	255	0	0	0	0	0
	8:45 AM	5	0	65	0	0	0	18	64	0	0	76	65	293	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	VOLUMES	49	0	524	0	0	0	124	598	0	0	843	589	2,729	0	0	0	2	2
	APPROACH %	9%	0%	91%	0%	0%	0%	17%	83%	0%	0%	59%	41%						
	APP/DEPART	573	/	713	0	/	0	722	/	1,124	1,434	/	892	0					
	BEGIN PEAK HR		7:00 AM																
	VOLUMES	22	0	288	0	0	0	59	338	0	0	523	377	1,607					
	APPROACH %	7%	0%	93%	0%	0%	0%	15%	85%	0%	0%	58%	42%						
	PEAK HR FACTOR		0.871			0.000			0.871			0.879		0.911					
	APP/DEPART	310	/	436	0	/	0	397	/	626	900	/	545	0					
PM	03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	5	0	68	0	0	0	32	102	0	0	130	81	418	0	0	0	0	0
	4:15 PM	2	0	62	0	0	0	25	113	0	0	97	45	344	0	0	0	0	0
	4:30 PM	5	0	59	0	0	0	29	106	0	0	119	65	383	0	0	0	0	0
	4:45 PM	1	0	70	0	0	0	27	132	0	0	100	65	395	0	0	0	0	0
	5:00 PM	2	0	62	0	0	0	28	113	0	0	132	62	399	0	0	0	0	0
	5:15 PM	5	0	88	0	0	0	24	107	0	0	105	51	380	0	0	0	0	0
	5:30 PM	2	0	92	0	0	0	24	107	0	0	109	60	394	0	0	0	0	0
	5:45 PM	7	0	88	0	0	0	22	95	0	0	142	48	402	0	0	0	0	0
	VOLUMES	29	0	589	0	0	0	211	875	0	0	934	477	3,115	0	0	0	0	0
	APPROACH %	5%	0%	95%	0%	0%	0%	19%	81%	0%	0%	66%	34%						
	APP/DEPART	618	/	688	0	/	0	1,086	/	1,464	1,411	/	963	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	16	0	330	0	0	0	98	422	0	0	488	221	1,575					
	APPROACH %	5%	0%	95%	0%	0%	0%	19%	81%	0%	0%	69%	31%						
	PEAK HR FACTOR		0.911			0.000			0.922			0.914		0.979					
	APP/DEPART	346	/	319	0	/	0	520	/	752	709	/	504	0					



		ALL PED AND BIKE					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

APPENDIX D

LEVEL OF SERVICE WORKSHEETS

Existing

Modern Pacific Homes

Vistro File: \...\AM E.vistro
Report File: G:\...\AM E.pdf

Scenario 1 Existing
1/18/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	La Cadena Dr (NS) at Tropica Rancho Rd (EW)	Two-way stop	HCM 6th Edition	EB Right	0.003	14.3	B
2	La Cadena Dr (NS) at Litton Ave (EW)	Signalized	HCM 6th Edition	EB Left	0.505	7.1	A
3	La Cadena Dr (NS) at Palm Ave (EW)	Two-way stop	HCM 6th Edition	EB Right	0.082	14.7	B
4	La Cadena Dr (NS) at Barton Rd (EW)	Signalized	HCM 6th Edition	SB Left	0.499	11.8	B
5	La Cadena Dr/Iowa Ave (NS) at La Cadena Dr (EW)	Signalized	HCM 6th Edition	EB Left	0.430	9.8	A
6	La Cadena Dr (NS) at Maryknoll Dr (EW)	Two-way stop	HCM 6th Edition	EB Left	0.122	30.0	D
7	La Cadena Dr (NS) at Cadena Creek Dwy/I-215 SB On-Ramp (EW)	All-way stop	HCM 6th Edition	SB Left	0.939	29.8	D
8	Iowa Ave (NS) at I-215 SB Off -Ramp (EW)	Signalized	HCM 6th Edition	EB Right	0.784	21.6	C
9	Iowa Ave (NS) at Iowa Ave/I-215 NB Ramps (EW)	Signalized	HCM 6th Edition	SB Right	1.155	118.9	F
10	I-215 SB Ramps/La Crosse Ave (NS) at Barton Rd (EW)	Roundabout	HCM 6th Edition	SB Left		5.2	A
11	I-215 NB Ramps (NS) at Barton Rd (EW)	Signalized	HCM 6th Edition	EB Left	0.475	11.9	B

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

Intersection Level Of Service Report
Intersection 1: La Cadena Dr (NS) at Tropica Rancho Rd (EW)

Control Type:	Two-way stop	Delay (sec / veh):	14.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.003

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Tropica Rancho Rd			Vivienda Ave		
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 Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	La Cadena Dr			La Cadena Dr			Tropica Rancho Rd			Vivienda Ave		
Base Volume Input [veh/h]	0	740	0	0	1283	1	0	0	1	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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]	0	740	0	0	1283	1	0	0	1	0	0	0
Peak Hour Factor	0.9500	0.9170	0.9170	0.9500	0.9170	0.9170	0.9500	0.9500	0.9170	0.9500	0.9500	0.9170
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	202	0	0	350	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	807	0	0	1399	1	0	0	1	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.34	0.00	0.00	10.98
Movement LOS		A	A		A	A			B			B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			0.00			14.34			10.98		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	0.01											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 2: La Cadena Dr (NS) at Litton Ave (EW)

Control Type:	Signalized	Delay (sec / veh):	7.1
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.505

Intersection Setup

Name	La Cadena Dr		La Cadena Dr		Litton Ave	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0
Pocket Length [ft]	105.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00		50.00		25.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	La Cadena Dr		La Cadena Dr		Litton Ave	
Base Volume Input [veh/h]	27	683	1264	18	59	34
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	27	683	1264	18	59	34
Peak Hour Factor	0.9260	0.9260	0.9260	0.9260	0.9260	0.9260
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	184	341	5	16	9
Total Analysis Volume [veh/h]	29	738	1365	19	64	37
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	75
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal group	5	2	6	0	3	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	7	7	7	0	7	0
Maximum Green [s]	30	30	30	0	30	0
Amber [s]	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	11	62	51	0	13	0
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	7	0	7	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	C	C
C, Cycle Length [s]	75	75	75	75	75
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	61	54	54	6
g / C, Green / Cycle	0.04	0.81	0.71	0.71	0.08
(v / s)_i Volume / Saturation Flow Rate	0.02	0.22	0.38	0.39	0.06
s, saturation flow rate [veh/h]	1714	3427	1800	1791	1642
c, Capacity [veh/h]	75	2777	1283	1277	137
d1, Uniform Delay [s]	34.91	1.72	5.03	5.04	33.63
k, delay calibration	0.11	0.50	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.19	0.23	1.63	1.65	7.55
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.38	0.27	0.54	0.54	0.74
d, Delay for Lane Group [s/veh]	38.11	1.96	6.65	6.69	41.17
Lane Group LOS	D	A	A	A	D
Critical Lane Group	Yes	No	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	0.54	0.16	3.01	3.03	2.06
50th-Percentile Queue Length [ft/ln]	13.58	4.05	75.31	75.65	51.47
95th-Percentile Queue Length [veh/ln]	0.98	0.29	5.42	5.45	3.71
95th-Percentile Queue Length [ft/ln]	24.45	7.29	135.57	136.17	92.65

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.11	1.96	6.67	6.69	41.17	41.17
Movement LOS	D	A	A	A	D	D
d_A, Approach Delay [s/veh]	3.33		6.67		41.17	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	7.08					
Intersection LOS	A					
Intersection V/C	0.505					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	27.31
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.765
Crosswalk LOS	F	F	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	37.50	37.50	37.50
l_b,int, Bicycle LOS Score for Intersection	4.765	5.274	4.299
Bicycle LOS	E	F	E

Sequence

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



Intersection Level Of Service Report
Intersection 3: La Cadena Dr (NS) at Palm Ave (EW)

Control Type:	Two-way stop	Delay (sec / veh):	14.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.082

Intersection Setup

Name	La Cadena Dr		La Cadena Dr		Palm Ave	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	140.00	100.00	100.00
Speed [mph]	50.00		50.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	La Cadena Dr		La Cadena Dr		Palm Ave	
Base Volume Input [veh/h]	0	705	1285	11	0	32
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	705	1285	11	0	32
Peak Hour Factor	0.9500	0.9590	0.9590	0.9590	0.9500	0.9590
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	184	335	3	0	8
Total Analysis Volume [veh/h]	0	735	1340	11	0	33
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.01	0.00	0.00	0.08
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	14.70
Movement LOS		A	A	A		B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.27
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	6.63
d_A, Approach Delay [s/veh]	0.00		0.00		14.70	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.23					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 4: La Cadena Dr (NS) at Barton Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	11.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.499

Intersection Setup

Name	La Cadena Dr		La Cadena Dr		Barton Rd	
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 Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	250.00	100.00	100.00	100.00
Speed [mph]	50.00		50.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		No	

Volumes

Name	La Cadena Dr		La Cadena Dr		Barton Rd	
Base Volume Input [veh/h]	538	147	208	1105	190	164
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	538	147	208	1105	190	164
Peak Hour Factor	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	140	38	54	287	49	43
Total Analysis Volume [veh/h]	559	153	216	1147	197	170
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal group	2	0	1	6	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	11	0	28	39	21	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	29	29	9	43	9	9
g / C, Green / Cycle	0.49	0.49	0.16	0.71	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.16	0.10	0.13	0.33	0.11	0.11
s, saturation flow rate [veh/h]	3427	1530	1714	3427	1714	1530
c, Capacity [veh/h]	1667	744	272	2440	266	237
d1, Uniform Delay [s]	9.48	8.81	24.35	3.75	24.26	24.16
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.54	0.62	5.18	0.65	4.04	4.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.34	0.21	0.79	0.47	0.74	0.72
d, Delay for Lane Group [s/veh]	10.02	9.44	29.53	4.41	28.30	28.16
Lane Group LOS	B	A	C	A	C	C
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	1.71	0.94	2.93	1.09	2.75	2.37
50th-Percentile Queue Length [ft/ln]	42.83	23.43	73.19	27.18	68.68	59.22
95th-Percentile Queue Length [veh/ln]	3.08	1.69	5.27	1.96	4.95	4.26
95th-Percentile Queue Length [ft/ln]	77.09	42.17	131.74	48.93	123.63	106.59

Movement, Approach, & Intersection Results

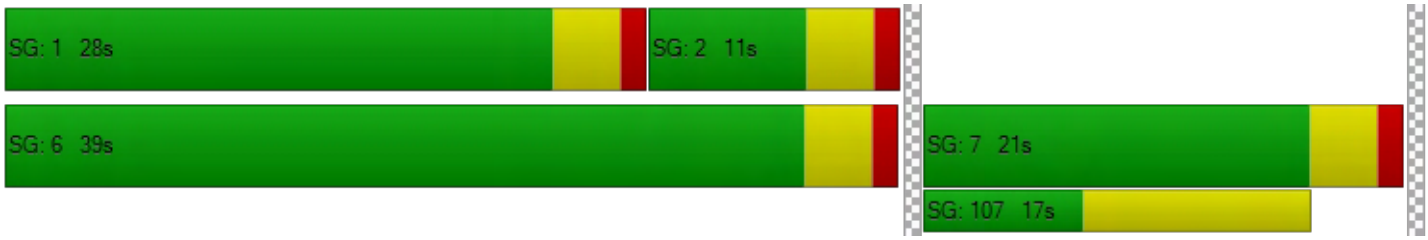
d_M, Delay for Movement [s/veh]	10.02	9.44	29.53	4.41	28.30	28.16
Movement LOS	B	A	C	A	C	C
d_A, Approach Delay [s/veh]	9.90		8.39		28.23	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	11.81					
Intersection LOS	B					
Intersection V/C	0.499					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	20.01	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.987	0.000	0.000
Crosswalk LOS	C	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	30.00	30.00	30.00
I_b,int, Bicycle LOS Score for Intersection	4.720	5.257	4.132
Bicycle LOS	E	F	D

Sequence

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



Intersection Level Of Service Report
Intersection 5: La Cadena Dr/Iowa Ave (NS) at La Cadena Dr (EW)

Control Type:	Signalized	Delay (sec / veh):	9.8
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.430

Intersection Setup

Name	Iowa Ave		La Cadena Dr		La Cadena Dr	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0
Pocket Length [ft]	130.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Iowa Ave		La Cadena Dr		La Cadena Dr	
Base Volume Input [veh/h]	77	516	474	834	105	101
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	77	516	474	834	105	101
Peak Hour Factor	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560
Other Adjustment Factor	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	135	124	0	27	26
Total Analysis Volume [veh/h]	81	540	496	0	110	106
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Overlap
Signal group	5	2	6	0	3	8
Auxiliary Signal Groups						5,8
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	7	7	7	0	7	7
Maximum Green [s]	30	30	30	0	30	30
Amber [s]	3.0	3.0	3.0	0.0	3.0	3.0
All red [s]	1.0	1.0	1.0	0.0	1.0	1.0
Split [s]	11	47	36	0	13	13
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	3.0
Walk [s]	0	7	7	0	7	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
Minimum Recall	No	No	No		No	No
Maximum Recall	No	No	No		No	No
Pedestrian Recall	No	No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	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
g_i, Effective Green Time [s]	5	46	37	37	6	15
g / C, Green / Cycle	0.09	0.77	0.61	0.61	0.10	0.25
(v / s)_i Volume / Saturation Flow Rate	0.05	0.30	0.28	0.00	0.06	0.07
s, saturation flow rate [veh/h]	1714	1800	1800	2708	1714	1530
c, Capacity [veh/h]	152	1381	1102	1658	171	390
d1, Uniform Delay [s]	26.23	2.33	6.25	0.00	26.04	17.94
k, delay calibration	0.11	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.89	0.83	1.33	0.00	3.98	0.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.53	0.39	0.45	0.00	0.64	0.27
d, Delay for Lane Group [s/veh]	29.12	3.17	7.58	0.00	30.02	18.31
Lane Group LOS	C	A	A	A	C	B
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.09	0.38	2.22	0.00	1.51	1.03
50th-Percentile Queue Length [ft/ln]	27.36	9.58	55.61	0.00	37.77	25.70
95th-Percentile Queue Length [veh/ln]	1.97	0.69	4.00	0.00	2.72	1.85
95th-Percentile Queue Length [ft/ln]	49.24	17.25	100.09	0.00	67.99	46.26

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	29.12	3.17	7.58	0.00	30.02	18.31
Movement LOS	C	A	A	A	C	B
d_A, Approach Delay [s/veh]	6.55		7.58		24.28	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	9.81					
Intersection LOS	A					
Intersection V/C	0.430					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	30.00	30.00	30.00
l_b,int, Bicycle LOS Score for Intersection	5.157	4.951	4.132
Bicycle LOS	F	E	D

Sequence

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



Intersection Level Of Service Report
Intersection 6: La Cadena Dr (NS) at Maryknoll Dr (EW)

Control Type:	Two-way stop	Delay (sec / veh):	30.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.122

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Maryknoll Dr			Dwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

Volumes

Name	La Cadena Dr			La Cadena Dr			Maryknoll Dr			Dwy		
Base Volume Input [veh/h]	8	172	4	20	881	10	19	0	35	12	0	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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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]	8	172	4	20	881	10	19	0	35	12	0	13
Peak Hour Factor	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	46	1	5	236	3	5	0	9	3	0	3
Total Analysis Volume [veh/h]	9	184	4	21	944	11	20	0	38	13	0	14
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.02	0.01	0.00	0.12	0.00	0.07	0.04	0.00	0.01
d_M, Delay for Movement [s/veh]	10.01	0.00	0.00	7.61	0.00	0.00	30.03	27.77	12.12	17.90	25.47	9.29
Movement LOS	B	A	A	A	A	A	D	D	B	C	D	A
95th-Percentile Queue Length [veh/ln]	0.03	0.02	0.00	0.04	0.02	0.00	0.41	0.41	0.22	0.19	0.19	0.19
95th-Percentile Queue Length [ft/ln]	0.83	0.42	0.00	1.09	0.54	0.00	10.21	10.21	5.61	4.73	4.73	4.73
d_A, Approach Delay [s/veh]	0.46			0.16			18.29			13.44		
Approach LOS	A			A			C			B		
d_I, Intersection Delay [s/veh]	1.33											
Intersection LOS	D											

Intersection Level Of Service Report
Intersection 7: La Cadena Dr (NS) at Cadena Creek Dwy/I-215 SB On-Ramp (EW)

Control Type:	All-way stop	Delay (sec / veh):	29.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.939

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Cadena Creek Dwy			I-215 SB On-Ramp		
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 Pocket	1	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	236.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00			50.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	La Cadena Dr			La Cadena Dr			Cadena Creek Dwy			I-215 SB On-Ramp		
Base Volume Input [veh/h]	9	110	0	513	375	46	73	17	28	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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]	9	110	0	513	375	46	73	17	28	0	0	0
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	31	0	142	104	13	20	5	8	0	0	0
Total Analysis Volume [veh/h]	10	122	0	569	416	51	81	19	31	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	479	513	513	606	672	468	546	
Degree of Utilization, x	0.02	0.12	0.12	0.94	0.70	0.21	0.06	

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.06	0.40	0.40	12.48	5.62	0.80	0.18	
95th-Percentile Queue Length [ft]	1.60	10.06	10.06	312.03	140.44	20.05	4.50	
Approach Delay [s/veh]	10.65			34.48		11.82		0.00
Approach LOS	B			D		B		A
Intersection Delay [s/veh]	29.77							
Intersection LOS	D							

Intersection Level Of Service Report
Intersection 8: Iowa Ave (NS) at I-215 SB Off-Ramp (EW)

Control Type:	Signalized	Delay (sec / veh):	21.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.784

Intersection Setup

Name	Iowa Ave		Iowa Ave		I-215 SB Off-Ramp	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		50.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Iowa Ave		Iowa Ave		I-215 SB Off-Ramp	
Base Volume Input [veh/h]	0	569	577	0	29	533
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	569	577	0	29	533
Peak Hour Factor	0.9500	0.9150	0.9150	0.9500	0.9150	0.9150
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	155	158	0	8	146
Total Analysis Volume [veh/h]	0	622	631	0	32	583
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Split	Split
Signal group	0	2	6	0	3	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	7	7	0	7	0
Maximum Green [s]	0	30	30	0	30	0
Amber [s]	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	0	14	14	0	46	0
Vehicle Extension [s]	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	7	0	7	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall		No	No		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	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
I, Upstream Filtering Factor	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	R
C, Cycle Length [s]	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	27	27	25	25
g / C, Green / Cycle	0.45	0.45	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.35	0.35	0.02	0.38
s, saturation flow rate [veh/h]	1800	1800	1714	1530
c, Capacity [veh/h]	801	801	723	645
d1, Uniform Delay [s]	14.14	14.25	10.24	16.24
k, delay calibration	0.50	0.50	0.11	0.12
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.27	7.71	0.02	5.72
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.79	0.04	0.90
d, Delay for Lane Group [s/veh]	21.41	21.96	10.27	21.96
Lane Group LOS	C	C	B	C
Critical Lane Group	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	7.67	7.02	0.23	7.40
50th-Percentile Queue Length [ft/ln]	191.73	175.46	5.65	185.10
95th-Percentile Queue Length [veh/ln]	12.21	11.36	0.41	11.87
95th-Percentile Queue Length [ft/ln]	305.28	284.07	10.16	296.66

Movement, Approach, & Intersection Results

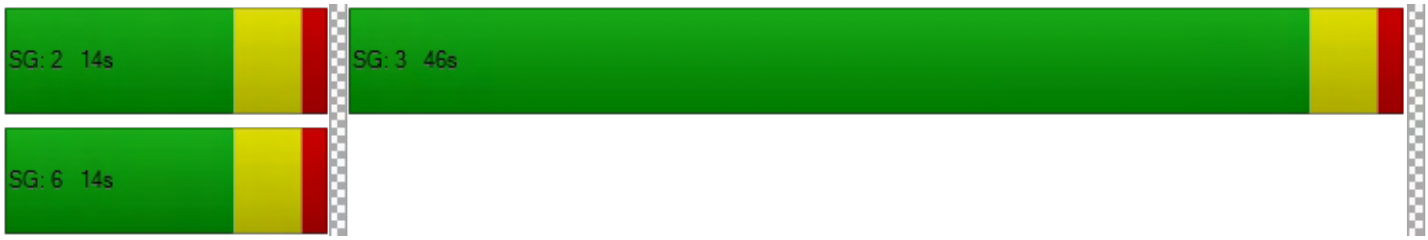
d_M, Delay for Movement [s/veh]	0.00	21.41	21.96	0.00	10.27	21.96
Movement LOS		C	C		B	C
d_A, Approach Delay [s/veh]	21.41		21.96		21.35	
Approach LOS	C		C		C	
d_I, Intersection Delay [s/veh]	21.58					
Intersection LOS	C					
Intersection V/C	0.784					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	30.00	30.00	30.00
l_b,int, Bicycle LOS Score for Intersection	5.159	5.174	4.132
Bicycle LOS	F	F	D

Sequence

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



Intersection Level Of Service Report
Intersection 9: Iowa Ave (NS) at Iowa Ave/I-215 NB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	118.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.155

Intersection Setup

Name	Iowa Ave		Iowa Ave		I-215 NB Ramps	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	90.00	100.00	100.00	100.00
Speed [mph]	30.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Iowa Ave		Iowa Ave		I-215 NB Ramps	
Base Volume Input [veh/h]	110	1000	305	532	33	264
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	110	1000	305	532	33	264
Peak Hour Factor	0.9130	0.9130	0.9130	0.9130	0.9130	0.9130
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	274	84	146	9	72
Total Analysis Volume [veh/h]	120	1095	334	583	36	289
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	125
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal group	1	0	3	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	7	0	7	7	7	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	75	0	25	50	25	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	R	L	C	C	R
C, Cycle Length [s]	125	125	125	125	125	125
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	71	71	21	46	21	21
g / C, Green / Cycle	0.57	0.57	0.17	0.37	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.07	0.72	0.19	0.32	0.02	0.19
s, saturation flow rate [veh/h]	1714	1530	1714	1800	1800	1530
c, Capacity [veh/h]	973	869	290	663	300	255
d1, Uniform Delay [s]	12.55	27.01	51.92	36.91	44.27	52.07
k, delay calibration	0.11	0.50	0.31	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.06	126.44	90.26	15.46	0.81	96.54
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.12	1.26	1.15	0.88	0.12	1.13
d, Delay for Lane Group [s/veh]	12.61	153.44	142.18	52.37	45.08	148.61
Lane Group LOS	B	F	F	D	D	F
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.58	54.88	16.11	18.69	1.02	14.82
50th-Percentile Queue Length [ft/ln]	39.47	1371.96	402.79	467.31	25.60	370.59
95th-Percentile Queue Length [veh/ln]	2.84	79.51	24.27	25.78	1.84	22.42
95th-Percentile Queue Length [ft/ln]	71.05	1987.82	606.81	644.57	46.08	560.62

Movement, Approach, & Intersection Results

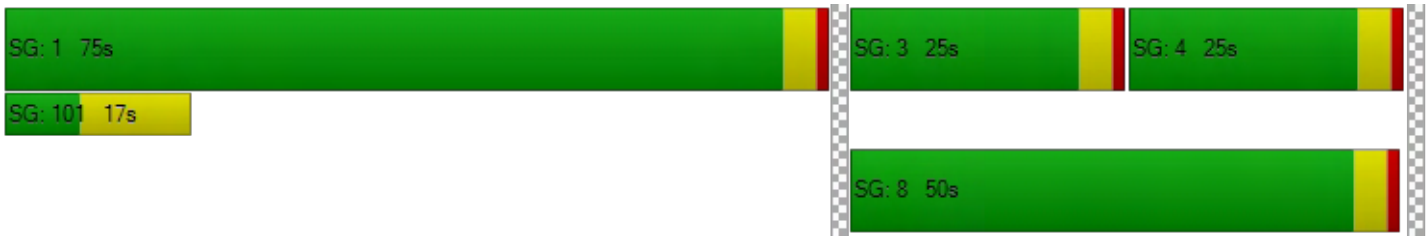
d_M, Delay for Movement [s/veh]	12.61	153.44	142.18	52.37	45.08	148.61
Movement LOS	B	F	F	D	D	F
d_A, Approach Delay [s/veh]	139.53		85.08		137.14	
Approach LOS	F		F		F	
d_I, Intersection Delay [s/veh]	118.90					
Intersection LOS	F					
Intersection V/C	1.155					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.98
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.290
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	62.50	62.50	62.50
l_b,int, Bicycle LOS Score for Intersection	4.132	5.645	4.669
Bicycle LOS	D	F	E

Sequence

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



Intersection Level Of Service Report

Intersection 10: I-215 SB Ramps/La Crosse Ave (NS) at Barton Rd (EW)

Control Type:	Roundabout	Delay (sec / veh):	5.2
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	La Crosse Ave			I-215 SB Ramps			Barton Rd			Barton Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	La Crosse Ave			I-215 SB Ramps			Barton Rd			Barton Rd		
Base Volume Input [veh/h]	0	0	8	116	23	67	1	296	41	321	251	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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]	0	0	8	116	23	67	1	296	41	321	251	3
Peak Hour Factor	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	2	31	6	18	0	78	11	85	66	1
Total Analysis Volume [veh/h]	0	0	8	123	24	71	1	313	43	340	266	3
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			2			2		
Circulating Flow Rate [veh/h]	437			606			487			1		
Exiting Flow Rate [veh/h]	407			4			337			444		
Demand Flow Rate [veh/h]	0	0	8	116	23	67	1	296	41	321	251	3
Adjusted Demand Flow Rate [veh/h]	0	0	8	123	24	71	1	313	43	340	266	3

Lanes

Overwrite Calculated Critical Headway	No	No	No	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1420.00	1420.00	1350.00	1420.00	1350.00	1420.00
B (coefficient)	0.00102	0.00091	0.00091	0.00092	0.00085	0.00092	0.00085
HV Adjustment Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Entry Flow Rate [veh/h]	8	147	71	168	190	340	269
Capacity of Entry and Bypass Lanes [veh/h]	884	819	819	863	939	1349	1419
Pedestrian Impedance	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	884	819	819	863	939	1349	1419
X, volume / capacity	0.01	0.18	0.09	0.19	0.20	0.25	0.19

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.03	0.65	0.28	0.72	0.75	1.00	0.70
95th-Percentile Queue Length [ft]	0.69	16.30	7.11	17.97	18.78	25.08	17.46
Approach Delay [s/veh]	4.16	5.93		5.97		4.50	
Approach LOS	A	A		A		A	
Intersection Delay [s/veh]	5.20						
Intersection LOS	A						

Intersection Level Of Service Report
Intersection 11: I-215 NB Ramps (NS) at Barton Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	11.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.475

Intersection Setup

Name	I-215 NB Off-Ramp			I-215 On-Ramp			Barton Rd			Barton Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	300.00	100.00	100.00	100.00	100.00	200.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	I-215 NB Off-Ramp			I-215 On-Ramp			Barton Rd			Barton Rd		
Base Volume Input [veh/h]	30	0	303	0	0	0	68	353	0	0	546	391
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	30	0	303	0	0	0	68	353	0	0	546	391
Peak Hour Factor	0.9230	0.9230	0.9230	0.9500	0.9500	0.9500	0.9230	0.9230	0.9500	0.9500	0.9230	0.9230
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	0	82	0	0	0	18	96	0	0	148	106
Total Analysis Volume [veh/h]	33	0	328	0	0	0	74	382	0	0	592	424
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	7	0	0	0	0	7	7	0	0	7	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	21	0	0	0	0	18	39	0	0	21	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	10	0	0	10	0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R		L	C	C	R
C, Cycle Length [s]	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
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	9	9		5	43	34	34
g / C, Green / Cycle	0.15	0.15	0.15		0.08	0.72	0.57	0.57
(v / s)_i Volume / Saturation Flow Rate	0.02	0.11	0.11		0.04	0.11	0.17	0.28
s, saturation flow rate [veh/h]	1714	1530	1530		1714	3427	3427	1530
c, Capacity [veh/h]	255	227	227		145	2463	1945	868
d1, Uniform Delay [s]	22.24	24.43	24.43		26.35	2.68	6.80	7.78
k, delay calibration	0.11	0.11	0.11		0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.23	4.30	4.30		2.76	0.13	0.40	1.96
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.13	0.72	0.72		0.51	0.16	0.30	0.49
d, Delay for Lane Group [s/veh]	22.47	28.73	28.73		29.11	2.82	7.21	9.75
Lane Group LOS	C	C	C		C	A	A	A
Critical Lane Group	No	Yes	No		Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.40	2.35	2.35		1.05	0.38	1.57	2.87
50th-Percentile Queue Length [ft/ln]	9.94	58.86	58.86		26.33	9.61	39.26	71.70
95th-Percentile Queue Length [veh/ln]	0.72	4.24	4.24		1.90	0.69	2.83	5.16
95th-Percentile Queue Length [ft/ln]	17.90	105.95	105.95		47.40	17.30	70.66	129.07

Movement, Approach, & Intersection Results

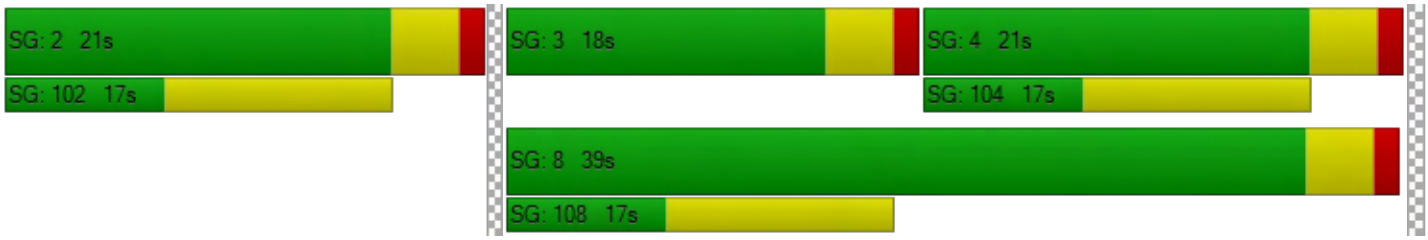
d_M, Delay for Movement [s/veh]	22.47	28.73	28.73	0.00	0.00	0.00	29.11	2.82	0.00	0.00	7.21	9.75
Movement LOS	C	C	C				C	A			A	A
d_A, Approach Delay [s/veh]	28.16			0.00			7.08			8.27		
Approach LOS	C			A			A			A		
d_I, Intersection Delay [s/veh]	11.89											
Intersection LOS	B											
Intersection V/C	0.475											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
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]	20.01	20.01	0.00	20.01
l_p,int, Pedestrian LOS Score for Intersection	2.035	1.886	0.000	2.670
Crosswalk LOS	B	A	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	567	0	1167	567
d_b, Bicycle Delay [s]	15.41	30.00	5.21	15.41
l_b,int, Bicycle LOS Score for Intersection	2.155	4.132	1.936	2.398
Bicycle LOS	B	D	A	B

Sequence

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



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Scenario 1 Existing
1/14/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	La Cadena Dr (NS) at Tropica Rancho Rd (EW)	Two-way stop	HCM 6th Edition	EB Right	0.000	14.4	B
2	La Cadena Dr (NS) at Litton Ave (EW)	Signalized	HCM 6th Edition	EB Left	0.458	5.5	A
3	La Cadena Dr (NS) at Palm Ave (EW)	Two-way stop	HCM 6th Edition	EB Right	0.067	14.9	B
4	La Cadena Dr (NS) at Barton Rd (EW)	Signalized	HCM 6th Edition	SB Left	0.567	12.9	B
5	La Cadena Dr/Iowa Ave (NS) at La Cadena Dr (EW)	Signalized	HCM 6th Edition	NB Left	0.610	14.5	B
6	La Cadena Dr (NS) at Maryknoll Dr (EW)	Two-way stop	HCM 6th Edition	EB Thru	0.000	41.2	E
7	La Cadena Dr (NS) at Cadena Creek Dwy/I-215 SB On-Ramp (EW)	All-way stop	HCM 6th Edition	SB Left	0.985	34.1	D
8	Iowa Ave (NS) at I-215 SB Off -Ramp (EW)	Signalized	HCM 6th Edition	EB Right	0.741	16.5	B
9	Iowa Ave (NS) at Iowa Ave/I-215 NB Ramps (EW)	Signalized	HCM 6th Edition	WB Right	0.972	62.1	E
10	I-215 SB Ramps/La Crosse Ave (NS) at Barton Rd (EW)	Roundabout	HCM 6th Edition	EB Left		5.2	A
11	I-215 NB Ramps (NS) at Barton Rd (EW)	Signalized	HCM 6th Edition	EB Left	0.369	12.6	B

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

Intersection Level Of Service Report
Intersection 1: La Cadena Dr (NS) at Tropica Rancho Rd (EW)

Control Type:	Two-way stop	Delay (sec / veh):	14.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Tropica Rancho Rd			Vivienda Ave		
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 Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	La Cadena Dr			La Cadena Dr			Tropica Rancho Rd			Vivienda Ave		
Base Volume Input [veh/h]	0	889	0	0	1290	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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]	0	889	0	0	1290	0	0	0	0	0	0	0
Peak Hour Factor	0.9500	0.9160	0.9160	0.9500	0.9160	0.9160	0.9500	0.9500	0.9160	0.9500	0.9500	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]	0	243	0	0	352	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	971	0	0	1408	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.37	0.00	0.00	11.75
Movement LOS		A	A		A	A			B			B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			0.00			14.37			11.75		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	0.00											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 2: La Cadena Dr (NS) at Litton Ave (EW)

Control Type:	Signalized	Delay (sec / veh):	5.5
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.458

Intersection Setup

Name	La Cadena Dr		La Cadena Dr		Litton Ave	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0
Pocket Length [ft]	105.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00		50.00		25.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	La Cadena Dr		La Cadena Dr		Litton Ave	
Base Volume Input [veh/h]	39	862	1245	45	25	24
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	862	1245	45	25	24
Peak Hour Factor	0.9680	0.9680	0.9680	0.9680	0.9680	0.9680
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	223	322	12	6	6
Total Analysis Volume [veh/h]	40	890	1286	46	26	25
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal group	5	2	6	0	3	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	7	7	7	0	7	0
Maximum Green [s]	30	30	30	0	30	0
Amber [s]	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	11	83	72	0	12	0
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	7	0	7	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	C	C
C, Cycle Length [s]	95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	82	73	73	5
g / C, Green / Cycle	0.05	0.86	0.77	0.77	0.05
(v / s)_i Volume / Saturation Flow Rate	0.02	0.26	0.37	0.37	0.03
s, saturation flow rate [veh/h]	1714	3427	1800	1778	1619
c, Capacity [veh/h]	83	2950	1386	1369	89
d1, Uniform Delay [s]	44.03	1.24	3.99	4.02	43.80
k, delay calibration	0.11	0.50	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.24	0.26	1.19	1.24	5.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.48	0.30	0.48	0.49	0.57
d, Delay for Lane Group [s/veh]	48.27	1.51	5.18	5.25	49.48
Lane Group LOS	D	A	A	A	D
Critical Lane Group	Yes	No	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	0.97	0.11	2.85	2.88	1.31
50th-Percentile Queue Length [ft/ln]	24.28	2.70	71.26	71.96	32.85
95th-Percentile Queue Length [veh/ln]	1.75	0.19	5.13	5.18	2.37
95th-Percentile Queue Length [ft/ln]	43.71	4.86	128.27	129.53	59.14

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.27	1.51	5.22	5.25	49.48	49.48
Movement LOS	D	A	A	A	D	D
d_A, Approach Delay [s/veh]	3.52		5.22		49.48	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	5.51					
Intersection LOS	A					
Intersection V/C	0.458					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	37.14
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.773
Crosswalk LOS	F	F	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	47.50	47.50	47.50
l_b,int, Bicycle LOS Score for Intersection	4.900	5.231	4.217
Bicycle LOS	E	F	D

Sequence

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



Intersection Level Of Service Report
Intersection 3: La Cadena Dr (NS) at Palm Ave (EW)

Control Type:	Two-way stop	Delay (sec / veh):	14.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.067

Intersection Setup

Name	La Cadena Dr		La Cadena Dr		Palm Ave	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	140.00	100.00	100.00
Speed [mph]	50.00		50.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	La Cadena Dr		La Cadena Dr		Palm Ave	
Base Volume Input [veh/h]	0	877	1273	22	0	24
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	877	1273	22	0	24
Peak Hour Factor	0.9500	0.9170	0.9170	0.9170	0.9500	0.9170
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	239	347	6	0	7
Total Analysis Volume [veh/h]	0	956	1388	24	0	26
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.01	0.00	0.00	0.07
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	14.89
Movement LOS		A	A	A		B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.21
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	5.33
d_A, Approach Delay [s/veh]	0.00		0.00		14.89	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.16					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 4: La Cadena Dr (NS) at Barton Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	12.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.567

Intersection Setup

Name	La Cadena Dr		La Cadena Dr		Barton Rd	
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 Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	250.00	100.00	100.00	100.00
Speed [mph]	50.00		50.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		No	

Volumes

Name	La Cadena Dr		La Cadena Dr		Barton Rd	
Base Volume Input [veh/h]	774	153	256	1014	208	136
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	774	153	256	1014	208	136
Peak Hour Factor	0.9730	0.9730	0.9730	0.9730	0.9730	0.9730
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	199	39	66	261	53	35
Total Analysis Volume [veh/h]	795	157	263	1042	214	140
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal group	2	0	1	6	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	11	0	28	39	21	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	27	27	11	42	10	10
g / C, Green / Cycle	0.45	0.45	0.19	0.70	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.23	0.10	0.15	0.30	0.12	0.09
s, saturation flow rate [veh/h]	3427	1530	1714	3427	1714	1530
c, Capacity [veh/h]	1537	686	323	2410	281	251
d1, Uniform Delay [s]	11.91	10.20	23.41	3.81	24.04	23.16
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.25	0.78	5.00	0.57	4.27	1.95
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.52	0.23	0.81	0.43	0.76	0.56
d, Delay for Lane Group [s/veh]	13.16	10.97	28.41	4.37	28.31	25.10
Lane Group LOS	B	B	C	A	C	C
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.05	1.09	3.48	1.05	2.99	1.81
50th-Percentile Queue Length [ft/ln]	76.35	27.26	87.08	26.24	74.72	45.23
95th-Percentile Queue Length [veh/ln]	5.50	1.96	6.27	1.89	5.38	3.26
95th-Percentile Queue Length [ft/ln]	137.44	49.07	156.75	47.22	134.50	81.41

Movement, Approach, & Intersection Results

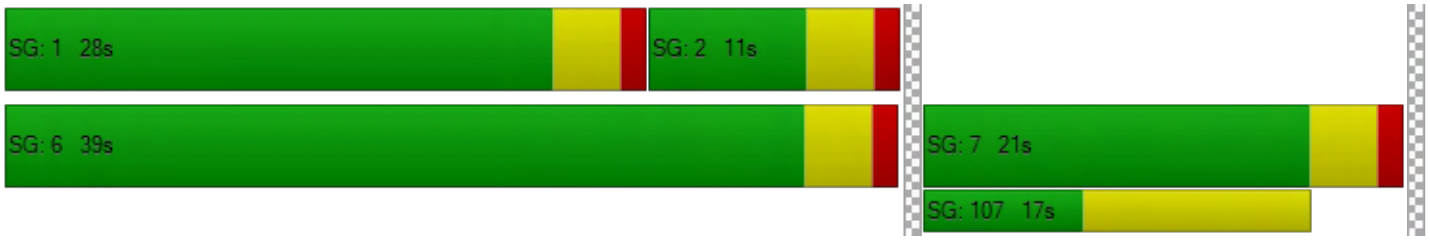
d_M, Delay for Movement [s/veh]	13.16	10.97	28.41	4.37	28.31	25.10
Movement LOS	B	B	C	A	C	C
d_A, Approach Delay [s/veh]	12.80		9.22		27.04	
Approach LOS	B		A		C	
d_I, Intersection Delay [s/veh]	12.94					
Intersection LOS	B					
Intersection V/C	0.567					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	20.01	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	3.028	0.000	0.000
Crosswalk LOS	C	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	30.00	30.00	30.00
l_b,int, Bicycle LOS Score for Intersection	4.918	5.209	4.132
Bicycle LOS	E	F	D

Sequence

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



Intersection Level Of Service Report
Intersection 5: La Cadena Dr/Iowa Ave (NS) at La Cadena Dr (EW)

Control Type:	Signalized	Delay (sec / veh):	14.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.610

Intersection Setup

Name	Iowa Ave		La Cadena Dr		La Cadena Dr	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0
Pocket Length [ft]	130.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Iowa Ave		La Cadena Dr		La Cadena Dr	
Base Volume Input [veh/h]	74	626	303	866	318	159
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	74	626	303	866	318	159
Peak Hour Factor	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710
Other Adjustment Factor	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	161	78	0	82	41
Total Analysis Volume [veh/h]	76	645	312	0	327	164
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Overlap
Signal group	5	2	6	0	3	8
Auxiliary Signal Groups						5,8
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	7	7	7	0	7	7
Maximum Green [s]	30	30	30	0	30	30
Amber [s]	3.0	3.0	3.0	0.0	3.0	3.0
All red [s]	1.0	1.0	1.0	0.0	1.0	1.0
Split [s]	31	42	11	0	18	18
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	3.0
Walk [s]	0	7	7	0	7	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
Minimum Recall	No	No	No		No	No
Maximum Recall	No	No	No		No	No
Pedestrian Recall	No	No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	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
g_i, Effective Green Time [s]	5	39	30	30	13	22
g / C, Green / Cycle	0.09	0.65	0.50	0.50	0.22	0.37
(v / s)_i Volume / Saturation Flow Rate	0.04	0.36	0.17	0.00	0.19	0.11
s, saturation flow rate [veh/h]	1714	1800	1800	2708	1714	1530
c, Capacity [veh/h]	148	1165	889	1338	377	571
d1, Uniform Delay [s]	26.27	5.84	9.31	0.00	22.62	13.25
k, delay calibration	0.11	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.73	1.90	1.09	0.00	6.11	0.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.51	0.55	0.35	0.00	0.87	0.29
d, Delay for Lane Group [s/veh]	29.00	7.74	10.40	0.00	28.73	13.52
Lane Group LOS	C	A	B	A	C	B
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.02	2.71	2.02	0.00	4.37	1.27
50th-Percentile Queue Length [ft/ln]	25.61	67.80	50.38	0.00	109.34	31.86
95th-Percentile Queue Length [veh/ln]	1.84	4.88	3.63	0.00	7.80	2.29
95th-Percentile Queue Length [ft/ln]	46.09	122.03	90.68	0.00	195.08	57.34

Movement, Approach, & Intersection Results

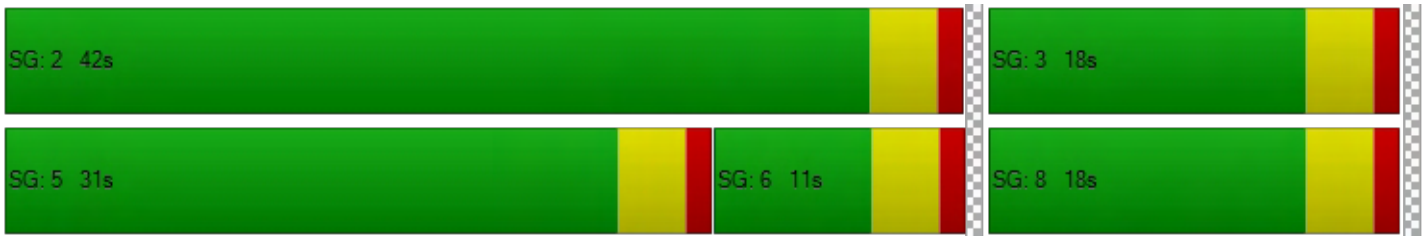
d_M, Delay for Movement [s/veh]	29.00	7.74	10.40	0.00	28.73	13.52
Movement LOS	C	A	B	A	C	B
d_A, Approach Delay [s/veh]	9.98		10.40		23.65	
Approach LOS	A		B		C	
d_I, Intersection Delay [s/veh]	14.47					
Intersection LOS	B					
Intersection V/C	0.610					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	30.00	30.00	30.00
l_b,int, Bicycle LOS Score for Intersection	5.322	4.647	4.132
Bicycle LOS	F	E	D

Sequence

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



Intersection Level Of Service Report
Intersection 6: La Cadena Dr (NS) at Maryknoll Dr (EW)

Control Type:	Two-way stop	Delay (sec / veh):	41.2
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Maryknoll Dr			Dwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

Volumes

Name	La Cadena Dr			La Cadena Dr			Maryknoll Dr			Dwy		
Base Volume Input [veh/h]	27	466	4	2	924	19	9	0	18	5	0	2
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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]	27	466	4	2	924	19	9	0	18	5	0	2
Peak Hour Factor	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330
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	125	1	1	248	5	2	0	5	1	0	1
Total Analysis Volume [veh/h]	29	499	4	2	990	20	10	0	19	5	0	2
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.00	0.00	0.00	0.01	0.00	0.09	0.00	0.04	0.03	0.00	0.00
d_M, Delay for Movement [s/veh]	10.41	0.00	0.00	8.36	0.00	0.00	39.12	41.18	12.11	26.95	39.65	10.33
Movement LOS	B	A	A	A	A	A	E	E	B	D	E	B
95th-Percentile Queue Length [veh/ln]	0.12	0.06	0.00	0.01	0.00	0.00	0.28	0.28	0.11	0.10	0.10	0.10
95th-Percentile Queue Length [ft/ln]	3.03	1.52	0.00	0.14	0.07	0.00	6.97	6.97	2.81	2.50	2.50	2.50
d_A, Approach Delay [s/veh]	0.57			0.02			21.42			22.20		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	0.69											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 7: La Cadena Dr (NS) at Cadena Creek Dwy/I-215 SB On-Ramp (EW)

Control Type:	All-way stop	Delay (sec / veh):	34.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.985

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Cadena Creek Dwy			I-215 SB On-Ramp		
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 Pocket	1	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	236.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00			50.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	La Cadena Dr			La Cadena Dr			Cadena Creek Dwy			I-215 SB On-Ramp		
Base Volume Input [veh/h]	27	449	6	500	373	74	50	9	17	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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]	27	449	6	500	373	74	50	9	17	0	0	0
Peak Hour Factor	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	120	2	134	100	20	13	2	5	0	0	0
Total Analysis Volume [veh/h]	29	480	6	534	399	79	53	10	18	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	481	515	517	542	597	414	475	
Degree of Utilization, x	0.06	0.47	0.47	0.99	0.80	0.15	0.04	

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.19	2.49	2.48	13.66	7.87	0.53	0.12	
95th-Percentile Queue Length [ft]	4.80	62.32	62.07	341.38	196.63	13.29	2.95	
Approach Delay [s/veh]	15.44			45.31		12.42		0.00
Approach LOS	C			E		B		A
Intersection Delay [s/veh]	34.08							
Intersection LOS	D							

Intersection Level Of Service Report
Intersection 8: Iowa Ave (NS) at I-215 SB Off-Ramp (EW)

Control Type:	Signalized	Delay (sec / veh):	16.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.741

Intersection Setup

Name	Iowa Ave		Iowa Ave		I-215 SB Off-Ramp	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		50.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Iowa Ave		Iowa Ave		I-215 SB Off-Ramp	
Base Volume Input [veh/h]	0	689	454	0	45	415
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	689	454	0	45	415
Peak Hour Factor	0.9500	0.9450	0.9450	0.9500	0.9450	0.9450
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	182	120	0	12	110
Total Analysis Volume [veh/h]	0	729	480	0	48	439
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Split	Split
Signal group	0	2	6	0	3	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	7	7	0	7	0
Maximum Green [s]	0	30	30	0	30	0
Amber [s]	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	0	11	11	0	49	0
Vehicle Extension [s]	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	7	0	7	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall		No	No		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	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
I, Upstream Filtering Factor	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	R
C, Cycle Length [s]	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	32	32	20	20
g / C, Green / Cycle	0.54	0.54	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.41	0.27	0.03	0.29
s, saturation flow rate [veh/h]	1800	1800	1714	1530
c, Capacity [veh/h]	969	969	564	503
d1, Uniform Delay [s]	10.77	8.74	13.94	19.00
k, delay calibration	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.39	1.81	0.06	4.89
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	0.50	0.09	0.87
d, Delay for Lane Group [s/veh]	16.16	10.55	14.00	23.89
Lane Group LOS	B	B	B	C
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	7.35	3.04	0.42	5.81
50th-Percentile Queue Length [ft/ln]	183.66	76.06	10.53	145.22
95th-Percentile Queue Length [veh/ln]	11.79	5.48	0.76	9.76
95th-Percentile Queue Length [ft/ln]	294.78	136.91	18.95	244.04

Movement, Approach, & Intersection Results

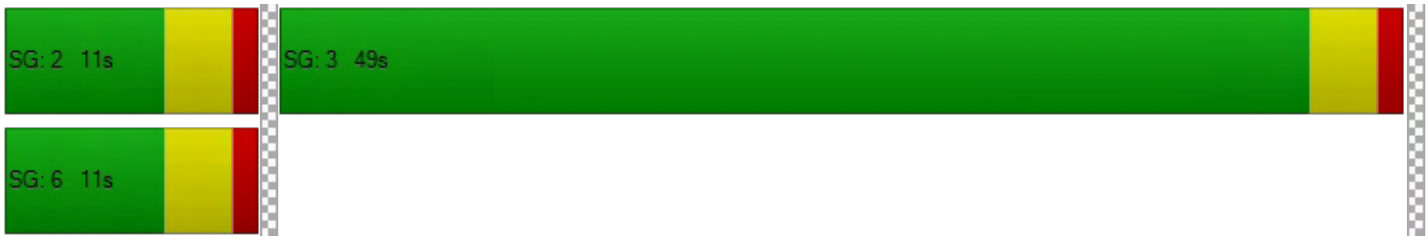
d_M, Delay for Movement [s/veh]	0.00	16.16	10.55	0.00	14.00	23.89
Movement LOS		B	B		B	C
d_A, Approach Delay [s/veh]	16.16		10.55		22.91	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	16.51					
Intersection LOS	B					
Intersection V/C	0.741					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	30.00	30.00	30.00
l_b,int, Bicycle LOS Score for Intersection	5.335	4.924	4.132
Bicycle LOS	F	E	D

Sequence

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



Intersection Level Of Service Report
Intersection 9: Iowa Ave (NS) at Iowa Ave/I-215 NB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	62.1
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.972

Intersection Setup

Name	Iowa Ave		Iowa Ave		I-215 NB Ramps	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	90.00	100.00	100.00	100.00
Speed [mph]	30.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Iowa Ave		Iowa Ave		I-215 NB Ramps	
Base Volume Input [veh/h]	141	728	363	668	17	327
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	141	728	363	668	17	327
Peak Hour Factor	0.9860	0.9860	0.9860	0.9860	0.9860	0.9860
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	185	92	169	4	83
Total Analysis Volume [veh/h]	143	738	368	677	17	332
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal group	1	0	3	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	7	0	7	7	7	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	49	0	25	51	26	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	R	L	C	C	R
C, Cycle Length [s]	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	45	45	21	47	22	22
g / C, Green / Cycle	0.45	0.45	0.21	0.47	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.08	0.48	0.21	0.38	0.01	0.22
s, saturation flow rate [veh/h]	1714	1530	1714	1800	1800	1530
c, Capacity [veh/h]	771	688	363	846	393	334
d1, Uniform Delay [s]	16.52	27.51	39.41	22.49	30.83	39.01
k, delay calibration	0.11	0.50	0.24	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.11	55.41	36.24	7.82	0.21	47.61
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.19	1.07	1.01	0.80	0.04	0.99
d, Delay for Lane Group [s/veh]	16.63	82.92	75.65	30.31	31.04	86.62
Lane Group LOS	B	F	F	C	C	F
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.96	26.09	12.11	13.94	0.35	12.39
50th-Percentile Queue Length [ft/ln]	48.97	652.34	302.74	348.53	8.63	309.86
95th-Percentile Queue Length [veh/ln]	3.53	36.30	17.95	20.06	0.62	18.17
95th-Percentile Queue Length [ft/ln]	88.14	907.48	448.67	501.62	15.54	454.20

Movement, Approach, & Intersection Results

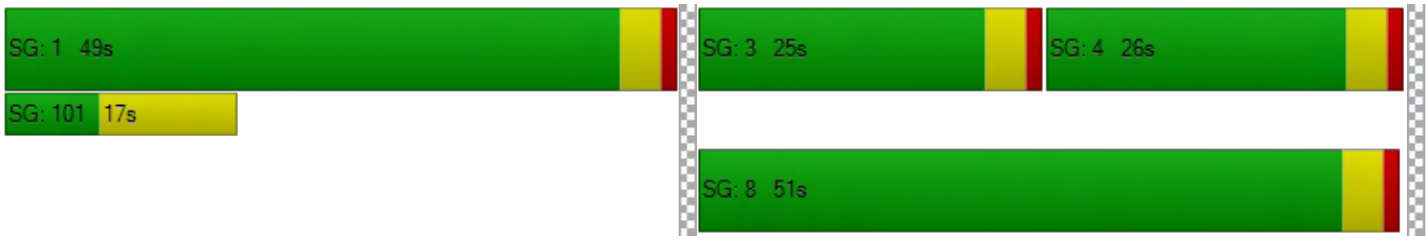
d_M, Delay for Movement [s/veh]	16.63	82.92	75.65	30.31	31.04	86.62
Movement LOS	B	F	F	C	C	F
d_A, Approach Delay [s/veh]	72.16		46.28		83.91	
Approach LOS	E		D		F	
d_I, Intersection Delay [s/veh]	62.07					
Intersection LOS	E					
Intersection V/C	0.972					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	39.61
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.325
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	50.00	50.00	50.00
l_b,int, Bicycle LOS Score for Intersection	4.132	5.857	4.708
Bicycle LOS	D	F	E

Sequence

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



Intersection Level Of Service Report

Intersection 10: I-215 SB Ramps/La Crosse Ave (NS) at Barton Rd (EW)

Control Type:	Roundabout	Delay (sec / veh):	5.2
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	La Crosse Ave			I-215 SB Ramps			Barton Rd			Barton Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	La Crosse Ave			I-215 SB Ramps			Barton Rd			Barton Rd		
Base Volume Input [veh/h]	2	0	38	179	9	71	1	385	40	234	224	6
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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]	2	0	38	179	9	71	1	385	40	234	224	6
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]	1	0	10	46	2	18	0	100	10	61	58	2
Total Analysis Volume [veh/h]	2	0	39	186	9	74	1	399	41	243	232	6
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			2			2		
Circulating Flow Rate [veh/h]	586			477			438			3		
Exiting Flow Rate [veh/h]	293			7			308			624		
Demand Flow Rate [veh/h]	2	0	38	179	9	71	1	385	40	234	224	6
Adjusted Demand Flow Rate [veh/h]	2	0	39	186	9	74	1	399	41	243	232	6

Lanes

Overwrite Calculated Critical Headway	No	No	No	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1420.00	1420.00	1350.00	1420.00	1350.00	1420.00
B (coefficient)	0.00102	0.00091	0.00091	0.00092	0.00085	0.00092	0.00085
HV Adjustment Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Entry Flow Rate [veh/h]	41	195	74	208	234	243	238
Capacity of Entry and Bypass Lanes [veh/h]	760	920	920	903	979	1347	1417
Pedestrian Impedance	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	760	920	920	903	979	1347	1417
X, volume / capacity	0.05	0.21	0.08	0.23	0.24	0.18	0.17

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.17	0.80	0.26	0.89	0.93	0.66	0.60
95th-Percentile Queue Length [ft]	4.27	20.00	6.54	22.14	23.30	16.44	15.09
Approach Delay [s/veh]	5.28	5.65		6.16		4.03	
Approach LOS	A	A		A		A	
Intersection Delay [s/veh]	5.19						
Intersection LOS	A						

Intersection Level Of Service Report
Intersection 11: I-215 NB Ramps (NS) at Barton Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	12.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.369

Intersection Setup

Name	I-215 NB Off-Ramp			I-215 On-Ramp			Barton Rd			Barton Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	300.00	100.00	100.00	100.00	100.00	200.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	I-215 NB Off-Ramp			I-215 On-Ramp			Barton Rd			Barton Rd		
Base Volume Input [veh/h]	19	2	343	0	0	0	104	427	0	0	497	229
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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]	19	2	343	0	0	0	104	427	0	0	497	229
Peak Hour Factor	0.9720	0.9720	0.9720	0.9500	0.9500	0.9500	0.9720	0.9720	0.9500	0.9500	0.9720	0.9720
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	88	0	0	0	27	110	0	0	128	59
Total Analysis Volume [veh/h]	20	2	353	0	0	0	107	439	0	0	511	236
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	7	0	0	0	0	7	7	0	0	7	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	21	0	0	0	0	18	39	0	0	21	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	10	0	0	10	0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R		L	C	C	R
C, Cycle Length [s]	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
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	9	9		6	43	33	33
g / C, Green / Cycle	0.16	0.16	0.16		0.10	0.71	0.55	0.55
(v / s)_i Volume / Saturation Flow Rate	0.01	0.12	0.12		0.06	0.13	0.15	0.15
s, saturation flow rate [veh/h]	1714	1533	1530		1714	3427	3427	1530
c, Capacity [veh/h]	269	241	240		169	2433	1867	834
d1, Uniform Delay [s]	21.62	24.17	24.17		26.07	2.90	7.33	7.37
k, delay calibration	0.11	0.11	0.11		0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.12	4.38	4.39		3.87	0.16	0.36	0.85
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.07	0.74	0.74		0.63	0.18	0.27	0.28
d, Delay for Lane Group [s/veh]	21.74	28.56	28.57		29.93	3.07	7.69	8.22
Lane Group LOS	C	C	C		C	A	A	A
Critical Lane Group	No	No	Yes		Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.24	2.54	2.54		1.54	0.49	1.43	1.44
50th-Percentile Queue Length [ft/ln]	5.88	63.58	63.49		38.62	12.20	35.87	36.07
95th-Percentile Queue Length [veh/ln]	0.42	4.58	4.57		2.78	0.88	2.58	2.60
95th-Percentile Queue Length [ft/ln]	10.59	114.44	114.28		69.52	21.95	64.56	64.92

Movement, Approach, & Intersection Results

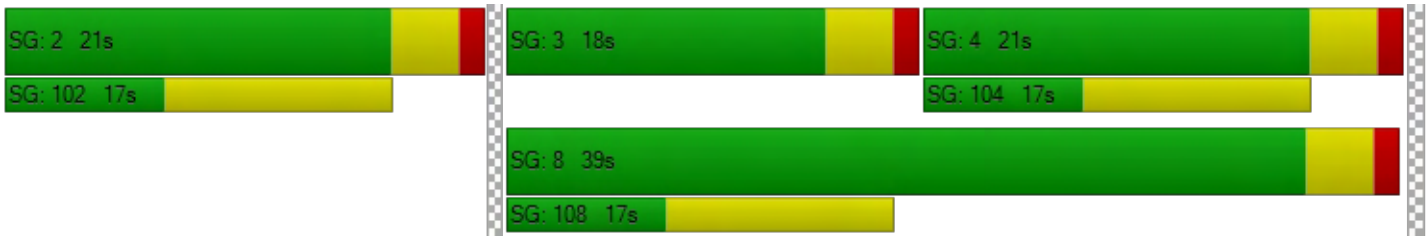
d_M, Delay for Movement [s/veh]	21.74	28.56	28.56	0.00	0.00	0.00	29.93	3.07	0.00	0.00	7.69	8.22
Movement LOS	C	C	C				C	A			A	A
d_A, Approach Delay [s/veh]	28.20			0.00			8.33			7.86		
Approach LOS	C			A			A			A		
d_I, Intersection Delay [s/veh]	12.59											
Intersection LOS	B											
Intersection V/C	0.369											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
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]	20.01	20.01	0.00	20.01
l_p,int, Pedestrian LOS Score for Intersection	2.040	1.737	0.000	2.627
Crosswalk LOS	B	A	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	567	0	1167	567
d_b, Bicycle Delay [s]	15.41	30.00	5.21	15.41
l_b,int, Bicycle LOS Score for Intersection	2.178	4.132	2.010	2.176
Bicycle LOS	B	D	B	B

Sequence

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



Existing Plus Project

Modern Pacific Homes

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Scenario 2 Existing Plus Project
1/18/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	La Cadena Dr (NS) at Tropica Rancho Rd (EW)	Two-way stop	HCM 6th Edition	EB Right	0.003	14.4	B
2	La Cadena Dr (NS) at Litton Ave (EW)	Signalized	HCM 6th Edition	EB Left	0.556	9.3	A
3	La Cadena Dr (NS) at Palm Ave (EW)	Two-way stop	HCM 6th Edition	EB Right	0.096	15.1	C
4	La Cadena Dr (NS) at Barton Rd (EW)	Signalized	HCM 6th Edition	SB Left	0.506	12.0	B
5	La Cadena Dr/Iowa Ave (NS) at La Cadena Dr (EW)	Signalized	HCM 6th Edition	EB Left	0.432	9.8	A
6	La Cadena Dr (NS) at Maryknoll Dr (EW)	Two-way stop	HCM 6th Edition	EB Left	0.127	31.0	D
7	La Cadena Dr (NS) at Cadena Creek Dwy/I-215 SB On-Ramp (EW)	All-way stop	HCM 6th Edition	SB Left	0.970	32.9	D
8	Iowa Ave (NS) at I-215 SB Off -Ramp (EW)	Signalized	HCM 6th Edition	EB Right	0.781	21.7	C
9	Iowa Ave (NS) at Iowa Ave/I-215 NB Ramps (EW)	Signalized	HCM 6th Edition	WB Right	1.161	120.6	F
10	I-215 SB Ramps/La Crosse Ave (NS) at Barton Rd (EW)	Roundabout	HCM 6th Edition	SB Left		5.2	A
11	I-215 NB Ramps (NS) at Barton Rd (EW)	Signalized	HCM 6th Edition	EB Left	0.482	12.1	B

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

Intersection Level Of Service Report
Intersection 1: La Cadena Dr (NS) at Tropica Rancho Rd (EW)

Control Type:	Two-way stop	Delay (sec / veh):	14.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.003

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Tropica Rancho Rd			Vivienda Ave		
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 Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	La Cadena Dr			La Cadena Dr			Tropica Rancho Rd			Vivienda Ave		
Base Volume Input [veh/h]	0	740	0	0	1283	1	0	0	1	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	15	0	0	5	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]	0	755	0	0	1288	1	0	0	1	0	0	0
Peak Hour Factor	0.9500	0.9170	0.9170	0.9500	0.9170	0.9170	0.9500	0.9500	0.9170	0.9500	0.9500	0.9170
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	206	0	0	351	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	823	0	0	1405	1	0	0	1	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.38	0.00	0.00	11.05
Movement LOS		A	A		A	A			B			B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			0.00			14.38			11.05		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	0.01											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 2: La Cadena Dr (NS) at Litton Ave (EW)

Control Type:	Signalized	Delay (sec / veh):	9.3
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.556

Intersection Setup

Name	La Cadena Dr		La Cadena Dr		Litton Ave	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0
Pocket Length [ft]	105.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00		50.00		25.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	La Cadena Dr		La Cadena Dr		Litton Ave	
Base Volume Input [veh/h]	27	683	1264	18	59	34
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	12	0	0	5	15	30
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	683	1264	23	74	64
Peak Hour Factor	0.9260	0.9260	0.9260	0.9260	0.9260	0.9260
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	184	341	6	20	17
Total Analysis Volume [veh/h]	42	738	1365	25	80	69
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	65
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal group	5	2	6	0	3	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	7	7	7	0	7	0
Maximum Green [s]	30	30	30	0	30	0
Amber [s]	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	11	32	21	0	33	0
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	7	0	7	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	C	C
C, Cycle Length [s]	65	65	65	65	65
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	49	42	42	8
g / C, Green / Cycle	0.06	0.76	0.64	0.64	0.12
(v / s)_i Volume / Saturation Flow Rate	0.02	0.22	0.39	0.39	0.09
s, saturation flow rate [veh/h]	1714	3427	1800	1789	1624
c, Capacity [veh/h]	102	2601	1149	1142	192
d1, Uniform Delay [s]	29.55	2.41	6.94	6.97	27.88
k, delay calibration	0.11	0.50	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.67	0.27	2.37	2.42	6.59
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.41	0.28	0.60	0.61	0.78
d, Delay for Lane Group [s/veh]	32.22	2.69	9.31	9.39	34.48
Lane Group LOS	C	A	A	A	C
Critical Lane Group	Yes	No	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	0.64	0.36	3.83	3.85	2.53
50th-Percentile Queue Length [ft/ln]	16.12	8.96	95.77	96.37	63.32
95th-Percentile Queue Length [veh/ln]	1.16	0.64	6.90	6.94	4.56
95th-Percentile Queue Length [ft/ln]	29.02	16.12	172.38	173.47	113.98

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	32.22	2.69	9.35	9.39	34.48	34.48
Movement LOS	C	A	A	A	C	C
d_A, Approach Delay [s/veh]	4.28		9.35		34.48	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	9.26					
Intersection LOS	A					
Intersection V/C	0.556					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	22.43
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.785
Crosswalk LOS	F	F	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	32.50	32.50	32.50
l_b,int, Bicycle LOS Score for Intersection	4.776	5.279	4.378
Bicycle LOS	E	F	E

Sequence

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



Intersection Level Of Service Report
Intersection 3: La Cadena Dr (NS) at Palm Ave (EW)

Control Type:	Two-way stop	Delay (sec / veh):	15.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.096

Intersection Setup

Name	La Cadena Dr		La Cadena Dr		Palm Ave	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	140.00	100.00	100.00
Speed [mph]	50.00		50.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	La Cadena Dr		La Cadena Dr		Palm Ave	
Base Volume Input [veh/h]	0	705	1285	11	0	32
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	30	0	0	4
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	717	1315	11	0	36
Peak Hour Factor	0.9500	0.9590	0.9590	0.9590	0.9500	0.9590
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	187	343	3	0	9
Total Analysis Volume [veh/h]	0	748	1371	11	0	38
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.01	0.00	0.00	0.10
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	15.08
Movement LOS		A	A	A		C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.32
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	7.93
d_A, Approach Delay [s/veh]	0.00		0.00		15.08	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.26					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 4: La Cadena Dr (NS) at Barton Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	12.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.506

Intersection Setup

Name	La Cadena Dr		La Cadena Dr		Barton Rd	
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 Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	250.00	100.00	100.00	100.00
Speed [mph]	50.00		50.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		No	

Volumes

Name	La Cadena Dr		La Cadena Dr		Barton Rd	
Base Volume Input [veh/h]	538	147	208	1105	190	164
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	7	0	14	20	0	5
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	545	147	222	1125	190	169
Peak Hour Factor	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	141	38	58	292	49	44
Total Analysis Volume [veh/h]	566	153	231	1168	197	175
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal group	2	0	1	6	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	11	0	28	39	21	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	29	29	10	43	9	9
g / C, Green / Cycle	0.48	0.48	0.17	0.71	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.17	0.10	0.13	0.34	0.11	0.11
s, saturation flow rate [veh/h]	3427	1530	1714	3427	1714	1530
c, Capacity [veh/h]	1634	729	289	2439	266	238
d1, Uniform Delay [s]	9.86	9.15	24.04	3.79	24.25	24.23
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.58	0.65	5.10	0.68	4.01	4.41
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.35	0.21	0.80	0.48	0.74	0.74
d, Delay for Lane Group [s/veh]	10.45	9.80	29.14	4.47	28.26	28.64
Lane Group LOS	B	A	C	A	C	C
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	1.80	0.97	3.11	1.12	2.75	2.46
50th-Percentile Queue Length [ft/ln]	44.96	24.20	77.64	28.05	68.63	61.61
95th-Percentile Queue Length [veh/ln]	3.24	1.74	5.59	2.02	4.94	4.44
95th-Percentile Queue Length [ft/ln]	80.92	43.56	139.76	50.49	123.54	110.90

Movement, Approach, & Intersection Results

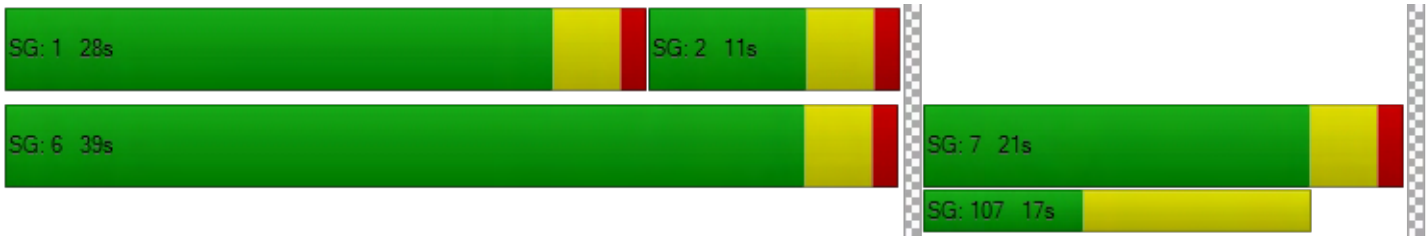
d_M, Delay for Movement [s/veh]	10.45	9.80	29.14	4.47	28.26	28.64
Movement LOS	B	A	C	A	C	C
d_A, Approach Delay [s/veh]	10.31		8.54		28.44	
Approach LOS	B		A		C	
d_I, Intersection Delay [s/veh]	12.03					
Intersection LOS	B					
Intersection V/C	0.506					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	20.01	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	2.995	0.000	0.000
Crosswalk LOS	C	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	30.00	30.00	30.00
l_b,int, Bicycle LOS Score for Intersection	4.726	5.287	4.132
Bicycle LOS	E	F	D

Sequence

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



Intersection Level Of Service Report

Intersection 5: La Cadena Dr/Iowa Ave (NS) at La Cadena Dr (EW)

Control Type:	Signalized	Delay (sec / veh):	9.8
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.432

Intersection Setup

Name	Iowa Ave		La Cadena Dr		La Cadena Dr	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0
Pocket Length [ft]	130.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Iowa Ave		La Cadena Dr		La Cadena Dr	
Base Volume Input [veh/h]	77	516	474	834	105	101
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	6	2	18	1	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	77	522	476	852	106	101
Peak Hour Factor	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560
Other Adjustment Factor	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	137	124	0	28	26
Total Analysis Volume [veh/h]	81	546	498	0	111	106
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Overlap
Signal group	5	2	6	0	3	8
Auxiliary Signal Groups						5,8
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	7	7	7	0	7	7
Maximum Green [s]	30	30	30	0	30	30
Amber [s]	3.0	3.0	3.0	0.0	3.0	3.0
All red [s]	1.0	1.0	1.0	0.0	1.0	1.0
Split [s]	11	47	36	0	13	13
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	3.0
Walk [s]	0	7	7	0	7	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
Minimum Recall	No	No	No		No	No
Maximum Recall	No	No	No		No	No
Pedestrian Recall	No	No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	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
g_i, Effective Green Time [s]	5	46	37	37	6	15
g / C, Green / Cycle	0.09	0.77	0.61	0.61	0.10	0.25
(v / s)_i Volume / Saturation Flow Rate	0.05	0.30	0.28	0.00	0.06	0.07
s, saturation flow rate [veh/h]	1714	1800	1800	2708	1714	1530
c, Capacity [veh/h]	152	1380	1101	1657	172	391
d1, Uniform Delay [s]	26.23	2.35	6.27	0.00	26.04	17.93
k, delay calibration	0.11	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.89	0.85	1.34	0.00	4.03	0.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.53	0.40	0.45	0.00	0.65	0.27
d, Delay for Lane Group [s/veh]	29.12	3.20	7.61	0.00	30.07	18.30
Lane Group LOS	C	A	A	A	C	B
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.09	0.39	2.24	0.00	1.53	1.03
50th-Percentile Queue Length [ft/ln]	27.36	9.86	56.03	0.00	38.16	25.68
95th-Percentile Queue Length [veh/ln]	1.97	0.71	4.03	0.00	2.75	1.85
95th-Percentile Queue Length [ft/ln]	49.24	17.75	100.85	0.00	68.68	46.23

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	29.12	3.20	7.61	0.00	30.07	18.30
Movement LOS	C	A	A	A	C	B
d_A, Approach Delay [s/veh]	6.55		7.61		24.32	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	9.82					
Intersection LOS	A					
Intersection V/C	0.432					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	30.00	30.00	30.00
l_b,int, Bicycle LOS Score for Intersection	5.167	4.954	4.132
Bicycle LOS	F	E	D

Sequence

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



Intersection Level Of Service Report
Intersection 6: La Cadena Dr (NS) at Maryknoll Dr (EW)

Control Type:	Two-way stop	Delay (sec / veh):	31.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.127

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Maryknoll Dr			Dwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

Volumes

Name	La Cadena Dr			La Cadena Dr			Maryknoll Dr			Dwy		
Base Volume Input [veh/h]	8	172	4	20	881	10	19	0	35	12	0	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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	0	0	18	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]	8	173	4	20	899	10	19	0	35	12	0	13
Peak Hour Factor	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	46	1	5	241	3	5	0	9	3	0	3
Total Analysis Volume [veh/h]	9	185	4	21	964	11	20	0	38	13	0	14
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.02	0.01	0.00	0.13	0.00	0.07	0.05	0.00	0.01
d_M, Delay for Movement [s/veh]	10.10	0.00	0.00	7.62	0.00	0.00	31.04	28.58	12.23	18.17	26.08	9.31
Movement LOS	B	A	A	A	A	A	D	D	B	C	D	A
95th-Percentile Queue Length [veh/ln]	0.03	0.02	0.00	0.04	0.02	0.00	0.42	0.42	0.23	0.19	0.19	0.19
95th-Percentile Queue Length [ft/ln]	0.85	0.42	0.00	1.09	0.54	0.00	10.60	10.60	5.70	4.80	4.80	4.80
d_A, Approach Delay [s/veh]	0.46			0.16			18.72			13.57		
Approach LOS	A			A			C			B		
d_I, Intersection Delay [s/veh]	1.33											
Intersection LOS	D											

Intersection Level Of Service Report

Intersection 7: La Cadena Dr (NS) at Cadena Creek Dwy/I-215 SB On-Ramp (EW)

Control Type:	All-way stop	Delay (sec / veh):	32.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.970

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Cadena Creek Dwy			I-215 SB On-Ramp		
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 Pocket	1	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	236.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00			50.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	La Cadena Dr			La Cadena Dr			Cadena Creek Dwy			I-215 SB On-Ramp		
Base Volume Input [veh/h]	9	110	0	513	375	46	73	17	28	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	0	16	2	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	111	0	529	377	46	73	17	28	0	0	0
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	31	0	147	105	13	20	5	8	0	0	0
Total Analysis Volume [veh/h]	10	123	0	587	418	51	81	19	31	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	476	510	510	605	670	464	541	
Degree of Utilization, x	0.02	0.12	0.12	0.97	0.70	0.22	0.06	

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.06	0.41	0.41	13.75	5.70	0.81	0.18	
95th-Percentile Queue Length [ft]	1.61	10.22	10.22	343.80	142.46	20.25	4.54	
Approach Delay [s/veh]	10.71			38.36		11.91		0.00
Approach LOS	B			E		B		A
Intersection Delay [s/veh]	32.95							
Intersection LOS	D							

Intersection Level Of Service Report
Intersection 8: Iowa Ave (NS) at I-215 SB Off-Ramp (EW)

Control Type:	Signalized	Delay (sec / veh):	21.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.781

Intersection Setup

Name	Iowa Ave		Iowa Ave		I-215 SB Off-Ramp	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		50.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Iowa Ave		Iowa Ave		I-215 SB Off-Ramp	
Base Volume Input [veh/h]	0	569	577	0	29	533
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	6	2	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	575	579	0	29	533
Peak Hour Factor	0.9500	0.9150	0.9150	0.9500	0.9150	0.9150
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	157	158	0	8	146
Total Analysis Volume [veh/h]	0	628	633	0	32	583
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	65
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Split	Split
Signal group	0	2	6	0	3	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	7	7	0	7	0
Maximum Green [s]	0	30	30	0	30	0
Amber [s]	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	0	11	11	0	54	0
Vehicle Extension [s]	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	7	0	7	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall		No	No		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	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
I, Upstream Filtering Factor	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	R
C, Cycle Length [s]	65	65	65	65
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	30	30	27	27
g / C, Green / Cycle	0.46	0.46	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.35	0.35	0.02	0.38
s, saturation flow rate [veh/h]	1800	1800	1714	1530
c, Capacity [veh/h]	826	826	717	640
d1, Uniform Delay [s]	14.63	14.69	11.23	17.81
k, delay calibration	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.51	6.71	0.03	5.50
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.77	0.04	0.91
d, Delay for Lane Group [s/veh]	21.14	21.40	11.26	23.30
Lane Group LOS	C	C	B	C
Critical Lane Group	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	8.15	7.39	0.25	8.15
50th-Percentile Queue Length [ft/ln]	203.77	184.78	6.34	203.86
95th-Percentile Queue Length [veh/ln]	12.83	11.85	0.46	12.84
95th-Percentile Queue Length [ft/ln]	320.83	296.25	11.41	320.94

Movement, Approach, & Intersection Results

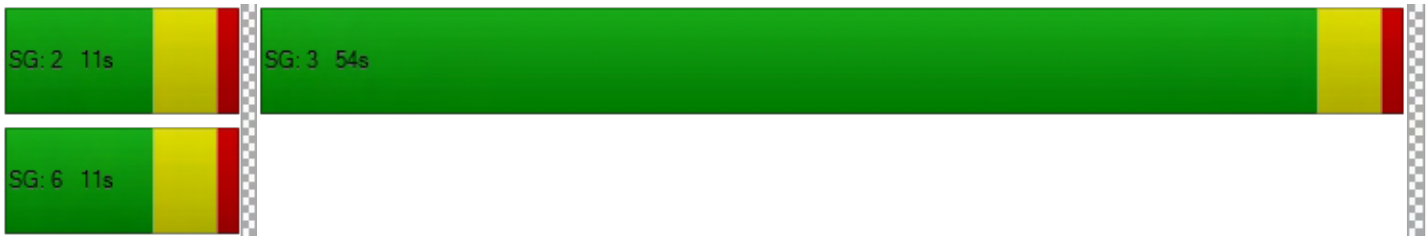
d_M, Delay for Movement [s/veh]	0.00	21.14	21.40	0.00	11.26	23.30
Movement LOS		C	C		B	C
d_A, Approach Delay [s/veh]	21.14		21.40		22.68	
Approach LOS	C		C		C	
d_I, Intersection Delay [s/veh]	21.73					
Intersection LOS	C					
Intersection V/C	0.781					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	32.50	32.50	32.50
l_b,int, Bicycle LOS Score for Intersection	5.169	5.177	4.132
Bicycle LOS	F	F	D

Sequence

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



Intersection Level Of Service Report
Intersection 9: Iowa Ave (NS) at Iowa Ave/I-215 NB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	120.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.161

Intersection Setup

Name	Iowa Ave		Iowa Ave		I-215 NB Ramps	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	90.00	100.00	100.00	100.00
Speed [mph]	30.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Iowa Ave		Iowa Ave		I-215 NB Ramps	
Base Volume Input [veh/h]	110	1000	305	532	33	264
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	2	1	0	0	5
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	110	1002	306	532	33	269
Peak Hour Factor	0.9130	0.9130	0.9130	0.9130	0.9130	0.9130
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	274	84	146	9	74
Total Analysis Volume [veh/h]	120	1097	335	583	36	295
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	125
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal group	1	0	3	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	7	0	7	7	7	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	75	0	25	50	25	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	R	L	C	C	R
C, Cycle Length [s]	125	125	125	125	125	125
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	71	71	21	46	21	21
g / C, Green / Cycle	0.57	0.57	0.17	0.37	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.07	0.72	0.20	0.32	0.02	0.19
s, saturation flow rate [veh/h]	1714	1530	1714	1800	1800	1530
c, Capacity [veh/h]	973	869	290	663	300	255
d1, Uniform Delay [s]	12.55	27.01	51.92	36.91	44.26	52.07
k, delay calibration	0.11	0.50	0.31	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.06	127.42	91.68	15.46	0.81	104.86
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.12	1.26	1.15	0.88	0.12	1.16
d, Delay for Lane Group [s/veh]	12.61	154.42	143.61	52.37	45.08	156.92
Lane Group LOS	B	F	F	D	D	F
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.58	55.11	16.23	18.69	1.02	15.41
50th-Percentile Queue Length [ft/ln]	39.47	1377.87	405.63	467.31	25.60	385.34
95th-Percentile Queue Length [veh/ln]	2.84	79.91	24.45	25.78	1.84	23.39
95th-Percentile Queue Length [ft/ln]	71.05	1997.84	611.30	644.57	46.08	584.86

Movement, Approach, & Intersection Results

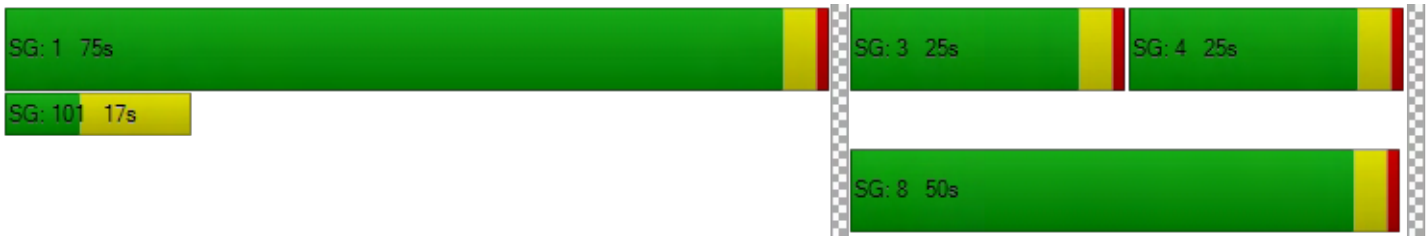
d_M, Delay for Movement [s/veh]	12.61	154.42	143.61	52.37	45.08	156.92
Movement LOS	B	F	F	D	D	F
d_A, Approach Delay [s/veh]	140.44		85.66		144.76	
Approach LOS	F		F		F	
d_I, Intersection Delay [s/veh]	120.63					
Intersection LOS	F					
Intersection V/C	1.161					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.98
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.292
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	62.50	62.50	62.50
l_b,int, Bicycle LOS Score for Intersection	4.132	5.647	4.679
Bicycle LOS	D	F	E

Sequence

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



Intersection Level Of Service Report

Intersection 10: I-215 SB Ramps/La Crosse Ave (NS) at Barton Rd (EW)

Control Type:	Roundabout	Delay (sec / veh):	5.2
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	La Crosse Ave			I-215 SB Ramps			Barton Rd			Barton Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	La Crosse Ave			I-215 SB Ramps			Barton Rd			Barton Rd		
Base Volume Input [veh/h]	0	0	8	116	23	67	1	296	41	321	251	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	3	2	12	0	0	2	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]	0	0	8	116	23	70	3	308	41	321	253	3
Peak Hour Factor	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	2	31	6	19	1	81	11	85	67	1
Total Analysis Volume [veh/h]	0	0	8	123	24	74	3	326	43	340	268	3
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			2			2		
Circulating Flow Rate [veh/h]	452			608			487			3		
Exiting Flow Rate [veh/h]	407			6			342			457		
Demand Flow Rate [veh/h]	0	0	8	116	23	70	3	308	41	321	253	3
Adjusted Demand Flow Rate [veh/h]	0	0	8	123	24	74	3	326	43	340	268	3

Lanes

Overwrite Calculated Critical Headway	No	No	No	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1420.00	1420.00	1350.00	1420.00	1350.00	1420.00
B (coefficient)	0.00102	0.00091	0.00091	0.00092	0.00085	0.00092	0.00085
HV Adjustment Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Entry Flow Rate [veh/h]	8	147	74	175	198	340	271
Capacity of Entry and Bypass Lanes [veh/h]	871	817	817	863	939	1347	1417
Pedestrian Impedance	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	871	817	817	863	939	1347	1417
X, volume / capacity	0.01	0.18	0.09	0.20	0.21	0.25	0.19

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.03	0.65	0.30	0.76	0.79	1.01	0.71
95th-Percentile Queue Length [ft]	0.70	16.34	7.45	18.90	19.77	25.14	17.66
Approach Delay [s/veh]	4.22	5.95		6.06		4.51	
Approach LOS	A	A		A		A	
Intersection Delay [s/veh]	5.25						
Intersection LOS	A						

Intersection Level Of Service Report
Intersection 11: I-215 NB Ramps (NS) at Barton Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	12.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.482

Intersection Setup

Name	I-215 NB Off-Ramp			I-215 On-Ramp			Barton Rd			Barton Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	300.00	100.00	100.00	100.00	100.00	200.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	I-215 NB Off-Ramp			I-215 On-Ramp			Barton Rd			Barton Rd		
Base Volume Input [veh/h]	30	0	303	0	0	0	68	353	0	0	546	391
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	0	0	0	0	0	10	2	0	0	1	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	31	0	303	0	0	0	78	355	0	0	547	391
Peak Hour Factor	0.9230	0.9230	0.9230	0.9500	0.9500	0.9500	0.9230	0.9230	0.9500	0.9500	0.9230	0.9230
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	0	82	0	0	0	21	96	0	0	148	106
Total Analysis Volume [veh/h]	34	0	328	0	0	0	85	385	0	0	593	424
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	7	0	0	0	0	7	7	0	0	7	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	21	0	0	0	0	18	39	0	0	21	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	10	0	0	10	0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R		L	C	C	R
C, Cycle Length [s]	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
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	9	9		5	43	34	34
g / C, Green / Cycle	0.15	0.15	0.15		0.09	0.72	0.56	0.56
(v / s)_i Volume / Saturation Flow Rate	0.02	0.11	0.11		0.05	0.11	0.17	0.28
s, saturation flow rate [veh/h]	1714	1530	1530		1714	3427	3427	1530
c, Capacity [veh/h]	255	227	227		155	2463	1926	860
d1, Uniform Delay [s]	22.25	24.43	24.43		26.20	2.68	6.98	7.99
k, delay calibration	0.11	0.11	0.11		0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.24	4.29	4.29		3.03	0.14	0.42	2.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.13	0.72	0.72		0.55	0.16	0.31	0.49
d, Delay for Lane Group [s/veh]	22.49	28.72	28.72		29.23	2.82	7.40	10.01
Lane Group LOS	C	C	C		C	A	A	B
Critical Lane Group	No	Yes	No		Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.41	2.35	2.35		1.21	0.39	1.61	2.93
50th-Percentile Queue Length [ft/ln]	10.25	58.85	58.85		30.28	9.70	40.23	73.32
95th-Percentile Queue Length [veh/ln]	0.74	4.24	4.24		2.18	0.70	2.90	5.28
95th-Percentile Queue Length [ft/ln]	18.45	105.94	105.94		54.50	17.46	72.41	131.98

Movement, Approach, & Intersection Results

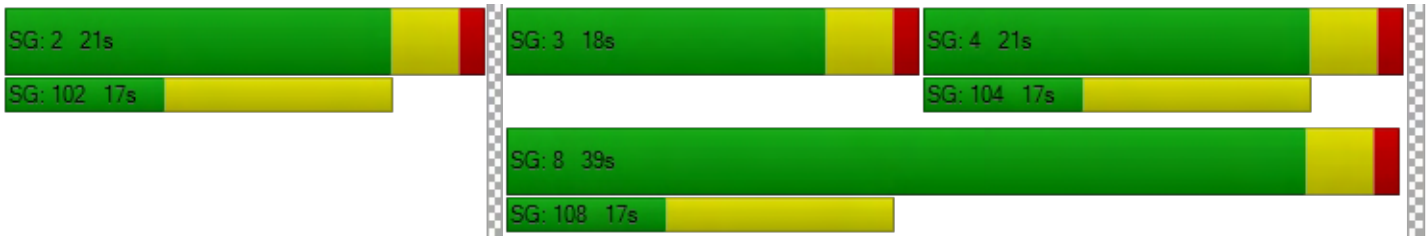
d_M, Delay for Movement [s/veh]	22.49	28.72	28.72	0.00	0.00	0.00	29.23	2.82	0.00	0.00	7.40	10.01
Movement LOS	C	C	C				C	A			A	B
d_A, Approach Delay [s/veh]	28.14			0.00			7.60			8.49		
Approach LOS	C			A			A			A		
d_I, Intersection Delay [s/veh]	12.11											
Intersection LOS	B											
Intersection V/C	0.482											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
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]	20.01	20.01	0.00	20.01
l_p,int, Pedestrian LOS Score for Intersection	2.035	1.897	0.000	2.671
Crosswalk LOS	B	A	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	567	0	1167	567
d_b, Bicycle Delay [s]	15.41	30.00	5.21	15.41
l_b,int, Bicycle LOS Score for Intersection	2.157	4.132	1.947	2.399
Bicycle LOS	B	D	A	B

Sequence

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



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Scenario 2 Existing Plus Project
1/14/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	La Cadena Dr (NS) at Tropica Rancho Rd (EW)	Two-way stop	HCM 6th Edition	EB Right	0.000	14.5	B
2	La Cadena Dr (NS) at Litton Ave (EW)	Signalized	HCM 6th Edition	EB Right	0.518	7.7	A
3	La Cadena Dr (NS) at Palm Ave (EW)	Two-way stop	HCM 6th Edition	EB Right	0.081	15.2	C
4	La Cadena Dr (NS) at Barton Rd (EW)	Signalized	HCM 6th Edition	WB Left	0.582	13.3	B
5	La Cadena Dr/Iowa Ave (NS) at La Cadena Dr (EW)	Signalized	HCM 6th Edition	NB Left	0.625	14.6	B
6	La Cadena Dr (NS) at Maryknoll Dr (EW)	Two-way stop	HCM 6th Edition	EB Thru	0.000	42.0	E
7	La Cadena Dr (NS) at Cadena Creek Dwy/I-215 SB On-Ramp (EW)	All-way stop	HCM 6th Edition	SB Left	1.006	36.2	E
8	Iowa Ave (NS) at I-215 SB Off -Ramp (EW)	Signalized	HCM 6th Edition	EB Right	0.754	16.9	B
9	Iowa Ave (NS) at Iowa Ave/I-215 NB Ramps (EW)	Signalized	HCM 6th Edition	WB Right	0.984	65.5	E
10	I-215 SB Ramps/La Crosse Ave (NS) at Barton Rd (EW)	Roundabout	HCM 6th Edition	EB Left		5.2	A
11	I-215 NB Ramps (NS) at Barton Rd (EW)	Signalized	HCM 6th Edition	EB Left	0.374	12.7	B

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

Intersection Level Of Service Report
Intersection 1: La Cadena Dr (NS) at Tropica Rancho Rd (EW)

Control Type:	Two-way stop	Delay (sec / veh):	14.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Tropica Rancho Rd			Vivienda Ave		
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 Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	La Cadena Dr			La Cadena Dr			Tropica Rancho Rd			Vivienda Ave		
Base Volume Input [veh/h]	0	889	0	0	1290	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	10	0	0	17	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]	0	899	0	0	1307	0	0	0	0	0	0	0
Peak Hour Factor	0.9500	0.9160	0.9160	0.9500	0.9160	0.9160	0.9500	0.9500	0.9160	0.9500	0.9500	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]	0	245	0	0	357	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	981	0	0	1427	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.51	0.00	0.00	11.80
Movement LOS		A	A		A	A			B			B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			0.00			14.51			11.80		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	0.00											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 2: La Cadena Dr (NS) at Litton Ave (EW)

Control Type:	Signalized	Delay (sec / veh):	7.7
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.518

Intersection Setup

Name	La Cadena Dr		La Cadena Dr		Litton Ave	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0
Pocket Length [ft]	105.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00		50.00		25.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	La Cadena Dr		La Cadena Dr		Litton Ave	
Base Volume Input [veh/h]	39	862	1245	45	25	24
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	40	0	0	17	10	19
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	79	862	1245	62	35	43
Peak Hour Factor	0.9680	0.9680	0.9680	0.9680	0.9680	0.9680
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	223	322	16	9	11
Total Analysis Volume [veh/h]	82	890	1286	64	36	44
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal group	5	2	6	0	3	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	7	7	7	0	7	0
Maximum Green [s]	30	30	30	0	30	0
Amber [s]	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	11	68	57	0	12	0
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	7	0	7	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	C	C
C, Cycle Length [s]	80	80	80	80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	66	56	56	6
g / C, Green / Cycle	0.07	0.83	0.70	0.70	0.07
(v / s)_i Volume / Saturation Flow Rate	0.05	0.26	0.38	0.38	0.05
s, saturation flow rate [veh/h]	1714	3427	1800	1770	1608
c, Capacity [veh/h]	128	2831	1263	1242	119
d1, Uniform Delay [s]	36.01	1.64	5.71	5.77	36.13
k, delay calibration	0.11	0.50	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.25	0.29	1.62	1.71	6.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.64	0.31	0.53	0.54	0.67
d, Delay for Lane Group [s/veh]	41.26	1.93	7.33	7.48	42.56
Lane Group LOS	D	A	A	A	D
Critical Lane Group	Yes	No	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	1.63	0.15	3.61	3.66	1.72
50th-Percentile Queue Length [ft/ln]	40.83	3.78	90.32	91.60	43.08
95th-Percentile Queue Length [veh/ln]	2.94	0.27	6.50	6.60	3.10
95th-Percentile Queue Length [ft/ln]	73.49	6.80	162.57	164.89	77.54

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	41.26	1.93	7.40	7.48	42.56	42.56
Movement LOS	D	A	A	A	D	D
d_A, Approach Delay [s/veh]	5.25		7.40		42.56	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	7.70					
Intersection LOS	A					
Intersection V/C	0.518					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	29.76
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.800
Crosswalk LOS	F	F	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	40.00	40.00	40.00
l_b,int, Bicycle LOS Score for Intersection	4.934	5.246	4.264
Bicycle LOS	E	F	E

Sequence

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



Intersection Level Of Service Report
Intersection 3: La Cadena Dr (NS) at Palm Ave (EW)

Control Type:	Two-way stop	Delay (sec / veh):	15.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.081

Intersection Setup

Name	La Cadena Dr		La Cadena Dr		Palm Ave	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	140.00	100.00	100.00
Speed [mph]	50.00		50.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	La Cadena Dr		La Cadena Dr		Palm Ave	
Base Volume Input [veh/h]	0	877	1273	22	0	24
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	40	19	0	0	4
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	917	1292	22	0	28
Peak Hour Factor	0.9500	0.9170	0.9170	0.9170	0.9500	0.9170
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	250	352	6	0	8
Total Analysis Volume [veh/h]	0	1000	1409	24	0	31
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.01	0.00	0.00	0.08
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	15.20
Movement LOS		A	A	A		C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.26
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	6.55
d_A, Approach Delay [s/veh]	0.00		0.00		15.20	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.19					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 4: La Cadena Dr (NS) at Barton Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	13.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.582

Intersection Setup

Name	La Cadena Dr		La Cadena Dr		Barton Rd	
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 Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	250.00	100.00	100.00	100.00
Speed [mph]	50.00		50.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		No	

Volumes

Name	La Cadena Dr		La Cadena Dr		Barton Rd	
Base Volume Input [veh/h]	774	153	256	1014	208	136
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	23	0	11	12	0	17
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	797	153	267	1026	208	153
Peak Hour Factor	0.9730	0.9730	0.9730	0.9730	0.9730	0.9730
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	205	39	69	264	53	39
Total Analysis Volume [veh/h]	819	157	274	1054	214	157
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal group	2	0	1	6	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	11	0	28	39	21	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	27	27	12	42	10	10
g / C, Green / Cycle	0.44	0.44	0.19	0.70	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.24	0.10	0.16	0.31	0.12	0.10
s, saturation flow rate [veh/h]	3427	1530	1714	3427	1714	1530
c, Capacity [veh/h]	1512	675	334	2408	282	251
d1, Uniform Delay [s]	12.34	10.47	23.20	3.84	24.00	23.41
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.40	0.81	4.98	0.58	4.19	2.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.54	0.23	0.82	0.44	0.76	0.62
d, Delay for Lane Group [s/veh]	13.74	11.28	28.18	4.42	28.20	25.94
Lane Group LOS	B	B	C	A	C	C
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.26	1.12	3.61	1.08	2.98	2.07
50th-Percentile Queue Length [ft/ln]	81.45	27.88	90.30	26.90	74.53	51.87
95th-Percentile Queue Length [veh/ln]	5.86	2.01	6.50	1.94	5.37	3.73
95th-Percentile Queue Length [ft/ln]	146.60	50.18	162.54	48.42	134.16	93.37

Movement, Approach, & Intersection Results

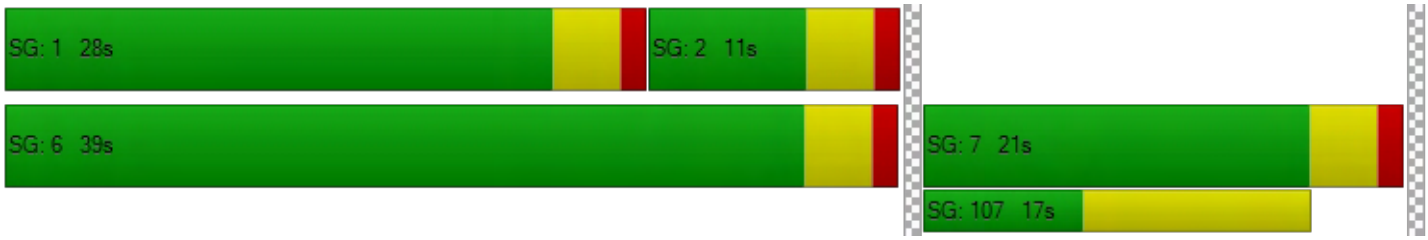
d_M, Delay for Movement [s/veh]	13.74	11.28	28.18	4.42	28.20	25.94
Movement LOS	B	B	C	A	C	C
d_A, Approach Delay [s/veh]	13.35		9.32		27.24	
Approach LOS	B		A		C	
d_I, Intersection Delay [s/veh]	13.28					
Intersection LOS	B					
Intersection V/C	0.582					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	20.01	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.038	0.000	0.000
Crosswalk LOS	C	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	30.00	30.00	30.00
I_b,int, Bicycle LOS Score for Intersection	4.938	5.228	4.132
Bicycle LOS	E	F	D

Sequence

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



Intersection Level Of Service Report

Intersection 5: La Cadena Dr/Iowa Ave (NS) at La Cadena Dr (EW)

Control Type:	Signalized	Delay (sec / veh):	14.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.625

Intersection Setup

Name	Iowa Ave		La Cadena Dr		La Cadena Dr	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0
Pocket Length [ft]	130.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Iowa Ave		La Cadena Dr		La Cadena Dr	
Base Volume Input [veh/h]	74	626	303	866	318	159
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	20	2	10	3	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	74	646	305	876	321	159
Peak Hour Factor	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710
Other Adjustment Factor	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	166	79	0	83	41
Total Analysis Volume [veh/h]	76	665	314	0	331	164
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Overlap
Signal group	5	2	6	0	3	8
Auxiliary Signal Groups						5,8
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	7	7	7	0	7	7
Maximum Green [s]	30	30	30	0	30	30
Amber [s]	3.0	3.0	3.0	0.0	3.0	3.0
All red [s]	1.0	1.0	1.0	0.0	1.0	1.0
Split [s]	31	42	11	0	18	18
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	3.0
Walk [s]	0	7	7	0	7	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
Minimum Recall	No	No	No		No	No
Maximum Recall	No	No	No		No	No
Pedestrian Recall	No	No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	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
g_i, Effective Green Time [s]	5	39	30	30	13	22
g / C, Green / Cycle	0.09	0.65	0.49	0.49	0.22	0.37
(v / s)_i Volume / Saturation Flow Rate	0.04	0.37	0.17	0.00	0.19	0.11
s, saturation flow rate [veh/h]	1714	1800	1800	2708	1714	1530
c, Capacity [veh/h]	148	1161	886	1333	381	574
d1, Uniform Delay [s]	26.28	6.01	9.40	0.00	22.56	13.17
k, delay calibration	0.11	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.74	2.06	1.11	0.00	6.15	0.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.51	0.57	0.35	0.00	0.87	0.29
d, Delay for Lane Group [s/veh]	29.02	8.07	10.51	0.00	28.71	13.44
Lane Group LOS	C	A	B	A	C	B
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.02	2.90	2.05	0.00	4.43	1.27
50th-Percentile Queue Length [ft/ln]	25.62	72.53	51.14	0.00	110.66	31.70
95th-Percentile Queue Length [veh/ln]	1.84	5.22	3.68	0.00	7.88	2.28
95th-Percentile Queue Length [ft/ln]	46.12	130.56	92.05	0.00	196.92	57.05

Movement, Approach, & Intersection Results

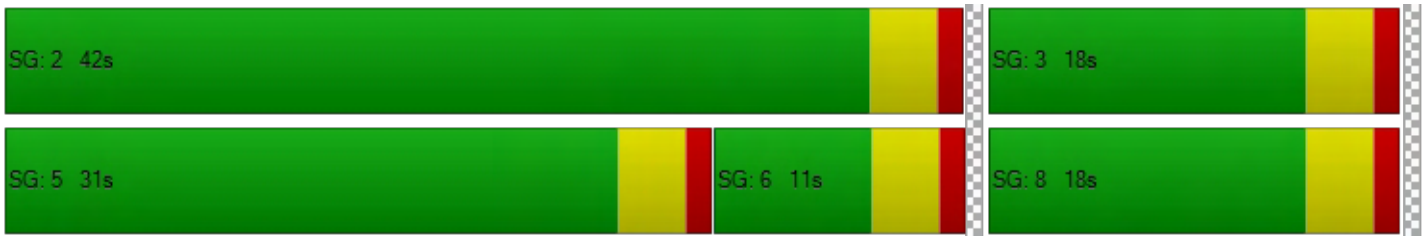
d_M, Delay for Movement [s/veh]	29.02	8.07	10.51	0.00	28.71	13.44
Movement LOS	C	A	B	A	C	B
d_A, Approach Delay [s/veh]	10.22		10.51		23.65	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	14.57					
Intersection LOS	B					
Intersection V/C	0.625					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	30.00	30.00	30.00
l_b,int, Bicycle LOS Score for Intersection	5.355	4.651	4.132
Bicycle LOS	F	E	D

Sequence

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



Intersection Level Of Service Report
Intersection 6: La Cadena Dr (NS) at Maryknoll Dr (EW)

Control Type:	Two-way stop	Delay (sec / veh):	42.0
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Maryknoll Dr			Dwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

Volumes

Name	La Cadena Dr			La Cadena Dr			Maryknoll Dr			Dwy		
Base Volume Input [veh/h]	27	466	4	2	924	19	9	0	18	5	0	2
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	3	0	0	10	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]	27	469	4	2	934	19	9	0	18	5	0	2
Peak Hour Factor	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330
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	126	1	1	250	5	2	0	5	1	0	1
Total Analysis Volume [veh/h]	29	503	4	2	1001	20	10	0	19	5	0	2
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.01	0.00	0.00	0.01	0.00	0.09	0.00	0.04	0.03	0.00	0.00
d_M, Delay for Movement [s/veh]	10.47	0.00	0.00	8.38	0.00	0.00	39.97	42.05	12.17	27.33	40.42	10.36
Movement LOS	B	A	A	A	A	A	E	E	B	D	E	B
95th-Percentile Queue Length [veh/ln]	0.12	0.06	0.00	0.01	0.00	0.00	0.29	0.29	0.11	0.10	0.10	0.10
95th-Percentile Queue Length [ft/ln]	3.06	1.53	0.00	0.14	0.07	0.00	7.13	7.13	2.83	2.54	2.54	2.54
d_A, Approach Delay [s/veh]	0.57			0.02			21.76			22.48		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	0.69											
Intersection LOS	E											

Intersection Level Of Service Report

Intersection 7: La Cadena Dr (NS) at Cadena Creek Dwy/I-215 SB On-Ramp (EW)

Control Type:	All-way stop	Delay (sec / veh):	36.2
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.006

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Cadena Creek Dwy			I-215 SB On-Ramp		
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 Pocket	1	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	236.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00			50.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	La Cadena Dr			La Cadena Dr			Cadena Creek Dwy			I-215 SB On-Ramp		
Base Volume Input [veh/h]	27	449	6	500	373	74	50	9	17	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	3	0	8	2	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	27	452	6	508	375	74	50	9	17	0	0	0
Peak Hour Factor	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	121	2	136	100	20	13	2	5	0	0	0
Total Analysis Volume [veh/h]	29	483	6	543	401	79	53	10	18	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	483	516	518	543	595	416	475	
Degree of Utilization, x	0.06	0.47	0.47	1.01	0.81	0.15	0.04	

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.19	2.51	2.50	14.47	8.04	0.53	0.12	
95th-Percentile Queue Length [ft]	4.78	62.76	62.50	361.70	201.11	13.25	2.94	
Approach Delay [s/veh]	15.46			48.57		12.39		0.00
Approach LOS	C			E		B		A
Intersection Delay [s/veh]	36.19							
Intersection LOS	E							

Intersection Level Of Service Report
Intersection 8: Iowa Ave (NS) at I-215 SB Off-Ramp (EW)

Control Type:	Signalized	Delay (sec / veh):	16.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.754

Intersection Setup

Name	Iowa Ave		Iowa Ave		I-215 SB Off-Ramp	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		50.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Iowa Ave		Iowa Ave		I-215 SB Off-Ramp	
Base Volume Input [veh/h]	0	689	454	0	45	415
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	20	2	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	709	456	0	45	415
Peak Hour Factor	0.9500	0.9450	0.9450	0.9500	0.9450	0.9450
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	188	121	0	12	110
Total Analysis Volume [veh/h]	0	750	483	0	48	439
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Split	Split
Signal group	0	2	6	0	3	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	7	7	0	7	0
Maximum Green [s]	0	30	30	0	30	0
Amber [s]	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	0	11	11	0	49	0
Vehicle Extension [s]	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	7	0	7	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall		No	No		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	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
I, Upstream Filtering Factor	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	R
C, Cycle Length [s]	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	32	32	20	20
g / C, Green / Cycle	0.54	0.54	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.42	0.27	0.03	0.29
s, saturation flow rate [veh/h]	1800	1800	1714	1530
c, Capacity [veh/h]	969	969	564	503
d1, Uniform Delay [s]	10.99	8.76	13.94	19.00
k, delay calibration	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.01	1.83	0.06	4.89
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.50	0.09	0.87
d, Delay for Lane Group [s/veh]	17.00	10.59	14.00	23.89
Lane Group LOS	B	B	B	C
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	7.81	3.07	0.42	5.81
50th-Percentile Queue Length [ft/ln]	195.14	76.76	10.53	145.22
95th-Percentile Queue Length [veh/ln]	12.39	5.53	0.76	9.76
95th-Percentile Queue Length [ft/ln]	309.69	138.16	18.95	244.04

Movement, Approach, & Intersection Results

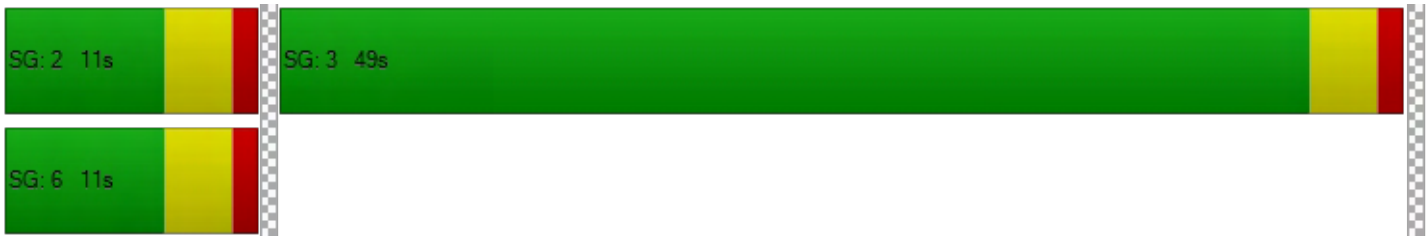
d_M, Delay for Movement [s/veh]	0.00	17.00	10.59	0.00	14.00	23.89
Movement LOS		B	B		B	C
d_A, Approach Delay [s/veh]	17.00		10.59		22.91	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	16.88					
Intersection LOS	B					
Intersection V/C	0.754					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	30.00	30.00	30.00
l_b,int, Bicycle LOS Score for Intersection	5.370	4.929	4.132
Bicycle LOS	F	E	D

Sequence

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



Intersection Level Of Service Report

Intersection 9: Iowa Ave (NS) at Iowa Ave/I-215 NB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	65.5
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.984

Intersection Setup

Name	Iowa Ave		Iowa Ave		I-215 NB Ramps	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	90.00	100.00	100.00	100.00
Speed [mph]	30.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Iowa Ave		Iowa Ave		I-215 NB Ramps	
Base Volume Input [veh/h]	141	728	363	668	17	327
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	2	3	0	0	17
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	141	730	366	668	17	344
Peak Hour Factor	0.9860	0.9860	0.9860	0.9860	0.9860	0.9860
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	185	93	169	4	87
Total Analysis Volume [veh/h]	143	740	371	677	17	349
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	105
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal group	1	0	3	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	7	0	7	7	7	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	51	0	26	54	28	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	R	L	C	C	R
C, Cycle Length [s]	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	47	47	22	50	24	24
g / C, Green / Cycle	0.45	0.45	0.21	0.48	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.08	0.48	0.22	0.38	0.01	0.23
s, saturation flow rate [veh/h]	1714	1530	1714	1800	1800	1530
c, Capacity [veh/h]	767	685	361	857	409	348
d1, Uniform Delay [s]	17.49	29.01	41.43	23.07	31.64	40.56
k, delay calibration	0.11	0.50	0.27	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.12	58.33	41.87	7.31	0.19	49.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.19	1.08	1.03	0.79	0.04	1.00
d, Delay for Lane Group [s/veh]	17.60	87.34	83.31	30.39	31.83	89.57
Lane Group LOS	B	F	F	C	C	F
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.09	27.48	13.12	14.45	0.36	13.58
50th-Percentile Queue Length [ft/ln]	52.22	687.10	328.02	361.22	8.97	339.49
95th-Percentile Queue Length [veh/ln]	3.76	38.21	19.33	20.68	0.65	19.66
95th-Percentile Queue Length [ft/ln]	93.99	955.24	483.36	517.07	16.14	491.43

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	17.60	87.34	83.31	30.39	31.83	89.57
Movement LOS	B	F	F	C	C	F
d_A, Approach Delay [s/veh]	76.04		49.12		86.89	
Approach LOS	E		D		F	
d_I, Intersection Delay [s/veh]	65.49					
Intersection LOS	E					
Intersection V/C	0.984					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	42.08
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.333
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	52.50	52.50	52.50
l_b,int, Bicycle LOS Score for Intersection	4.132	5.862	4.736
Bicycle LOS	D	F	E

Sequence

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



Intersection Level Of Service Report

Intersection 10: I-215 SB Ramps/La Crosse Ave (NS) at Barton Rd (EW)

Control Type:	Roundabout	Delay (sec / veh):	5.2
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	La Crosse Ave			I-215 SB Ramps			Barton Rd			Barton Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	La Crosse Ave			I-215 SB Ramps			Barton Rd			Barton Rd		
Base Volume Input [veh/h]	2	0	38	179	9	71	1	385	40	234	224	6
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	11	2	9	0	0	6	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]	2	0	38	179	9	82	3	394	40	234	230	6
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]	1	0	10	46	2	21	1	102	10	61	60	2
Total Analysis Volume [veh/h]	2	0	39	186	9	85	3	409	41	243	239	6
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			2			2		
Circulating Flow Rate [veh/h]	598			484			438			5		
Exiting Flow Rate [veh/h]	293			9			326			634		
Demand Flow Rate [veh/h]	2	0	38	179	9	82	3	394	40	234	230	6
Adjusted Demand Flow Rate [veh/h]	2	0	39	186	9	85	3	409	41	243	239	6

Lanes

Overwrite Calculated Critical Headway	No	No	No	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1420.00	1420.00	1350.00	1420.00	1350.00	1420.00
B (coefficient)	0.00102	0.00091	0.00091	0.00092	0.00085	0.00092	0.00085
HV Adjustment Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Entry Flow Rate [veh/h]	41	195	85	213	241	243	245
Capacity of Entry and Bypass Lanes [veh/h]	750	915	915	903	979	1344	1414
Pedestrian Impedance	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	750	915	915	903	979	1344	1414
X, volume / capacity	0.05	0.21	0.09	0.24	0.25	0.18	0.17

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.17	0.81	0.31	0.92	0.97	0.66	0.63
95th-Percentile Queue Length [ft]	4.33	20.16	7.67	22.92	24.13	16.48	15.65
Approach Delay [s/veh]	5.35	5.69		6.24		4.06	
Approach LOS	A	A		A		A	
Intersection Delay [s/veh]	5.24						
Intersection LOS	A						

Intersection Level Of Service Report
Intersection 11: I-215 NB Ramps (NS) at Barton Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	12.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.374

Intersection Setup

Name	I-215 NB Off-Ramp			I-215 On-Ramp			Barton Rd			Barton Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	300.00	100.00	100.00	100.00	100.00	200.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	I-215 NB Off-Ramp			I-215 On-Ramp			Barton Rd			Barton Rd		
Base Volume Input [veh/h]	19	2	343	0	0	0	104	427	0	0	497	229
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	0	0	0	0	0	7	2	0	0	3	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]	22	2	343	0	0	0	111	429	0	0	500	229
Peak Hour Factor	0.9720	0.9720	0.9720	0.9500	0.9500	0.9500	0.9720	0.9720	0.9500	0.9500	0.9720	0.9720
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	1	88	0	0	0	29	110	0	0	129	59
Total Analysis Volume [veh/h]	23	2	353	0	0	0	114	441	0	0	514	236
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	7	0	0	0	0	7	7	0	0	7	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	21	0	0	0	0	18	39	0	0	21	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	10	0	0	10	0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R		L	C	C	R
C, Cycle Length [s]	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
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	9	9		6	43	33	33
g / C, Green / Cycle	0.16	0.16	0.16		0.10	0.71	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.01	0.12	0.12		0.07	0.13	0.15	0.15
s, saturation flow rate [veh/h]	1714	1533	1530		1714	3427	3427	1530
c, Capacity [veh/h]	269	241	241		173	2433	1860	830
d1, Uniform Delay [s]	21.66	24.17	24.17		26.06	2.91	7.40	7.44
k, delay calibration	0.11	0.11	0.11		0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.13	4.37	4.38		4.25	0.16	0.37	0.86
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.09	0.74	0.74		0.66	0.18	0.28	0.28
d, Delay for Lane Group [s/veh]	21.79	28.54	28.55		30.31	3.07	7.77	8.30
Lane Group LOS	C	C	C		C	A	A	A
Critical Lane Group	No	No	Yes		Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.27	2.54	2.54		1.66	0.49	1.46	1.45
50th-Percentile Queue Length [ft/ln]	6.78	63.55	63.46		41.46	12.27	36.41	36.36
95th-Percentile Queue Length [veh/ln]	0.49	4.58	4.57		2.99	0.88	2.62	2.62
95th-Percentile Queue Length [ft/ln]	12.20	114.39	114.23		74.63	22.09	65.54	65.44

Movement, Approach, & Intersection Results

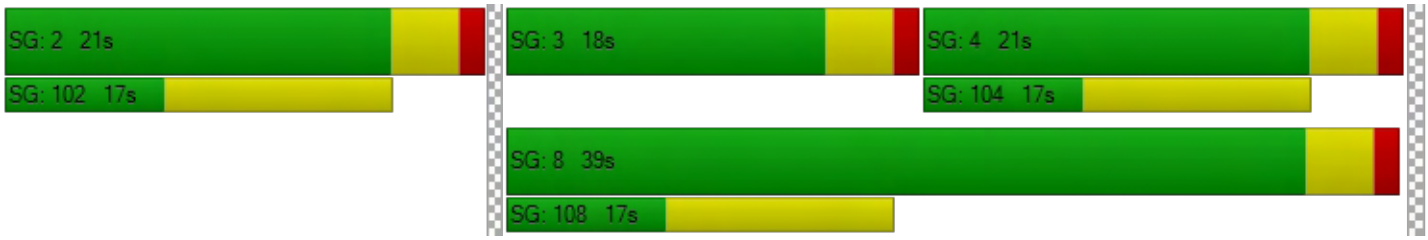
d_M, Delay for Movement [s/veh]	21.79	28.54	28.54	0.00	0.00	0.00	30.31	3.07	0.00	0.00	7.77	8.30
Movement LOS	C	C	C				C	A			A	A
d_A, Approach Delay [s/veh]	28.13			0.00			8.67			7.94		
Approach LOS	C			A			A			A		
d_I, Intersection Delay [s/veh]	12.71											
Intersection LOS	B											
Intersection V/C	0.374											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
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]	20.01	20.01	0.00	20.01
l_p,int, Pedestrian LOS Score for Intersection	2.041	1.744	0.000	2.629
Crosswalk LOS	B	A	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	567	0	1167	567
d_b, Bicycle Delay [s]	15.41	30.00	5.21	15.41
l_b,int, Bicycle LOS Score for Intersection	2.183	4.132	2.017	2.178
Bicycle LOS	B	D	B	B

Sequence

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



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Scenario 2 Existing Plus Project
1/18/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
6	La Cadena Dr (NS) at Maryknoll Dr (EW)	Signalized	HCM 6th Edition	EB Right	0.317	3.9	A
7	La Cadena Dr (NS) at Cadena Creek Dwy/I-215 SB On-Ramp (EW)	Signalized	HCM 6th Edition	NB Left	0.483	17.2	B
9	Iowa Ave (NS) at Iowa Ave/I-215 NB Ramps (EW)	Signalized	HCM 6th Edition	WB Thru	0.563	15.4	B

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

Intersection Level Of Service Report
Intersection 6: La Cadena Dr (NS) at Maryknoll Dr (EW)

Control Type:	Signalized	Delay (sec / veh):	3.9
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.317

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Maryknoll Dr			Dwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			Yes		

Volumes

Name	La Cadena Dr			La Cadena Dr			Maryknoll Dr			Dwy		
Base Volume Input [veh/h]	8	172	4	20	881	10	19	0	35	12	0	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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	0	0	18	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]	8	173	4	20	899	10	19	0	35	12	0	13
Peak Hour Factor	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	46	1	5	241	3	5	0	9	3	0	3
Total Analysis Volume [veh/h]	9	185	4	21	964	11	20	0	38	13	0	14
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	7	0	0	7	0	0	7	0	0	7	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	48	0	0	48	0	0	12	0	0	12	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	C
C, Cycle Length [s]	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
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	48	48	48	48	48	48	4	4	4
g / C, Green / Cycle	0.79	0.79	0.79	0.79	0.79	0.79	0.07	0.07	0.07
(v / s)_i Volume / Saturation Flow Rate	0.02	0.05	0.05	0.02	0.27	0.27	0.01	0.02	0.02
s, saturation flow rate [veh/h]	586	1800	1787	1213	1800	1793	1650	1530	1152
c, Capacity [veh/h]	515	1427	1416	1022	1427	1421	242	113	174
d1, Uniform Delay [s]	3.23	1.36	1.36	2.01	1.77	1.77	26.04	26.39	26.17
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	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
d2, Incremental Delay [s]	0.06	0.09	0.09	0.04	0.66	0.66	0.14	1.72	0.41
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.02	0.07	0.07	0.02	0.34	0.34	0.08	0.34	0.16
d, Delay for Lane Group [s/veh]	3.30	1.45	1.45	2.05	2.43	2.43	26.18	28.11	26.58
Lane Group LOS	A	A	A	A	A	A	C	C	C
Critical Lane Group	No	No	No	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.03	0.04	0.04	0.03	0.26	0.26	0.27	0.55	0.37
50th-Percentile Queue Length [ft/ln]	0.67	0.89	0.89	0.70	6.49	6.49	6.71	13.82	9.27
95th-Percentile Queue Length [veh/ln]	0.05	0.06	0.06	0.05	0.47	0.47	0.48	0.99	0.67
95th-Percentile Queue Length [ft/ln]	1.21	1.60	1.61	1.26	11.69	11.69	12.09	24.87	16.69

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	3.30	1.45	1.45	2.05	2.43	2.43	26.18	26.18	28.11	26.58	26.58	26.58
Movement LOS	A	A	A	A	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	1.54			2.42			27.44			26.58		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	3.93											
Intersection LOS	A											
Intersection V/C	0.317											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
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]	0.00	0.00	0.00	20.01
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	1.743
Crosswalk LOS	F	F	F	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1467	1467	267	267
d_b, Bicycle Delay [s]	2.13	2.13	22.53	22.53
l_b,int, Bicycle LOS Score for Intersection	1.723	2.381	1.655	1.604
Bicycle LOS	A	B	A	A

Sequence

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



Intersection Level Of Service Report
Intersection 7: La Cadena Dr (NS) at Cadena Creek Dwy/I-215 SB On-Ramp (EW)

Control Type:	Signalized	Delay (sec / veh):	17.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.483

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Cadena Creek Dwy			I-215 SB On-Ramp		
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 Pocket	1	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	236.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00			50.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name	La Cadena Dr			La Cadena Dr			Cadena Creek Dwy			I-215 SB On-Ramp		
Base Volume Input [veh/h]	9	110	0	513	375	46	73	17	28	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	0	16	2	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	111	0	529	377	46	73	17	28	0	0	0
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	31	0	147	105	13	20	5	8	0	0	0
Total Analysis Volume [veh/h]	10	123	0	587	418	51	81	19	31	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	0	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	19	11	0	38	30	0	0	11	0	0	0	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall	No	No		No	No			No				
Maximum Recall	No	No		No	No			No				
Pedestrian Recall	No	No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	L	C	C	R	
C, Cycle Length [s]	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	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	1	19	19	23	41	6	6	
g / C, Green / Cycle	0.02	0.32	0.32	0.38	0.68	0.10	0.10	
(v / s)_i Volume / Saturation Flow Rate	0.01	0.03	0.03	0.34	0.27	0.06	0.02	
s, saturation flow rate [veh/h]	1714	1800	1800	1714	1766	1730	1530	
c, Capacity [veh/h]	34	567	567	652	1192	182	161	
d1, Uniform Delay [s]	29.06	14.62	14.62	17.57	4.32	25.56	24.58	
k, delay calibration	0.11	0.50	0.50	0.16	0.50	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	4.58	0.39	0.39	7.10	0.97	2.57	0.57	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.29	0.11	0.11	0.90	0.39	0.55	0.19	
d, Delay for Lane Group [s/veh]	33.63	15.00	15.00	24.67	5.30	28.13	25.15	
Lane Group LOS	C	B	B	C	A	C	C	
Critical Lane Group	No	Yes	No	Yes	No	Yes	No	
50th-Percentile Queue Length [veh/ln]	0.17	0.56	0.56	7.14	1.35	1.43	0.41	
50th-Percentile Queue Length [ft/ln]	4.31	14.01	14.01	178.61	33.63	35.85	10.36	
95th-Percentile Queue Length [veh/ln]	0.31	1.01	1.01	11.53	2.42	2.58	0.75	
95th-Percentile Queue Length [ft/ln]	7.76	25.21	25.21	288.20	60.53	64.53	18.65	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	33.63	15.00	15.00	24.67	5.30	5.30	28.13	28.13	25.15	0.00	0.00	0.00
Movement LOS	C	B	B	C	A	A	C	C	C			
d_A, Approach Delay [s/veh]	16.40			16.06			27.42			0.00		
Approach LOS	B			B			C			A		
d_I, Intersection Delay [s/veh]	17.22											
Intersection LOS	B											
Intersection V/C	0.483											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	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]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	233	867	233	0
d_b, Bicycle Delay [s]	23.41	9.63	23.41	30.00
l_b,int, Bicycle LOS Score for Intersection	1.669	3.302	1.776	4.132
Bicycle LOS	A	C	A	D

Sequence

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



Intersection Level Of Service Report
Intersection 9: Iowa Ave (NS) at Iowa Ave/I-215 NB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	15.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.563

Intersection Setup

Name	Iowa Ave		Iowa Ave		I-215 NB Ramps	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	90.00	100.00	100.00	100.00
Speed [mph]	30.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Iowa Ave		Iowa Ave		I-215 NB Ramps	
Base Volume Input [veh/h]	110	1000	305	532	33	264
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	2	1	0	0	5
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	110	1002	306	532	33	269
Peak Hour Factor	0.9130	0.9130	0.9130	0.9130	0.9130	0.9130
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	274	84	146	9	74
Total Analysis Volume [veh/h]	120	1097	335	583	36	295
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	85
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Overlap
Signal group	1	6	3	8	4	4
Auxiliary Signal Groups		3,6				1,4
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	7	7	7	7	7	7
Maximum Green [s]	30	30	30	30	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	35	35	39	50	11	11
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	7	0	0	7	7	7
Pedestrian Clearance [s]	10	0	0	10	10	10
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
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
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	R	L	C	C	R
C, Cycle Length [s]	85	85	85	85	85	85
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	0.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	31	70	35	46	7	42
g / C, Green / Cycle	0.36	0.82	0.41	0.54	0.08	0.49
(v / s)_i Volume / Saturation Flow Rate	0.07	0.72	0.20	0.32	0.02	0.19
s, saturation flow rate [veh/h]	1714	1530	1714	1800	1800	1530
c, Capacity [veh/h]	624	1257	704	976	152	758
d1, Uniform Delay [s]	18.51	4.78	18.37	13.21	36.43	13.43
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.15	8.53	0.50	2.70	3.66	0.33
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.19	0.87	0.48	0.60	0.24	0.39
d, Delay for Lane Group [s/veh]	18.66	13.30	18.87	15.91	40.08	13.76
Lane Group LOS	B	B	B	B	D	B
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.59	8.05	4.41	7.00	0.84	3.38
50th-Percentile Queue Length [ft/ln]	39.79	201.17	110.16	174.95	21.09	84.45
95th-Percentile Queue Length [veh/ln]	2.86	12.70	7.85	11.34	1.52	6.08
95th-Percentile Queue Length [ft/ln]	71.62	317.48	196.22	283.41	37.97	152.01

Movement, Approach, & Intersection Results

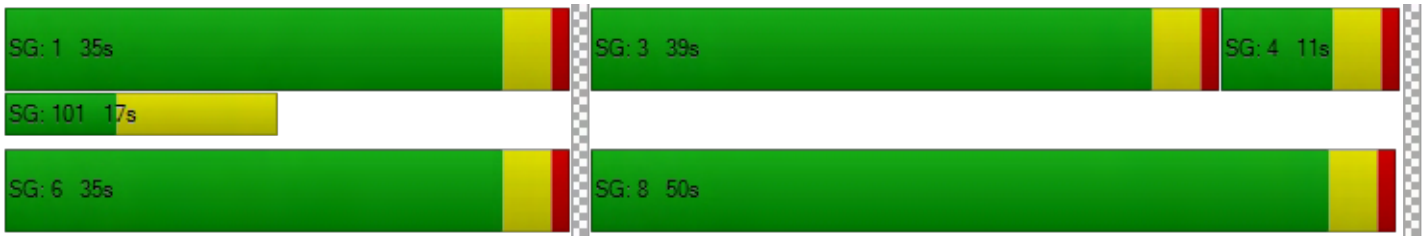
d_M, Delay for Movement [s/veh]	18.66	13.30	18.87	15.91	40.08	13.76
Movement LOS	B	B	B	B	D	B
d_A, Approach Delay [s/veh]	13.83		16.99		16.62	
Approach LOS	B		B		B	
d_I, Intersection Delay [s/veh]	15.38					
Intersection LOS	B					
Intersection V/C	0.563					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	32.21
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.273
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	42.50	42.50	42.50
l_b,int, Bicycle LOS Score for Intersection	4.132	5.647	4.679
Bicycle LOS	D	F	E

Sequence

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



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Scenario 2 Existing Plus Project
1/18/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
6	La Cadena Dr (NS) at Maryknoll Dr (EW)	Signalized	HCM 6th Edition	EB Right	0.314	2.4	A
7	La Cadena Dr (NS) at Cadena Creek Dwy/I-215 SB On-Ramp (EW)	Signalized	HCM 6th Edition	NB Left	0.544	16.5	B
9	Iowa Ave (NS) at Iowa Ave/I-215 NB Ramps (EW)	Signalized	HCM 6th Edition	EB Left	0.768	12.3	B

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

Intersection Level Of Service Report
Intersection 6: La Cadena Dr (NS) at Maryknoll Dr (EW)

Control Type:	Signalized	Delay (sec / veh):	2.4
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.314

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Maryknoll Dr			Dwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			Yes		

Volumes

Name	La Cadena Dr			La Cadena Dr			Maryknoll Dr			Dwy		
Base Volume Input [veh/h]	27	466	4	2	924	19	9	0	18	5	0	2
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	3	0	0	10	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	469	4	2	934	19	9	0	18	5	0	2
Peak Hour Factor	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330
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	126	1	1	250	5	2	0	5	1	0	1
Total Analysis Volume [veh/h]	29	503	4	2	1001	20	10	0	19	5	0	2
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]	75
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	7	0	0	7	0	0	7	0	0	7	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	63	0	0	63	0	0	12	0	0	12	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	C
C, Cycle Length [s]	75	75	75	75	75	75	75	75	75
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	64	64	64	64	64	64	3	3	3
g / C, Green / Cycle	0.85	0.85	0.85	0.85	0.85	0.85	0.04	0.04	0.04
(v / s)_i Volume / Saturation Flow Rate	0.05	0.14	0.14	0.00	0.28	0.28	0.01	0.01	0.01
s, saturation flow rate [veh/h]	561	1800	1795	906	1800	1788	1682	1530	875
c, Capacity [veh/h]	519	1529	1525	813	1529	1519	169	67	121
d1, Uniform Delay [s]	2.39	0.99	0.99	1.64	1.18	1.18	34.49	34.72	34.44
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	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
d2, Incremental Delay [s]	0.21	0.23	0.23	0.01	0.59	0.60	0.14	2.30	0.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.06	0.17	0.17	0.00	0.33	0.33	0.06	0.28	0.06
d, Delay for Lane Group [s/veh]	2.59	1.22	1.22	1.64	1.78	1.78	34.63	37.01	34.64
Lane Group LOS	A	A	A	A	A	A	C	D	C
Critical Lane Group	No	No	No	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.09	0.10	0.10	0.00	0.25	0.25	0.18	0.38	0.13
50th-Percentile Queue Length [ft/ln]	2.26	2.49	2.49	0.09	6.28	6.28	4.51	9.38	3.20
95th-Percentile Queue Length [veh/ln]	0.16	0.18	0.18	0.01	0.45	0.45	0.32	0.68	0.23
95th-Percentile Queue Length [ft/ln]	4.07	4.47	4.48	0.17	11.31	11.31	8.12	16.88	5.76

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	2.59	1.22	1.22	1.64	1.78	1.78	34.63	34.63	37.01	34.64	34.64	34.64
Movement LOS	A	A	A	A	A	A	C	C	D	C	C	C
d_A, Approach Delay [s/veh]	1.30			1.78			36.19			34.64		
Approach LOS	A			A			D			C		
d_I, Intersection Delay [s/veh]	2.39											
Intersection LOS	A											
Intersection V/C	0.314											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
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]	0.00	0.00	0.00	27.31
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	1.713
Crosswalk LOS	F	F	F	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1573	1573	213	213
d_b, Bicycle Delay [s]	1.71	1.71	29.93	29.93
l_b,int, Bicycle LOS Score for Intersection	2.002	2.404	1.607	1.571
Bicycle LOS	B	B	A	A

Sequence

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



Intersection Level Of Service Report

Intersection 7: La Cadena Dr (NS) at Cadena Creek Dwy/I-215 SB On-Ramp (EW)

Control Type:	Signalized	Delay (sec / veh):	16.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.544

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Cadena Creek Dwy			I-215 SB On-Ramp		
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 Pocket	1	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	236.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00			50.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name	La Cadena Dr			La Cadena Dr			Cadena Creek Dwy			I-215 SB On-Ramp		
Base Volume Input [veh/h]	27	449	6	500	373	74	50	9	17	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	3	0	8	2	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	27	452	6	508	375	74	50	9	17	0	0	0
Peak Hour Factor	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	121	2	136	100	20	13	2	5	0	0	0
Total Analysis Volume [veh/h]	29	483	6	543	401	79	53	10	18	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	0	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	21	11	0	38	28	0	0	11	0	0	0	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall	No	No		No	No			No				
Maximum Recall	No	No		No	No			No				
Pedestrian Recall	No	No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	L	C	C	R	
C, Cycle Length [s]	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	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	3	22	22	21	40	5	5	
g / C, Green / Cycle	0.05	0.36	0.36	0.35	0.67	0.09	0.09	
(v / s)_i Volume / Saturation Flow Rate	0.02	0.14	0.14	0.32	0.27	0.04	0.01	
s, saturation flow rate [veh/h]	1714	1800	1792	1714	1749	1727	1530	
c, Capacity [veh/h]	81	642	640	609	1163	153	135	
d1, Uniform Delay [s]	27.79	14.40	14.40	18.31	4.65	25.94	25.29	
k, delay calibration	0.11	0.50	0.50	0.13	0.50	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	2.69	1.72	1.73	5.73	1.08	1.77	0.44	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.36	0.38	0.38	0.89	0.41	0.41	0.13	
d, Delay for Lane Group [s/veh]	30.48	16.11	16.13	24.04	5.74	27.71	25.73	
Lane Group LOS	C	B	B	C	A	C	C	
Critical Lane Group	No	No	Yes	Yes	No	Yes	No	
50th-Percentile Queue Length [veh/ln]	0.42	2.33	2.32	6.52	1.52	0.90	0.25	
50th-Percentile Queue Length [ft/ln]	10.62	58.26	58.11	162.99	37.98	22.43	6.14	
95th-Percentile Queue Length [veh/ln]	0.76	4.19	4.18	10.71	2.73	1.61	0.44	
95th-Percentile Queue Length [ft/ln]	19.11	104.87	104.60	267.68	68.37	40.37	11.05	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	30.48	16.12	16.13	24.04	5.74	5.74	27.71	27.71	25.73	0.00	0.00	0.00
Movement LOS	C	B	B	C	A	A	C	C	C			
d_A, Approach Delay [s/veh]	16.92			15.45			27.27			0.00		
Approach LOS	B			B			C			A		
d_I, Intersection Delay [s/veh]	16.51											
Intersection LOS	B											
Intersection V/C	0.544											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	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]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	233	800	233	0
d_b, Bicycle Delay [s]	23.41	10.80	23.41	30.00
l_b,int, Bicycle LOS Score for Intersection	1.987	3.248	1.693	4.132
Bicycle LOS	A	C	A	D

Sequence

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



Intersection Level Of Service Report
Intersection 9: Iowa Ave (NS) at Iowa Ave/I-215 NB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	12.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.768

Intersection Setup

Name	Iowa Ave		Iowa Ave		I-215 NB Ramps	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	90.00	100.00	100.00	100.00
Speed [mph]	30.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Iowa Ave		Iowa Ave		I-215 NB Ramps	
Base Volume Input [veh/h]	141	728	363	668	17	327
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	2	3	0	0	17
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	141	730	366	668	17	344
Peak Hour Factor	0.9860	0.9860	0.9860	0.9860	0.9860	0.9860
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	185	93	169	4	87
Total Analysis Volume [veh/h]	143	740	371	677	17	349
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Overlap
Signal group	1	6	3	8	4	4
Auxiliary Signal Groups		3,6				1,4
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	7	7	7	7	7	7
Maximum Green [s]	30	30	30	30	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	21	21	23	39	16	16
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	7	0	0	7	7	7
Pedestrian Clearance [s]	10	0	0	10	10	10
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
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
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	R	L	C	C	R
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	0.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	17	40	19	35	12	33
g / C, Green / Cycle	0.28	0.67	0.32	0.58	0.20	0.55
(v / s)_i Volume / Saturation Flow Rate	0.08	0.48	0.22	0.38	0.01	0.23
s, saturation flow rate [veh/h]	1714	1530	1714	1800	1800	1530
c, Capacity [veh/h]	486	1017	539	1050	364	845
d1, Uniform Delay [s]	16.82	6.54	18.00	8.35	19.29	7.80
k, delay calibration	0.11	0.43	0.11	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.33	3.92	1.57	3.05	0.24	0.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.29	0.73	0.69	0.64	0.05	0.41
d, Delay for Lane Group [s/veh]	17.15	10.47	19.58	11.40	19.53	8.12
Lane Group LOS	B	B	B	B	B	A
Critical Lane Group	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.46	4.97	3.95	4.56	0.20	2.15
50th-Percentile Queue Length [ft/ln]	36.48	124.19	98.78	113.98	5.09	53.87
95th-Percentile Queue Length [veh/ln]	2.63	8.62	7.11	8.06	0.37	3.88
95th-Percentile Queue Length [ft/ln]	65.66	215.57	177.80	201.52	9.16	96.97

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	17.15	10.47	19.58	11.40	19.53	8.12
Movement LOS	B	B	B	B	B	A
d_A, Approach Delay [s/veh]	11.55		14.30		8.65	
Approach LOS	B		B		A	
d_I, Intersection Delay [s/veh]	12.34					
Intersection LOS	B					
Intersection V/C	0.768					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	20.01
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.303
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	30.00	30.00	30.00
l_b,int, Bicycle LOS Score for Intersection	4.132	5.862	4.736
Bicycle LOS	D	F	E

Sequence

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



Opening Year (2020) Without Project

Modern Pacific Homes

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Scenario 1 Opening Year (2020) Without Project
1/18/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	La Cadena Dr (NS) at Tropica Rancho Rd (EW)	Two-way stop	HCM 6th Edition	EB Right	0.003	16.0	C
2	La Cadena Dr (NS) at Litton Ave (EW)	Signalized	HCM 6th Edition	EB Left	0.567	7.3	A
3	La Cadena Dr (NS) at Palm Ave (EW)	Two-way stop	HCM 6th Edition	EB Right	0.098	16.5	C
4	La Cadena Dr (NS) at Barton Rd (EW)	Signalized	HCM 6th Edition	SB Left	0.627	15.1	B
5	La Cadena Dr/Iowa Ave (NS) at La Cadena Dr (EW)	Signalized	HCM 6th Edition	NB Left	0.727	20.1	C
6	La Cadena Dr (NS) at Maryknoll Dr (EW)	Two-way stop	HCM 6th Edition	EB Left	3.546	1,229.3	F
7	La Cadena Dr (NS) at Cadena Creek Dwy/I-215 SB On-Ramp (EW)	All-way stop	HCM 6th Edition	SB Thru	1.043	55.9	F
8	Iowa Ave (NS) at I-215 SB Off -Ramp (EW)	Signalized	HCM 6th Edition	EB Right	0.862	29.8	C
9	Iowa Ave (NS) at Iowa Ave/I-215 NB Ramps (EW)	Signalized	HCM 6th Edition	SB Right	1.275	156.7	F
10	I-215 SB Ramps/La Crosse Ave (NS) at Barton Rd (EW)	Roundabout	HCM 6th Edition	EB Left		6.3	A
11	I-215 NB Ramps (NS) at Barton Rd (EW)	Signalized	HCM 6th Edition	EB Left	0.525	12.5	B

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

Intersection Level Of Service Report

Intersection 1: La Cadena Dr (NS) at Tropica Rancho Rd (EW)

Control Type:	Two-way stop	Delay (sec / veh):	16.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.003

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Tropica Rancho Rd			Vivienda Ave		
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 Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	La Cadena Dr			La Cadena Dr			Tropica Rancho Rd			Vivienda Ave		
Base Volume Input [veh/h]	0	740	0	0	1283	1	0	0	1	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	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 Rate	1.00	1.02	1.02	1.00	1.02	1.02	1.00	1.00	1.02	1.00	1.00	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	275	0	0	169	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]	0	1030	0	0	1478	1	0	0	1	0	0	0
Peak Hour Factor	0.9500	0.9170	0.9170	0.9500	0.9170	0.9170	0.9500	0.9500	0.9170	0.9500	0.9500	0.9170
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	281	0	0	403	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	1123	0	0	1612	1	0	0	1	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.98	0.00	0.00	12.57
Movement LOS		A	A		A	A			C			B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			0.00			15.98			12.57		
Approach LOS	A			A			C			B		
d_I, Intersection Delay [s/veh]	0.01											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 2: La Cadena Dr (NS) at Litton Ave (EW)

Control Type:	Signalized	Delay (sec / veh):	7.3
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.567

Intersection Setup

Name	La Cadena Dr		La Cadena Dr		Litton Ave	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0
Pocket Length [ft]	105.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00		50.00		25.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	La Cadena Dr		La Cadena Dr		Litton Ave	
Base Volume Input [veh/h]	27	683	1264	18	59	34
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 Rate	1.02	1.02	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	275	169	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	28	972	1458	18	60	35
Peak Hour Factor	0.9260	0.9260	0.9260	0.9260	0.9260	0.9260
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	262	394	5	16	9
Total Analysis Volume [veh/h]	30	1050	1575	19	65	38
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal group	5	2	6	0	3	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	7	7	7	0	7	0
Maximum Green [s]	30	30	30	0	30	0
Amber [s]	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	11	32	21	0	48	0
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	7	0	7	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	C	C
C, Cycle Length [s]	80	80	80	80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	66	58	58	6
g / C, Green / Cycle	0.04	0.82	0.73	0.73	0.08
(v / s)_i Volume / Saturation Flow Rate	0.02	0.31	0.44	0.44	0.06
s, saturation flow rate [veh/h]	1714	3427	1800	1792	1641
c, Capacity [veh/h]	76	2805	1304	1299	134
d1, Uniform Delay [s]	37.24	1.90	5.45	5.47	36.04
k, delay calibration	0.11	0.50	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.35	0.38	2.14	2.17	8.91
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.40	0.37	0.61	0.61	0.77
d, Delay for Lane Group [s/veh]	40.60	2.28	7.60	7.65	44.94
Lane Group LOS	D	A	A	A	D
Critical Lane Group	Yes	No	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	0.60	0.32	4.07	4.09	2.28
50th-Percentile Queue Length [ft/ln]	15.10	8.11	101.85	102.33	57.12
95th-Percentile Queue Length [veh/ln]	1.09	0.58	7.33	7.37	4.11
95th-Percentile Queue Length [ft/ln]	27.18	14.59	183.33	184.20	102.81

Movement, Approach, & Intersection Results

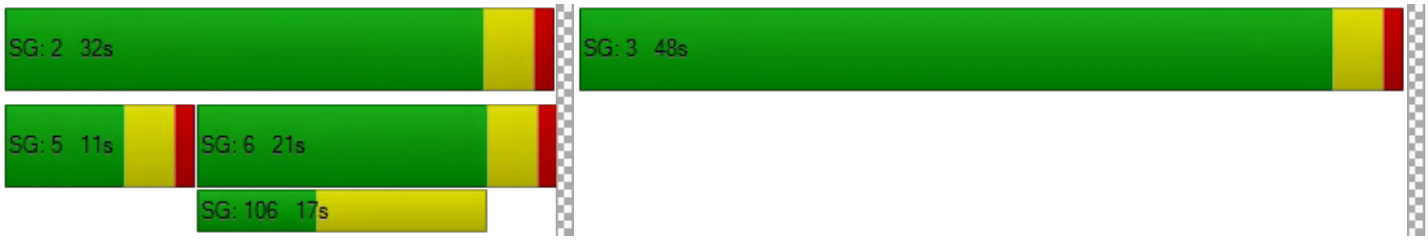
d_M, Delay for Movement [s/veh]	40.60	2.28	7.62	7.65	44.94	44.94
Movement LOS	D	A	A	A	D	D
d_A, Approach Delay [s/veh]	3.35		7.62		44.94	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	7.34					
Intersection LOS	A					
Intersection V/C	0.567					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	29.76
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.770
Crosswalk LOS	F	F	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	40.00	40.00	40.00
l_b,int, Bicycle LOS Score for Intersection	5.023	5.447	4.302
Bicycle LOS	F	F	E

Sequence

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



Intersection Level Of Service Report
Intersection 3: La Cadena Dr (NS) at Palm Ave (EW)

Control Type:	Two-way stop	Delay (sec / veh):	16.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.098

Intersection Setup

Name	La Cadena Dr		La Cadena Dr		Palm Ave	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	140.00	100.00	100.00
Speed [mph]	50.00		50.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	La Cadena Dr		La Cadena Dr		Palm Ave	
Base Volume Input [veh/h]	0	705	1285	11	0	32
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 Rate	1.00	1.02	1.02	1.02	1.00	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	275	169	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	994	1480	11	0	33
Peak Hour Factor	0.9500	0.9590	0.9590	0.9590	0.9500	0.9590
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	259	386	3	0	9
Total Analysis Volume [veh/h]	0	1036	1543	11	0	34
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.02	0.00	0.00	0.10
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	16.50
Movement LOS		A	A	A		C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.32
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	8.08
d_A, Approach Delay [s/veh]	0.00		0.00		16.50	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.21					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 4: La Cadena Dr (NS) at Barton Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	15.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.627

Intersection Setup

Name	La Cadena Dr		La Cadena Dr		Barton Rd	
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 Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	250.00	100.00	100.00	100.00
Speed [mph]	50.00		50.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		No	

Volumes

Name	La Cadena Dr		La Cadena Dr		Barton Rd	
Base Volume Input [veh/h]	538	147	208	1105	190	164
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 Rate	1.02	1.02	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	226	183	27	142	103	49
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	775	333	239	1269	297	216
Peak Hour Factor	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	201	86	62	329	77	56
Total Analysis Volume [veh/h]	805	346	248	1318	308	224
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal group	2	0	1	6	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	11	0	28	39	21	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	24	24	11	39	13	13
g / C, Green / Cycle	0.40	0.40	0.18	0.65	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.23	0.23	0.14	0.38	0.18	0.15
s, saturation flow rate [veh/h]	3427	1530	1714	3427	1714	1530
c, Capacity [veh/h]	1382	617	307	2223	374	334
d1, Uniform Delay [s]	14.00	13.85	23.70	6.03	22.41	21.53
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.80	3.66	5.04	1.17	4.57	2.33
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.58	0.56	0.81	0.59	0.82	0.67
d, Delay for Lane Group [s/veh]	15.80	17.50	28.74	7.20	26.98	23.87
Lane Group LOS	B	B	C	A	C	C
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	3.58	3.37	3.31	2.57	4.21	2.83
50th-Percentile Queue Length [ft/ln]	89.43	84.34	82.67	64.15	105.27	70.69
95th-Percentile Queue Length [veh/ln]	6.44	6.07	5.95	4.62	7.58	5.09
95th-Percentile Queue Length [ft/ln]	160.97	151.81	148.81	115.47	189.40	127.24

Movement, Approach, & Intersection Results

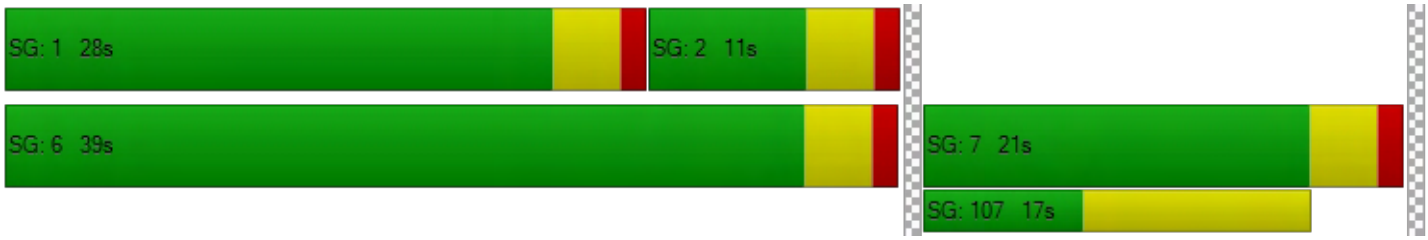
d_M, Delay for Movement [s/veh]	15.80	17.50	28.74	7.20	26.98	23.87
Movement LOS	B	B	C	A	C	C
d_A, Approach Delay [s/veh]	16.32		10.61		25.67	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	15.10					
Intersection LOS	B					
Intersection V/C	0.627					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	20.01	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	3.182	0.000	0.000
Crosswalk LOS	C	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	30.00	30.00	30.00
l_b,int, Bicycle LOS Score for Intersection	5.082	5.424	4.132
Bicycle LOS	F	F	D

Sequence

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



Intersection Level Of Service Report

Intersection 5: La Cadena Dr/Iowa Ave (NS) at La Cadena Dr (EW)

Control Type:	Signalized	Delay (sec / veh):	20.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.727

Intersection Setup

Name	Iowa Ave		La Cadena Dr		La Cadena Dr	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0
Pocket Length [ft]	130.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Iowa Ave		La Cadena Dr		La Cadena Dr	
Base Volume Input [veh/h]	77	516	474	834	105	101
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 Rate	1.02	1.02	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	31	64	52	193	345	75
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	110	590	535	1044	452	178
Peak Hour Factor	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560
Other Adjustment Factor	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	29	154	140	0	118	47
Total Analysis Volume [veh/h]	115	617	560	0	473	186
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Overlap
Signal group	5	2	6	0	3	8
Auxiliary Signal Groups						5,8
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	7	7	7	0	7	7
Maximum Green [s]	30	30	30	0	30	30
Amber [s]	3.0	3.0	3.0	0.0	3.0	3.0
All red [s]	1.0	1.0	1.0	0.0	1.0	1.0
Split [s]	27	38	11	0	22	22
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	3.0
Walk [s]	0	7	7	0	7	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
Minimum Recall	No	No	No		No	No
Maximum Recall	No	No	No		No	No
Pedestrian Recall	No	No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	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
g_i, Effective Green Time [s]	6	34	24	24	18	28
g / C, Green / Cycle	0.10	0.57	0.40	0.40	0.30	0.47
(v / s)_i Volume / Saturation Flow Rate	0.07	0.34	0.31	0.00	0.28	0.12
s, saturation flow rate [veh/h]	1714	1800	1800	2708	1714	1530
c, Capacity [veh/h]	176	1021	716	1078	514	718
d1, Uniform Delay [s]	25.97	8.58	15.82	0.00	20.36	9.66
k, delay calibration	0.11	0.50	0.50	0.50	0.12	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.08	2.66	8.29	0.00	8.06	0.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.65	0.60	0.78	0.00	0.92	0.26
d, Delay for Lane Group [s/veh]	30.05	11.23	24.12	0.00	28.42	9.85
Lane Group LOS	C	B	C	A	C	A
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.58	3.98	6.73	0.00	6.31	1.11
50th-Percentile Queue Length [ft/ln]	39.49	99.46	168.14	0.00	157.63	27.85
95th-Percentile Queue Length [veh/ln]	2.84	7.16	10.98	0.00	10.42	2.01
95th-Percentile Queue Length [ft/ln]	71.09	179.04	274.47	0.00	260.59	50.13

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	30.05	11.23	24.12	0.00	28.42	9.85
Movement LOS	C	B	C	A	C	A
d_A, Approach Delay [s/veh]	14.19		24.12		23.18	
Approach LOS	B		C		C	
d_I, Intersection Delay [s/veh]	20.07					
Intersection LOS	C					
Intersection V/C	0.727					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	30.00	30.00	30.00
l_b,int, Bicycle LOS Score for Intersection	5.340	5.056	4.132
Bicycle LOS	F	F	D

Sequence

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



Intersection Level Of Service Report
Intersection 6: La Cadena Dr (NS) at Maryknoll Dr (EW)

Control Type:	Two-way stop	Delay (sec / veh):	1,229.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	3.546

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Maryknoll Dr			Dwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

Volumes

Name	La Cadena Dr			La Cadena Dr			Maryknoll Dr			Dwy		
Base Volume Input [veh/h]	8	172	4	20	881	10	19	0	35	12	0	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 Rate	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	29	84	0	0	85	139	336	0	70	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]	37	259	4	20	984	149	355	0	106	12	0	13
Peak Hour Factor	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330
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	69	1	5	264	40	95	0	28	3	0	3
Total Analysis Volume [veh/h]	40	278	4	21	1055	160	380	0	114	13	0	14
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.00	0.00	0.02	0.01	0.00	3.55	0.00	0.23	0.08	0.00	0.02
d_M, Delay for Movement [s/veh]	11.65	0.00	0.00	7.83	0.00	0.00	1229.26	1226.18	14.30	28.70	44.44	10.42
Movement LOS	B	A	A	A	A	A	F	F	B	D	E	B
95th-Percentile Queue Length [veh/ln]	0.20	0.10	0.00	0.05	0.02	0.00	37.87	37.87	0.87	0.32	0.32	0.32
95th-Percentile Queue Length [ft/ln]	5.09	2.54	0.00	1.18	0.59	0.00	946.68	946.68	21.73	7.92	7.92	7.92
d_A, Approach Delay [s/veh]	1.45			0.13			948.88			19.22		
Approach LOS	A			A			F			C		
d_I, Intersection Delay [s/veh]	226.02											
Intersection LOS	F											

Intersection Level Of Service Report

Intersection 7: La Cadena Dr (NS) at Cadena Creek Dwy/I-215 SB On-Ramp (EW)

Control Type:	All-way stop	Delay (sec / veh):	55.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.043

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Cadena Creek Dwy			I-215 SB On-Ramp		
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 Pocket	1	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	236.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00			50.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	La Cadena Dr			La Cadena Dr			Cadena Creek Dwy			I-215 SB On-Ramp		
Base Volume Input [veh/h]	9	110	0	513	375	46	73	17	28	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	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 Rate	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	113	0	0	155	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]	9	225	0	523	538	47	74	17	29	0	0	0
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	62	0	145	149	13	21	5	8	0	0	0
Total Analysis Volume [veh/h]	10	250	0	580	597	52	82	19	32	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	460	492	492	580	649	433	498	
Degree of Utilization, x	0.02	0.25	0.25	1.02	1.04	0.23	0.06	

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.07	1.00	1.00	15.56	17.36	0.89	0.21	
95th-Percentile Queue Length [ft]	1.66	25.04	25.04	388.92	434.06	22.37	5.13	
Approach Delay [s/veh]	12.44			69.81		12.79		0.00
Approach LOS	B			F		B		A
Intersection Delay [s/veh]	55.94							
Intersection LOS	F							

Intersection Level Of Service Report
Intersection 8: Iowa Ave (NS) at I-215 SB Off-Ramp (EW)

Control Type:	Signalized	Delay (sec / veh):	29.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.862

Intersection Setup

Name	Iowa Ave		Iowa Ave		I-215 SB Off-Ramp	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		50.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Iowa Ave		Iowa Ave		I-215 SB Off-Ramp	
Base Volume Input [veh/h]	0	569	577	0	29	533
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 Rate	1.00	1.02	1.02	1.00	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	71	127	0	24	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	651	716	0	54	544
Peak Hour Factor	0.9500	0.9150	0.9150	0.9500	0.9150	0.9150
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	178	196	0	15	149
Total Analysis Volume [veh/h]	0	711	783	0	59	595
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Split	Split
Signal group	0	2	6	0	3	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	7	7	0	7	0
Maximum Green [s]	0	30	30	0	30	0
Amber [s]	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	0	15	15	0	75	0
Vehicle Extension [s]	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	7	0	7	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall		No	No		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	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
I, Upstream Filtering Factor	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	R
C, Cycle Length [s]	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	45	45	37	37
g / C, Green / Cycle	0.49	0.49	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.40	0.44	0.03	0.39
s, saturation flow rate [veh/h]	1800	1800	1714	1530
c, Capacity [veh/h]	892	892	713	636
d1, Uniform Delay [s]	18.93	20.27	15.90	25.13
k, delay calibration	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.35	11.94	0.05	7.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.88	0.08	0.94
d, Delay for Lane Group [s/veh]	26.28	32.21	15.95	32.26
Lane Group LOS	C	C	B	C
Critical Lane Group	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	13.27	15.20	0.72	12.65
50th-Percentile Queue Length [ft/ln]	331.84	380.11	18.12	316.32
95th-Percentile Queue Length [veh/ln]	19.25	21.60	1.30	18.49
95th-Percentile Queue Length [ft/ln]	481.22	539.98	32.62	462.16

Movement, Approach, & Intersection Results

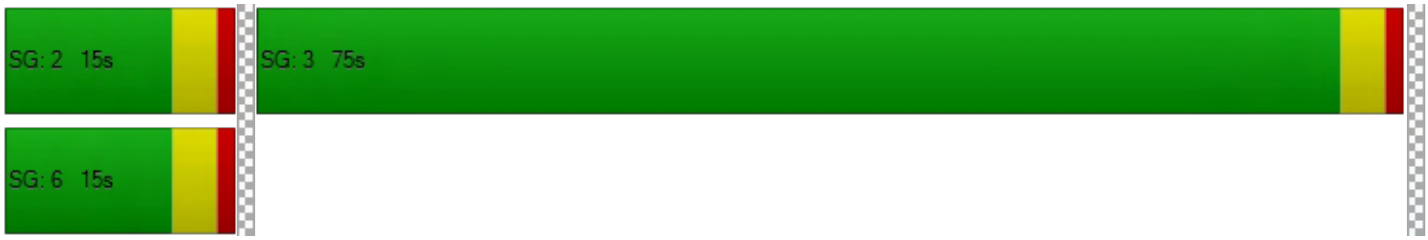
d_M, Delay for Movement [s/veh]	0.00	26.28	32.21	0.00	15.95	32.26
Movement LOS		C	C		B	C
d_A, Approach Delay [s/veh]	26.28		32.21		30.79	
Approach LOS	C		C		C	
d_I, Intersection Delay [s/veh]	29.81					
Intersection LOS	C					
Intersection V/C	0.862					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	45.00	45.00	45.00
l_b,int, Bicycle LOS Score for Intersection	5.306	5.424	4.132
Bicycle LOS	F	F	D

Sequence

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



Intersection Level Of Service Report
Intersection 9: Iowa Ave (NS) at Iowa Ave/I-215 NB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	156.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.275

Intersection Setup

Name	Iowa Ave		Iowa Ave		I-215 NB Ramps	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	90.00	100.00	100.00	100.00
Speed [mph]	30.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Iowa Ave		Iowa Ave		I-215 NB Ramps	
Base Volume Input [veh/h]	110	1000	305	532	33	264
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 Rate	1.02	1.02	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	58	69	71	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	170	1089	382	543	34	269
Peak Hour Factor	0.9130	0.9130	0.9130	0.9130	0.9130	0.9130
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	298	105	149	9	74
Total Analysis Volume [veh/h]	186	1193	418	595	37	295
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal group	1	0	3	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	7	0	7	7	7	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	77	0	29	53	24	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	R	L	C	C	R
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	73	73	25	49	20	20
g / C, Green / Cycle	0.56	0.56	0.19	0.38	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.11	0.78	0.24	0.33	0.02	0.19
s, saturation flow rate [veh/h]	1714	1530	1714	1800	1800	1530
c, Capacity [veh/h]	962	859	331	679	275	234
d1, Uniform Delay [s]	14.02	28.51	52.44	37.68	47.61	55.06
k, delay calibration	0.11	0.50	0.49	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.10	182.16	139.47	14.88	1.01	146.92
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.19	1.39	1.26	0.88	0.13	1.26
d, Delay for Lane Group [s/veh]	14.12	210.66	191.90	52.56	48.63	201.98
Lane Group LOS	B	F	F	D	D	F
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.73	68.83	23.34	19.63	1.12	17.20
50th-Percentile Queue Length [ft/ln]	68.20	1720.79	583.60	490.81	28.09	430.04
95th-Percentile Queue Length [veh/ln]	4.91	103.21	35.00	26.90	2.02	26.55
95th-Percentile Queue Length [ft/ln]	122.76	2580.37	874.99	672.47	50.55	663.63

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	14.12	210.66	191.90	52.56	48.63	201.98
Movement LOS	B	F	F	D	D	F
d_A, Approach Delay [s/veh]	184.15		110.06		184.89	
Approach LOS	F		F		F	
d_I, Intersection Delay [s/veh]	156.69					
Intersection LOS	F					
Intersection V/C	1.275					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	54.47
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.320
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	65.00	65.00	65.00
I_b,int, Bicycle LOS Score for Intersection	4.132	5.804	4.680
Bicycle LOS	D	F	E

Sequence

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



Intersection Level Of Service Report

Intersection 10: I-215 SB Ramps/La Crosse Ave (NS) at Barton Rd (EW)

Control Type:	Roundabout	Delay (sec / veh):	6.3
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	La Crosse Ave			I-215 SB Ramps			Barton Rd			Barton Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	La Crosse Ave			I-215 SB Ramps			Barton Rd			Barton Rd		
Base Volume Input [veh/h]	0	0	8	116	23	67	1	296	41	321	251	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	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 Rate	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
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	24	2	208	0	0	128	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]	0	0	8	118	23	92	3	510	42	327	384	3
Peak Hour Factor	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	2	31	6	24	1	135	11	87	102	1
Total Analysis Volume [veh/h]	0	0	8	125	24	97	3	540	44	346	406	3
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			2			2		
Circulating Flow Rate [veh/h]	668			752			495			3		
Exiting Flow Rate [veh/h]	414			6			503			673		
Demand Flow Rate [veh/h]	0	0	8	118	23	92	3	510	42	327	384	3
Adjusted Demand Flow Rate [veh/h]	0	0	8	125	24	97	3	540	44	346	406	3

Lanes

Overwrite Calculated Critical Headway	No	No	No	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1420.00	1420.00	1350.00	1420.00	1350.00	1420.00
B (coefficient)	0.00102	0.00091	0.00091	0.00092	0.00085	0.00092	0.00085
HV Adjustment Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Entry Flow Rate [veh/h]	8	149	97	276	312	355	401
Capacity of Entry and Bypass Lanes [veh/h]	699	717	717	857	933	1347	1417
Pedestrian Impedance	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	699	717	717	857	933	1347	1417
X, volume / capacity	0.01	0.21	0.14	0.32	0.33	0.26	0.28

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.03	0.78	0.47	1.40	1.47	1.06	1.17
95th-Percentile Queue Length [ft]	0.87	19.48	11.68	34.98	36.86	26.62	29.26
Approach Delay [s/veh]	5.27	7.03		7.62		4.95	
Approach LOS	A	A		A		A	
Intersection Delay [s/veh]	6.25						
Intersection LOS	A						

Intersection Level Of Service Report
Intersection 11: I-215 NB Ramps (NS) at Barton Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	12.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.525

Intersection Setup

Name	I-215 NB Off-Ramp			I-215 On-Ramp			Barton Rd			Barton Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	300.00	100.00	100.00	100.00	100.00	200.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	I-215 NB Off-Ramp			I-215 On-Ramp			Barton Rd			Barton Rd		
Base Volume Input [veh/h]	30	0	303	0	0	0	68	353	0	0	546	391
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 Rate	1.02	1.02	1.02	1.00	1.00	1.00	1.02	1.02	1.00	1.00	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	7	0	0	0	0	0	58	150	0	0	121	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]	38	0	309	0	0	0	127	510	0	0	678	399
Peak Hour Factor	0.9230	0.9230	0.9230	0.9500	0.9500	0.9500	0.9230	0.9230	0.9500	0.9500	0.9230	0.9230
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	0	84	0	0	0	34	138	0	0	184	108
Total Analysis Volume [veh/h]	41	0	335	0	0	0	138	553	0	0	735	432
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	7	0	0	0	0	7	7	0	0	7	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	21	0	0	0	0	18	39	0	0	21	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	10	0	0	10	0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R		L	C	C	R
C, Cycle Length [s]	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
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	9	9		6	43	33	33
g / C, Green / Cycle	0.15	0.15	0.15		0.11	0.72	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.02	0.11	0.11		0.08	0.16	0.21	0.28
s, saturation flow rate [veh/h]	1714	1530	1530		1714	3427	3427	1530
c, Capacity [veh/h]	259	231	231		183	2454	1860	831
d1, Uniform Delay [s]	22.21	24.34	24.34		26.11	2.89	8.00	8.76
k, delay calibration	0.11	0.11	0.11		0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.28	4.27	4.27		6.22	0.21	0.63	2.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.16	0.72	0.72		0.76	0.23	0.40	0.52
d, Delay for Lane Group [s/veh]	22.49	28.62	28.62		32.33	3.11	8.63	11.09
Lane Group LOS	C	C	C		C	A	A	B
Critical Lane Group	No	Yes	No		Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.49	2.40	2.40		2.09	0.61	2.27	3.24
50th-Percentile Queue Length [ft/ln]	12.37	59.99	59.99		52.21	15.17	56.67	81.08
95th-Percentile Queue Length [veh/ln]	0.89	4.32	4.32		3.76	1.09	4.08	5.84
95th-Percentile Queue Length [ft/ln]	22.27	107.97	107.97		93.98	27.30	102.00	145.94

Movement, Approach, & Intersection Results

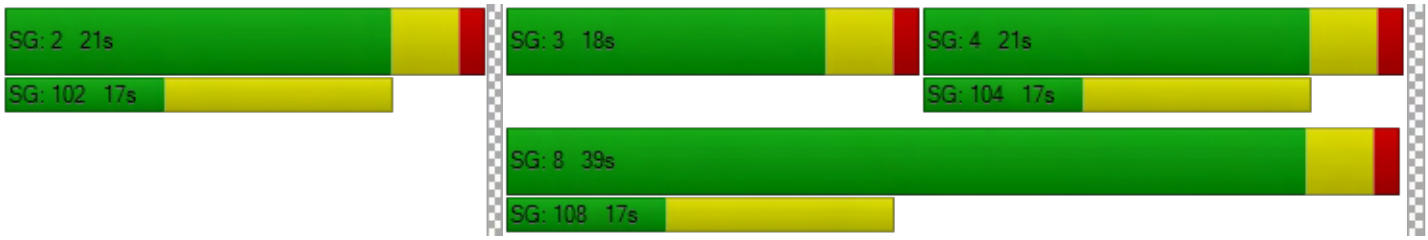
d_M, Delay for Movement [s/veh]	22.49	28.62	28.62	0.00	0.00	0.00	32.33	3.11	0.00	0.00	8.63	11.09
Movement LOS	C	C	C				C	A			A	B
d_A, Approach Delay [s/veh]	27.95			0.00			8.94			9.54		
Approach LOS	C			A			A			A		
d_I, Intersection Delay [s/veh]	12.45											
Intersection LOS	B											
Intersection V/C	0.525											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
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]	20.01	20.01	0.00	20.01
l_p,int, Pedestrian LOS Score for Intersection	2.040	1.957	0.000	2.745
Crosswalk LOS	B	A	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	567	0	1167	567
d_b, Bicycle Delay [s]	15.41	30.00	5.21	15.41
l_b,int, Bicycle LOS Score for Intersection	2.180	4.132	2.130	2.522
Bicycle LOS	B	D	B	B

Sequence

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



Modern Pacific Homes

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Report File: G:\...\PM OY.pdf
Scenario 1 Opening Year (2020) Without Project
1/16/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	La Cadena Dr (NS) at Tropica Rancho Rd (EW)	Two-way stop	HCM 6th Edition	EB Right	0.000	17.4	C
2	La Cadena Dr (NS) at Litton Ave (EW)	Signalized	HCM 6th Edition	EB Left	0.556	6.0	A
3	La Cadena Dr (NS) at Palm Ave (EW)	Two-way stop	HCM 6th Edition	EB Right	0.088	18.4	C
4	La Cadena Dr (NS) at Barton Rd (EW)	Signalized	HCM 6th Edition	WB Left	0.836	24.5	C
5	La Cadena Dr/Iowa Ave (NS) at La Cadena Dr (EW)	Signalized	HCM 6th Edition	NB Left	0.849	27.0	C
6	La Cadena Dr (NS) at Maryknoll Dr (EW)	Two-way stop	HCM 6th Edition	EB Thru	0.000	1,932.6	F
7	La Cadena Dr (NS) at Cadena Creek Dwy/I-215 SB On-Ramp (EW)	All-way stop	HCM 6th Edition	SB Thru	1.189	74.3	F
8	Iowa Ave (NS) at I-215 SB Off -Ramp (EW)	Signalized	HCM 6th Edition	EB Right	0.816	20.4	C
9	Iowa Ave (NS) at Iowa Ave/I-215 NB Ramps (EW)	Signalized	HCM 6th Edition	SB Right	1.110	102.0	F
10	I-215 SB Ramps/La Crosse Ave (NS) at Barton Rd (EW)	Roundabout	HCM 6th Edition	EB Left		6.7	A
11	I-215 NB Ramps (NS) at Barton Rd (EW)	Signalized	HCM 6th Edition	EB Left	0.465	12.9	B

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

Intersection Level Of Service Report

Intersection 1: La Cadena Dr (NS) at Tropica Rancho Rd (EW)

Control Type:	Two-way stop	Delay (sec / veh):	17.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Tropica Rancho Rd			Vivienda Ave		
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 Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	La Cadena Dr			La Cadena Dr			Tropica Rancho Rd			Vivienda Ave		
Base Volume Input [veh/h]	0	889	0	0	1290	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	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 Rate	1.00	1.02	1.02	1.00	1.02	1.02	1.00	1.00	1.02	1.00	1.00	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	242	0	0	313	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]	0	1149	0	0	1629	0	0	0	0	0	0	0
Peak Hour Factor	0.9500	0.9160	0.9160	0.9500	0.9160	0.9160	0.9500	0.9500	0.9160	0.9500	0.9500	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]	0	314	0	0	445	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	1254	0	0	1778	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.40	0.00	0.00	13.35
Movement LOS		A	A		A	A			C			B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			0.00			17.40			13.35		
Approach LOS	A			A			C			B		
d_I, Intersection Delay [s/veh]	0.00											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 2: La Cadena Dr (NS) at Litton Ave (EW)

Control Type:	Signalized	Delay (sec / veh):	6.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.556

Intersection Setup

Name	La Cadena Dr		La Cadena Dr		Litton Ave	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0
Pocket Length [ft]	105.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00		50.00		25.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	La Cadena Dr		La Cadena Dr		Litton Ave	
Base Volume Input [veh/h]	39	862	1245	45	25	24
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 Rate	1.02	1.02	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	242	313	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	40	1121	1583	46	26	24
Peak Hour Factor	0.9680	0.9680	0.9680	0.9680	0.9680	0.9680
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	290	409	12	7	6
Total Analysis Volume [veh/h]	41	1158	1635	48	27	25
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal group	5	2	6	0	3	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	7	7	7	0	7	0
Maximum Green [s]	30	30	30	0	30	0
Amber [s]	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	11	108	97	0	12	0
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	7	0	7	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	C	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	106	97	97	6
g / C, Green / Cycle	0.04	0.89	0.81	0.81	0.05
(v / s)_i Volume / Saturation Flow Rate	0.02	0.34	0.47	0.47	0.03
s, saturation flow rate [veh/h]	1714	3427	1800	1782	1620
c, Capacity [veh/h]	75	3033	1454	1439	78
d1, Uniform Delay [s]	56.18	1.20	4.16	4.20	56.12
k, delay calibration	0.11	0.50	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.04	0.37	1.69	1.74	9.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.55	0.38	0.58	0.58	0.66
d, Delay for Lane Group [s/veh]	62.22	1.57	5.85	5.94	65.32
Lane Group LOS	E	A	A	A	E
Critical Lane Group	Yes	No	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	1.31	0.19	4.79	4.85	1.76
50th-Percentile Queue Length [ft/ln]	32.64	4.64	119.81	121.13	44.05
95th-Percentile Queue Length [veh/ln]	2.35	0.33	8.38	8.46	3.17
95th-Percentile Queue Length [ft/ln]	58.75	8.36	209.56	211.38	79.29

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	62.22	1.57	5.90	5.94	65.32	65.32
Movement LOS	E	A	A	A	E	E
d_A, Approach Delay [s/veh]	3.64		5.90		65.32	
Approach LOS	A		A		E	
d_I, Intersection Delay [s/veh]	6.03					
Intersection LOS	A					
Intersection V/C	0.556					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	49.50
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.786
Crosswalk LOS	F	F	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	60.00	60.00	60.00
l_b,int, Bicycle LOS Score for Intersection	5.122	5.521	4.218
Bicycle LOS	F	F	D

Sequence

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



Intersection Level Of Service Report
Intersection 3: La Cadena Dr (NS) at Palm Ave (EW)

Control Type:	Two-way stop	Delay (sec / veh):	18.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.088

Intersection Setup

Name	La Cadena Dr		La Cadena Dr		Palm Ave	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	140.00	100.00	100.00
Speed [mph]	50.00		50.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	La Cadena Dr		La Cadena Dr		Palm Ave	
Base Volume Input [veh/h]	0	877	1273	22	0	24
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 Rate	1.00	1.02	1.02	1.02	1.00	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	242	313	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1137	1611	22	0	24
Peak Hour Factor	0.9500	0.9170	0.9170	0.9170	0.9500	0.9170
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	310	439	6	0	7
Total Analysis Volume [veh/h]	0	1240	1757	24	0	26
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.02	0.00	0.00	0.09
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	18.38
Movement LOS		A	A	A		C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.29
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	7.19
d_A, Approach Delay [s/veh]	0.00		0.00		18.38	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.16					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 4: La Cadena Dr (NS) at Barton Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	24.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.836

Intersection Setup

Name	La Cadena Dr		La Cadena Dr		Barton Rd	
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 Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	250.00	100.00	100.00	100.00
Speed [mph]	50.00		50.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		No	

Volumes

Name	La Cadena Dr		La Cadena Dr		Barton Rd	
Base Volume Input [veh/h]	774	153	256	1014	208	136
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 Rate	1.02	1.02	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	189	182	72	241	233	53
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	978	338	333	1275	445	192
Peak Hour Factor	0.9730	0.9730	0.9730	0.9730	0.9730	0.9730
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	251	87	86	328	114	49
Total Analysis Volume [veh/h]	1005	347	342	1310	457	197
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	65
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal group	2	0	1	6	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	25	0	18	43	22	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	65	65	65	65	65	65
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	21	21	14	39	18	18
g / C, Green / Cycle	0.32	0.32	0.22	0.60	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.29	0.23	0.20	0.38	0.27	0.13
s, saturation flow rate [veh/h]	3427	1530	1714	3427	1714	1530
c, Capacity [veh/h]	1106	494	371	2057	475	424
d1, Uniform Delay [s]	21.19	19.37	25.04	8.44	23.26	19.58
k, delay calibration	0.50	0.50	0.11	0.50	0.14	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.43	8.13	9.72	1.52	14.69	0.79
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.70	0.92	0.64	0.96	0.46
d, Delay for Lane Group [s/veh]	33.62	27.49	34.77	9.96	37.94	20.37
Lane Group LOS	C	C	C	A	D	C
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	7.92	4.91	5.44	4.08	8.15	2.35
50th-Percentile Queue Length [ft/ln]	198.11	122.78	136.08	102.10	203.79	58.71
95th-Percentile Queue Length [veh/ln]	12.54	8.55	9.27	7.35	12.83	4.23
95th-Percentile Queue Length [ft/ln]	313.52	213.64	231.74	183.78	320.85	105.67

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	33.62	27.49	34.77	9.96	37.94	20.37
Movement LOS	C	C	C	A	D	C
d_A, Approach Delay [s/veh]	32.04		15.10		32.65	
Approach LOS	C		B		C	
d_I, Intersection Delay [s/veh]	24.50					
Intersection LOS	C					
Intersection V/C	0.836					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	22.43	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	3.280	0.000	0.000
Crosswalk LOS	C	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	32.50	32.50	32.50
l_b,int, Bicycle LOS Score for Intersection	5.248	5.495	4.132
Bicycle LOS	F	F	D

Sequence

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



Intersection Level Of Service Report

Intersection 5: La Cadena Dr/Iowa Ave (NS) at La Cadena Dr (EW)

Control Type:	Signalized	Delay (sec / veh):	27.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.849

Intersection Setup

Name	Iowa Ave		La Cadena Dr		La Cadena Dr	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0
Pocket Length [ft]	130.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Iowa Ave		La Cadena Dr		La Cadena Dr	
Base Volume Input [veh/h]	74	626	303	866	318	159
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 Rate	1.02	1.02	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	81	83	87	387	288	48
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	156	722	396	1270	612	210
Peak Hour Factor	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710
Other Adjustment Factor	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	186	102	0	158	54
Total Analysis Volume [veh/h]	161	744	408	0	630	216
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	75
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Overlap
Signal group	5	2	6	0	3	8
Auxiliary Signal Groups						5,8
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	7	7	7	0	7	7
Maximum Green [s]	30	30	30	0	30	30
Amber [s]	3.0	3.0	3.0	0.0	3.0	3.0
All red [s]	1.0	1.0	1.0	0.0	1.0	1.0
Split [s]	16	27	11	0	48	48
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	3.0
Walk [s]	0	7	7	0	7	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
Minimum Recall	No	No	No		No	No
Maximum Recall	No	No	No		No	No
Pedestrian Recall	No	No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	75	75	75	75	75	75
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	9	37	24	24	30	43
g / C, Green / Cycle	0.12	0.50	0.32	0.32	0.40	0.57
(v / s)_i Volume / Saturation Flow Rate	0.09	0.41	0.23	0.00	0.37	0.14
s, saturation flow rate [veh/h]	1714	1800	1800	2708	1714	1530
c, Capacity [veh/h]	205	892	581	874	682	873
d1, Uniform Delay [s]	32.14	16.30	22.27	0.00	21.51	8.06
k, delay calibration	0.11	0.50	0.50	0.50	0.19	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.56	9.06	6.95	0.00	9.32	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.83	0.70	0.00	0.92	0.25
d, Delay for Lane Group [s/veh]	38.70	25.36	29.21	0.00	30.83	8.21
Lane Group LOS	D	C	C	A	C	A
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.96	10.77	6.56	0.00	10.50	1.34
50th-Percentile Queue Length [ft/ln]	74.09	269.17	163.98	0.00	262.40	33.44
95th-Percentile Queue Length [veh/ln]	5.33	16.15	10.76	0.00	15.81	2.41
95th-Percentile Queue Length [ft/ln]	133.36	403.70	268.98	0.00	395.23	60.19

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.70	25.36	29.21	0.00	30.83	8.21
Movement LOS	D	C	C	A	C	A
d_A, Approach Delay [s/veh]	27.73		29.21		25.05	
Approach LOS	C		C		C	
d_I, Intersection Delay [s/veh]	26.96					
Intersection LOS	C					
Intersection V/C	0.849					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	37.50	37.50	37.50
l_b,int, Bicycle LOS Score for Intersection	5.626	4.806	4.132
Bicycle LOS	F	E	D

Sequence

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



Intersection Level Of Service Report
Intersection 6: La Cadena Dr (NS) at Maryknoll Dr (EW)

Control Type:	Two-way stop	Delay (sec / veh):	1,932.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Maryknoll Dr			Dwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

Volumes

Name	La Cadena Dr			La Cadena Dr			Maryknoll Dr			Dwy		
Base Volume Input [veh/h]	27	466	4	2	924	19	9	0	18	5	0	2
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 Rate	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	74	120	0	0	109	359	216	0	45	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]	102	595	4	2	1051	378	225	0	63	5	0	2
Peak Hour Factor	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330
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]	27	159	1	1	282	101	60	0	17	1	0	1
Total Analysis Volume [veh/h]	109	638	4	2	1126	405	241	0	68	5	0	2
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.25	0.01	0.00	0.00	0.01	0.00	4.90	0.00	0.14	0.08	0.00	0.00
d_M, Delay for Movement [s/veh]	15.83	0.00	0.00	8.79	0.00	0.00	1921.72	1932.58	13.85	64.92	159.84	13.94
Movement LOS	C	A	A	A	A	A	F	F	B	F	F	B
95th-Percentile Queue Length [veh/ln]	0.89	0.44	0.00	0.01	0.00	0.00	27.29	27.29	0.50	0.26	0.26	0.26
95th-Percentile Queue Length [ft/ln]	22.13	11.06	0.00	0.16	0.08	0.00	682.28	682.28	12.42	6.45	6.45	6.45
d_A, Approach Delay [s/veh]	2.30			0.01			1501.86			50.36		
Approach LOS	A			A			F			F		
d_I, Intersection Delay [s/veh]	179.30											
Intersection LOS	F											

Intersection Level Of Service Report

Intersection 7: La Cadena Dr (NS) at Cadena Creek Dwy/I-215 SB On-Ramp (EW)

Control Type:	All-way stop	Delay (sec / veh):	74.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.189

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Cadena Creek Dwy			I-215 SB On-Ramp		
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 Pocket	1	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	236.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00			50.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	La Cadena Dr			La Cadena Dr			Cadena Creek Dwy			I-215 SB On-Ramp		
Base Volume Input [veh/h]	27	449	6	500	373	74	50	9	17	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	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 Rate	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	194	0	0	154	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]	28	652	6	510	534	75	51	9	17	0	0	0
Peak Hour Factor	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	174	2	136	143	20	14	2	5	0	0	0
Total Analysis Volume [veh/h]	30	697	6	545	571	80	54	10	18	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	470	502	503	545	651	382	434	
Degree of Utilization, x	0.06	0.70	0.70	1.08	1.19	0.17	0.04	

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.20	5.43	5.41	17.17	23.37	0.59	0.13	
95th-Percentile Queue Length [ft]	5.10	135.76	135.28	429.24	584.19	14.86	3.24	
Approach Delay [s/veh]	24.28			109.21		13.42		0.00
Approach LOS	C			F		B		A
Intersection Delay [s/veh]	74.35							
Intersection LOS	F							

Intersection Level Of Service Report
Intersection 8: Iowa Ave (NS) at I-215 SB Off-Ramp (EW)

Control Type:	Signalized	Delay (sec / veh):	20.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.816

Intersection Setup

Name	Iowa Ave		Iowa Ave		I-215 SB Off-Ramp	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		50.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Iowa Ave		Iowa Ave		I-215 SB Off-Ramp	
Base Volume Input [veh/h]	0	689	454	0	45	415
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 Rate	1.00	1.02	1.02	1.00	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	102	135	0	62	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	805	598	0	108	423
Peak Hour Factor	0.9500	0.9450	0.9450	0.9500	0.9450	0.9450
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	213	158	0	29	112
Total Analysis Volume [veh/h]	0	852	633	0	114	448
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	65
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Split	Split
Signal group	0	2	6	0	3	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	7	7	0	7	0
Maximum Green [s]	0	30	30	0	30	0
Amber [s]	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	0	18	18	0	47	0
Vehicle Extension [s]	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	7	0	7	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall		No	No		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	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
I, Upstream Filtering Factor	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	R
C, Cycle Length [s]	65	65	65	65
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	35	35	22	22
g / C, Green / Cycle	0.54	0.54	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.47	0.35	0.07	0.29
s, saturation flow rate [veh/h]	1800	1800	1714	1530
c, Capacity [veh/h]	980	980	571	510
d1, Uniform Delay [s]	12.86	10.44	15.53	20.50
k, delay calibration	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.42	3.29	0.17	5.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.65	0.20	0.88
d, Delay for Lane Group [s/veh]	23.28	13.73	15.70	25.58
Lane Group LOS	C	B	B	C
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	11.49	5.23	1.15	6.54
50th-Percentile Queue Length [ft/ln]	287.32	130.82	28.71	163.41
95th-Percentile Queue Length [veh/ln]	17.05	8.98	2.07	10.73
95th-Percentile Queue Length [ft/ln]	426.31	224.61	51.68	268.23

Movement, Approach, & Intersection Results

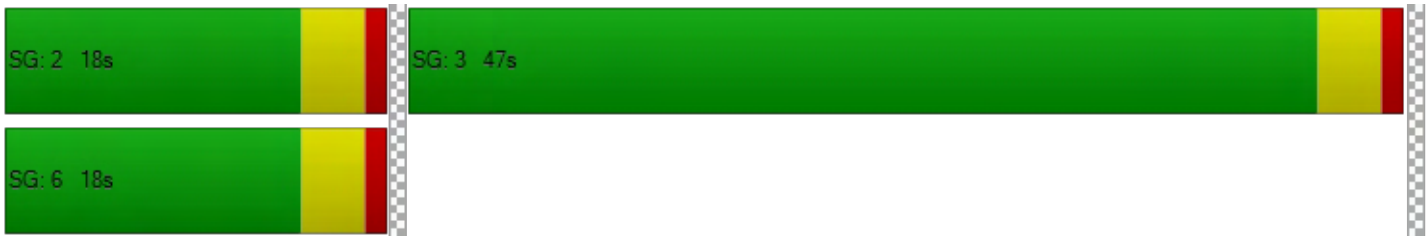
d_M, Delay for Movement [s/veh]	0.00	23.28	13.73	0.00	15.70	25.58
Movement LOS		C	B		B	C
d_A, Approach Delay [s/veh]	23.28		13.73		23.57	
Approach LOS	C		B		C	
d_I, Intersection Delay [s/veh]	20.41					
Intersection LOS	C					
Intersection V/C	0.816					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	32.50	32.50	32.50
I_b,int, Bicycle LOS Score for Intersection	5.538	5.177	4.132
Bicycle LOS	F	F	D

Sequence

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



Intersection Level Of Service Report
Intersection 9: Iowa Ave (NS) at Iowa Ave/I-215 NB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	102.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.110

Intersection Setup

Name	Iowa Ave		Iowa Ave		I-215 NB Ramps	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	90.00	100.00	100.00	100.00
Speed [mph]	30.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Iowa Ave		Iowa Ave		I-215 NB Ramps	
Base Volume Input [veh/h]	141	728	363	668	17	327
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 Rate	1.02	1.02	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	37	98	102	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	181	841	472	681	17	334
Peak Hour Factor	0.9860	0.9860	0.9860	0.9860	0.9860	0.9860
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	46	213	120	173	4	85
Total Analysis Volume [veh/h]	184	853	479	691	17	339
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal group	1	0	3	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	7	0	7	7	7	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	64	0	36	66	30	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	R	L	C	C	R
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	60	60	32	62	26	26
g / C, Green / Cycle	0.46	0.46	0.25	0.48	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.11	0.56	0.28	0.38	0.01	0.22
s, saturation flow rate [veh/h]	1714	1530	1714	1800	1800	1530
c, Capacity [veh/h]	791	706	424	859	358	304
d1, Uniform Delay [s]	21.12	35.01	48.90	28.85	42.13	52.08
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.15	106.76	83.56	7.92	0.25	86.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.23	1.21	1.13	0.80	0.05	1.12
d, Delay for Lane Group [s/veh]	21.27	141.77	132.46	36.77	42.38	138.32
Lane Group LOS	C	F	F	D	D	F
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.45	42.64	23.18	19.07	0.47	17.16
50th-Percentile Queue Length [ft/ln]	86.17	1066.02	579.58	476.81	11.79	428.97
95th-Percentile Queue Length [veh/ln]	6.20	60.96	33.32	26.23	0.85	25.35
95th-Percentile Queue Length [ft/ln]	155.11	1523.93	832.90	655.86	21.23	633.80

Movement, Approach, & Intersection Results

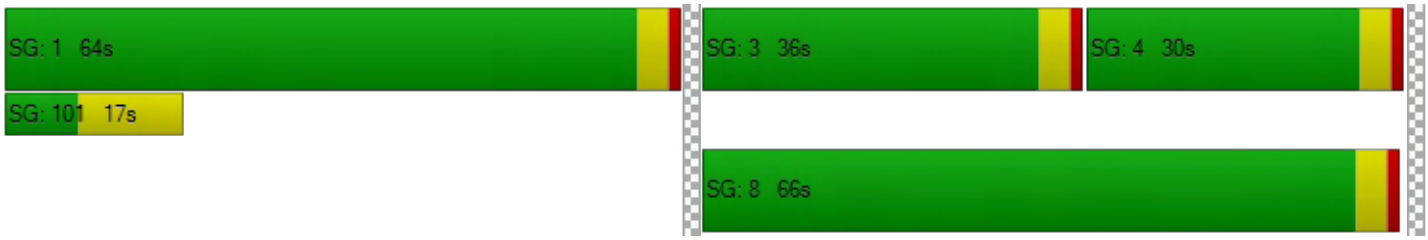
d_M, Delay for Movement [s/veh]	21.27	141.77	132.46	36.77	42.38	138.32
Movement LOS	C	F	F	D	D	F
d_A, Approach Delay [s/veh]	120.39		75.95		133.74	
Approach LOS	F		E		F	
d_I, Intersection Delay [s/veh]	101.96					
Intersection LOS	F					
Intersection V/C	1.110					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	54.47
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.358
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	65.00	65.00	65.00
l_b,int, Bicycle LOS Score for Intersection	4.132	6.063	4.720
Bicycle LOS	D	F	E

Sequence

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



Intersection Level Of Service Report

Intersection 10: I-215 SB Ramps/La Crosse Ave (NS) at Barton Rd (EW)

Control Type:	Roundabout	Delay (sec / veh):	6.7
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	La Crosse Ave			I-215 SB Ramps			Barton Rd			Barton Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	La Crosse Ave			I-215 SB Ramps			Barton Rd			Barton Rd		
Base Volume Input [veh/h]	2	0	38	179	9	71	1	385	40	234	224	6
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 Rate	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
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	62	7	247	0	0	224	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]	2	0	39	183	9	134	8	640	41	239	452	6
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]	1	0	10	47	2	35	2	166	11	62	117	2
Total Analysis Volume [veh/h]	2	0	40	190	9	139	8	664	43	248	469	6
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			2			2		
Circulating Flow Rate [veh/h]	862			719			447			10		
Exiting Flow Rate [veh/h]	300			14			610			894		
Demand Flow Rate [veh/h]	2	0	39	183	9	134	8	640	41	239	452	6
Adjusted Demand Flow Rate [veh/h]	2	0	40	190	9	139	8	664	43	248	469	6

Lanes

Overwrite Calculated Critical Headway	No	No	No	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1420.00	1420.00	1350.00	1420.00	1350.00	1420.00
B (coefficient)	0.00102	0.00091	0.00091	0.00092	0.00085	0.00092	0.00085
HV Adjustment Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Entry Flow Rate [veh/h]	42	199	139	337	379	340	384
Capacity of Entry and Bypass Lanes [veh/h]	573	739	739	895	972	1338	1408
Pedestrian Impedance	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	573	739	739	895	972	1338	1408
X, volume / capacity	0.07	0.27	0.19	0.38	0.39	0.25	0.27

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.24	1.09	0.69	1.76	1.87	1.01	1.11
95th-Percentile Queue Length [ft]	5.91	27.24	17.24	44.00	46.81	25.34	27.80
Approach Delay [s/veh]	7.15	7.58		8.15		4.87	
Approach LOS	A	A		A		A	
Intersection Delay [s/veh]	6.72						
Intersection LOS	A						

Intersection Level Of Service Report
Intersection 11: I-215 NB Ramps (NS) at Barton Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	12.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.465

Intersection Setup

Name	I-215 NB Off-Ramp			I-215 On-Ramp			Barton Rd			Barton Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	300.00	100.00	100.00	100.00	100.00	200.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	I-215 NB Off-Ramp			I-215 On-Ramp			Barton Rd			Barton Rd		
Base Volume Input [veh/h]	19	2	343	0	0	0	104	427	0	0	497	229
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 Rate	1.02	1.02	1.02	1.00	1.00	1.00	1.02	1.02	1.00	1.00	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	0	0	0	0	0	37	210	0	0	221	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]	22	2	350	0	0	0	143	646	0	0	728	234
Peak Hour Factor	0.9720	0.9720	0.9720	0.9500	0.9500	0.9500	0.9720	0.9720	0.9500	0.9500	0.9720	0.9720
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	1	90	0	0	0	37	166	0	0	187	60
Total Analysis Volume [veh/h]	23	2	360	0	0	0	147	665	0	0	749	241
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	65
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	7	0	0	0	0	7	7	0	0	7	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	21	0	0	0	0	18	39	0	0	21	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	10	0	0	10	0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R		L	C	C	R
C, Cycle Length [s]	65	65	65		65	65	65	65
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	10	10		7	47	36	36
g / C, Green / Cycle	0.16	0.16	0.16		0.11	0.72	0.55	0.55
(v / s)_i Volume / Saturation Flow Rate	0.01	0.12	0.12		0.09	0.19	0.22	0.16
s, saturation flow rate [veh/h]	1714	1533	1530		1714	3427	3427	1530
c, Capacity [veh/h]	267	239	239		190	2472	1881	840
d1, Uniform Delay [s]	23.52	26.32	26.32		28.15	3.14	8.49	7.87
k, delay calibration	0.11	0.11	0.11		0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.14	4.88	4.89		6.49	0.27	0.63	0.86
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.09	0.76	0.76		0.77	0.27	0.40	0.29
d, Delay for Lane Group [s/veh]	23.66	31.20	31.21		34.64	3.41	9.12	8.73
Lane Group LOS	C	C	C		C	A	A	A
Critical Lane Group	No	No	Yes		Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.30	2.87	2.86		2.43	0.88	2.57	1.64
50th-Percentile Queue Length [ft/ln]	7.47	71.71	71.61		60.72	22.07	64.31	40.94
95th-Percentile Queue Length [veh/ln]	0.54	5.16	5.16		4.37	1.59	4.63	2.95
95th-Percentile Queue Length [ft/ln]	13.45	129.08	128.90		109.30	39.72	115.76	73.70

Movement, Approach, & Intersection Results

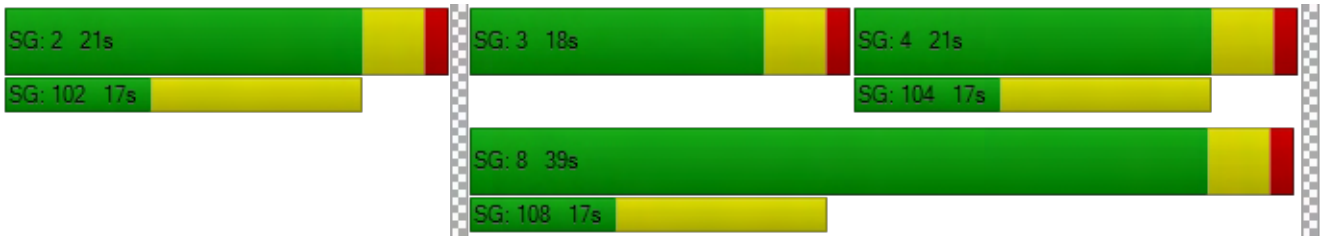
d_M, Delay for Movement [s/veh]	23.66	31.20	31.21	0.00	0.00	0.00	34.64	3.41	0.00	0.00	9.12	8.73
Movement LOS	C	C	C				C	A			A	A
d_A, Approach Delay [s/veh]	30.75			0.00			9.06			9.02		
Approach LOS	C			A			A			A		
d_I, Intersection Delay [s/veh]	12.86											
Intersection LOS	B											
Intersection V/C	0.465											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
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]	22.43	22.43	0.00	22.43
l_p,int, Pedestrian LOS Score for Intersection	2.047	1.786	0.000	2.740
Crosswalk LOS	B	A	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	523	0	1077	523
d_b, Bicycle Delay [s]	17.72	32.50	6.92	17.72
l_b,int, Bicycle LOS Score for Intersection	2.195	4.132	2.230	2.376
Bicycle LOS	B	D	B	B

Sequence

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



Opening Year (2020) With Project

Modern Pacific Homes

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Report File: G:\...\AM OYP.pdf

Scenario 2 Opening Year (2020) With Project
1/18/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	La Cadena Dr (NS) at Tropica Rancho Rd (EW)	Two-way stop	HCM 6th Edition	EB Right	0.003	16.0	C
2	La Cadena Dr (NS) at Litton Ave (EW)	Signalized	HCM 6th Edition	EB Left	0.611	9.8	A
3	La Cadena Dr (NS) at Palm Ave (EW)	Two-way stop	HCM 6th Edition	EB Right	0.115	17.0	C
4	La Cadena Dr (NS) at Barton Rd (EW)	Signalized	HCM 6th Edition	SB Left	0.634	15.4	B
5	La Cadena Dr/Iowa Ave (NS) at La Cadena Dr (EW)	Signalized	HCM 6th Edition	NB Left	0.729	20.2	C
6	La Cadena Dr (NS) at Maryknoll Dr (EW)	Two-way stop	HCM 6th Edition	EB Left	3.670	1,287.1	F
7	La Cadena Dr (NS) at Cadena Creek Dwy/I-215 SB On-Ramp (EW)	All-way stop	HCM 6th Edition	SB Left	1.055	60.1	F
8	Iowa Ave (NS) at I-215 SB Off -Ramp (EW)	Signalized	HCM 6th Edition	SB Thru	0.863	30.0	C
9	Iowa Ave (NS) at Iowa Ave/I-215 NB Ramps (EW)	Signalized	HCM 6th Edition	SB Right	1.281	158.4	F
10	I-215 SB Ramps/La Crosse Ave (NS) at Barton Rd (EW)	Roundabout	HCM 6th Edition	EB Left		6.3	A
11	I-215 NB Ramps (NS) at Barton Rd (EW)	Signalized	HCM 6th Edition	EB Left	0.531	12.7	B

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

Intersection Level Of Service Report

Intersection 1: La Cadena Dr (NS) at Tropica Rancho Rd (EW)

Control Type:	Two-way stop	Delay (sec / veh):	16.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.003

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Tropica Rancho Rd			Vivienda Ave		
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 Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	La Cadena Dr			La Cadena Dr			Tropica Rancho Rd			Vivienda Ave		
Base Volume Input [veh/h]	0	740	0	0	1283	1	0	0	1	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	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 Rate	1.00	1.02	1.02	1.00	1.02	1.02	1.00	1.00	1.02	1.00	1.00	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	290	0	0	174	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]	0	1045	0	0	1483	1	0	0	1	0	0	0
Peak Hour Factor	0.9500	0.9170	0.9170	0.9500	0.9170	0.9170	0.9500	0.9500	0.9170	0.9500	0.9500	0.9170
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	285	0	0	404	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	1140	0	0	1617	1	0	0	1	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.02	0.00	0.00	12.66
Movement LOS		A	A		A	A			C			B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			0.00			16.02			12.66		
Approach LOS	A			A			C			B		
d_I, Intersection Delay [s/veh]	0.01											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 2: La Cadena Dr (NS) at Litton Ave (EW)

Control Type:	Signalized	Delay (sec / veh):	9.8
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.611

Intersection Setup

Name	La Cadena Dr		La Cadena Dr		Litton Ave	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0
Pocket Length [ft]	105.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00		50.00		25.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	La Cadena Dr		La Cadena Dr		Litton Ave	
Base Volume Input [veh/h]	27	683	1264	18	59	34
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 Rate	1.02	1.02	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	12	275	169	5	15	30
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	40	972	1458	23	75	65
Peak Hour Factor	0.9260	0.9260	0.9260	0.9260	0.9260	0.9260
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	262	394	6	20	18
Total Analysis Volume [veh/h]	43	1050	1575	25	81	70
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal group	5	2	6	0	3	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	7	7	7	0	7	0
Maximum Green [s]	30	30	30	0	30	0
Amber [s]	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	11	32	21	0	48	0
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	7	0	7	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	C	C
C, Cycle Length [s]	80	80	80	80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	63	54	54	9
g / C, Green / Cycle	0.05	0.78	0.68	0.68	0.12
(v / s)_i Volume / Saturation Flow Rate	0.03	0.31	0.44	0.45	0.09
s, saturation flow rate [veh/h]	1714	3427	1800	1790	1624
c, Capacity [veh/h]	95	2684	1220	1214	190
d1, Uniform Delay [s]	36.66	2.71	7.48	7.51	34.43
k, delay calibration	0.11	0.50	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.36	0.43	2.76	2.82	7.36
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.45	0.39	0.66	0.66	0.80
d, Delay for Lane Group [s/veh]	40.02	3.14	10.24	10.33	41.79
Lane Group LOS	D	A	B	B	D
Critical Lane Group	Yes	No	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	0.85	0.93	5.75	5.79	3.22
50th-Percentile Queue Length [ft/ln]	21.21	23.31	143.78	144.68	80.40
95th-Percentile Queue Length [veh/ln]	1.53	1.68	9.68	9.73	5.79
95th-Percentile Queue Length [ft/ln]	38.18	41.95	242.10	243.31	144.73

Movement, Approach, & Intersection Results

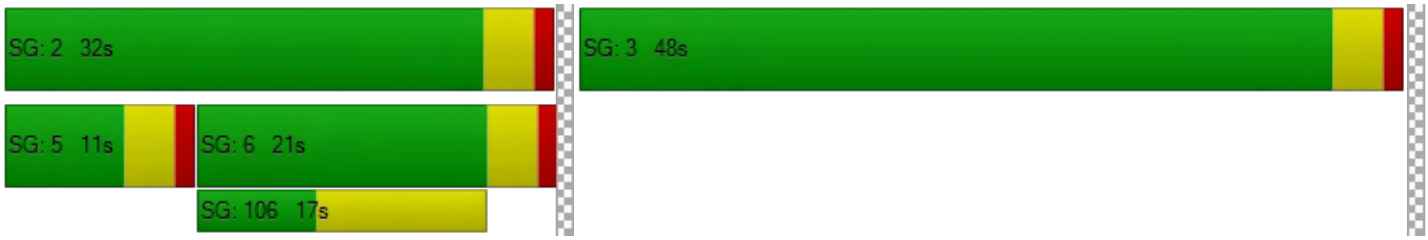
d_M, Delay for Movement [s/veh]	40.02	3.14	10.28	10.33	41.79	41.79
Movement LOS	D	A	B	B	D	D
d_A, Approach Delay [s/veh]	4.60		10.28		41.79	
Approach LOS	A		B		D	
d_I, Intersection Delay [s/veh]	9.77					
Intersection LOS	A					
Intersection V/C	0.611					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	29.76
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.797
Crosswalk LOS	F	F	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	40.00	40.00	40.00
l_b,int, Bicycle LOS Score for Intersection	5.034	5.452	4.382
Bicycle LOS	F	F	E

Sequence

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



Intersection Level Of Service Report
Intersection 3: La Cadena Dr (NS) at Palm Ave (EW)

Control Type:	Two-way stop	Delay (sec / veh):	17.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.115

Intersection Setup

Name	La Cadena Dr		La Cadena Dr		Palm Ave	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	140.00	100.00	100.00
Speed [mph]	50.00		50.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	La Cadena Dr		La Cadena Dr		Palm Ave	
Base Volume Input [veh/h]	0	705	1285	11	0	32
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 Rate	1.00	1.02	1.02	1.02	1.00	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	287	199	0	0	4
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1006	1510	11	0	37
Peak Hour Factor	0.9500	0.9590	0.9590	0.9590	0.9500	0.9590
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	262	394	3	0	10
Total Analysis Volume [veh/h]	0	1049	1575	11	0	39
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.02	0.00	0.00	0.12
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	17.01
Movement LOS		A	A	A		C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.39
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	9.66
d_A, Approach Delay [s/veh]	0.00		0.00		17.01	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.25					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 4: La Cadena Dr (NS) at Barton Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	15.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.634

Intersection Setup

Name	La Cadena Dr		La Cadena Dr		Barton Rd	
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 Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	250.00	100.00	100.00	100.00
Speed [mph]	50.00		50.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		No	

Volumes

Name	La Cadena Dr		La Cadena Dr		Barton Rd	
Base Volume Input [veh/h]	538	147	208	1105	190	164
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 Rate	1.02	1.02	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	233	183	41	162	103	54
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	782	333	253	1289	297	221
Peak Hour Factor	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	203	86	66	335	77	57
Total Analysis Volume [veh/h]	812	346	263	1339	308	229
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal group	2	0	1	6	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	11	0	28	39	21	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	24	24	11	39	13	13
g / C, Green / Cycle	0.40	0.40	0.19	0.65	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.24	0.23	0.15	0.39	0.18	0.15
s, saturation flow rate [veh/h]	3427	1530	1714	3427	1714	1530
c, Capacity [veh/h]	1350	603	323	2223	374	334
d1, Uniform Delay [s]	14.49	14.28	23.41	6.10	22.40	21.61
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.99	3.95	5.00	1.22	4.56	2.49
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.60	0.57	0.81	0.60	0.82	0.69
d, Delay for Lane Group [s/veh]	16.48	18.23	28.41	7.31	26.96	24.10
Lane Group LOS	B	B	C	A	C	C
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	3.72	3.48	3.48	2.64	4.21	2.91
50th-Percentile Queue Length [ft/ln]	93.12	86.93	87.08	66.01	105.22	72.75
95th-Percentile Queue Length [veh/ln]	6.70	6.26	6.27	4.75	7.57	5.24
95th-Percentile Queue Length [ft/ln]	167.62	156.47	156.75	118.81	189.33	130.95

Movement, Approach, & Intersection Results

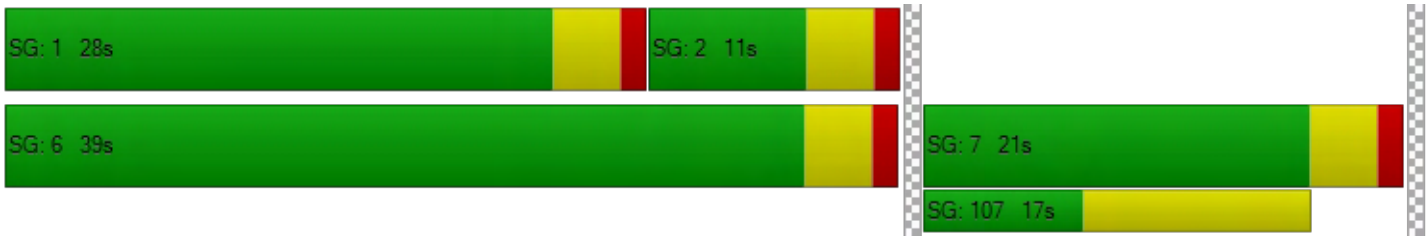
d_M, Delay for Movement [s/veh]	16.48	18.23	28.41	7.31	26.96	24.10
Movement LOS	B	B	C	A	C	C
d_A, Approach Delay [s/veh]	17.00		10.78		25.74	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	15.40					
Intersection LOS	B					
Intersection V/C	0.634					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	20.01	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.190	0.000	0.000
Crosswalk LOS	C	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	30.00	30.00	30.00
I_b,int, Bicycle LOS Score for Intersection	5.088	5.454	4.132
Bicycle LOS	F	F	D

Sequence

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



Intersection Level Of Service Report

Intersection 5: La Cadena Dr/Iowa Ave (NS) at La Cadena Dr (EW)

Control Type:	Signalized	Delay (sec / veh):	20.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.729

Intersection Setup

Name	Iowa Ave		La Cadena Dr		La Cadena Dr	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0
Pocket Length [ft]	130.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Iowa Ave		La Cadena Dr		La Cadena Dr	
Base Volume Input [veh/h]	77	516	474	834	105	101
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 Rate	1.02	1.02	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	31	70	54	211	346	75
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	110	596	537	1062	453	178
Peak Hour Factor	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560
Other Adjustment Factor	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	29	156	140	0	118	47
Total Analysis Volume [veh/h]	115	623	562	0	474	186
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Overlap
Signal group	5	2	6	0	3	8
Auxiliary Signal Groups						5,8
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	7	7	7	0	7	7
Maximum Green [s]	30	30	30	0	30	30
Amber [s]	3.0	3.0	3.0	0.0	3.0	3.0
All red [s]	1.0	1.0	1.0	0.0	1.0	1.0
Split [s]	27	38	11	0	22	22
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	3.0
Walk [s]	0	7	7	0	7	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
Minimum Recall	No	No	No		No	No
Maximum Recall	No	No	No		No	No
Pedestrian Recall	No	No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	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
g_i, Effective Green Time [s]	6	34	24	24	18	28
g / C, Green / Cycle	0.10	0.57	0.40	0.40	0.30	0.47
(v / s)_i Volume / Saturation Flow Rate	0.07	0.35	0.31	0.00	0.28	0.12
s, saturation flow rate [veh/h]	1714	1800	1800	2708	1714	1530
c, Capacity [veh/h]	176	1021	716	1078	514	718
d1, Uniform Delay [s]	25.97	8.62	15.85	0.00	20.38	9.66
k, delay calibration	0.11	0.50	0.50	0.50	0.12	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.08	2.72	8.41	0.00	8.26	0.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.65	0.61	0.78	0.00	0.92	0.26
d, Delay for Lane Group [s/veh]	30.05	11.34	24.26	0.00	28.64	9.85
Lane Group LOS	C	B	C	A	C	A
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.58	4.04	6.78	0.00	6.35	1.11
50th-Percentile Queue Length [ft/ln]	39.49	101.12	169.39	0.00	158.72	27.85
95th-Percentile Queue Length [veh/ln]	2.84	7.28	11.04	0.00	10.48	2.01
95th-Percentile Queue Length [ft/ln]	71.09	182.02	276.11	0.00	262.03	50.13

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	30.05	11.34	24.26	0.00	28.64	9.85
Movement LOS	C	B	C	A	C	A
d_A, Approach Delay [s/veh]	14.26		24.26		23.34	
Approach LOS	B		C		C	
d_I, Intersection Delay [s/veh]	20.18					
Intersection LOS	C					
Intersection V/C	0.729					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	30.00	30.00	30.00
l_b,int, Bicycle LOS Score for Intersection	5.350	5.060	4.132
Bicycle LOS	F	F	D

Sequence

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



Intersection Level Of Service Report
Intersection 6: La Cadena Dr (NS) at Maryknoll Dr (EW)

Control Type:	Two-way stop	Delay (sec / veh):	1,287.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	3.670

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Maryknoll Dr			Dwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

Volumes

Name	La Cadena Dr			La Cadena Dr			Maryknoll Dr			Dwy		
Base Volume Input [veh/h]	8	172	4	20	881	10	19	0	35	12	0	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 Rate	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	29	85	0	0	103	139	336	0	70	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]	37	260	4	20	1002	149	355	0	106	12	0	13
Peak Hour Factor	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330
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	70	1	5	268	40	95	0	28	3	0	3
Total Analysis Volume [veh/h]	40	279	4	21	1074	160	380	0	114	13	0	14
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.00	0.00	0.02	0.01	0.00	3.67	0.00	0.23	0.08	0.00	0.02
d_M, Delay for Movement [s/veh]	11.77	0.00	0.00	7.83	0.00	0.00	1287.15	1283.81	14.47	29.27	45.65	10.48
Movement LOS	B	A	A	A	A	A	F	F	B	D	E	B
95th-Percentile Queue Length [veh/ln]	0.21	0.10	0.00	0.05	0.02	0.00	38.28	38.28	0.88	0.32	0.32	0.32
95th-Percentile Queue Length [ft/ln]	5.18	2.59	0.00	1.18	0.59	0.00	956.97	956.97	22.12	8.09	8.09	8.09
d_A, Approach Delay [s/veh]	1.46			0.13			993.45			19.53		
Approach LOS	A			A			F			C		
d_I, Intersection Delay [s/veh]	234.36											
Intersection LOS	F											

Intersection Level Of Service Report

Intersection 7: La Cadena Dr (NS) at Cadena Creek Dwy/I-215 SB On-Ramp (EW)

Control Type:	All-way stop	Delay (sec / veh):	60.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.055

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Cadena Creek Dwy			I-215 SB On-Ramp		
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 Pocket	1	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	236.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00			50.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	La Cadena Dr			La Cadena Dr			Cadena Creek Dwy			I-215 SB On-Ramp		
Base Volume Input [veh/h]	9	110	0	513	375	46	73	17	28	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	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 Rate	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	114	0	16	157	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]	9	226	0	539	540	47	74	17	29	0	0	0
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	63	0	150	150	13	21	5	8	0	0	0
Total Analysis Volume [veh/h]	10	251	0	598	599	52	82	19	32	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	460	491	491	598	651	432	497	
Degree of Utilization, x	0.02	0.26	0.26	1.06	1.05	0.23	0.06	

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.07	1.01	1.01	17.06	17.59	0.90	0.21	
95th-Percentile Queue Length [ft]	1.67	25.19	25.19	426.55	439.72	22.39	5.14	
Approach Delay [s/veh]	12.46			75.10		12.80		0.00
Approach LOS	B			F		B		A
Intersection Delay [s/veh]	60.11							
Intersection LOS	F							

Intersection Level Of Service Report
Intersection 8: Iowa Ave (NS) at I-215 SB Off-Ramp (EW)

Control Type:	Signalized	Delay (sec / veh):	30.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.863

Intersection Setup

Name	Iowa Ave		Iowa Ave		I-215 SB Off-Ramp	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		50.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Iowa Ave		Iowa Ave		I-215 SB Off-Ramp	
Base Volume Input [veh/h]	0	569	577	0	29	533
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 Rate	1.00	1.02	1.02	1.00	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	77	129	0	24	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	657	718	0	54	544
Peak Hour Factor	0.9500	0.9150	0.9150	0.9500	0.9150	0.9150
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	180	196	0	15	149
Total Analysis Volume [veh/h]	0	718	785	0	59	595
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Split	Split
Signal group	0	2	6	0	3	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	7	7	0	7	0
Maximum Green [s]	0	30	30	0	30	0
Amber [s]	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	0	14	14	0	76	0
Vehicle Extension [s]	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	7	0	7	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall		No	No		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	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
I, Upstream Filtering Factor	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	R
C, Cycle Length [s]	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	45	45	37	37
g / C, Green / Cycle	0.49	0.49	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.40	0.44	0.03	0.39
s, saturation flow rate [veh/h]	1800	1800	1714	1530
c, Capacity [veh/h]	892	892	712	636
d1, Uniform Delay [s]	19.04	20.30	15.91	25.14
k, delay calibration	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.66	12.10	0.05	7.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.88	0.08	0.94
d, Delay for Lane Group [s/veh]	26.71	32.41	15.96	32.29
Lane Group LOS	C	C	B	C
Critical Lane Group	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	13.54	15.30	0.72	12.66
50th-Percentile Queue Length [ft/ln]	338.48	382.52	18.12	316.41
95th-Percentile Queue Length [veh/ln]	19.57	21.72	1.30	18.49
95th-Percentile Queue Length [ft/ln]	489.34	542.89	32.62	462.27

Movement, Approach, & Intersection Results

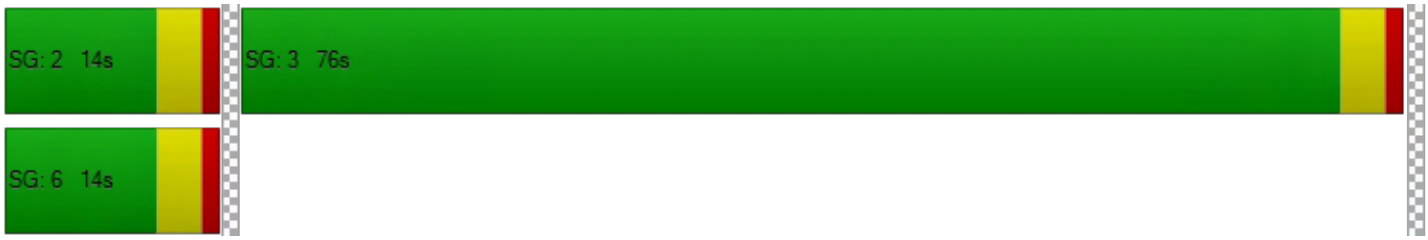
d_M, Delay for Movement [s/veh]	0.00	26.71	32.41	0.00	15.96	32.29
Movement LOS		C	C		B	C
d_A, Approach Delay [s/veh]	26.71		32.41		30.81	
Approach LOS	C		C		C	
d_I, Intersection Delay [s/veh]	30.03					
Intersection LOS	C					
Intersection V/C	0.863					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	45.00	45.00	45.00
l_b,int, Bicycle LOS Score for Intersection	5.317	5.428	4.132
Bicycle LOS	F	F	D

Sequence

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



Intersection Level Of Service Report

Intersection 9: Iowa Ave (NS) at Iowa Ave/I-215 NB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	158.4
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.281

Intersection Setup

Name	Iowa Ave		Iowa Ave		I-215 NB Ramps	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	90.00	100.00	100.00	100.00
Speed [mph]	30.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Iowa Ave		Iowa Ave		I-215 NB Ramps	
Base Volume Input [veh/h]	110	1000	305	532	33	264
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 Rate	1.02	1.02	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	58	71	72	0	0	5
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	170	1091	383	543	34	274
Peak Hour Factor	0.9130	0.9130	0.9130	0.9130	0.9130	0.9130
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	299	105	149	9	75
Total Analysis Volume [veh/h]	186	1195	419	595	37	300
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal group	1	0	3	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	7	0	7	7	7	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	77	0	29	53	24	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	R	L	C	C	R
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	73	73	25	49	20	20
g / C, Green / Cycle	0.56	0.56	0.19	0.38	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.11	0.78	0.24	0.33	0.02	0.20
s, saturation flow rate [veh/h]	1714	1530	1714	1800	1800	1530
c, Capacity [veh/h]	962	859	331	679	275	234
d1, Uniform Delay [s]	14.02	28.51	52.44	37.68	47.61	55.06
k, delay calibration	0.11	0.50	0.49	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.10	183.17	140.77	14.88	1.01	155.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.19	1.39	1.26	0.88	0.13	1.28
d, Delay for Lane Group [s/veh]	14.12	211.68	193.21	52.56	48.63	210.43
Lane Group LOS	B	F	F	D	D	F
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.73	69.07	23.46	19.63	1.12	17.75
50th-Percentile Queue Length [ft/ln]	68.20	1726.87	586.59	490.81	28.09	443.79
95th-Percentile Queue Length [veh/ln]	4.91	103.64	35.19	26.90	2.02	27.44
95th-Percentile Queue Length [ft/ln]	122.76	2590.95	879.79	672.48	50.55	686.12

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	14.12	211.68	193.21	52.56	48.63	210.43
Movement LOS	B	F	F	D	D	F
d_A, Approach Delay [s/veh]	185.07		110.68		192.66	
Approach LOS	F		F		F	
d_I, Intersection Delay [s/veh]	158.40					
Intersection LOS	F					
Intersection V/C	1.281					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	54.47
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.321
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	65.00	65.00	65.00
l_b,int, Bicycle LOS Score for Intersection	4.132	5.806	4.688
Bicycle LOS	D	F	E

Sequence

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



Intersection Level Of Service Report

Intersection 10: I-215 SB Ramps/La Crosse Ave (NS) at Barton Rd (EW)

Control Type:	Roundabout	Delay (sec / veh):	6.3
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	La Crosse Ave			I-215 SB Ramps			Barton Rd			Barton Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	La Crosse Ave			I-215 SB Ramps			Barton Rd			Barton Rd		
Base Volume Input [veh/h]	0	0	8	116	23	67	1	296	41	321	251	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	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 Rate	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
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	27	4	220	0	0	130	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]	0	0	8	118	23	95	5	522	42	327	386	3
Peak Hour Factor	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	2	31	6	25	1	138	11	87	102	1
Total Analysis Volume [veh/h]	0	0	8	125	24	101	5	552	44	346	408	3
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			2			2		
Circulating Flow Rate [veh/h]	682			754			495			5		
Exiting Flow Rate [veh/h]	414			8			509			685		
Demand Flow Rate [veh/h]	0	0	8	118	23	95	5	522	42	327	386	3
Adjusted Demand Flow Rate [veh/h]	0	0	8	125	24	101	5	552	44	346	408	3

Lanes

Overwrite Calculated Critical Headway	No	No	No	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1420.00	1420.00	1350.00	1420.00	1350.00	1420.00
B (coefficient)	0.00102	0.00091	0.00091	0.00092	0.00085	0.00092	0.00085
HV Adjustment Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Entry Flow Rate [veh/h]	8	149	101	283	319	356	402
Capacity of Entry and Bypass Lanes [veh/h]	689	715	715	857	933	1344	1414
Pedestrian Impedance	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	689	715	715	857	933	1344	1414
X, volume / capacity	0.01	0.21	0.14	0.33	0.34	0.26	0.28

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.04	0.78	0.49	1.45	1.53	1.07	1.18
95th-Percentile Queue Length [ft]	0.88	19.53	12.26	36.20	38.16	26.78	29.44
Approach Delay [s/veh]	5.35	7.06		7.72		4.97	
Approach LOS	A	A		A		A	
Intersection Delay [s/veh]	6.32						
Intersection LOS	A						

Intersection Level Of Service Report
Intersection 11: I-215 NB Ramps (NS) at Barton Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	12.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.531

Intersection Setup

Name	I-215 NB Off-Ramp			I-215 On-Ramp			Barton Rd			Barton Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	300.00	100.00	100.00	100.00	100.00	200.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	I-215 NB Off-Ramp			I-215 On-Ramp			Barton Rd			Barton Rd		
Base Volume Input [veh/h]	30	0	303	0	0	0	68	353	0	0	546	391
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 Rate	1.02	1.02	1.02	1.00	1.00	1.00	1.02	1.02	1.00	1.00	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	8	0	0	0	0	0	68	152	0	0	122	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]	39	0	309	0	0	0	137	512	0	0	679	399
Peak Hour Factor	0.9230	0.9230	0.9230	0.9500	0.9500	0.9500	0.9230	0.9230	0.9500	0.9500	0.9230	0.9230
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]	11	0	84	0	0	0	37	139	0	0	184	108
Total Analysis Volume [veh/h]	42	0	335	0	0	0	148	555	0	0	736	432
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	7	0	0	0	0	7	7	0	0	7	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	21	0	0	0	0	18	39	0	0	21	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	10	0	0	10	0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R		L	C	C	R
C, Cycle Length [s]	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
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	9	9		7	43	32	32
g / C, Green / Cycle	0.15	0.15	0.15		0.11	0.72	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.02	0.11	0.11		0.09	0.16	0.21	0.28
s, saturation flow rate [veh/h]	1714	1530	1530		1714	3427	3427	1530
c, Capacity [veh/h]	259	231	231		194	2453	1838	821
d1, Uniform Delay [s]	22.22	24.34	24.34		25.90	2.90	8.23	9.01
k, delay calibration	0.11	0.11	0.11		0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.29	4.27	4.27		6.14	0.21	0.65	2.41
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.16	0.72	0.72		0.76	0.23	0.40	0.53
d, Delay for Lane Group [s/veh]	22.51	28.61	28.61		32.04	3.11	8.89	11.42
Lane Group LOS	C	C	C		C	A	A	B
Critical Lane Group	No	Yes	No		Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.51	2.40	2.40		2.23	0.61	2.32	3.32
50th-Percentile Queue Length [ft/ln]	12.68	59.98	59.98		55.67	15.24	58.09	83.01
95th-Percentile Queue Length [veh/ln]	0.91	4.32	4.32		4.01	1.10	4.18	5.98
95th-Percentile Queue Length [ft/ln]	22.83	107.96	107.96		100.20	27.43	104.57	149.42

Movement, Approach, & Intersection Results

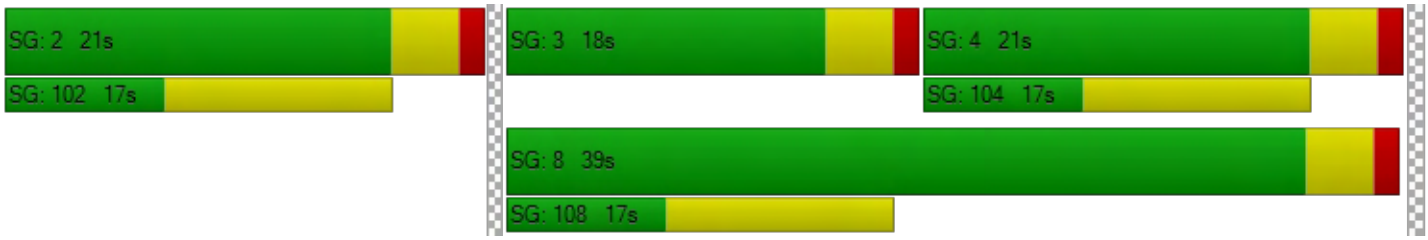
d_M, Delay for Movement [s/veh]	22.51	28.61	28.61	0.00	0.00	0.00	32.04	3.11	0.00	0.00	8.89	11.42
Movement LOS	C	C	C				C	A			A	B
d_A, Approach Delay [s/veh]	27.93			0.00			9.20			9.82		
Approach LOS	C			A			A			A		
d_I, Intersection Delay [s/veh]	12.67											
Intersection LOS	B											
Intersection V/C	0.531											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
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]	20.01	20.01	0.00	20.01
l_p,int, Pedestrian LOS Score for Intersection	2.040	1.966	0.000	2.746
Crosswalk LOS	B	A	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	567	0	1167	567
d_b, Bicycle Delay [s]	15.41	30.00	5.21	15.41
l_b,int, Bicycle LOS Score for Intersection	2.182	4.132	2.140	2.523
Bicycle LOS	B	D	B	B

Sequence

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



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Scenario 2 Opening Year (2020) With Project
1/16/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	La Cadena Dr (NS) at Tropica Rancho Rd (EW)	Two-way stop	HCM 6th Edition	EB Right	0.000	17.6	C
2	La Cadena Dr (NS) at Litton Ave (EW)	Signalized	HCM 6th Edition	EB Right	0.616	8.4	A
3	La Cadena Dr (NS) at Palm Ave (EW)	Two-way stop	HCM 6th Edition	EB Right	0.107	18.9	C
4	La Cadena Dr (NS) at Barton Rd (EW)	Signalized	HCM 6th Edition	SB Left	0.852	25.6	C
5	La Cadena Dr/Iowa Ave (NS) at La Cadena Dr (EW)	Signalized	HCM 6th Edition	SB Thru	0.882	28.1	C
6	La Cadena Dr (NS) at Maryknoll Dr (EW)	Two-way stop	HCM 6th Edition	EB Thru	0.000	1,992.0	F
7	La Cadena Dr (NS) at Cadena Creek Dwy/I-215 SB On-Ramp (EW)	All-way stop	HCM 6th Edition	SB Thru	1.194	76.6	F
8	Iowa Ave (NS) at I-215 SB Off -Ramp (EW)	Signalized	HCM 6th Edition	EB Right	0.825	21.1	C
9	Iowa Ave (NS) at Iowa Ave/I-215 NB Ramps (EW)	Signalized	HCM 6th Edition	SB Right	1.127	106.2	F
10	I-215 SB Ramps/La Crosse Ave (NS) at Barton Rd (EW)	Roundabout	HCM 6th Edition	EB Left		6.8	A
11	I-215 NB Ramps (NS) at Barton Rd (EW)	Signalized	HCM 6th Edition	EB Left	0.471	13.0	B

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

Intersection Level Of Service Report
Intersection 1: La Cadena Dr (NS) at Tropica Rancho Rd (EW)

Control Type:	Two-way stop	Delay (sec / veh):	17.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Tropica Rancho Rd			Vivienda Ave		
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 Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	La Cadena Dr			La Cadena Dr			Tropica Rancho Rd			Vivienda Ave		
Base Volume Input [veh/h]	0	889	0	0	1290	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	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 Rate	1.00	1.02	1.02	1.00	1.02	1.02	1.00	1.00	1.02	1.00	1.00	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	252	0	0	330	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]	0	1159	0	0	1646	0	0	0	0	0	0	0
Peak Hour Factor	0.9500	0.9160	0.9160	0.9500	0.9160	0.9160	0.9500	0.9500	0.9160	0.9500	0.9500	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]	0	316	0	0	449	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	1265	0	0	1797	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.58	0.00	0.00	13.42
Movement LOS		A	A		A	A			C			B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			0.00			17.58			13.42		
Approach LOS	A			A			C			B		
d_I, Intersection Delay [s/veh]	0.00											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 2: La Cadena Dr (NS) at Litton Ave (EW)

Control Type:	Signalized	Delay (sec / veh):	8.4
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.616

Intersection Setup

Name	La Cadena Dr		La Cadena Dr		Litton Ave	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0
Pocket Length [ft]	105.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00		50.00		25.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	La Cadena Dr		La Cadena Dr		Litton Ave	
Base Volume Input [veh/h]	39	862	1245	45	25	24
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 Rate	1.02	1.02	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	40	242	313	17	10	19
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	80	1121	1583	63	36	43
Peak Hour Factor	0.9680	0.9680	0.9680	0.9680	0.9680	0.9680
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	290	409	16	9	11
Total Analysis Volume [veh/h]	83	1158	1635	65	37	44
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal group	5	2	6	0	3	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	7	7	7	0	7	0
Maximum Green [s]	30	30	30	0	30	0
Amber [s]	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	11	82	71	0	13	0
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	7	0	7	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	C	C
C, Cycle Length [s]	95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	81	71	71	6
g / C, Green / Cycle	0.07	0.85	0.74	0.74	0.07
(v / s)_i Volume / Saturation Flow Rate	0.05	0.34	0.47	0.48	0.05
s, saturation flow rate [veh/h]	1714	3427	1800	1776	1609
c, Capacity [veh/h]	113	2914	1336	1318	105
d1, Uniform Delay [s]	43.56	1.61	5.98	6.05	43.69
k, delay calibration	0.11	0.50	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.85	0.41	2.32	2.44	11.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.73	0.40	0.64	0.64	0.77
d, Delay for Lane Group [s/veh]	52.41	2.01	8.30	8.49	54.77
Lane Group LOS	D	A	A	A	D
Critical Lane Group	Yes	No	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	2.10	0.30	5.69	5.78	2.20
50th-Percentile Queue Length [ft/ln]	52.44	7.42	142.18	144.45	55.04
95th-Percentile Queue Length [veh/ln]	3.78	0.53	9.60	9.72	3.96
95th-Percentile Queue Length [ft/ln]	94.40	13.36	239.96	243.01	99.08

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	52.41	2.01	8.39	8.49	54.77	54.77
Movement LOS	D	A	A	A	D	D
d_A, Approach Delay [s/veh]	5.38		8.40		54.77	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	8.40					
Intersection LOS	A					
Intersection V/C	0.616					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	37.14
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.810
Crosswalk LOS	F	F	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	47.50	47.50	47.50
I_b,int, Bicycle LOS Score for Intersection	5.156	5.535	4.266
Bicycle LOS	F	F	E

Sequence

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



Intersection Level Of Service Report
Intersection 3: La Cadena Dr (NS) at Palm Ave (EW)

Control Type:	Two-way stop	Delay (sec / veh):	18.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.107

Intersection Setup

Name	La Cadena Dr		La Cadena Dr		Palm Ave	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	140.00	100.00	100.00
Speed [mph]	50.00		50.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	La Cadena Dr		La Cadena Dr		Palm Ave	
Base Volume Input [veh/h]	0	877	1273	22	0	24
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 Rate	1.00	1.02	1.02	1.02	1.00	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	282	332	0	0	4
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1177	1630	22	0	28
Peak Hour Factor	0.9500	0.9170	0.9170	0.9170	0.9500	0.9170
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	321	444	6	0	8
Total Analysis Volume [veh/h]	0	1284	1778	24	0	31
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.02	0.00	0.00	0.11
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	18.88
Movement LOS		A	A	A		C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.35
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	8.87
d_A, Approach Delay [s/veh]	0.00		0.00		18.88	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.19					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 4: La Cadena Dr (NS) at Barton Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	25.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.852

Intersection Setup

Name	La Cadena Dr		La Cadena Dr		Barton Rd	
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 Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	250.00	100.00	100.00	100.00
Speed [mph]	50.00		50.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		No	

Volumes

Name	La Cadena Dr		La Cadena Dr		Barton Rd	
Base Volume Input [veh/h]	774	153	256	1014	208	136
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 Rate	1.02	1.02	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	212	182	83	253	233	70
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1001	338	344	1287	445	209
Peak Hour Factor	0.9730	0.9730	0.9730	0.9730	0.9730	0.9730
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	257	87	88	331	114	54
Total Analysis Volume [veh/h]	1029	347	354	1323	457	215
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	65
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal group	2	0	1	6	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	25	0	18	43	22	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	65	65	65	65	65	65
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	21	21	14	39	18	18
g / C, Green / Cycle	0.32	0.32	0.22	0.60	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.30	0.23	0.21	0.39	0.27	0.14
s, saturation flow rate [veh/h]	3427	1530	1714	3427	1714	1530
c, Capacity [veh/h]	1106	494	371	2057	475	424
d1, Uniform Delay [s]	21.40	19.37	25.26	8.49	23.26	19.85
k, delay calibration	0.50	0.50	0.11	0.50	0.14	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.77	8.13	13.32	1.56	14.69	0.94
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.93	0.70	0.95	0.64	0.96	0.51
d, Delay for Lane Group [s/veh]	36.17	27.49	38.59	10.05	37.94	20.79
Lane Group LOS	D	C	D	B	D	C
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	8.49	4.91	6.01	4.15	8.15	2.61
50th-Percentile Queue Length [ft/ln]	212.24	122.78	150.27	103.87	203.79	65.13
95th-Percentile Queue Length [veh/ln]	13.27	8.55	10.03	7.48	12.83	4.69
95th-Percentile Queue Length [ft/ln]	331.70	213.64	250.79	186.97	320.85	117.23

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.17	27.49	38.59	10.05	37.94	20.79
Movement LOS	D	C	D	B	D	C
d_A, Approach Delay [s/veh]	33.98		16.08		32.45	
Approach LOS	C		B		C	
d_I, Intersection Delay [s/veh]	25.65					
Intersection LOS	C					
Intersection V/C	0.852					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	22.43	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.290	0.000	0.000
Crosswalk LOS	C	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	32.50	32.50	32.50
I_b,int, Bicycle LOS Score for Intersection	5.268	5.516	4.132
Bicycle LOS	F	F	D

Sequence

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



Intersection Level Of Service Report

Intersection 5: La Cadena Dr/Iowa Ave (NS) at La Cadena Dr (EW)

Control Type:	Signalized	Delay (sec / veh):	28.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.882

Intersection Setup

Name	Iowa Ave		La Cadena Dr		La Cadena Dr	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0
Pocket Length [ft]	130.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Iowa Ave		La Cadena Dr		La Cadena Dr	
Base Volume Input [veh/h]	74	626	303	866	318	159
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 Rate	1.02	1.02	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	81	103	89	397	291	48
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	156	742	398	1280	615	210
Peak Hour Factor	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710
Other Adjustment Factor	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	191	102	0	158	54
Total Analysis Volume [veh/h]	161	764	410	0	633	216
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Overlap
Signal group	5	2	6	0	3	8
Auxiliary Signal Groups						5,8
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	7	7	7	0	7	7
Maximum Green [s]	30	30	30	0	30	30
Amber [s]	3.0	3.0	3.0	0.0	3.0	3.0
All red [s]	1.0	1.0	1.0	0.0	1.0	1.0
Split [s]	13	32	19	0	28	28
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	3.0
Walk [s]	0	7	7	0	7	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
Minimum Recall	No	No	No		No	No
Maximum Recall	No	No	No		No	No
Pedestrian Recall	No	No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	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
g_i, Effective Green Time [s]	7	28	17	17	24	35
g / C, Green / Cycle	0.12	0.47	0.29	0.29	0.39	0.58
(v / s)_i Volume / Saturation Flow Rate	0.09	0.42	0.23	0.00	0.37	0.14
s, saturation flow rate [veh/h]	1714	1800	1800	2708	1714	1530
c, Capacity [veh/h]	207	853	515	775	674	889
d1, Uniform Delay [s]	25.65	14.48	19.85	0.00	17.55	6.16
k, delay calibration	0.11	0.50	0.50	0.50	0.26	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.14	14.01	12.04	0.00	14.09	0.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.90	0.80	0.00	0.94	0.24
d, Delay for Lane Group [s/veh]	31.79	28.49	31.88	0.00	31.64	6.30
Lane Group LOS	C	C	C	A	C	A
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.29	9.93	6.02	0.00	9.00	0.85
50th-Percentile Queue Length [ft/ln]	57.24	248.32	150.54	0.00	225.10	21.17
95th-Percentile Queue Length [veh/ln]	4.12	15.10	10.05	0.00	13.93	1.52
95th-Percentile Queue Length [ft/ln]	103.02	377.53	251.16	0.00	348.13	38.11

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	31.79	28.49	31.88	0.00	31.64	6.30
Movement LOS	C	C	C	A	C	A
d_A, Approach Delay [s/veh]	29.06		31.88		25.19	
Approach LOS	C		C		C	
d_I, Intersection Delay [s/veh]	28.09					
Intersection LOS	C					
Intersection V/C	0.882					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	30.00	30.00	30.00
l_b,int, Bicycle LOS Score for Intersection	5.659	4.809	4.132
Bicycle LOS	F	E	D

Sequence

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



Intersection Level Of Service Report
Intersection 6: La Cadena Dr (NS) at Maryknoll Dr (EW)

Control Type:	Two-way stop	Delay (sec / veh):	1,992.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Maryknoll Dr			Dwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

Volumes

Name	La Cadena Dr			La Cadena Dr			Maryknoll Dr			Dwy		
Base Volume Input [veh/h]	27	466	4	2	924	19	9	0	18	5	0	2
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 Rate	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	74	123	0	0	119	359	216	0	45	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]	102	598	4	2	1061	378	225	0	63	5	0	2
Peak Hour Factor	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330
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]	27	160	1	1	284	101	60	0	17	1	0	1
Total Analysis Volume [veh/h]	109	641	4	2	1137	405	241	0	68	5	0	2
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.25	0.01	0.00	0.00	0.01	0.00	5.03	0.00	0.14	0.08	0.00	0.00
d_M, Delay for Movement [s/veh]	15.97	0.00	0.00	8.80	0.00	0.00	1980.91	1992.04	13.93	66.16	163.86	14.09
Movement LOS	C	A	A	A	A	A	F	F	B	F	F	B
95th-Percentile Queue Length [veh/ln]	0.90	0.45	0.00	0.01	0.00	0.00	27.43	27.43	0.50	0.26	0.26	0.26
95th-Percentile Queue Length [ft/ln]	22.40	11.20	0.00	0.16	0.08	0.00	685.65	685.65	12.54	6.58	6.58	6.58
d_A, Approach Delay [s/veh]	2.31			0.01			1548.05			51.28		
Approach LOS	A			A			F			F		
d_I, Intersection Delay [s/veh]	183.80											
Intersection LOS	F											

Intersection Level Of Service Report

Intersection 7: La Cadena Dr (NS) at Cadena Creek Dwy/I-215 SB On-Ramp (EW)

Control Type:	All-way stop	Delay (sec / veh):	76.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.194

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Cadena Creek Dwy			I-215 SB On-Ramp		
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 Pocket	1	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	236.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00			50.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	La Cadena Dr			La Cadena Dr			Cadena Creek Dwy			I-215 SB On-Ramp		
Base Volume Input [veh/h]	27	449	6	500	373	74	50	9	17	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	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 Rate	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	197	0	8	156	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]	28	655	6	518	536	75	51	9	17	0	0	0
Peak Hour Factor	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	175	2	138	143	20	14	2	5	0	0	0
Total Analysis Volume [veh/h]	30	700	6	553	573	80	54	10	18	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	470	502	503	553	653	382	433	
Degree of Utilization, x	0.06	0.70	0.70	1.10	1.19	0.17	0.04	

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.20	5.48	5.47	17.90	23.61	0.59	0.13	
95th-Percentile Queue Length [ft]	5.10	137.11	136.63	447.61	590.27	14.87	3.25	
Approach Delay [s/veh]	24.46			112.65		13.43		0.00
Approach LOS	C			F		B		A
Intersection Delay [s/veh]	76.56							
Intersection LOS	F							

Intersection Level Of Service Report
Intersection 8: Iowa Ave (NS) at I-215 SB Off-Ramp (EW)

Control Type:	Signalized	Delay (sec / veh):	21.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.825

Intersection Setup

Name	Iowa Ave		Iowa Ave		I-215 SB Off-Ramp	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		50.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Iowa Ave		Iowa Ave		I-215 SB Off-Ramp	
Base Volume Input [veh/h]	0	689	454	0	45	415
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 Rate	1.00	1.02	1.02	1.00	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	122	137	0	62	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	825	600	0	108	423
Peak Hour Factor	0.9500	0.9450	0.9450	0.9500	0.9450	0.9450
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	218	159	0	29	112
Total Analysis Volume [veh/h]	0	873	635	0	114	448
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Split	Split
Signal group	0	2	6	0	3	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	7	7	0	7	0
Maximum Green [s]	0	30	30	0	30	0
Amber [s]	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	0	11	11	0	59	0
Vehicle Extension [s]	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	7	0	7	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall		No	No		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	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
I, Upstream Filtering Factor	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	R
C, Cycle Length [s]	70	70	70	70
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	39	39	23	23
g / C, Green / Cycle	0.56	0.56	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.49	0.35	0.07	0.29
s, saturation flow rate [veh/h]	1800	1800	1714	1530
c, Capacity [veh/h]	1003	1003	563	503
d1, Uniform Delay [s]	13.32	10.60	16.89	22.29
k, delay calibration	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.28	3.04	0.18	5.67
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.63	0.20	0.89
d, Delay for Lane Group [s/veh]	23.60	13.65	17.06	27.96
Lane Group LOS	C	B	B	C
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	12.58	5.58	1.27	7.23
50th-Percentile Queue Length [ft/ln]	314.57	139.57	31.69	180.63
95th-Percentile Queue Length [veh/ln]	18.40	9.46	2.28	11.63
95th-Percentile Queue Length [ft/ln]	460.01	236.44	57.04	290.84

Movement, Approach, & Intersection Results

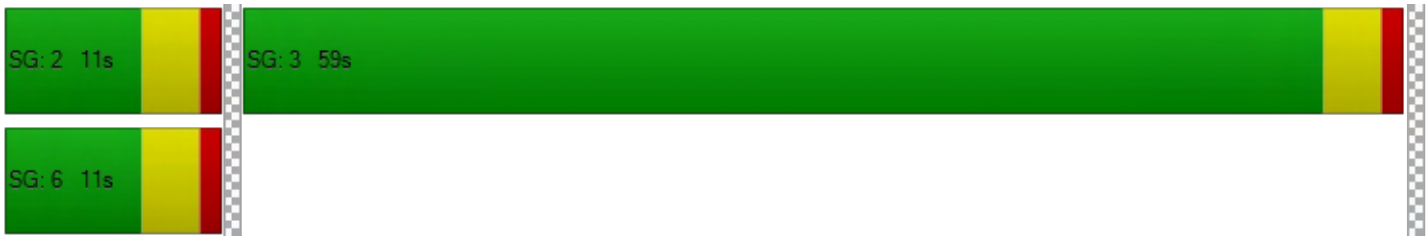
d_M, Delay for Movement [s/veh]	0.00	23.60	13.65	0.00	17.06	27.96
Movement LOS		C	B		B	C
d_A, Approach Delay [s/veh]	23.60		13.65		25.75	
Approach LOS	C		B		C	
d_I, Intersection Delay [s/veh]	21.13					
Intersection LOS	C					
Intersection V/C	0.825					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	35.00	35.00	35.00
l_b,int, Bicycle LOS Score for Intersection	5.573	5.180	4.132
Bicycle LOS	F	F	D

Sequence

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



Intersection Level Of Service Report
Intersection 9: Iowa Ave (NS) at Iowa Ave/I-215 NB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	106.2
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.127

Intersection Setup

Name	Iowa Ave		Iowa Ave		I-215 NB Ramps	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	90.00	100.00	100.00	100.00
Speed [mph]	30.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Iowa Ave		Iowa Ave		I-215 NB Ramps	
Base Volume Input [veh/h]	141	728	363	668	17	327
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 Rate	1.02	1.02	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	37	100	105	0	0	17
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	181	843	475	681	17	351
Peak Hour Factor	0.9860	0.9860	0.9860	0.9860	0.9860	0.9860
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	46	214	120	173	4	89
Total Analysis Volume [veh/h]	184	855	482	691	17	356
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	125
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal group	1	0	3	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	7	0	7	7	7	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	61	0	34	64	30	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	R	L	C	C	R
C, Cycle Length [s]	125	125	125	125	125	125
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	57	57	30	60	26	26
g / C, Green / Cycle	0.46	0.46	0.24	0.48	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.11	0.56	0.28	0.38	0.01	0.23
s, saturation flow rate [veh/h]	1714	1530	1714	1800	1800	1530
c, Capacity [veh/h]	782	698	413	864	373	317
d1, Uniform Delay [s]	20.73	34.01	47.43	27.42	39.67	49.56
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.15	114.08	98.13	7.66	0.23	88.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.24	1.23	1.17	0.80	0.05	1.12
d, Delay for Lane Group [s/veh]	20.88	148.09	145.56	35.08	39.90	137.85
Lane Group LOS	C	F	F	D	D	F
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.33	42.62	23.68	18.09	0.45	17.61
50th-Percentile Queue Length [ft/ln]	83.31	1065.57	592.06	452.21	11.17	440.24
95th-Percentile Queue Length [veh/ln]	6.00	61.41	34.49	25.06	0.80	26.05
95th-Percentile Queue Length [ft/ln]	149.97	1535.13	862.31	626.58	20.10	651.13

Movement, Approach, & Intersection Results

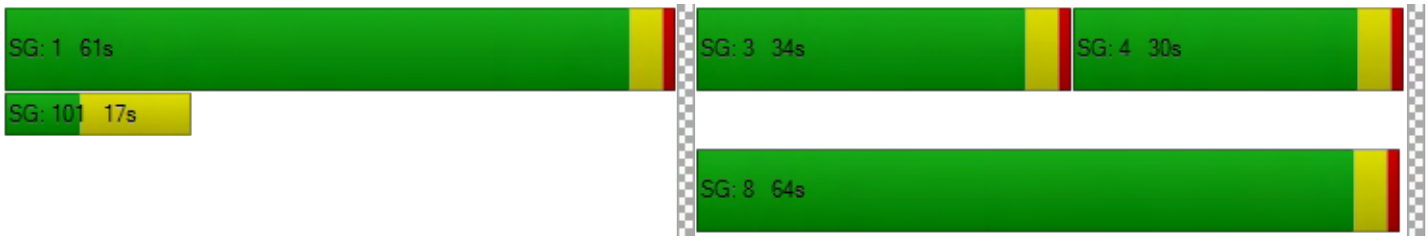
d_M, Delay for Movement [s/veh]	20.88	148.09	145.56	35.08	39.90	137.85
Movement LOS	C	F	F	D	D	F
d_A, Approach Delay [s/veh]	125.56		80.48		133.39	
Approach LOS	F		F		F	
d_I, Intersection Delay [s/veh]	106.23					
Intersection LOS	F					
Intersection V/C	1.127					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	51.98
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.362
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	62.50	62.50	62.50
I_b,int, Bicycle LOS Score for Intersection	4.132	6.068	4.748
Bicycle LOS	D	F	E

Sequence

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



Intersection Level Of Service Report

Intersection 10: I-215 SB Ramps/La Crosse Ave (NS) at Barton Rd (EW)

Control Type:	Roundabout	Delay (sec / veh):	6.8
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	La Crosse Ave			I-215 SB Ramps			Barton Rd			Barton Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	La Crosse Ave			I-215 SB Ramps			Barton Rd			Barton Rd		
Base Volume Input [veh/h]	2	0	38	179	9	71	1	385	40	234	224	6
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 Rate	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
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	73	9	256	0	0	230	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]	2	0	39	183	9	145	10	649	41	239	458	6
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]	1	0	10	47	2	38	3	168	11	62	119	2
Total Analysis Volume [veh/h]	2	0	40	190	9	150	10	673	43	248	475	6
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			2			2		
Circulating Flow Rate [veh/h]	873			725			447			12		
Exiting Flow Rate [veh/h]	300			16			627			903		
Demand Flow Rate [veh/h]	2	0	39	183	9	145	10	649	41	239	458	6
Adjusted Demand Flow Rate [veh/h]	2	0	40	190	9	150	10	673	43	248	475	6

Lanes

Overwrite Calculated Critical Headway	No	No	No	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1420.00	1420.00	1350.00	1420.00	1350.00	1420.00
B (coefficient)	0.00102	0.00091	0.00091	0.00092	0.00085	0.00092	0.00085
HV Adjustment Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Entry Flow Rate [veh/h]	42	199	150	342	385	343	387
Capacity of Entry and Bypass Lanes [veh/h]	567	735	735	895	972	1336	1406
Pedestrian Impedance	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	567	735	735	895	972	1336	1406
X, volume / capacity	0.07	0.27	0.20	0.38	0.40	0.26	0.27

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.24	1.10	0.76	1.80	1.92	1.03	1.13
95th-Percentile Queue Length [ft]	5.98	27.44	19.06	45.05	47.96	25.68	28.18
Approach Delay [s/veh]	7.23	7.69		8.23		4.91	
Approach LOS	A	A		A		A	
Intersection Delay [s/veh]	6.79						
Intersection LOS	A						

Intersection Level Of Service Report
Intersection 11: I-215 NB Ramps (NS) at Barton Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	13.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.471

Intersection Setup

Name	I-215 NB Off-Ramp			I-215 On-Ramp			Barton Rd			Barton Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	300.00	100.00	100.00	100.00	100.00	200.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	I-215 NB Off-Ramp			I-215 On-Ramp			Barton Rd			Barton Rd		
Base Volume Input [veh/h]	19	2	343	0	0	0	104	427	0	0	497	229
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 Rate	1.02	1.02	1.02	1.00	1.00	1.00	1.02	1.02	1.00	1.00	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	6	0	0	0	0	0	44	212	0	0	224	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]	25	2	350	0	0	0	150	648	0	0	731	234
Peak Hour Factor	0.9720	0.9720	0.9720	0.9500	0.9500	0.9500	0.9720	0.9720	0.9500	0.9500	0.9720	0.9720
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	1	90	0	0	0	39	167	0	0	188	60
Total Analysis Volume [veh/h]	26	2	360	0	0	0	154	667	0	0	752	241
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	65
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	7	0	0	0	0	7	7	0	0	7	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	21	0	0	0	0	18	39	0	0	21	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	10	0	0	10	0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R		L	C	C	R
C, Cycle Length [s]	65	65	65		65	65	65	65
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	10	10		7	47	35	35
g / C, Green / Cycle	0.16	0.16	0.16		0.12	0.72	0.55	0.55
(v / s)_i Volume / Saturation Flow Rate	0.02	0.12	0.12		0.09	0.19	0.22	0.16
s, saturation flow rate [veh/h]	1714	1533	1530		1714	3427	3427	1530
c, Capacity [veh/h]	267	239	239		199	2472	1864	832
d1, Uniform Delay [s]	23.56	26.31	26.31		27.97	3.14	8.68	8.04
k, delay calibration	0.11	0.11	0.11		0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.16	4.87	4.88		6.35	0.27	0.65	0.88
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.10	0.76	0.76		0.78	0.27	0.40	0.29
d, Delay for Lane Group [s/veh]	23.72	31.18	31.19		34.32	3.41	9.33	8.92
Lane Group LOS	C	C	C		C	A	A	A
Critical Lane Group	No	No	Yes		Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.34	2.87	2.86		2.53	0.89	2.63	1.67
50th-Percentile Queue Length [ft/ln]	8.46	71.69	71.59		63.25	22.17	65.77	41.64
95th-Percentile Queue Length [veh/ln]	0.61	5.16	5.15		4.55	1.60	4.74	3.00
95th-Percentile Queue Length [ft/ln]	15.24	129.04	128.86		113.85	39.90	118.39	74.95

Movement, Approach, & Intersection Results

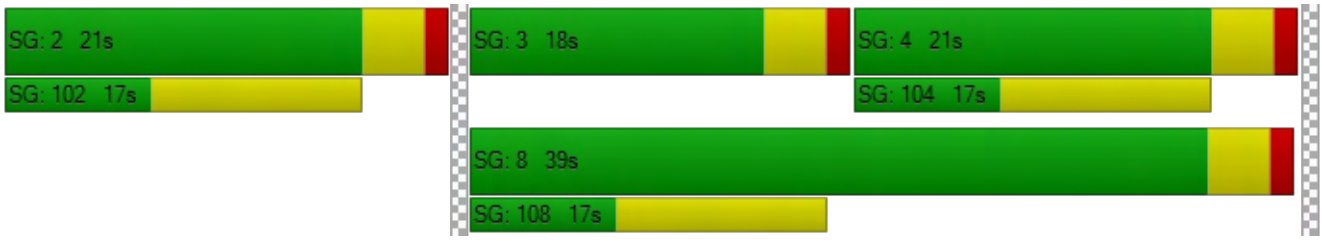
d_M, Delay for Movement [s/veh]	23.72	31.18	31.19	0.00	0.00	0.00	34.32	3.41	0.00	0.00	9.33	8.92
Movement LOS	C	C	C				C	A			A	A
d_A, Approach Delay [s/veh]	30.69			0.00			9.21			9.23		
Approach LOS	C			A			A			A		
d_I, Intersection Delay [s/veh]	13.00											
Intersection LOS	B											
Intersection V/C	0.471											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
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]	22.43	22.43	0.00	22.43
l_p,int, Pedestrian LOS Score for Intersection	2.048	1.793	0.000	2.741
Crosswalk LOS	B	A	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	523	0	1077	523
d_b, Bicycle Delay [s]	17.72	32.50	6.92	17.72
l_b,int, Bicycle LOS Score for Intersection	2.200	4.132	2.237	2.379
Bicycle LOS	B	D	B	B

Sequence

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



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Scenario 2 Opening Year (2020) With Project
1/18/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
6	La Cadena Dr (NS) at Maryknoll Dr (EW)	Signalized	HCM 6th Edition	EB Left	0.830	19.7	B
7	La Cadena Dr (NS) at Cadena Creek Dwy/I-215 SB On-Ramp (EW)	Signalized	HCM 6th Edition	NB Left	0.525	18.1	B
9	Iowa Ave (NS) at Iowa Ave/I-215 NB Ramps (EW)	Signalized	HCM 6th Edition	WB Thru	0.572	19.0	B

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

Intersection Level Of Service Report
Intersection 6: La Cadena Dr (NS) at Maryknoll Dr (EW)

Control Type:	Signalized	Delay (sec / veh):	19.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.830

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Maryknoll Dr			Dwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			Yes		

Volumes

Name	La Cadena Dr			La Cadena Dr			Maryknoll Dr			Dwy		
Base Volume Input [veh/h]	8	172	4	20	881	10	19	0	35	12	0	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 Rate	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	29	85	0	0	103	139	336	0	70	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]	37	260	4	20	1002	149	355	0	106	12	0	13
Peak Hour Factor	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330
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	70	1	5	268	40	95	0	28	3	0	3
Total Analysis Volume [veh/h]	40	279	4	21	1074	160	380	0	114	13	0	14
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	65
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	7	0	0	7	0	0	7	0	0	7	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	31	0	0	31	0	0	29	0	0	29	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	C
C, Cycle Length [s]	65	65	65	65	65	65	65	65	65
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	32	32	32	32	32	32	25	25	25
g / C, Green / Cycle	0.49	0.49	0.49	0.49	0.49	0.49	0.38	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.09	0.08	0.08	0.02	0.35	0.35	0.43	0.07	0.18
s, saturation flow rate [veh/h]	458	1800	1791	1114	1800	1720	888	1530	153
c, Capacity [veh/h]	202	890	886	584	890	850	450	585	140
d1, Uniform Delay [s]	22.91	9.02	9.02	10.95	12.78	12.80	21.54	13.40	16.56
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.40	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
d2, Incremental Delay [s]	2.20	0.38	0.39	0.11	4.72	5.00	14.27	0.16	0.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.20	0.16	0.16	0.04	0.71	0.71	0.84	0.19	0.19
d, Delay for Lane Group [s/veh]	25.11	9.40	9.40	11.06	17.50	17.80	35.80	13.56	17.22
Lane Group LOS	C	A	A	B	B	B	D	B	B
Critical Lane Group	No	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.59	0.92	0.92	0.16	6.36	6.17	7.47	1.07	0.26
50th-Percentile Queue Length [ft/ln]	14.81	22.96	22.91	4.00	158.95	154.19	186.69	26.75	6.46
95th-Percentile Queue Length [veh/ln]	1.07	1.65	1.65	0.29	10.49	10.24	11.95	1.93	0.46
95th-Percentile Queue Length [ft/ln]	26.66	41.32	41.24	7.20	262.33	256.01	298.73	48.15	11.62

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	25.11	9.40	9.40	11.06	17.63	17.80	35.80	35.80	13.56	17.22	17.22	17.22
Movement LOS	C	A	A	B	B	B	D	D	B	B	B	B
d_A, Approach Delay [s/veh]	11.35			17.54			30.67			17.22		
Approach LOS	B			B			C			B		
d_I, Intersection Delay [s/veh]	19.67											
Intersection LOS	B											
Intersection V/C	0.830											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
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]	0.00	0.00	0.00	22.43
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	1.748
Crosswalk LOS	F	F	F	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	831	831	769	769
d_b, Bicycle Delay [s]	11.11	11.11	12.31	12.31
I_b,int, Bicycle LOS Score for Intersection	1.826	2.595	2.375	1.604
Bicycle LOS	A	B	B	A

Sequence

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



Intersection Level Of Service Report
Intersection 7: La Cadena Dr (NS) at Cadena Creek Dwy/I-215 SB On-Ramp (EW)

Control Type:	Signalized	Delay (sec / veh):	18.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.525

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Cadena Creek Dwy			I-215 SB On-Ramp		
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 Pocket	1	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	236.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00			50.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name	La Cadena Dr			La Cadena Dr			Cadena Creek Dwy			I-215 SB On-Ramp		
Base Volume Input [veh/h]	9	110	0	513	375	46	73	17	28	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	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 Rate	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	114	0	16	157	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]	9	226	0	539	540	47	74	17	29	0	0	0
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	63	0	150	150	13	21	5	8	0	0	0
Total Analysis Volume [veh/h]	10	251	0	598	599	52	82	19	32	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	65
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	0	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	12	11	0	38	37	0	0	11	0	0	0	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall	No	No		No	No			No				
Maximum Recall	No	No		No	No			No				
Pedestrian Recall	No	No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	L	C	C	R	
C, Cycle Length [s]	65	65	65	65	65	65	65	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	1	22	22	25	45	6	6	
g / C, Green / Cycle	0.02	0.33	0.33	0.38	0.70	0.10	0.10	
(v / s)_i Volume / Saturation Flow Rate	0.01	0.07	0.07	0.35	0.37	0.06	0.02	
s, saturation flow rate [veh/h]	1714	1800	1800	1714	1775	1730	1530	
c, Capacity [veh/h]	34	600	600	656	1236	172	152	
d1, Uniform Delay [s]	31.48	15.55	15.55	19.06	4.74	28.05	26.98	
k, delay calibration	0.11	0.50	0.50	0.21	0.50	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	4.76	0.79	0.79	9.60	1.61	3.16	0.68	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.30	0.21	0.21	0.91	0.53	0.59	0.21	
d, Delay for Lane Group [s/veh]	36.24	16.34	16.34	28.66	6.34	31.21	27.66	
Lane Group LOS	D	B	B	C	A	C	C	
Critical Lane Group	No	Yes	No	Yes	No	Yes	No	
50th-Percentile Queue Length [veh/ln]	0.19	1.27	1.27	8.52	2.26	1.61	0.47	
50th-Percentile Queue Length [ft/ln]	4.68	31.82	31.82	213.08	56.58	40.33	11.86	
95th-Percentile Queue Length [veh/ln]	0.34	2.29	2.29	13.31	4.07	2.90	0.85	
95th-Percentile Queue Length [ft/ln]	8.42	57.28	57.28	332.78	101.84	72.60	21.34	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.24	16.34	16.34	28.66	6.34	6.34	31.21	31.21	27.66	0.00	0.00	0.00
Movement LOS	D	B	B	C	A	A	C	C	C			
d_A, Approach Delay [s/veh]	17.10			17.03			30.36			0.00		
Approach LOS	B			B			C			A		
d_I, Intersection Delay [s/veh]	18.12											
Intersection LOS	B											
Intersection V/C	0.525											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	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]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	215	1015	215	0
d_b, Bicycle Delay [s]	25.88	7.88	25.88	32.50
l_b,int, Bicycle LOS Score for Intersection	1.775	3.620	1.779	4.132
Bicycle LOS	A	D	A	D

Sequence

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



Intersection Level Of Service Report
Intersection 9: Iowa Ave (NS) at Iowa Ave/I-215 NB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	19.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.572

Intersection Setup

Name	Iowa Ave		Iowa Ave		I-215 NB Ramps	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	90.00	100.00	100.00	100.00
Speed [mph]	30.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Iowa Ave		Iowa Ave		I-215 NB Ramps	
Base Volume Input [veh/h]	110	1000	305	532	33	264
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 Rate	1.02	1.02	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	58	71	72	0	0	5
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	170	1091	383	543	34	274
Peak Hour Factor	0.9130	0.9130	0.9130	0.9130	0.9130	0.9130
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	299	105	149	9	75
Total Analysis Volume [veh/h]	186	1195	419	595	37	300
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Overlap
Signal group	1	6	3	8	4	4
Auxiliary Signal Groups		3,6				1,4
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	7	7	7	7	7	7
Maximum Green [s]	30	30	30	30	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	43	43	46	57	11	11
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	7	0	0	7	7	7
Pedestrian Clearance [s]	10	0	0	10	10	10
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
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
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	R	L	C	C	R
C, Cycle Length [s]	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	0.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	39	85	42	53	7	50
g / C, Green / Cycle	0.39	0.85	0.42	0.53	0.07	0.50
(v / s)_i Volume / Saturation Flow Rate	0.11	0.78	0.24	0.33	0.02	0.20
s, saturation flow rate [veh/h]	1714	1530	1714	1800	1800	1530
c, Capacity [veh/h]	667	1303	724	955	123	761
d1, Uniform Delay [s]	20.93	5.03	22.08	16.44	44.31	15.70
k, delay calibration	0.11	0.50	0.15	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.23	11.65	1.02	3.05	6.17	0.33
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.28	0.92	0.58	0.62	0.30	0.39
d, Delay for Lane Group [s/veh]	21.15	16.67	23.10	19.50	50.48	16.03
Lane Group LOS	C	B	C	B	D	B
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.98	11.04	7.14	9.24	1.08	4.19
50th-Percentile Queue Length [ft/ln]	74.44	275.91	178.46	230.92	26.98	104.84
95th-Percentile Queue Length [veh/ln]	5.36	16.48	11.52	14.22	1.94	7.55
95th-Percentile Queue Length [ft/ln]	134.00	412.11	288.01	355.53	48.56	188.71

Movement, Approach, & Intersection Results

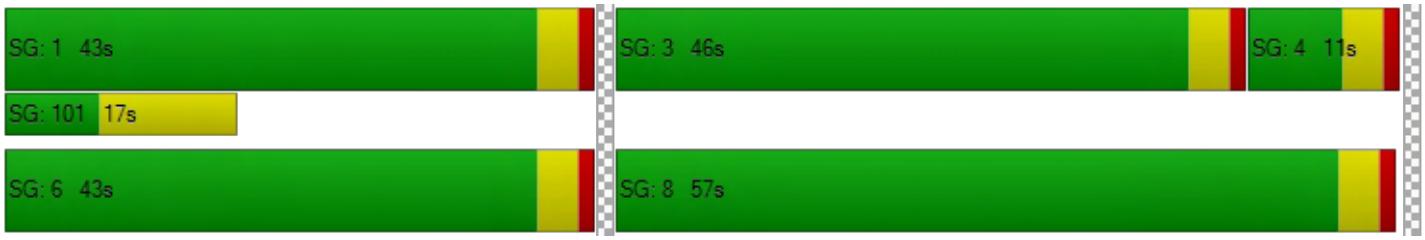
d_M, Delay for Movement [s/veh]	21.15	16.67	23.10	19.50	50.48	16.03
Movement LOS	C	B	C	B	D	B
d_A, Approach Delay [s/veh]	17.28		20.99		19.82	
Approach LOS	B		C		B	
d_I, Intersection Delay [s/veh]	18.97					
Intersection LOS	B					
Intersection V/C	0.572					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	39.61
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.308
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	50.00	50.00	50.00
I_b,int, Bicycle LOS Score for Intersection	4.132	5.806	4.688
Bicycle LOS	D	F	E

Sequence

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



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Scenario 2 Opening Year (2020) With Project
1/18/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
6	La Cadena Dr (NS) at Maryknoll Dr (EW)	Signalized	HCM 6th Edition	NB Left	0.685	10.6	B
7	La Cadena Dr (NS) at Cadena Creek Dwy/I-215 SB On-Ramp (EW)	Signalized	HCM 6th Edition	NB Left	0.618	17.3	B
9	Iowa Ave (NS) at Iowa Ave/I-215 NB Ramps (EW)	Signalized	HCM 6th Edition	WB Thru	0.873	13.9	B

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

Intersection Level Of Service Report
Intersection 6: La Cadena Dr (NS) at Maryknoll Dr (EW)

Control Type:	Signalized	Delay (sec / veh):	10.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.685

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Maryknoll Dr			Dwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			Yes		

Volumes

Name	La Cadena Dr			La Cadena Dr			Maryknoll Dr			Dwy		
Base Volume Input [veh/h]	27	466	4	2	924	19	9	0	18	5	0	2
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 Rate	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	74	123	0	0	119	359	216	0	45	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]	102	598	4	2	1061	378	225	0	63	5	0	2
Peak Hour Factor	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330
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]	27	160	1	1	284	101	60	0	17	1	0	1
Total Analysis Volume [veh/h]	109	641	4	2	1137	405	241	0	68	5	0	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	7	0	0	7	0	0	7	0	0	7	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	44	0	0	44	0	0	16	0	0	16	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	C
C, Cycle Length [s]	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
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	40	40	40	40	40	40	12	12	12
g / C, Green / Cycle	0.67	0.67	0.67	0.67	0.67	0.67	0.20	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.32	0.18	0.18	0.00	0.44	0.46	0.18	0.04	0.05
s, saturation flow rate [veh/h]	341	1800	1796	798	1800	1643	1308	1530	142
c, Capacity [veh/h]	236	1197	1194	561	1197	1092	384	309	131
d1, Uniform Delay [s]	19.21	4.11	4.11	6.01	6.04	6.19	23.45	20.02	20.23
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	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
d2, Incremental Delay [s]	6.38	0.55	0.56	0.01	2.91	3.49	1.69	0.35	0.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.46	0.27	0.27	0.00	0.66	0.68	0.63	0.22	0.05
d, Delay for Lane Group [s/veh]	25.59	4.67	4.67	6.03	8.95	9.68	25.14	20.37	20.40
Lane Group LOS	C	A	A	A	A	A	C	C	C
Critical Lane Group	No	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.57	0.88	0.88	0.01	3.50	3.50	3.33	0.79	0.08
50th-Percentile Queue Length [ft/ln]	39.27	22.12	22.09	0.23	87.53	87.53	83.31	19.74	2.03
95th-Percentile Queue Length [veh/ln]	2.83	1.59	1.59	0.02	6.30	6.30	6.00	1.42	0.15
95th-Percentile Queue Length [ft/ln]	70.69	39.82	39.76	0.41	157.56	157.56	149.95	35.53	3.65

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	25.59	4.67	4.67	6.03	9.17	9.68	25.14	25.14	20.37	20.40	20.40	20.40
Movement LOS	C	A	A	A	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	7.69			9.30			24.09			20.40		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	10.61											
Intersection LOS	B											
Intersection V/C	0.685											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
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]	0.00	0.00	0.00	20.01
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	1.700
Crosswalk LOS	F	F	F	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1333	1333	400	400
d_b, Bicycle Delay [s]	3.33	3.33	19.20	19.20
l_b,int, Bicycle LOS Score for Intersection	2.182	2.833	2.069	1.571
Bicycle LOS	B	C	B	A

Sequence

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



Intersection Level Of Service Report

Intersection 7: La Cadena Dr (NS) at Cadena Creek Dwy/I-215 SB On-Ramp (EW)

Control Type:	Signalized	Delay (sec / veh):	17.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.618

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Cadena Creek Dwy			I-215 SB On-Ramp		
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 Pocket	1	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	236.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00			50.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name	La Cadena Dr			La Cadena Dr			Cadena Creek Dwy			I-215 SB On-Ramp		
Base Volume Input [veh/h]	27	449	6	500	373	74	50	9	17	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	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 Rate	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	197	0	8	156	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]	28	655	6	518	536	75	51	9	17	0	0	0
Peak Hour Factor	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	175	2	138	143	20	14	2	5	0	0	0
Total Analysis Volume [veh/h]	30	700	6	553	573	80	54	10	18	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	0	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	12	11	0	38	37	0	0	11	0	0	0	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall	No	No		No	No			No				
Maximum Recall	No	No		No	No			No				
Pedestrian Recall	No	No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	L	C	C	R	
C, Cycle Length [s]	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	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	3	21	21	22	40	5	5	
g / C, Green / Cycle	0.05	0.35	0.35	0.36	0.67	0.09	0.09	
(v / s)_i Volume / Saturation Flow Rate	0.02	0.20	0.20	0.32	0.37	0.04	0.01	
s, saturation flow rate [veh/h]	1714	1800	1795	1714	1762	1727	1530	
c, Capacity [veh/h]	83	631	629	619	1169	154	136	
d1, Uniform Delay [s]	27.74	15.78	15.78	18.14	5.42	25.93	25.26	
k, delay calibration	0.11	0.50	0.50	0.14	0.50	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	2.66	3.56	3.58	6.04	1.93	1.79	0.43	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.36	0.56	0.56	0.89	0.56	0.42	0.13	
d, Delay for Lane Group [s/veh]	30.39	19.35	19.36	24.18	7.35	27.72	25.70	
Lane Group LOS	C	B	B	C	A	C	C	
Critical Lane Group	No	No	Yes	Yes	No	Yes	No	
50th-Percentile Queue Length [veh/ln]	0.44	3.81	3.80	6.66	2.49	0.91	0.25	
50th-Percentile Queue Length [ft/ln]	10.94	95.31	95.09	166.54	62.26	22.79	6.13	
95th-Percentile Queue Length [veh/ln]	0.79	6.86	6.85	10.89	4.48	1.64	0.44	
95th-Percentile Queue Length [ft/ln]	19.70	171.55	171.16	272.36	112.06	41.01	11.04	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	30.39	19.35	19.36	24.18	7.35	7.35	27.72	27.72	25.70	0.00	0.00	0.00
Movement LOS	C	B	B	C	A	A	C	C	C			
d_A, Approach Delay [s/veh]	19.80			15.07			27.27			0.00		
Approach LOS	B			B			C			A		
d_I, Intersection Delay [s/veh]	17.28											
Intersection LOS	B											
Intersection V/C	0.618											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	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]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	233	1100	233	0
d_b, Bicycle Delay [s]	23.41	6.08	23.41	30.00
I_b,int, Bicycle LOS Score for Intersection	2.167	3.550	1.695	4.132
Bicycle LOS	B	D	A	D

Sequence

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



Intersection Level Of Service Report

Intersection 9: Iowa Ave (NS) at Iowa Ave/I-215 NB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	13.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.873

Intersection Setup

Name	Iowa Ave		Iowa Ave		I-215 NB Ramps	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	90.00	100.00	100.00	100.00
Speed [mph]	30.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Iowa Ave		Iowa Ave		I-215 NB Ramps	
Base Volume Input [veh/h]	141	728	363	668	17	327
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 Rate	1.02	1.02	1.02	1.02	1.02	1.02
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	37	100	105	0	0	17
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	181	843	475	681	17	351
Peak Hour Factor	0.9860	0.9860	0.9860	0.9860	0.9860	0.9860
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	46	214	120	173	4	89
Total Analysis Volume [veh/h]	184	855	482	691	17	356
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Overlap
Signal group	1	6	3	8	4	4
Auxiliary Signal Groups		3,6				1,4
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	7	7	7	7	7	7
Maximum Green [s]	30	30	30	30	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	21	21	25	39	14	14
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	7	0	0	7	7	7
Pedestrian Clearance [s]	10	0	0	10	10	10
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
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
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	R	L	C	C	R
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	0.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	17	42	21	35	10	31
g / C, Green / Cycle	0.28	0.70	0.35	0.58	0.17	0.52
(v / s)_i Volume / Saturation Flow Rate	0.11	0.56	0.28	0.38	0.01	0.23
s, saturation flow rate [veh/h]	1714	1530	1714	1800	1800	1530
c, Capacity [veh/h]	486	1068	596	1050	304	794
d1, Uniform Delay [s]	17.27	6.22	17.76	8.46	20.93	9.05
k, delay calibration	0.11	0.50	0.13	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.49	6.33	3.19	3.23	0.35	0.40
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.38	0.80	0.81	0.66	0.06	0.45
d, Delay for Lane Group [s/veh]	17.76	12.55	20.95	11.69	21.28	9.45
Lane Group LOS	B	B	C	B	C	A
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.93	6.02	5.42	4.73	0.22	2.48
50th-Percentile Queue Length [ft/ln]	48.35	150.54	135.43	118.36	5.45	61.96
95th-Percentile Queue Length [veh/ln]	3.48	10.05	9.23	8.30	0.39	4.46
95th-Percentile Queue Length [ft/ln]	87.03	251.15	230.85	207.57	9.82	111.53

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	17.76	12.55	20.95	11.69	21.28	9.45
Movement LOS	B	B	C	B	C	A
d_A, Approach Delay [s/veh]	13.47		15.49		9.99	
Approach LOS	B		B		A	
d_I, Intersection Delay [s/veh]	13.89					
Intersection LOS	B					
Intersection V/C	0.873					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	20.01
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.323
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	30.00	30.00	30.00
l_b,int, Bicycle LOS Score for Intersection	4.132	6.068	4.748
Bicycle LOS	D	F	E

Sequence

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



Buildout Year (2040) Without Project

Modern Pacific Homes

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Report File: G:\...\AM LR.pdf

Scenario 1 Year 2040 Without Project
1/18/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	La Cadena Dr (NS) at Tropica Rancho Rd (EW)	Two-way stop	HCM 6th Edition	EB Right	0.004	19.4	C
2	La Cadena Dr (NS) at Litton Ave (EW)	Signalized	HCM 6th Edition	EB Left	0.639	8.3	A
3	La Cadena Dr (NS) at Palm Ave (EW)	Two-way stop	HCM 6th Edition	EB Right	0.142	21.6	C
4	La Cadena Dr (NS) at Barton Rd (EW)	Signalized	HCM 6th Edition	SB Left	0.749	18.0	B
5	La Cadena Dr/Iowa Ave (NS) at La Cadena Dr (EW)	Signalized	HCM 6th Edition	SB Thru	0.863	33.1	C
6	La Cadena Dr (NS) at Maryknoll Dr (EW)	Two-way stop	HCM 6th Edition	EB Left	5.081	1,947.8	F
7	La Cadena Dr (NS) at Cadena Creek Dwy/I-215 SB On-Ramp (EW)	All-way stop	HCM 6th Edition	SB Left	1.378	113.1	F
8	Iowa Ave (NS) at I-215 SB Off -Ramp (EW)	Signalized	HCM 6th Edition	EB Right	1.024	69.0	E
9	Iowa Ave (NS) at Iowa Ave/I-215 NB Ramps (EW)	Signalized	HCM 6th Edition	SB Right	1.387	179.5	F
10	I-215 SB Ramps/La Crosse Ave (NS) at Barton Rd (EW)	Roundabout	HCM 6th Edition	SB Left		11.4	B
11	I-215 NB Ramps (NS) at Barton Rd (EW)	Signalized	HCM 6th Edition	EB Left	0.612	14.2	B

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

Intersection Level Of Service Report
Intersection 1: La Cadena Dr (NS) at Tropica Rancho Rd (EW)

Control Type:	Two-way stop	Delay (sec / veh):	19.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.004

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Tropica Rancho Rd			Vivienda Ave		
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 Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	La Cadena Dr			La Cadena Dr			Tropica Rancho Rd			Vivienda Ave		
Base Volume Input [veh/h]	0	1220	0	0	1870	0	0	0	1	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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]	0	1220	0	0	1870	0	0	0	1	0	0	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	321	0	0	492	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	1284	0	0	1968	0	0	0	1	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.39	0.00	0.00	13.54
Movement LOS		A	A		A	A			C			B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			0.00			19.39			13.54		
Approach LOS	A			A			C			B		
d_I, Intersection Delay [s/veh]	0.01											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 2: La Cadena Dr (NS) at Litton Ave (EW)

Control Type:	Signalized	Delay (sec / veh):	8.3
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.639

Intersection Setup

Name	La Cadena Dr		La Cadena Dr		Litton Ave	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0
Pocket Length [ft]	105.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00		50.00		25.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	La Cadena Dr		La Cadena Dr		Litton Ave	
Base Volume Input [veh/h]	30	1157	1853	20	65	37
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	30	1157	1853	20	65	37
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	304	488	5	17	10
Total Analysis Volume [veh/h]	32	1218	1951	21	68	39
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal group	5	2	6	0	3	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	7	7	7	0	7	0
Maximum Green [s]	30	30	30	0	30	0
Amber [s]	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	11	32	21	0	68	0
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	7	0	7	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	C	C
C, Cycle Length [s]	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	84	76	76	8
g / C, Green / Cycle	0.04	0.84	0.76	0.76	0.08
(v / s)_i Volume / Saturation Flow Rate	0.02	0.34	0.52	0.52	0.06
s, saturation flow rate [veh/h]	1810	3618	1900	1893	1733
c, Capacity [veh/h]	76	3041	1441	1435	138
d1, Uniform Delay [s]	46.69	1.92	6.07	6.10	45.16
k, delay calibration	0.11	0.50	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.61	0.39	2.66	2.70	9.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.42	0.40	0.68	0.69	0.78
d, Delay for Lane Group [s/veh]	50.31	2.31	8.73	8.80	54.18
Lane Group LOS	D	A	A	A	D
Critical Lane Group	Yes	No	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	0.82	0.74	7.01	7.04	2.96
50th-Percentile Queue Length [ft/ln]	20.51	18.60	175.16	176.08	73.97
95th-Percentile Queue Length [veh/ln]	1.48	1.34	11.35	11.40	5.33
95th-Percentile Queue Length [ft/ln]	36.92	33.49	283.69	284.89	133.15

Movement, Approach, & Intersection Results

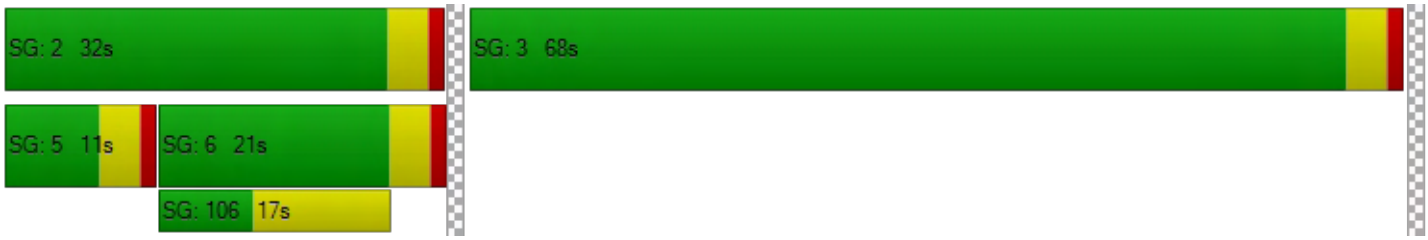
d_M, Delay for Movement [s/veh]	50.31	2.31	8.76	8.80	54.18	54.18
Movement LOS	D	A	A	A	D	D
d_A, Approach Delay [s/veh]	3.54		8.76		54.18	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	8.26					
Intersection LOS	A					
Intersection V/C	0.639					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	39.61
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.785
Crosswalk LOS	F	F	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	50.00	50.00	50.00
l_b,int, Bicycle LOS Score for Intersection	5.164	5.759	4.309
Bicycle LOS	F	F	E

Sequence

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



Intersection Level Of Service Report
Intersection 3: La Cadena Dr (NS) at Palm Ave (EW)

Control Type:	Two-way stop	Delay (sec / veh):	21.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.142

Intersection Setup

Name	La Cadena Dr		La Cadena Dr		Palm Ave	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	140.00	100.00	100.00
Speed [mph]	50.00		50.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	La Cadena Dr		La Cadena Dr		Palm Ave	
Base Volume Input [veh/h]	0	1190	1880	12	0	35
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1190	1880	12	0	35
Peak Hour Factor	0.9500	0.9590	0.9590	0.9590	0.9500	0.9590
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	310	490	3	0	9
Total Analysis Volume [veh/h]	0	1241	1960	13	0	36
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.02	0.00	0.00	0.14
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	21.60
Movement LOS		A	A	A		C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.49
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	12.24
d_A, Approach Delay [s/veh]	0.00		0.00		21.60	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.24					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 4: La Cadena Dr (NS) at Barton Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	18.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.749

Intersection Setup

Name	La Cadena Dr		La Cadena Dr		Barton Rd	
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 Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	250.00	100.00	100.00	100.00
Speed [mph]	50.00		50.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		No	

Volumes

Name	La Cadena Dr		La Cadena Dr		Barton Rd	
Base Volume Input [veh/h]	896	387	283	1610	370	294
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	896	387	283	1610	370	294
Peak Hour Factor	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	233	100	73	418	96	76
Total Analysis Volume [veh/h]	930	402	294	1672	384	305
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal group	2	0	1	6	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	11	0	28	39	21	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	21	21	12	37	15	15
g / C, Green / Cycle	0.35	0.35	0.20	0.62	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.26	0.25	0.16	0.46	0.21	0.19
s, saturation flow rate [veh/h]	3618	1615	1810	3618	1810	1615
c, Capacity [veh/h]	1278	570	359	2237	450	402
d1, Uniform Delay [s]	16.94	16.76	23.07	8.15	21.55	20.93
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.66	7.15	4.61	2.34	4.68	2.97
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.73	0.70	0.82	0.75	0.85	0.76
d, Delay for Lane Group [s/veh]	20.60	23.90	27.68	10.49	26.23	23.90
Lane Group LOS	C	C	C	B	C	C
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	5.02	4.87	3.83	4.72	5.19	3.88
50th-Percentile Queue Length [ft/ln]	125.42	121.69	95.74	117.93	129.67	97.02
95th-Percentile Queue Length [veh/ln]	8.69	8.49	6.89	8.28	8.92	6.99
95th-Percentile Queue Length [ft/ln]	217.26	212.14	172.32	206.98	223.05	174.64

Movement, Approach, & Intersection Results

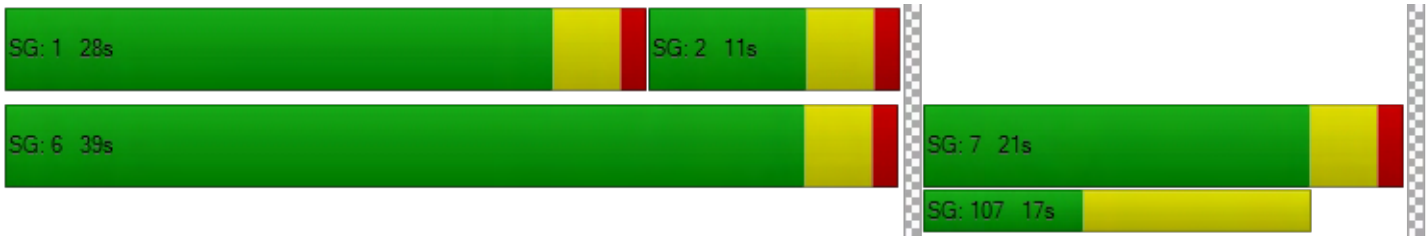
d_M, Delay for Movement [s/veh]	20.60	23.90	27.68	10.49	26.23	23.90
Movement LOS	C	C	C	B	C	C
d_A, Approach Delay [s/veh]	21.60		13.06		25.20	
Approach LOS	C		B		C	
d_I, Intersection Delay [s/veh]	18.01					
Intersection LOS	B					
Intersection V/C	0.749					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	20.01	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	3.348	0.000	0.000
Crosswalk LOS	C	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	30.00	30.00	30.00
l_b,int, Bicycle LOS Score for Intersection	5.231	5.754	4.132
Bicycle LOS	F	F	D

Sequence

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



Intersection Level Of Service Report

Intersection 5: La Cadena Dr/Iowa Ave (NS) at La Cadena Dr (EW)

Control Type:	Signalized	Delay (sec / veh):	33.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.863

Intersection Setup

Name	Iowa Ave		La Cadena Dr		La Cadena Dr	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0
Pocket Length [ft]	130.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Iowa Ave		La Cadena Dr		La Cadena Dr	
Base Volume Input [veh/h]	135	811	756	1161	519	211
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	135	811	756	1161	519	211
Peak Hour Factor	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560
Other Adjustment Factor	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	212	198	0	136	55
Total Analysis Volume [veh/h]	141	848	791	0	543	221
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	75
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Overlap
Signal group	5	2	6	0	3	8
Auxiliary Signal Groups						5,8
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	7	7	7	0	7	7
Maximum Green [s]	30	30	30	0	30	30
Amber [s]	3.0	3.0	3.0	0.0	3.0	3.0
All red [s]	1.0	1.0	1.0	0.0	1.0	1.0
Split [s]	11	47	36	0	28	28
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	3.0
Walk [s]	0	7	7	0	7	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
Minimum Recall	No	No	No		No	No
Maximum Recall	No	No	No		No	No
Pedestrian Recall	No	No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	75	75	75	75	75	75
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	7	43	32	32	24	35
g / C, Green / Cycle	0.09	0.57	0.43	0.43	0.32	0.47
(v / s)_i Volume / Saturation Flow Rate	0.08	0.45	0.42	0.00	0.30	0.14
s, saturation flow rate [veh/h]	1810	1900	1900	2859	1810	1615
c, Capacity [veh/h]	173	1090	808	1216	579	756
d1, Uniform Delay [s]	33.37	12.33	21.28	0.00	24.86	12.31
k, delay calibration	0.11	0.50	0.50	0.50	0.27	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.02	5.47	26.94	0.00	16.15	0.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.78	0.98	0.00	0.94	0.29
d, Delay for Lane Group [s/veh]	42.39	17.80	48.22	0.00	41.01	12.53
Lane Group LOS	D	B	D	A	D	B
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.74	9.46	17.13	0.00	10.67	1.92
50th-Percentile Queue Length [ft/ln]	68.55	236.55	428.18	0.00	266.65	47.99
95th-Percentile Queue Length [veh/ln]	4.94	14.51	23.91	0.00	16.02	3.46
95th-Percentile Queue Length [ft/ln]	123.38	362.67	597.86	0.00	400.55	86.38

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	42.39	17.80	48.22	0.00	41.01	12.53
Movement LOS	D	B	D	A	D	B
d_A, Approach Delay [s/veh]	21.31		48.22		32.77	
Approach LOS	C		D		C	
d_I, Intersection Delay [s/veh]	33.12					
Intersection LOS	C					
Intersection V/C	0.863					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	37.50	37.50	37.50
l_b,int, Bicycle LOS Score for Intersection	5.764	5.438	4.132
Bicycle LOS	F	F	D

Sequence

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



Intersection Level Of Service Report
Intersection 6: La Cadena Dr (NS) at Maryknoll Dr (EW)

Control Type:	Two-way stop	Delay (sec / veh):	1,947.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	5.081

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Maryknoll Dr			Dwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

Volumes

Name	La Cadena Dr			La Cadena Dr			Maryknoll Dr			Dwy		
Base Volume Input [veh/h]	42	299	6	22	1161	151	361	0	119	20	0	14
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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]	42	299	6	22	1161	151	361	0	119	20	0	14
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	79	2	6	306	40	95	0	31	5	0	4
Total Analysis Volume [veh/h]	44	315	6	23	1222	159	380	0	125	21	0	15
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.00	0.00	0.02	0.01	0.00	5.08	0.00	0.28	0.18	0.00	0.02
d_M, Delay for Movement [s/veh]	12.85	0.00	0.00	7.93	0.00	0.00	1947.84	1942.35	16.33	40.48	62.96	13.92
Movement LOS	B	A	A	A	A	A	F	F	C	E	F	B
95th-Percentile Queue Length [veh/ln]	0.27	0.14	0.00	0.05	0.03	0.00	41.58	41.58	1.15	0.71	0.71	0.71
95th-Percentile Queue Length [ft/ln]	6.81	3.40	0.00	1.34	0.67	0.00	1039.48	1039.48	28.76	17.68	17.68	17.68
d_A, Approach Delay [s/veh]	1.55			0.13			1469.75			29.41		
Approach LOS	A			A			F			D		
d_I, Intersection Delay [s/veh]	322.09											
Intersection LOS	F											

Intersection Level Of Service Report

Intersection 7: La Cadena Dr (NS) at Cadena Creek Dwy/I-215 SB On-Ramp (EW)

Control Type:	All-way stop	Delay (sec / veh):	113.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.378

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Cadena Creek Dwy			I-215 SB On-Ramp		
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 Pocket	1	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	236.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00			50.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	La Cadena Dr			La Cadena Dr			Cadena Creek Dwy			I-215 SB On-Ramp		
Base Volume Input [veh/h]	14	265	0	727	558	56	80	23	32	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	265	0	727	558	56	80	23	32	0	0	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	70	0	191	147	15	21	6	8	0	0	0
Total Analysis Volume [veh/h]	15	279	0	765	587	59	84	24	34	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	458	488	488	765	646	429	492	
Degree of Utilization, x	0.03	0.29	0.29	1.38	1.06	0.25	0.07	

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.10	1.17	1.17	34.53	18.09	0.99	0.22	
95th-Percentile Queue Length [ft]	2.54	29.21	29.21	863.27	452.19	24.65	5.55	
Approach Delay [s/veh]	12.88			144.03		13.10		0.00
Approach LOS	B			F		B		A
Intersection Delay [s/veh]	113.09							
Intersection LOS	F							

Intersection Level Of Service Report
Intersection 8: Iowa Ave (NS) at I-215 SB Off-Ramp (EW)

Control Type:	Signalized	Delay (sec / veh):	69.0
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.024

Intersection Setup

Name	Iowa Ave		Iowa Ave		I-215 SB Off-Ramp	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		50.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Iowa Ave		Iowa Ave		I-215 SB Off-Ramp	
Base Volume Input [veh/h]	0	893	947	0	87	703
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	893	947	0	87	703
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	235	249	0	23	185
Total Analysis Volume [veh/h]	0	940	997	0	92	740
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Split	Split
Signal group	0	2	6	0	3	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	7	7	0	7	0
Maximum Green [s]	0	30	30	0	30	0
Amber [s]	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	0	53	53	0	47	0
Vehicle Extension [s]	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	7	0	7	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall		No	No		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	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
I, Upstream Filtering Factor	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	R
C, Cycle Length [s]	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	49	49	43	43
g / C, Green / Cycle	0.49	0.49	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.49	0.52	0.05	0.46
s, saturation flow rate [veh/h]	1900	1900	1810	1615
c, Capacity [veh/h]	932	932	777	693
d1, Uniform Delay [s]	25.43	25.43	17.14	28.51
k, delay calibration	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	31.49	49.83	0.07	53.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.01	1.07	0.12	1.07
d, Delay for Lane Group [s/veh]	56.92	75.26	17.21	82.19
Lane Group LOS	F	F	B	F
Critical Lane Group	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	28.78	31.86	1.27	26.06
50th-Percentile Queue Length [ft/ln]	719.42	796.57	31.75	651.53
95th-Percentile Queue Length [veh/ln]	37.82	43.32	2.29	36.12
95th-Percentile Queue Length [ft/ln]	945.58	1083.06	57.14	902.99

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	56.92	75.26	0.00	17.21	82.19
Movement LOS		F	F		B	F
d_A, Approach Delay [s/veh]	56.92		75.26		75.01	
Approach LOS	E		E		E	
d_I, Intersection Delay [s/veh]	68.96					
Intersection LOS	E					
Intersection V/C	1.024					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	50.00	50.00	50.00
l_b,int, Bicycle LOS Score for Intersection	5.683	5.777	4.132
Bicycle LOS	F	F	D

Sequence

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



Intersection Level Of Service Report
Intersection 9: Iowa Ave (NS) at Iowa Ave/I-215 NB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	179.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.387

Intersection Setup

Name	Iowa Ave		Iowa Ave		I-215 NB Ramps	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	90.00	100.00	100.00	100.00
Speed [mph]	30.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Iowa Ave		Iowa Ave		I-215 NB Ramps	
Base Volume Input [veh/h]	429	1200	486	585	86	396
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	429	1200	486	585	86	396
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	113	316	128	154	23	104
Total Analysis Volume [veh/h]	452	1263	512	616	91	417
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal group	1	0	3	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	7	0	7	7	7	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	72	0	30	58	28	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	R	L	C	C	R
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	68	68	26	54	24	24
g / C, Green / Cycle	0.52	0.52	0.20	0.42	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.25	0.78	0.28	0.32	0.05	0.26
s, saturation flow rate [veh/h]	1810	1615	1810	1900	1900	1615
c, Capacity [veh/h]	946	845	365	790	348	296
d1, Uniform Delay [s]	19.72	31.01	51.90	32.86	45.54	53.09
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.38	229.23	197.72	7.52	1.82	202.96
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.48	1.50	1.40	0.78	0.26	1.41
d, Delay for Lane Group [s/veh]	20.09	260.24	249.63	40.38	47.36	256.05
Lane Group LOS	C	F	F	D	D	F
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	8.74	79.16	31.57	17.64	2.72	26.32
50th-Percentile Queue Length [ft/ln]	218.47	1979.07	789.33	441.02	67.93	658.08
95th-Percentile Queue Length [veh/ln]	13.59	120.91	47.75	24.53	4.89	40.42
95th-Percentile Queue Length [ft/ln]	339.67	3022.74	1193.82	613.22	122.27	1010.44

Movement, Approach, & Intersection Results

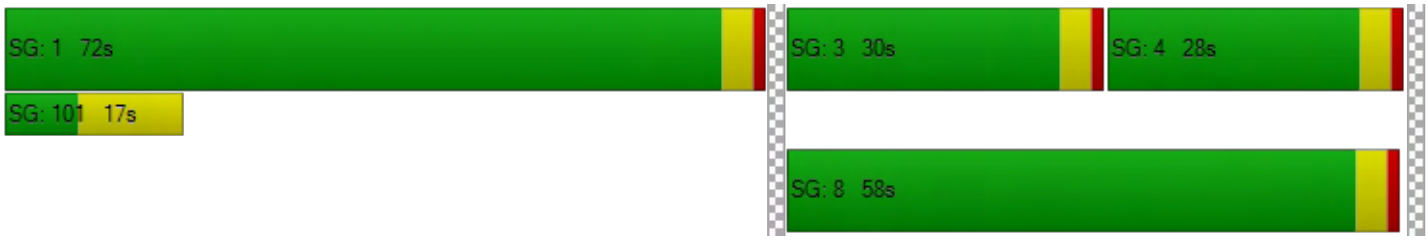
d_M, Delay for Movement [s/veh]	20.09	260.24	249.63	40.38	47.36	256.05
Movement LOS	C	F	F	D	D	F
d_A, Approach Delay [s/veh]	196.95		135.36		218.66	
Approach LOS	F		F		F	
d_I, Intersection Delay [s/veh]	179.51					
Intersection LOS	F					
Intersection V/C	1.387					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	54.47
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.470
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	65.00	65.00	65.00
l_b,int, Bicycle LOS Score for Intersection	4.132	5.994	4.971
Bicycle LOS	D	F	E

Sequence

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



Intersection Level Of Service Report

Intersection 10: I-215 SB Ramps/La Crosse Ave (NS) at Barton Rd (EW)

Control Type:	Roundabout	Delay (sec / veh):	11.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes		

Intersection Setup

Name	La Crosse Ave			I-215 SB Ramps			Barton Rd			Barton Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	La Crosse Ave			I-215 SB Ramps			Barton Rd			Barton Rd		
Base Volume Input [veh/h]	0	0	10	249	49	169	6	601	56	545	501	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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]	0	0	10	249	49	169	6	601	56	545	501	3
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	3	66	13	44	2	158	15	143	132	1
Total Analysis Volume [veh/h]	0	0	11	262	52	178	6	633	59	574	527	3
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			2			2		
Circulating Flow Rate [veh/h]	901			1101			888			6		
Exiting Flow Rate [veh/h]	685			9			705			906		
Demand Flow Rate [veh/h]	0	0	10	249	49	169	6	601	56	545	501	3
Adjusted Demand Flow Rate [veh/h]	0	0	11	262	52	178	6	633	59	574	527	3

Lanes

Overwrite Calculated Critical Headway	No	No	No	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1420.00	1420.00	1350.00	1420.00	1350.00	1420.00
B (coefficient)	0.00102	0.00091	0.00091	0.00092	0.00085	0.00092	0.00085
HV Adjustment Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Entry Flow Rate [veh/h]	11	314	178	329	370	574	530
Capacity of Entry and Bypass Lanes [veh/h]	551	522	522	597	668	1343	1413
Pedestrian Impedance	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	551	522	522	597	668	1343	1413
X, volume / capacity	0.02	0.60	0.34	0.55	0.55	0.43	0.38

Movement, Approach, & Intersection Results

Lane LOS	A	C	B	C	B	A	A
95th-Percentile Queue Length [veh]	0.06	3.94	1.50	3.34	3.42	2.19	1.77
95th-Percentile Queue Length [ft]	1.53	98.56	37.56	83.40	85.39	54.76	44.32
Approach Delay [s/veh]	6.77	17.05		15.25		6.39	
Approach LOS	A	C		C		A	
Intersection Delay [s/veh]	11.35						
Intersection LOS	B						

Intersection Level Of Service Report
Intersection 11: I-215 NB Ramps (NS) at Barton Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	14.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.612

Intersection Setup

Name	I-215 NB Off-Ramp			I-215 On-Ramp			Barton Rd			Barton Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	300.00	100.00	100.00	100.00	100.00	200.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	I-215 NB Off-Ramp			I-215 On-Ramp			Barton Rd			Barton Rd		
Base Volume Input [veh/h]	58	0	441	0	0	0	150	709	0	0	992	490
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	0	441	0	0	0	150	709	0	0	992	490
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	0	116	0	0	0	39	187	0	0	261	129
Total Analysis Volume [veh/h]	61	0	464	0	0	0	158	746	0	0	1044	516
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	7	0	0	0	0	7	7	0	0	7	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	21	0	0	0	0	18	39	0	0	21	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	10	0	0	10	0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R		L	C	C	R
C, Cycle Length [s]	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
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	11	11		7	41	30	30
g / C, Green / Cycle	0.19	0.19	0.19		0.11	0.68	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.03	0.14	0.14		0.09	0.21	0.29	0.32
s, saturation flow rate [veh/h]	1810	1615	1615		1810	3618	3618	1615
c, Capacity [veh/h]	338	302	302		209	2460	1803	805
d1, Uniform Delay [s]	20.58	23.22	23.22		25.80	3.88	10.64	11.13
k, delay calibration	0.11	0.11	0.11		0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.25	4.11	4.11		5.53	0.32	1.36	3.90
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.18	0.77	0.77		0.76	0.30	0.58	0.64
d, Delay for Lane Group [s/veh]	20.83	27.33	27.33		31.33	4.20	12.01	15.03
Lane Group LOS	C	C	C		C	A	B	B
Critical Lane Group	No	Yes	No		Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.70	3.24	3.24		2.34	1.15	4.19	4.85
50th-Percentile Queue Length [ft/ln]	17.48	81.08	81.08		58.51	28.77	104.65	121.14
95th-Percentile Queue Length [veh/ln]	1.26	5.84	5.84		4.21	2.07	7.53	8.46
95th-Percentile Queue Length [ft/ln]	31.46	145.95	145.95		105.32	51.79	188.37	211.39

Movement, Approach, & Intersection Results

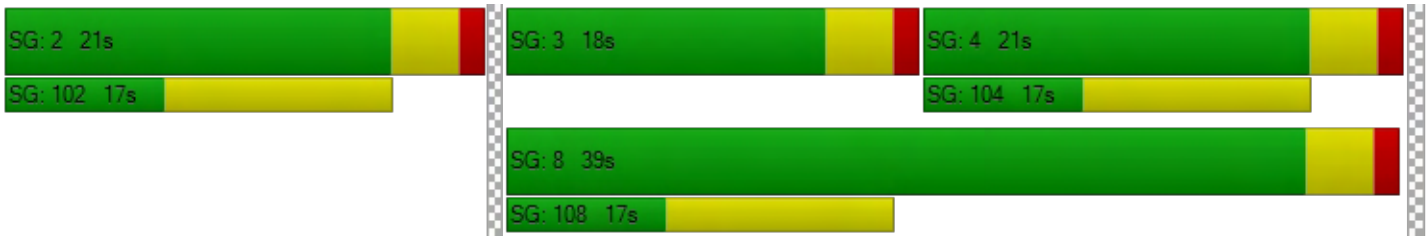
d_M, Delay for Movement [s/veh]	20.83	27.33	27.33	0.00	0.00	0.00	31.33	4.20	0.00	0.00	12.01	15.03
Movement LOS	C	C	C				C	A			B	B
d_A, Approach Delay [s/veh]	26.58			0.00			8.94			13.01		
Approach LOS	C			A			A			B		
d_I, Intersection Delay [s/veh]	14.16											
Intersection LOS	B											
Intersection V/C	0.612											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
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]	20.01	20.01	0.00	20.01
l_p,int, Pedestrian LOS Score for Intersection	2.088	2.058	0.000	2.907
Crosswalk LOS	B	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	567	0	1167	567
d_b, Bicycle Delay [s]	15.41	30.00	5.21	15.41
l_b,int, Bicycle LOS Score for Intersection	2.426	4.132	2.305	2.847
Bicycle LOS	B	D	B	C

Sequence

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



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Scenario 1 Year 2040 Without Project
1/18/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	La Cadena Dr (NS) at Tropica Rancho Rd (EW)	Two-way stop	HCM 6th Edition	EB Right	0.000	19.3	C
2	La Cadena Dr (NS) at Litton Ave (EW)	Signalized	HCM 6th Edition	EB Left	0.605	6.4	A
3	La Cadena Dr (NS) at Palm Ave (EW)	Two-way stop	HCM 6th Edition	EB Right	0.107	20.9	C
4	La Cadena Dr (NS) at Barton Rd (EW)	Signalized	HCM 6th Edition	WB Left	0.976	45.7	D
5	La Cadena Dr/Iowa Ave (NS) at La Cadena Dr (EW)	Signalized	HCM 6th Edition	EB Left	1.089	80.6	F
6	La Cadena Dr (NS) at Maryknoll Dr (EW)	Two-way stop	HCM 6th Edition	EB Thru	0.000	4,029.5	F
7	La Cadena Dr (NS) at Cadena Creek Dwy/I-215 SB On-Ramp (EW)	All-way stop	HCM 6th Edition	SB Left	1.644	163.3	F
8	Iowa Ave (NS) at I-215 SB Off -Ramp (EW)	Signalized	HCM 6th Edition	EB Right	0.937	34.9	C
9	Iowa Ave (NS) at Iowa Ave/I-215 NB Ramps (EW)	Signalized	HCM 6th Edition	EB Left	1.310	157.9	F
10	I-215 SB Ramps/La Crosse Ave (NS) at Barton Rd (EW)	Roundabout	HCM 6th Edition	EB Left		11.8	B
11	I-215 NB Ramps (NS) at Barton Rd (EW)	Signalized	HCM 6th Edition	EB Left	0.687	17.7	B

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

Intersection Level Of Service Report
Intersection 1: La Cadena Dr (NS) at Tropica Rancho Rd (EW)

Control Type:	Two-way stop	Delay (sec / veh):	19.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Tropica Rancho Rd			Vivienda Ave		
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 Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	La Cadena Dr			La Cadena Dr			Tropica Rancho Rd			Vivienda Ave		
Base Volume Input [veh/h]	0	1670	0	0	1870	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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]	0	1670	0	0	1870	0	0	0	0	0	0	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	439	0	0	492	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	1758	0	0	1968	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.02	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.33	0.00	0.00	17.22
Movement LOS		A	A		A	A			C			C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			0.00			19.33			17.22		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	0.00											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 2: La Cadena Dr (NS) at Litton Ave (EW)

Control Type:	Signalized	Delay (sec / veh):	6.4
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.605

Intersection Setup

Name	La Cadena Dr		La Cadena Dr		Litton Ave	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0
Pocket Length [ft]	105.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00		50.00		25.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	La Cadena Dr		La Cadena Dr		Litton Ave	
Base Volume Input [veh/h]	51	1643	1827	50	28	26
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	51	1643	1827	50	28	26
Peak Hour Factor	0.9680	0.9680	0.9680	0.9680	0.9680	0.9680
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	424	472	13	7	7
Total Analysis Volume [veh/h]	53	1697	1887	52	29	27
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal group	5	2	6	0	3	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	7	7	7	0	7	0
Maximum Green [s]	30	30	30	0	30	0
Amber [s]	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	11	118	107	0	12	0
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	7	0	7	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	C	C
C, Cycle Length [s]	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	116	106	106	6
g / C, Green / Cycle	0.05	0.89	0.81	0.81	0.05
(v / s)_i Volume / Saturation Flow Rate	0.03	0.47	0.51	0.52	0.03
s, saturation flow rate [veh/h]	1810	3618	1900	1882	1710
c, Capacity [veh/h]	84	3225	1547	1533	80
d1, Uniform Delay [s]	60.89	1.44	4.57	4.62	61.00
k, delay calibration	0.11	0.50	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.68	0.62	1.93	2.00	10.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.63	0.53	0.63	0.63	0.70
d, Delay for Lane Group [s/veh]	68.57	2.06	6.50	6.61	71.29
Lane Group LOS	E	A	A	A	E
Critical Lane Group	Yes	No	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	1.85	0.47	6.56	6.64	2.07
50th-Percentile Queue Length [ft/ln]	46.29	11.80	164.07	166.02	51.71
95th-Percentile Queue Length [veh/ln]	3.33	0.85	10.76	10.87	3.72
95th-Percentile Queue Length [ft/ln]	83.33	21.23	269.10	271.68	93.08

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	68.57	2.06	6.56	6.61	71.29	71.29
Movement LOS	E	A	A	A	E	E
d_A, Approach Delay [s/veh]	4.08		6.56		71.29	
Approach LOS	A		A		E	
d_I, Intersection Delay [s/veh]	6.37					
Intersection LOS	A					
Intersection V/C	0.605					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	54.47
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.798
Crosswalk LOS	F	F	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	65.00	65.00	65.00
l_b,int, Bicycle LOS Score for Intersection	5.576	5.732	4.225
Bicycle LOS	F	F	D

Sequence

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



Intersection Level Of Service Report
Intersection 3: La Cadena Dr (NS) at Palm Ave (EW)

Control Type:	Two-way stop	Delay (sec / veh):	20.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.107

Intersection Setup

Name	La Cadena Dr		La Cadena Dr		Palm Ave	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	140.00	100.00	100.00
Speed [mph]	50.00		50.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	La Cadena Dr		La Cadena Dr		Palm Ave	
Base Volume Input [veh/h]	0	1660	1860	24	0	26
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1660	1860	24	0	26
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	437	489	6	0	7
Total Analysis Volume [veh/h]	0	1747	1958	25	0	27
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.02	0.02	0.00	0.00	0.11
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	20.92
Movement LOS		A	A	A		C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.35
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	8.85
d_A, Approach Delay [s/veh]	0.00		0.00		20.92	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.15					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 4: La Cadena Dr (NS) at Barton Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	45.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.976

Intersection Setup

Name	La Cadena Dr		La Cadena Dr		Barton Rd	
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 Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	250.00	100.00	100.00	100.00
Speed [mph]	50.00		50.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		No	

Volumes

Name	La Cadena Dr		La Cadena Dr		Barton Rd	
Base Volume Input [veh/h]	1451	442	368	1565	510	209
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1451	442	368	1565	510	209
Peak Hour Factor	0.9730	0.9730	0.9730	0.9730	0.9730	0.9730
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	373	114	95	402	131	54
Total Analysis Volume [veh/h]	1491	454	378	1608	524	215
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal group	2	0	1	6	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	39	0	22	61	29	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	35	35	18	57	25	25
g / C, Green / Cycle	0.39	0.39	0.20	0.63	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.41	0.28	0.21	0.44	0.29	0.13
s, saturation flow rate [veh/h]	3618	1615	1810	3618	1810	1615
c, Capacity [veh/h]	1405	627	363	2291	503	449
d1, Uniform Delay [s]	27.53	23.42	36.00	10.90	32.51	27.09
k, delay calibration	0.50	0.50	0.18	0.50	0.35	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	41.99	7.11	39.75	1.82	45.30	0.79
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.06	0.72	1.04	0.70	1.04	0.48
d, Delay for Lane Group [s/veh]	69.53	30.53	75.75	12.72	77.82	27.88
Lane Group LOS	F	C	F	B	F	C
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	21.40	8.50	11.36	8.36	16.73	3.81
50th-Percentile Queue Length [ft/ln]	535.10	212.44	283.89	209.06	418.36	95.16
95th-Percentile Queue Length [veh/ln]	30.21	13.28	17.25	13.10	24.04	6.85
95th-Percentile Queue Length [ft/ln]	755.16	331.95	431.20	327.62	601.08	171.30

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	69.53	30.53	75.75	12.72	77.82	27.88
Movement LOS	F	C	F	B	F	C
d_A, Approach Delay [s/veh]	60.42		24.72		63.29	
Approach LOS	E		C		E	
d_I, Intersection Delay [s/veh]	45.69					
Intersection LOS	D					
Intersection V/C	0.976					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	3.557	0.000	0.000
Crosswalk LOS	D	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	45.00	45.00	45.00
l_b,int, Bicycle LOS Score for Intersection	5.737	5.771	4.132
Bicycle LOS	F	F	D

Sequence

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



Intersection Level Of Service Report

Intersection 5: La Cadena Dr/Iowa Ave (NS) at La Cadena Dr (EW)

Control Type:	Signalized	Delay (sec / veh):	80.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.089

Intersection Setup

Name	Iowa Ave		La Cadena Dr		La Cadena Dr	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0
Pocket Length [ft]	130.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Iowa Ave		La Cadena Dr		La Cadena Dr	
Base Volume Input [veh/h]	231	1190	755	1394	680	225
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	231	1190	755	1394	680	225
Peak Hour Factor	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710
Other Adjustment Factor	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	59	306	194	0	175	58
Total Analysis Volume [veh/h]	238	1226	778	0	700	232
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Overlap
Signal group	5	2	6	0	3	8
Auxiliary Signal Groups						5,8
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	7	7	7	0	7	7
Maximum Green [s]	30	30	30	0	30	30
Amber [s]	3.0	3.0	3.0	0.0	3.0	3.0
All red [s]	1.0	1.0	1.0	0.0	1.0	1.0
Split [s]	19	70	51	0	45	45
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	3.0
Walk [s]	0	7	7	0	7	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
Minimum Recall	No	No	No		No	No
Maximum Recall	No	No	No		No	No
Pedestrian Recall	No	No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	15	66	47	47	41	60
g / C, Green / Cycle	0.13	0.57	0.41	0.41	0.36	0.52
(v / s)_i Volume / Saturation Flow Rate	0.13	0.65	0.41	0.00	0.39	0.14
s, saturation flow rate [veh/h]	1810	1900	1900	2859	1810	1615
c, Capacity [veh/h]	237	1092	777	1169	644	842
d1, Uniform Delay [s]	49.95	24.45	33.98	0.00	37.03	15.36
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.12
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	28.14	67.61	32.66	0.00	61.56	0.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.00	1.12	1.00	0.00	1.09	0.28
d, Delay for Lane Group [s/veh]	78.09	92.06	66.63	0.00	98.59	15.56
Lane Group LOS	F	F	F	A	F	B
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	8.39	45.67	26.88	0.00	27.77	3.16
50th-Percentile Queue Length [ft/ln]	209.79	1141.77	671.90	0.00	694.13	78.93
95th-Percentile Queue Length [veh/ln]	13.17	62.35	35.42	0.00	38.55	5.68
95th-Percentile Queue Length [ft/ln]	329.14	1558.81	885.46	0.00	963.67	142.08

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	78.09	92.06	66.63	0.00	98.59	15.56
Movement LOS	F	F	F	A	F	B
d_A, Approach Delay [s/veh]	89.79		66.63		77.92	
Approach LOS	F		E		E	
d_I, Intersection Delay [s/veh]	80.63					
Intersection LOS	F					
Intersection V/C	1.089					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	57.50	57.50	57.50
l_b,int, Bicycle LOS Score for Intersection	6.548	5.416	4.132
Bicycle LOS	F	F	D

Sequence

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



Intersection Level Of Service Report
Intersection 6: La Cadena Dr (NS) at Maryknoll Dr (EW)

Control Type:	Two-way stop	Delay (sec / veh):	4,029.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Maryknoll Dr			Dwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

Volumes

Name	La Cadena Dr			La Cadena Dr			Maryknoll Dr			Dwy		
Base Volume Input [veh/h]	108	703	8	2	1296	381	230	0	75	9	0	2
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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]	108	703	8	2	1296	381	230	0	75	9	0	2
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	185	2	1	341	100	61	0	20	2	0	1
Total Analysis Volume [veh/h]	114	740	8	2	1364	401	242	0	79	9	0	2
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.32	0.01	0.00	0.00	0.01	0.00	9.25	0.00	0.20	0.25	0.00	0.00
d_M, Delay for Movement [s/veh]	19.67	0.00	0.00	9.15	0.00	0.00	4002.30	4029.47	16.31	131.67	328.00	37.01
Movement LOS	C	A	A	A	A	A	F	F	C	F	F	E
95th-Percentile Queue Length [veh/ln]	1.24	0.62	0.00	0.01	0.00	0.00	30.00	30.00	0.73	0.85	0.85	0.85
95th-Percentile Queue Length [ft/ln]	31.12	15.56	0.00	0.17	0.09	0.00	750.09	750.09	18.29	21.13	21.13	21.13
d_A, Approach Delay [s/veh]	2.60			0.01			3021.32			114.46		
Approach LOS	A			A			F			F		
d_I, Intersection Delay [s/veh]	328.73											
Intersection LOS	F											

Intersection Level Of Service Report

Intersection 7: La Cadena Dr (NS) at Cadena Creek Dwy/I-215 SB On-Ramp (EW)

Control Type:	All-way stop	Delay (sec / veh):	163.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.644

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Cadena Creek Dwy			I-215 SB On-Ramp		
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 Pocket	1	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	236.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00			50.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	La Cadena Dr			La Cadena Dr			Cadena Creek Dwy			I-215 SB On-Ramp		
Base Volume Input [veh/h]	31	738	12	754	560	81	62	14	19	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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]	31	738	12	754	560	81	62	14	19	0	0	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	194	3	198	147	21	16	4	5	0	0	0
Total Analysis Volume [veh/h]	33	777	13	794	589	85	65	15	20	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	464	496	497	794	674	374	422	
Degree of Utilization, x	0.07	0.80	0.79	1.64	1.29	0.21	0.05	

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.23	7.41	7.36	45.44	27.80	0.80	0.15	
95th-Percentile Queue Length [ft]	5.72	185.32	184.00	1135.97	694.99	19.97	3.72	
Approach Delay [s/veh]	31.76			247.16		14.27		0.00
Approach LOS	D			F		B		A
Intersection Delay [s/veh]	163.28							
Intersection LOS	F							

Intersection Level Of Service Report
Intersection 8: Iowa Ave (NS) at I-215 SB Off-Ramp (EW)

Control Type:	Signalized	Delay (sec / veh):	34.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.937

Intersection Setup

Name	Iowa Ave		Iowa Ave		I-215 SB Off-Ramp	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		50.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Iowa Ave		Iowa Ave		I-215 SB Off-Ramp	
Base Volume Input [veh/h]	0	1057	948	0	383	457
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1057	948	0	383	457
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	278	249	0	101	120
Total Analysis Volume [veh/h]	0	1113	998	0	403	481
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Split	Split
Signal group	0	2	6	0	3	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	7	7	0	7	0
Maximum Green [s]	0	30	30	0	30	0
Amber [s]	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	0	45	45	0	25	0
Vehicle Extension [s]	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	7	0	7	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall		No	No		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	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
I, Upstream Filtering Factor	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	R
C, Cycle Length [s]	70	70	70	70
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	41	41	21	21
g / C, Green / Cycle	0.58	0.58	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.59	0.53	0.22	0.30
s, saturation flow rate [veh/h]	1900	1900	1810	1615
c, Capacity [veh/h]	1109	1109	546	488
d1, Uniform Delay [s]	14.56	12.77	21.93	24.27
k, delay calibration	0.50	0.50	0.11	0.23
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	27.90	11.61	1.97	24.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.00	0.90	0.74	0.99
d, Delay for Lane Group [s/veh]	42.47	24.38	23.90	48.60
Lane Group LOS	F	C	C	D
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	22.42	12.57	5.85	10.63
50th-Percentile Queue Length [ft/ln]	560.47	314.36	146.21	265.70
95th-Percentile Queue Length [veh/ln]	30.28	18.39	9.81	15.97
95th-Percentile Queue Length [ft/ln]	756.89	459.74	245.36	399.36

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	42.47	24.38	0.00	23.90	48.60
Movement LOS		F	C		C	D
d_A, Approach Delay [s/veh]	42.47		24.38		37.34	
Approach LOS	D		C		D	
d_I, Intersection Delay [s/veh]	34.93					
Intersection LOS	C					
Intersection V/C	0.937					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	35.00	35.00	35.00
l_b,int, Bicycle LOS Score for Intersection	5.969	5.779	4.132
Bicycle LOS	F	F	D

Sequence

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



Intersection Level Of Service Report
Intersection 9: Iowa Ave (NS) at Iowa Ave/I-215 NB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	157.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.310

Intersection Setup

Name	Iowa Ave		Iowa Ave		I-215 NB Ramps	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	90.00	100.00	100.00	100.00
Speed [mph]	30.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Iowa Ave		Iowa Ave		I-215 NB Ramps	
Base Volume Input [veh/h]	337	1001	572	735	19	478
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	337	1001	572	735	19	478
Peak Hour Factor	0.9860	0.9860	0.9860	0.9860	0.9860	0.9860
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	85	254	145	186	5	121
Total Analysis Volume [veh/h]	342	1015	580	745	19	485
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal group	1	0	3	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	7	0	7	7	7	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	63	0	34	67	33	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	R	L	C	C	R
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	59	59	30	63	29	29
g / C, Green / Cycle	0.45	0.45	0.23	0.48	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.19	0.63	0.32	0.39	0.01	0.30
s, saturation flow rate [veh/h]	1810	1615	1810	1900	1900	1615
c, Capacity [veh/h]	821	733	420	921	421	358
d1, Uniform Delay [s]	23.92	35.51	49.91	28.39	39.76	50.58
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.34	181.78	185.62	7.60	0.20	176.55
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.42	1.39	1.38	0.81	0.05	1.35
d, Delay for Lane Group [s/veh]	24.26	217.29	235.52	35.98	39.96	227.13
Lane Group LOS	C	F	F	D	D	F
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	7.18	59.59	34.89	20.38	0.51	29.17
50th-Percentile Queue Length [ft/ln]	179.47	1489.65	872.31	509.51	12.68	729.22
95th-Percentile Queue Length [veh/ln]	11.57	88.91	52.33	27.78	0.91	44.11
95th-Percentile Queue Length [ft/ln]	289.32	2222.71	1308.30	694.60	22.82	1102.81

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	24.26	217.29	235.52	35.98	39.96	227.13
Movement LOS	C	F	F	D	D	F
d_A, Approach Delay [s/veh]	168.64		123.33		220.08	
Approach LOS	F		F		F	
d_I, Intersection Delay [s/veh]	157.93					
Intersection LOS	F					
Intersection V/C	1.310					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	54.47
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.475
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	65.00	65.00	65.00
I_b,int, Bicycle LOS Score for Intersection	4.132	6.319	4.964
Bicycle LOS	D	F	E

Sequence

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



Intersection Level Of Service Report

Intersection 10: I-215 SB Ramps/La Crosse Ave (NS) at Barton Rd (EW)

Control Type:	Roundabout	Delay (sec / veh):	11.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes		

Intersection Setup

Name	La Crosse Ave			I-215 SB Ramps			Barton Rd			Barton Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	La Crosse Ave			I-215 SB Ramps			Barton Rd			Barton Rd		
Base Volume Input [veh/h]	2	0	42	275	14	169	32	797	86	419	519	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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]	2	0	42	275	14	169	32	797	86	419	519	8
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]	1	0	11	71	4	44	8	207	22	109	135	2
Total Analysis Volume [veh/h]	2	0	44	285	15	175	33	827	89	435	538	8
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			2			2		
Circulating Flow Rate [veh/h]	1145			975			735			35		
Exiting Flow Rate [veh/h]	539			41			715			1156		
Demand Flow Rate [veh/h]	2	0	42	275	14	169	32	797	86	419	519	8
Adjusted Demand Flow Rate [veh/h]	2	0	44	285	15	175	33	827	89	435	538	8

Lanes

Overwrite Calculated Critical Headway	No	No	No	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1420.00	1420.00	1350.00	1420.00	1350.00	1420.00
B (coefficient)	0.00102	0.00091	0.00091	0.00092	0.00085	0.00092	0.00085
HV Adjustment Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Entry Flow Rate [veh/h]	46	300	175	447	503	462	520
Capacity of Entry and Bypass Lanes [veh/h]	430	585	585	687	761	1308	1379
Pedestrian Impedance	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	430	585	585	687	761	1308	1379
X, volume / capacity	0.11	0.51	0.30	0.65	0.66	0.35	0.38

Movement, Approach, & Intersection Results

Lane LOS	A	C	B	C	C	A	A
95th-Percentile Queue Length [veh]	0.36	2.92	1.25	4.80	5.07	1.61	1.79
95th-Percentile Queue Length [ft]	8.94	73.03	31.27	119.95	126.66	40.25	44.68
Approach Delay [s/veh]	9.93	13.27		17.21		6.04	
Approach LOS	A	B		C		A	
Intersection Delay [s/veh]	11.84						
Intersection LOS	B						

Intersection Level Of Service Report
Intersection 11: I-215 NB Ramps (NS) at Barton Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	17.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.687

Intersection Setup

Name	I-215 NB Off-Ramp			I-215 On-Ramp			Barton Rd			Barton Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	300.00	100.00	100.00	100.00	100.00	200.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	I-215 NB Off-Ramp			I-215 On-Ramp			Barton Rd			Barton Rd		
Base Volume Input [veh/h]	48	5	501	0	0	0	324	789	0	0	862	430
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	48	5	501	0	0	0	324	789	0	0	862	430
Peak Hour Factor	0.9720	0.9720	0.9720	0.9500	0.9500	0.9500	0.9720	0.9720	0.9500	0.9500	0.9720	0.9720
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	1	129	0	0	0	83	203	0	0	222	111
Total Analysis Volume [veh/h]	49	5	515	0	0	0	333	812	0	0	887	442
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	7	0	0	0	0	7	7	0	0	7	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	21	0	0	0	0	18	39	0	0	21	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	10	0	0	10	0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R		L	C	C	R
C, Cycle Length [s]	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
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	12	12		13	40	23	23
g / C, Green / Cycle	0.20	0.20	0.20		0.22	0.66	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.03	0.16	0.16		0.18	0.22	0.25	0.27
s, saturation flow rate [veh/h]	1810	1620	1615		1810	3618	3618	1615
c, Capacity [veh/h]	368	329	328		394	2401	1373	613
d1, Uniform Delay [s]	19.62	22.75	22.75		22.56	4.39	15.35	15.95
k, delay calibration	0.11	0.11	0.11		0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.16	4.26	4.28		5.02	0.38	2.36	7.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.13	0.79	0.79		0.85	0.34	0.65	0.72
d, Delay for Lane Group [s/veh]	19.78	27.01	27.02		27.58	4.77	17.71	23.14
Lane Group LOS	B	C	C		C	A	B	C
Critical Lane Group	No	No	Yes		Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.54	3.62	3.62		4.61	1.43	4.70	5.62
50th-Percentile Queue Length [ft/ln]	13.54	90.61	90.38		115.27	35.80	117.44	140.59
95th-Percentile Queue Length [veh/ln]	0.97	6.52	6.51		8.13	2.58	8.25	9.51
95th-Percentile Queue Length [ft/ln]	24.37	163.09	162.69		203.31	64.44	206.31	237.81

Movement, Approach, & Intersection Results

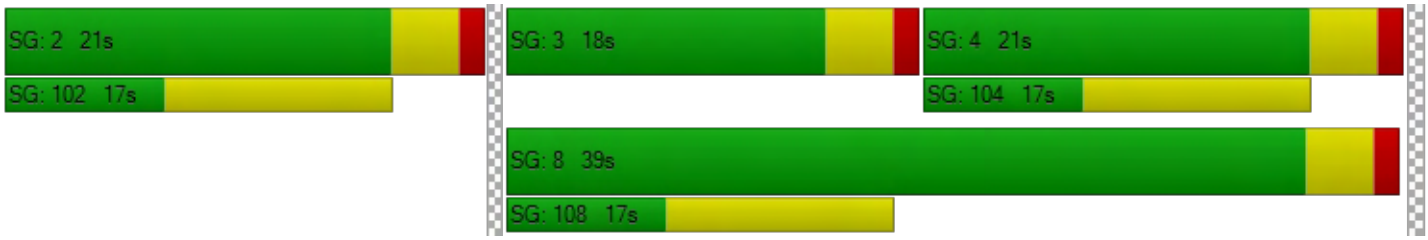
d_M, Delay for Movement [s/veh]	19.78	27.01	27.02	0.00	0.00	0.00	27.58	4.77	0.00	0.00	17.71	23.14
Movement LOS	B	C	C				C	A			B	C
d_A, Approach Delay [s/veh]	26.39			0.00			11.40			19.52		
Approach LOS	C			A			B			B		
d_I, Intersection Delay [s/veh]	17.75											
Intersection LOS	B											
Intersection V/C	0.687											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
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]	20.01	20.01	0.00	20.01
l_p,int, Pedestrian LOS Score for Intersection	2.103	2.161	0.000	2.882
Crosswalk LOS	B	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	567	0	1167	567
d_b, Bicycle Delay [s]	15.41	30.00	5.21	15.41
l_b,int, Bicycle LOS Score for Intersection	2.498	4.132	2.504	2.656
Bicycle LOS	B	D	B	B

Sequence

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



Buildout Year (2040) With Project

Modern Pacific Homes

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Scenario 2 Year 2040 With Project
1/18/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	La Cadena Dr (NS) at Tropica Rancho Rd (EW)	Two-way stop	HCM 6th Edition	EB Right	0.004	19.5	C
2	La Cadena Dr (NS) at Litton Ave (EW)	Signalized	HCM 6th Edition	EB Left	0.678	11.0	B
3	La Cadena Dr (NS) at Palm Ave (EW)	Two-way stop	HCM 6th Edition	EB Right	0.166	22.5	C
4	La Cadena Dr (NS) at Barton Rd (EW)	Signalized	HCM 6th Edition	SB Left	0.756	18.5	B
5	La Cadena Dr/Iowa Ave (NS) at La Cadena Dr (EW)	Signalized	HCM 6th Edition	SB Thru	0.865	35.6	D
6	La Cadena Dr (NS) at Maryknoll Dr (EW)	Two-way stop	HCM 6th Edition	EB Left	5.262	2,032.5	F
7	La Cadena Dr (NS) at Cadena Creek Dwy/I-215 SB On-Ramp (EW)	All-way stop	HCM 6th Edition	SB Left	1.409	119.7	F
8	Iowa Ave (NS) at I-215 SB Off -Ramp (EW)	Signalized	HCM 6th Edition	EB Right	1.025	69.8	E
9	Iowa Ave (NS) at Iowa Ave/I-215 NB Ramps (EW)	Signalized	HCM 6th Edition	EB Left	1.392	181.4	F
10	I-215 SB Ramps/La Crosse Ave (NS) at Barton Rd (EW)	Roundabout	HCM 6th Edition	SB Left		11.5	B
11	I-215 NB Ramps (NS) at Barton Rd (EW)	Signalized	HCM 6th Edition	EB Left	0.618	14.4	B

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

Intersection Level Of Service Report
Intersection 1: La Cadena Dr (NS) at Tropica Rancho Rd (EW)

Control Type:	Two-way stop	Delay (sec / veh):	19.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.004

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Tropica Rancho Rd			Vivienda Ave		
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 Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	La Cadena Dr			La Cadena Dr			Tropica Rancho Rd			Vivienda Ave		
Base Volume Input [veh/h]	0	1220	0	0	1870	0	0	0	1	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	15	0	0	5	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]	0	1235	0	0	1875	0	0	0	1	0	0	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	325	0	0	493	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	1300	0	0	1974	0	0	0	1	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.46	0.00	0.00	13.64
Movement LOS		A	A		A	A			C			B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			0.00			19.46			13.64		
Approach LOS	A			A			C			B		
d_I, Intersection Delay [s/veh]	0.01											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 2: La Cadena Dr (NS) at Litton Ave (EW)

Control Type:	Signalized	Delay (sec / veh):	11.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.678

Intersection Setup

Name	La Cadena Dr		La Cadena Dr		Litton Ave	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0
Pocket Length [ft]	105.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00		50.00		25.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	La Cadena Dr		La Cadena Dr		Litton Ave	
Base Volume Input [veh/h]	30	1157	1853	20	65	37
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	12	0	0	5	15	30
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	42	1157	1853	25	80	67
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	304	488	7	21	18
Total Analysis Volume [veh/h]	44	1218	1951	26	84	71
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal group	5	2	6	0	3	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	7	7	7	0	7	0
Maximum Green [s]	30	30	30	0	30	0
Amber [s]	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	11	32	21	0	68	0
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	7	0	7	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	C	C
C, Cycle Length [s]	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	81	72	72	11
g / C, Green / Cycle	0.05	0.81	0.72	0.72	0.11
(v / s)_i Volume / Saturation Flow Rate	0.02	0.34	0.52	0.52	0.09
s, saturation flow rate [veh/h]	1810	3618	1900	1891	1715
c, Capacity [veh/h]	91	2927	1365	1359	190
d1, Uniform Delay [s]	46.22	2.75	8.25	8.30	43.44
k, delay calibration	0.11	0.50	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.92	0.44	3.37	3.44	8.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.48	0.42	0.72	0.73	0.81
d, Delay for Lane Group [s/veh]	50.13	3.19	11.62	11.73	51.59
Lane Group LOS	D	A	B	B	D
Critical Lane Group	Yes	No	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	1.12	1.56	9.53	9.59	4.19
50th-Percentile Queue Length [ft/ln]	27.96	39.09	238.27	239.83	104.67
95th-Percentile Queue Length [veh/ln]	2.01	2.81	14.59	14.67	7.54
95th-Percentile Queue Length [ft/ln]	50.33	70.36	364.85	366.82	188.40

Movement, Approach, & Intersection Results

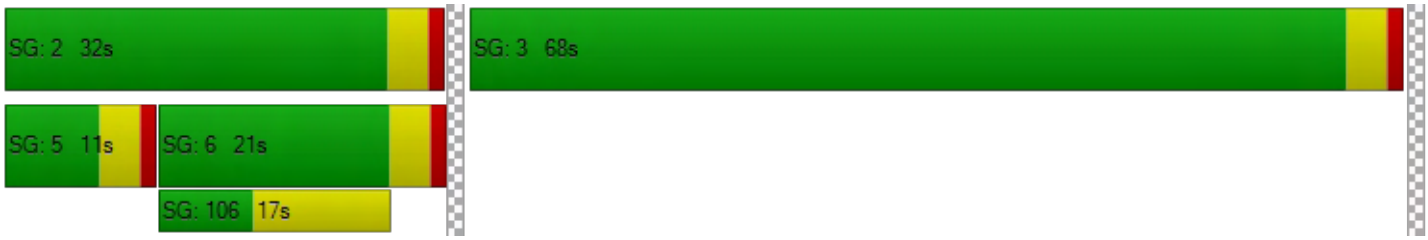
d_M, Delay for Movement [s/veh]	50.13	3.19	11.68	11.73	51.59	51.59
Movement LOS	D	A	B	B	D	D
d_A, Approach Delay [s/veh]	4.83		11.68		51.59	
Approach LOS	A		B		D	
d_I, Intersection Delay [s/veh]	10.95					
Intersection LOS	B					
Intersection V/C	0.678					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	39.61
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.811
Crosswalk LOS	F	F	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	50.00	50.00	50.00
l_b,int, Bicycle LOS Score for Intersection	5.174	5.763	4.388
Bicycle LOS	F	F	E

Sequence

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



Intersection Level Of Service Report
Intersection 3: La Cadena Dr (NS) at Palm Ave (EW)

Control Type:	Two-way stop	Delay (sec / veh):	22.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.166

Intersection Setup

Name	La Cadena Dr		La Cadena Dr		Palm Ave	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	140.00	100.00	100.00
Speed [mph]	50.00		50.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	La Cadena Dr		La Cadena Dr		Palm Ave	
Base Volume Input [veh/h]	0	1190	1880	12	0	35
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	30	0	0	4
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1202	1910	12	0	39
Peak Hour Factor	0.9500	0.9590	0.9590	0.9590	0.9500	0.9590
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	313	498	3	0	10
Total Analysis Volume [veh/h]	0	1253	1992	13	0	41
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.02	0.00	0.00	0.17
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	22.49
Movement LOS		A	A	A		C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.58
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	14.62
d_A, Approach Delay [s/veh]	0.00		0.00		22.49	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.28					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 4: La Cadena Dr (NS) at Barton Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	18.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.756

Intersection Setup

Name	La Cadena Dr		La Cadena Dr		Barton Rd	
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 Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	250.00	100.00	100.00	100.00
Speed [mph]	50.00		50.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		No	

Volumes

Name	La Cadena Dr		La Cadena Dr		Barton Rd	
Base Volume Input [veh/h]	896	387	283	1610	370	294
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	7	0	14	20	0	5
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	903	387	297	1630	370	299
Peak Hour Factor	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	234	100	77	423	96	78
Total Analysis Volume [veh/h]	938	402	308	1693	384	310
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal group	2	0	1	6	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	11	0	28	39	21	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	21	21	12	37	15	15
g / C, Green / Cycle	0.35	0.35	0.21	0.62	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.26	0.25	0.17	0.47	0.21	0.19
s, saturation flow rate [veh/h]	3618	1615	1810	3618	1810	1615
c, Capacity [veh/h]	1249	557	374	2236	450	402
d1, Uniform Delay [s]	17.42	17.18	22.82	8.24	21.54	21.00
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.20	7.86	4.61	2.45	4.67	3.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	0.72	0.82	0.76	0.85	0.77
d, Delay for Lane Group [s/veh]	21.61	25.04	27.43	10.70	26.21	24.17
Lane Group LOS	C	C	C	B	C	C
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	5.23	5.02	3.99	4.85	5.19	3.97
50th-Percentile Queue Length [ft/ln]	130.78	125.60	99.78	121.25	129.63	99.36
95th-Percentile Queue Length [veh/ln]	8.98	8.70	7.18	8.46	8.92	7.15
95th-Percentile Queue Length [ft/ln]	224.56	217.50	179.61	211.55	222.99	178.86

Movement, Approach, & Intersection Results

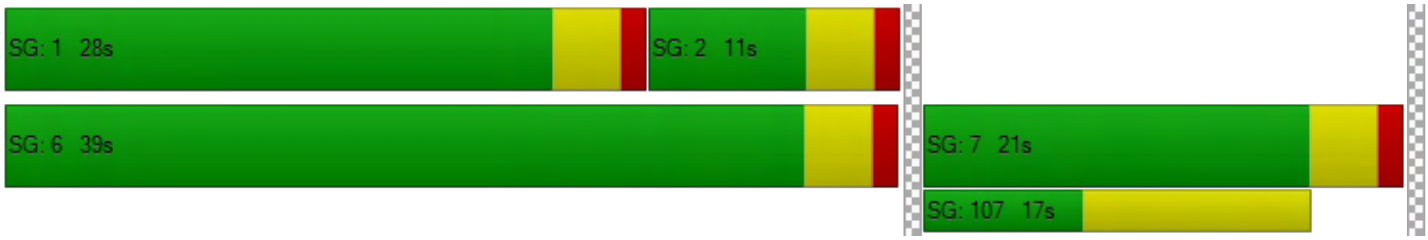
d_M, Delay for Movement [s/veh]	21.61	25.04	27.43	10.70	26.21	24.17
Movement LOS	C	C	C	B	C	C
d_A, Approach Delay [s/veh]	22.64		13.27		25.30	
Approach LOS	C		B		C	
d_I, Intersection Delay [s/veh]	18.45					
Intersection LOS	B					
Intersection V/C	0.756					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	20.01	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.356	0.000	0.000
Crosswalk LOS	C	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	30.00	30.00	30.00
I_b,int, Bicycle LOS Score for Intersection	5.238	5.783	4.132
Bicycle LOS	F	F	D

Sequence

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



Intersection Level Of Service Report

Intersection 5: La Cadena Dr/Iowa Ave (NS) at La Cadena Dr (EW)

Control Type:	Signalized	Delay (sec / veh):	35.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.865

Intersection Setup

Name	Iowa Ave		La Cadena Dr		La Cadena Dr	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0
Pocket Length [ft]	130.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Iowa Ave		La Cadena Dr		La Cadena Dr	
Base Volume Input [veh/h]	135	811	756	1161	519	211
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	6	2	18	1	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	135	817	758	1179	520	211
Peak Hour Factor	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560
Other Adjustment Factor	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	214	198	0	136	55
Total Analysis Volume [veh/h]	141	855	793	0	544	221
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	75
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Overlap
Signal group	5	2	6	0	3	8
Auxiliary Signal Groups						5,8
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	7	7	7	0	7	7
Maximum Green [s]	30	30	30	0	30	30
Amber [s]	3.0	3.0	3.0	0.0	3.0	3.0
All red [s]	1.0	1.0	1.0	0.0	1.0	1.0
Split [s]	12	31	19	0	54	54
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	3.0
Walk [s]	0	7	7	0	7	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
Minimum Recall	No	No	No		No	No
Maximum Recall	No	No	No		No	No
Pedestrian Recall	No	No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	75	75	75	75	75	75
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	8	42	30	30	25	37
g / C, Green / Cycle	0.10	0.56	0.41	0.41	0.33	0.49
(v / s)_i Volume / Saturation Flow Rate	0.08	0.45	0.42	0.00	0.30	0.14
s, saturation flow rate [veh/h]	1810	1900	1900	2859	1810	1615
c, Capacity [veh/h]	186	1065	769	1157	602	790
d1, Uniform Delay [s]	32.78	13.18	22.36	0.00	23.90	11.36
k, delay calibration	0.11	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.18	6.41	40.84	0.00	5.37	0.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.80	1.03	0.00	0.90	0.28
d, Delay for Lane Group [s/veh]	38.96	19.59	63.20	0.00	29.27	11.56
Lane Group LOS	D	B	F	A	C	B
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.60	10.23	19.83	0.00	8.77	1.80
50th-Percentile Queue Length [ft/ln]	65.02	255.66	495.80	0.00	219.37	45.08
95th-Percentile Queue Length [veh/ln]	4.68	15.47	27.74	0.00	13.63	3.25
95th-Percentile Queue Length [ft/ln]	117.04	386.78	693.62	0.00	340.82	81.14

Movement, Approach, & Intersection Results

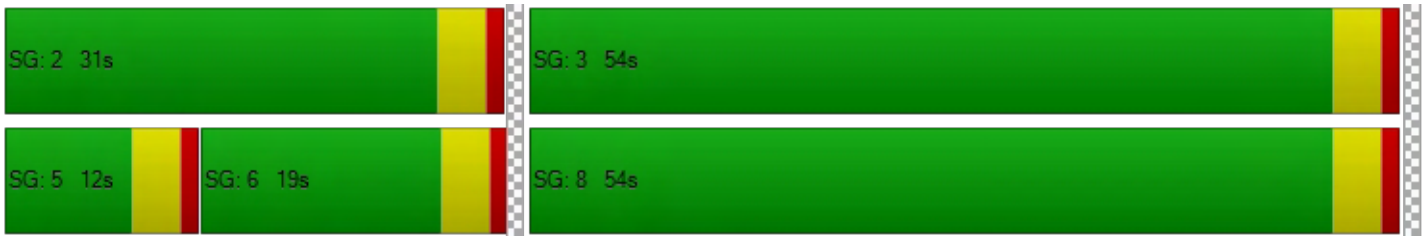
d_M, Delay for Movement [s/veh]	38.96	19.59	63.20	0.00	29.27	11.56
Movement LOS	D	B	F	A	C	B
d_A, Approach Delay [s/veh]	22.33		63.20		24.15	
Approach LOS	C		E		C	
d_I, Intersection Delay [s/veh]	35.57					
Intersection LOS	D					
Intersection V/C	0.865					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	37.50	37.50	37.50
l_b,int, Bicycle LOS Score for Intersection	5.776	5.441	4.132
Bicycle LOS	F	F	D

Sequence

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



Intersection Level Of Service Report
Intersection 6: La Cadena Dr (NS) at Maryknoll Dr (EW)

Control Type:	Two-way stop	Delay (sec / veh):	2,032.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	5.262

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Maryknoll Dr			Dwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

Volumes

Name	La Cadena Dr			La Cadena Dr			Maryknoll Dr			Dwy		
Base Volume Input [veh/h]	42	299	6	22	1161	151	361	0	119	20	0	14
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	0	0	18	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]	42	300	6	22	1179	151	361	0	119	20	0	14
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	79	2	6	310	40	95	0	31	5	0	4
Total Analysis Volume [veh/h]	44	316	6	23	1241	159	380	0	125	21	0	15
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.00	0.00	0.02	0.01	0.00	5.26	0.00	0.29	0.18	0.00	0.02
d_M, Delay for Movement [s/veh]	12.99	0.00	0.00	7.94	0.00	0.00	2032.53	2026.63	16.56	41.50	64.87	14.17
Movement LOS	B	A	A	A	A	A	F	F	C	E	F	B
95th-Percentile Queue Length [veh/ln]	0.28	0.14	0.00	0.05	0.03	0.00	41.88	41.88	1.17	0.73	0.73	0.73
95th-Percentile Queue Length [ft/ln]	6.93	3.46	0.00	1.34	0.67	0.00	1046.91	1046.91	29.31	18.15	18.15	18.15
d_A, Approach Delay [s/veh]	1.56			0.13			1533.53			30.11		
Approach LOS	A			A			F			D		
d_I, Intersection Delay [s/veh]	333.16											
Intersection LOS	F											

Intersection Level Of Service Report

Intersection 7: La Cadena Dr (NS) at Cadena Creek Dwy/I-215 SB On-Ramp (EW)

Control Type:	All-way stop	Delay (sec / veh):	119.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.409

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Cadena Creek Dwy			I-215 SB On-Ramp		
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 Pocket	1	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	236.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00			50.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	La Cadena Dr			La Cadena Dr			Cadena Creek Dwy			I-215 SB On-Ramp		
Base Volume Input [veh/h]	14	265	0	727	558	56	80	23	32	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	0	16	2	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	266	0	743	560	56	80	23	32	0	0	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	70	0	196	147	15	21	6	8	0	0	0
Total Analysis Volume [veh/h]	15	280	0	782	589	59	84	24	34	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	458	488	488	782	648	429	492	
Degree of Utilization, x	0.03	0.29	0.29	1.41	1.07	0.25	0.07	

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.10	1.17	1.17	36.43	18.28	0.99	0.22	
95th-Percentile Queue Length [ft]	2.54	29.35	29.35	910.69	456.93	24.66	5.55	
Approach Delay [s/veh]	12.90			152.34		13.11		0.00
Approach LOS	B			F		B		A
Intersection Delay [s/veh]	119.72							
Intersection LOS	F							

Intersection Level Of Service Report
Intersection 8: Iowa Ave (NS) at I-215 SB Off-Ramp (EW)

Control Type:	Signalized	Delay (sec / veh):	69.8
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.025

Intersection Setup

Name	Iowa Ave		Iowa Ave		I-215 SB Off-Ramp	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		50.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Iowa Ave		Iowa Ave		I-215 SB Off-Ramp	
Base Volume Input [veh/h]	0	893	947	0	87	703
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	6	2	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	899	949	0	87	703
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	237	250	0	23	185
Total Analysis Volume [veh/h]	0	946	999	0	92	740
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Split	Split
Signal group	0	2	6	0	3	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	7	7	0	7	0
Maximum Green [s]	0	30	30	0	30	0
Amber [s]	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	0	53	53	0	47	0
Vehicle Extension [s]	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	7	0	7	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall		No	No		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	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
I, Upstream Filtering Factor	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	R
C, Cycle Length [s]	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	49	49	43	43
g / C, Green / Cycle	0.49	0.49	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.50	0.53	0.05	0.46
s, saturation flow rate [veh/h]	1900	1900	1810	1615
c, Capacity [veh/h]	932	932	777	693
d1, Uniform Delay [s]	25.43	25.43	17.14	28.51
k, delay calibration	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	33.15	50.56	0.07	53.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.01	1.07	0.12	1.07
d, Delay for Lane Group [s/veh]	58.59	75.99	17.21	82.19
Lane Group LOS	F	F	B	F
Critical Lane Group	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	29.21	32.05	1.27	26.06
50th-Percentile Queue Length [ft/ln]	730.21	801.31	31.75	651.53
95th-Percentile Queue Length [veh/ln]	38.52	43.62	2.29	36.12
95th-Percentile Queue Length [ft/ln]	963.01	1090.41	57.14	902.99

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	58.59	75.99	0.00	17.21	82.19
Movement LOS		F	F		B	F
d_A, Approach Delay [s/veh]	58.59		75.99		75.01	
Approach LOS	E		E		E	
d_I, Intersection Delay [s/veh]	69.77					
Intersection LOS	E					
Intersection V/C	1.025					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	50.00	50.00	50.00
l_b,int, Bicycle LOS Score for Intersection	5.693	5.781	4.132
Bicycle LOS	F	F	D

Sequence

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



Intersection Level Of Service Report
Intersection 9: Iowa Ave (NS) at Iowa Ave/I-215 NB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	181.4
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.392

Intersection Setup

Name	Iowa Ave		Iowa Ave		I-215 NB Ramps	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	90.00	100.00	100.00	100.00
Speed [mph]	30.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Iowa Ave		Iowa Ave		I-215 NB Ramps	
Base Volume Input [veh/h]	429	1200	486	585	86	396
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	2	1	0	0	5
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	429	1202	487	585	86	401
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	113	316	128	154	23	106
Total Analysis Volume [veh/h]	452	1265	513	616	91	422
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal group	1	0	3	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	7	0	7	7	7	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	73	0	29	57	28	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	R	L	C	C	R
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	69	69	25	53	24	24
g / C, Green / Cycle	0.53	0.53	0.19	0.41	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.25	0.78	0.28	0.32	0.05	0.26
s, saturation flow rate [veh/h]	1810	1615	1810	1900	1900	1615
c, Capacity [veh/h]	960	857	351	775	348	296
d1, Uniform Delay [s]	19.09	30.51	52.40	33.73	45.55	53.09
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.36	220.61	223.12	8.26	1.82	210.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.47	1.48	1.46	0.79	0.26	1.43
d, Delay for Lane Group [s/veh]	19.45	251.12	275.52	41.99	47.37	263.51
Lane Group LOS	B	F	F	D	D	F
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	8.57	78.19	32.87	18.02	2.72	26.92
50th-Percentile Queue Length [ft/ln]	214.22	1954.68	821.83	450.57	67.93	673.09
95th-Percentile Queue Length [veh/ln]	13.37	119.01	50.06	24.99	4.89	41.40
95th-Percentile Queue Length [ft/ln]	334.24	2975.31	1251.60	624.63	122.28	1035.02

Movement, Approach, & Intersection Results

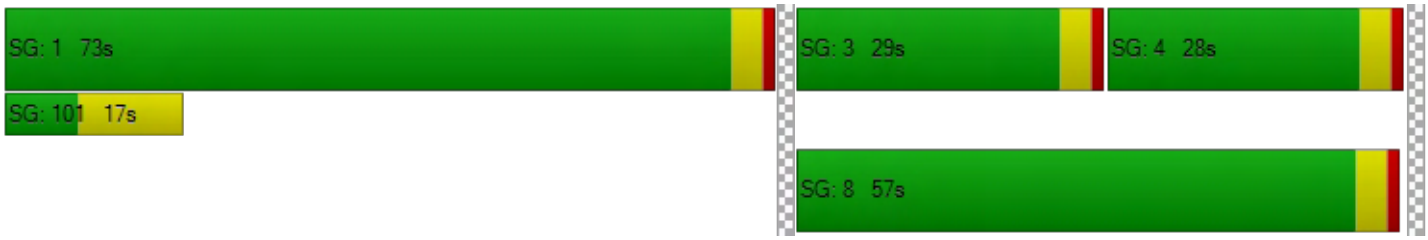
d_M, Delay for Movement [s/veh]	19.45	251.12	275.52	41.99	47.37	263.51
Movement LOS	B	F	F	D	D	F
d_A, Approach Delay [s/veh]	190.13		148.10		225.17	
Approach LOS	F		F		F	
d_I, Intersection Delay [s/veh]	181.36					
Intersection LOS	F					
Intersection V/C	1.392					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	54.47
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.472
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	65.00	65.00	65.00
l_b,int, Bicycle LOS Score for Intersection	4.132	5.995	4.979
Bicycle LOS	D	F	E

Sequence

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



Intersection Level Of Service Report

Intersection 10: I-215 SB Ramps/La Crosse Ave (NS) at Barton Rd (EW)

Control Type:	Roundabout	Delay (sec / veh):	11.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes		

Intersection Setup

Name	La Crosse Ave			I-215 SB Ramps			Barton Rd			Barton Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	La Crosse Ave			I-215 SB Ramps			Barton Rd			Barton Rd		
Base Volume Input [veh/h]	0	0	10	249	49	169	6	601	56	545	501	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	3	2	12	0	0	2	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]	0	0	10	249	49	172	8	613	56	545	503	3
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	3	66	13	45	2	161	15	143	132	1
Total Analysis Volume [veh/h]	0	0	11	262	52	181	8	645	59	574	529	3
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			2			2		
Circulating Flow Rate [veh/h]	915			1103			888			8		
Exiting Flow Rate [veh/h]	685			11			710			918		
Demand Flow Rate [veh/h]	0	0	10	249	49	172	8	613	56	545	503	3
Adjusted Demand Flow Rate [veh/h]	0	0	11	262	52	181	8	645	59	574	529	3

Lanes

Overwrite Calculated Critical Headway	No	No	No	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1420.00	1420.00	1350.00	1420.00	1350.00	1420.00
B (coefficient)	0.00102	0.00091	0.00091	0.00092	0.00085	0.00092	0.00085
HV Adjustment Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Entry Flow Rate [veh/h]	11	314	181	335	378	574	532
Capacity of Entry and Bypass Lanes [veh/h]	543	521	521	597	668	1341	1411
Pedestrian Impedance	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	543	521	521	597	668	1341	1411
X, volume / capacity	0.02	0.60	0.35	0.56	0.57	0.43	0.38

Movement, Approach, & Intersection Results

Lane LOS	A	C	B	C	B	A	A
95th-Percentile Queue Length [veh]	0.06	3.96	1.54	3.47	3.55	2.20	1.79
95th-Percentile Queue Length [ft]	1.55	98.91	38.59	86.70	88.83	54.93	44.70
Approach Delay [s/veh]	6.87	17.12		15.60		6.42	
Approach LOS	A	C		C		A	
Intersection Delay [s/veh]	11.51						
Intersection LOS	B						

Intersection Level Of Service Report
Intersection 11: I-215 NB Ramps (NS) at Barton Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	14.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.618

Intersection Setup

Name	I-215 NB Off-Ramp			I-215 On-Ramp			Barton Rd			Barton Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	300.00	100.00	100.00	100.00	100.00	200.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	I-215 NB Off-Ramp			I-215 On-Ramp			Barton Rd			Barton Rd		
Base Volume Input [veh/h]	58	0	441	0	0	0	150	709	0	0	992	490
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	0	0	0	0	0	10	2	0	0	1	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]	59	0	441	0	0	0	160	711	0	0	993	490
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	0	116	0	0	0	42	187	0	0	261	129
Total Analysis Volume [veh/h]	62	0	464	0	0	0	168	748	0	0	1045	516
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	7	0	0	0	0	7	7	0	0	7	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	21	0	0	0	0	18	39	0	0	21	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	10	0	0	10	0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R		L	C	C	R
C, Cycle Length [s]	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
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	11	11		7	41	30	30
g / C, Green / Cycle	0.19	0.19	0.19		0.12	0.68	0.49	0.49
(v / s)_i Volume / Saturation Flow Rate	0.03	0.14	0.14		0.09	0.21	0.29	0.32
s, saturation flow rate [veh/h]	1810	1615	1615		1810	3618	3618	1615
c, Capacity [veh/h]	338	302	302		220	2460	1779	794
d1, Uniform Delay [s]	20.59	23.22	23.22		25.57	3.88	10.93	11.42
k, delay calibration	0.11	0.11	0.11		0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.26	4.11	4.11		5.38	0.32	1.43	4.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.18	0.77	0.77		0.76	0.30	0.59	0.65
d, Delay for Lane Group [s/veh]	20.85	27.33	27.33		30.95	4.20	12.36	15.52
Lane Group LOS	C	C	C		C	A	B	B
Critical Lane Group	No	Yes	No		Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.71	3.24	3.24		2.47	1.15	4.28	4.96
50th-Percentile Queue Length [ft/ln]	17.78	81.08	81.08		61.75	28.87	107.08	124.00
95th-Percentile Queue Length [veh/ln]	1.28	5.84	5.84		4.45	2.08	7.68	8.61
95th-Percentile Queue Length [ft/ln]	32.00	145.94	145.94		111.15	51.97	191.94	215.31

Movement, Approach, & Intersection Results

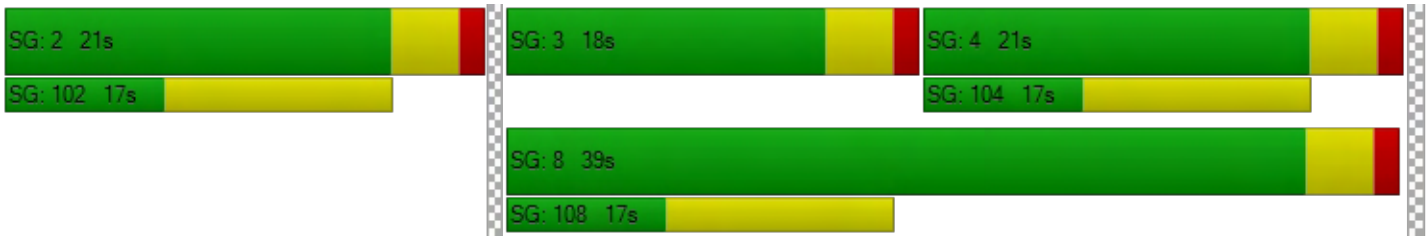
d_M, Delay for Movement [s/veh]	20.85	27.33	27.33	0.00	0.00	0.00	30.95	4.20	0.00	0.00	12.36	15.52
Movement LOS	C	C	C				C	A			B	B
d_A, Approach Delay [s/veh]	26.56			0.00			9.11			13.40		
Approach LOS	C			A			A			B		
d_I, Intersection Delay [s/veh]	14.40											
Intersection LOS	B											
Intersection V/C	0.618											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
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]	20.01	20.01	0.00	20.01
l_p,int, Pedestrian LOS Score for Intersection	2.089	2.068	0.000	2.908
Crosswalk LOS	B	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	567	0	1167	567
d_b, Bicycle Delay [s]	15.41	30.00	5.21	15.41
l_b,int, Bicycle LOS Score for Intersection	2.428	4.132	2.315	2.847
Bicycle LOS	B	D	B	C

Sequence

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



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Scenario 2 Year 2040 With Project
1/18/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	La Cadena Dr (NS) at Tropica Rancho Rd (EW)	Two-way stop	HCM 6th Edition	EB Right	0.000	19.5	C
2	La Cadena Dr (NS) at Litton Ave (EW)	Signalized	HCM 6th Edition	EB Right	0.663	8.6	A
3	La Cadena Dr (NS) at Palm Ave (EW)	Two-way stop	HCM 6th Edition	EB Right	0.128	21.6	C
4	La Cadena Dr (NS) at Barton Rd (EW)	Signalized	HCM 6th Edition	WB Left	0.994	48.5	D
5	La Cadena Dr/Iowa Ave (NS) at La Cadena Dr (EW)	Signalized	HCM 6th Edition	EB Left	1.097	82.6	F
6	La Cadena Dr (NS) at Maryknoll Dr (EW)	Two-way stop	HCM 6th Edition	EB Thru	0.000	4,151.6	F
7	La Cadena Dr (NS) at Cadena Creek Dwy/I-215 SB On-Ramp (EW)	All-way stop	HCM 6th Edition	SB Left	1.662	167.1	F
8	Iowa Ave (NS) at I-215 SB Off -Ramp (EW)	Signalized	HCM 6th Edition	EB Right	0.953	36.9	D
9	Iowa Ave (NS) at Iowa Ave/I-215 NB Ramps (EW)	Signalized	HCM 6th Edition	EB Left	1.324	162.5	F
10	I-215 SB Ramps/La Crosse Ave (NS) at Barton Rd (EW)	Roundabout	HCM 6th Edition	EB Left		12.0	B
11	I-215 NB Ramps (NS) at Barton Rd (EW)	Signalized	HCM 6th Edition	EB Left	0.692	17.9	B

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

Intersection Level Of Service Report
Intersection 1: La Cadena Dr (NS) at Tropica Rancho Rd (EW)

Control Type:	Two-way stop	Delay (sec / veh):	19.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Tropica Rancho Rd			Vivienda Ave		
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 Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	La Cadena Dr			La Cadena Dr			Tropica Rancho Rd			Vivienda Ave		
Base Volume Input [veh/h]	0	1670	0	0	1870	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	10	0	0	17	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]	0	1680	0	0	1887	0	0	0	0	0	0	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	442	0	0	497	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	1768	0	0	1986	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.02	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.53	0.00	0.00	17.31
Movement LOS		A	A		A	A			C			C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			0.00			19.53			17.31		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	0.00											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 2: La Cadena Dr (NS) at Litton Ave (EW)

Control Type:	Signalized	Delay (sec / veh):	8.6
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.663

Intersection Setup

Name	La Cadena Dr		La Cadena Dr		Litton Ave	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0
Pocket Length [ft]	105.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00		50.00		25.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	La Cadena Dr		La Cadena Dr		Litton Ave	
Base Volume Input [veh/h]	51	1643	1827	50	28	26
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	40	0	0	17	10	19
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	91	1643	1827	67	38	45
Peak Hour Factor	0.9680	0.9680	0.9680	0.9680	0.9680	0.9680
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	424	472	17	10	12
Total Analysis Volume [veh/h]	94	1697	1887	69	39	46
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal group	5	2	6	0	3	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	7	7	7	0	7	0
Maximum Green [s]	30	30	30	0	30	0
Amber [s]	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	11	32	21	0	68	0
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	7	0	7	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	C	C
C, Cycle Length [s]	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	86	75	75	6
g / C, Green / Cycle	0.07	0.86	0.75	0.75	0.06
(v / s)_i Volume / Saturation Flow Rate	0.05	0.47	0.51	0.52	0.05
s, saturation flow rate [veh/h]	1810	3618	1900	1877	1699
c, Capacity [veh/h]	121	3092	1421	1404	111
d1, Uniform Delay [s]	45.95	1.99	6.54	6.63	45.99
k, delay calibration	0.11	0.50	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.31	0.71	2.74	2.88	10.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.55	0.69	0.70	0.77
d, Delay for Lane Group [s/veh]	56.26	2.69	9.28	9.51	56.42
Lane Group LOS	E	A	A	A	E
Critical Lane Group	Yes	No	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	2.54	0.68	7.50	7.63	2.41
50th-Percentile Queue Length [ft/ln]	63.53	16.92	187.60	190.81	60.20
95th-Percentile Queue Length [veh/ln]	4.57	1.22	12.00	12.16	4.33
95th-Percentile Queue Length [ft/ln]	114.35	30.45	299.91	304.08	108.36

Movement, Approach, & Intersection Results

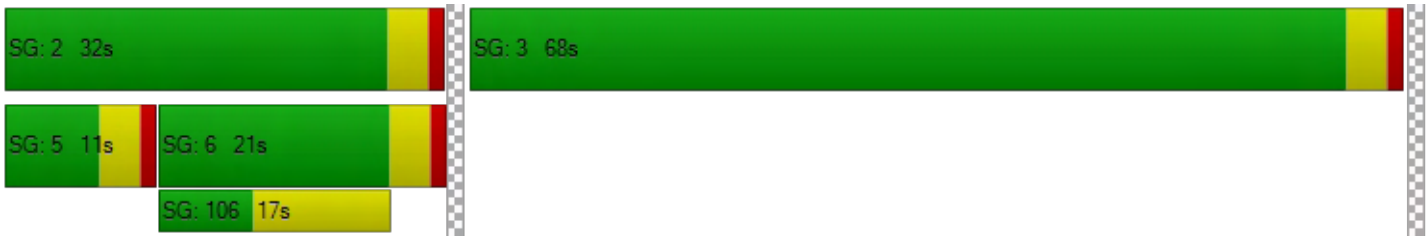
d_M, Delay for Movement [s/veh]	56.26	2.69	9.39	9.51	56.42	56.42
Movement LOS	E	A	A	A	E	E
d_A, Approach Delay [s/veh]	5.51		9.40		56.42	
Approach LOS	A		A		E	
d_I, Intersection Delay [s/veh]	8.62					
Intersection LOS	A					
Intersection V/C	0.663					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	39.61
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.820
Crosswalk LOS	F	F	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	50.00	50.00	50.00
l_b,int, Bicycle LOS Score for Intersection	5.610	5.746	4.273
Bicycle LOS	F	F	E

Sequence

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



Intersection Level Of Service Report
Intersection 3: La Cadena Dr (NS) at Palm Ave (EW)

Control Type:	Two-way stop	Delay (sec / veh):	21.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.128

Intersection Setup

Name	La Cadena Dr		La Cadena Dr		Palm Ave	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	140.00	100.00	100.00
Speed [mph]	50.00		50.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	La Cadena Dr		La Cadena Dr		Palm Ave	
Base Volume Input [veh/h]	0	1660	1860	24	0	26
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	40	19	0	0	4
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1700	1879	24	0	30
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	447	494	6	0	8
Total Analysis Volume [veh/h]	0	1789	1978	25	0	32
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.02	0.02	0.00	0.00	0.13
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	21.56
Movement LOS		A	A	A		C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.43
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	10.87
d_A, Approach Delay [s/veh]	0.00		0.00		21.56	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.18					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 4: La Cadena Dr (NS) at Barton Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	48.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.994

Intersection Setup

Name	La Cadena Dr		La Cadena Dr		Barton Rd	
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 Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	250.00	100.00	100.00	100.00
Speed [mph]	50.00		50.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		No	

Volumes

Name	La Cadena Dr		La Cadena Dr		Barton Rd	
Base Volume Input [veh/h]	1451	442	368	1565	510	209
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	23	0	11	12	0	17
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1474	442	379	1577	510	226
Peak Hour Factor	0.9730	0.9730	0.9730	0.9730	0.9730	0.9730
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	379	114	97	405	131	58
Total Analysis Volume [veh/h]	1515	454	390	1621	524	232
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	85
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal group	2	0	1	6	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	37	0	21	58	27	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	85	85	85	85	85	85
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	33	33	17	54	23	23
g / C, Green / Cycle	0.39	0.39	0.20	0.64	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.42	0.28	0.22	0.45	0.29	0.14
s, saturation flow rate [veh/h]	3618	1615	1810	3618	1810	1615
c, Capacity [veh/h]	1401	626	363	2298	490	437
d1, Uniform Delay [s]	26.08	22.22	34.02	10.26	31.04	26.43
k, delay calibration	0.50	0.50	0.17	0.50	0.32	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	49.21	7.19	48.97	1.85	52.67	1.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.08	0.73	1.07	0.71	1.07	0.53
d, Delay for Lane Group [s/veh]	75.29	29.42	82.99	12.11	83.71	27.43
Lane Group LOS	F	C	F	B	F	C
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	21.78	7.99	11.81	7.68	16.66	3.95
50th-Percentile Queue Length [ft/ln]	544.62	199.77	295.34	191.93	416.50	98.69
95th-Percentile Queue Length [veh/ln]	31.05	12.63	18.09	12.22	24.30	7.11
95th-Percentile Queue Length [ft/ln]	776.30	315.67	452.19	305.54	607.51	177.64

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	75.29	29.42	82.99	12.11	83.71	27.43
Movement LOS	F	C	F	B	F	C
d_A, Approach Delay [s/veh]	64.71		25.86		66.44	
Approach LOS	E		C		E	
d_I, Intersection Delay [s/veh]	48.49					
Intersection LOS	D					
Intersection V/C	0.994					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	32.21	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	3.564	0.000	0.000
Crosswalk LOS	D	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	42.50	42.50	42.50
l_b,int, Bicycle LOS Score for Intersection	5.757	5.791	4.132
Bicycle LOS	F	F	D

Sequence

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



Intersection Level Of Service Report

Intersection 5: La Cadena Dr/Iowa Ave (NS) at La Cadena Dr (EW)

Control Type:	Signalized	Delay (sec / veh):	82.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.097

Intersection Setup

Name	Iowa Ave		La Cadena Dr		La Cadena Dr	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0
Pocket Length [ft]	130.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Iowa Ave		La Cadena Dr		La Cadena Dr	
Base Volume Input [veh/h]	231	1190	755	1394	680	225
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	20	2	10	3	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	231	1210	757	1404	683	225
Peak Hour Factor	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710
Other Adjustment Factor	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	59	312	195	0	176	58
Total Analysis Volume [veh/h]	238	1246	780	0	703	232
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	125
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Overlap
Signal group	5	2	6	0	3	8
Auxiliary Signal Groups						5,8
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	7	7	7	0	7	7
Maximum Green [s]	30	30	30	0	30	30
Amber [s]	3.0	3.0	3.0	0.0	3.0	3.0
All red [s]	1.0	1.0	1.0	0.0	1.0	1.0
Split [s]	20	77	57	0	48	48
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	3.0
Walk [s]	0	7	7	0	7	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
Minimum Recall	No	No	No		No	No
Maximum Recall	No	No	No		No	No
Pedestrian Recall	No	No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	125	125	125	125	125	125
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	16	73	53	53	44	64
g / C, Green / Cycle	0.13	0.58	0.42	0.42	0.35	0.51
(v / s)_i Volume / Saturation Flow Rate	0.13	0.66	0.41	0.00	0.39	0.14
s, saturation flow rate [veh/h]	1810	1900	1900	2859	1810	1615
c, Capacity [veh/h]	232	1111	806	1213	636	826
d1, Uniform Delay [s]	54.46	25.95	35.11	0.00	40.53	17.41
k, delay calibration	0.12	0.50	0.50	0.50	0.50	0.16
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	35.44	66.93	24.66	0.00	68.31	0.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.03	1.12	0.97	0.00	1.11	0.28
d, Delay for Lane Group [s/veh]	89.91	92.88	59.77	0.00	108.84	17.67
Lane Group LOS	F	F	E	A	F	B
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	9.33	49.11	26.95	0.00	30.40	3.63
50th-Percentile Queue Length [ft/ln]	233.33	1227.70	673.86	0.00	760.01	90.63
95th-Percentile Queue Length [veh/ln]	14.50	66.60	35.47	0.00	42.22	6.53
95th-Percentile Queue Length [ft/ln]	362.57	1664.98	886.72	0.00	1055.53	163.13

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	89.91	92.88	59.77	0.00	108.84	17.67
Movement LOS	F	F	E	A	F	B
d_A, Approach Delay [s/veh]	92.40		59.77		86.22	
Approach LOS	F		E		F	
d_I, Intersection Delay [s/veh]	82.64					
Intersection LOS	F					
Intersection V/C	1.097					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	62.50	62.50	62.50
l_b,int, Bicycle LOS Score for Intersection	6.581	5.419	4.132
Bicycle LOS	F	F	D

Sequence

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



Intersection Level Of Service Report
Intersection 6: La Cadena Dr (NS) at Maryknoll Dr (EW)

Control Type:	Two-way stop	Delay (sec / veh):	4,151.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Maryknoll Dr			Dwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

Volumes

Name	La Cadena Dr			La Cadena Dr			Maryknoll Dr			Dwy		
Base Volume Input [veh/h]	108	703	8	2	1296	381	230	0	75	9	0	2
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	3	0	0	10	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]	108	706	8	2	1306	381	230	0	75	9	0	2
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	186	2	1	344	100	61	0	20	2	0	1
Total Analysis Volume [veh/h]	114	743	8	2	1375	401	242	0	79	9	0	2
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.32	0.01	0.00	0.00	0.01	0.00	9.50	0.00	0.20	0.26	0.00	0.00
d_M, Delay for Movement [s/veh]	19.88	0.00	0.00	9.16	0.00	0.00	4123.54	4151.62	16.42	135.15	337.79	38.28
Movement LOS	C	A	A	A	A	A	F	F	C	F	F	E
95th-Percentile Queue Length [veh/ln]	1.26	0.63	0.00	0.01	0.00	0.00	30.08	30.08	0.74	0.86	0.86	0.86
95th-Percentile Queue Length [ft/ln]	31.53	15.76	0.00	0.17	0.09	0.00	752.07	752.07	18.48	21.57	21.57	21.57
d_A, Approach Delay [s/veh]	2.62			0.01			3112.76			117.54		
Approach LOS	A			A			F			F		
d_I, Intersection Delay [s/veh]	337.07											
Intersection LOS	F											

Intersection Level Of Service Report

Intersection 7: La Cadena Dr (NS) at Cadena Creek Dwy/I-215 SB On-Ramp (EW)

Control Type:	All-way stop	Delay (sec / veh):	167.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.662

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Cadena Creek Dwy			I-215 SB On-Ramp		
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 Pocket	1	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	236.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00			50.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	La Cadena Dr			La Cadena Dr			Cadena Creek Dwy			I-215 SB On-Ramp		
Base Volume Input [veh/h]	31	738	12	754	560	81	62	14	19	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	3	0	8	2	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	31	741	12	762	562	81	62	14	19	0	0	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	195	3	201	148	21	16	4	5	0	0	0
Total Analysis Volume [veh/h]	33	780	13	802	592	85	65	15	20	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	464	495	497	802	677	374	422	
Degree of Utilization, x	0.07	0.80	0.80	1.66	1.29	0.21	0.05	

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.23	7.49	7.43	46.41	28.16	0.80	0.15	
95th-Percentile Queue Length [ft]	5.72	187.13	185.80	1160.33	703.96	19.98	3.72	
Approach Delay [s/veh]	32.06			252.90		14.28		0.00
Approach LOS	D			F		B		A
Intersection Delay [s/veh]	167.13							
Intersection LOS	F							

Intersection Level Of Service Report
Intersection 8: Iowa Ave (NS) at I-215 SB Off-Ramp (EW)

Control Type:	Signalized	Delay (sec / veh):	36.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.953

Intersection Setup

Name	Iowa Ave		Iowa Ave		I-215 SB Off-Ramp	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		50.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Iowa Ave		Iowa Ave		I-215 SB Off-Ramp	
Base Volume Input [veh/h]	0	1057	948	0	383	457
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	20	2	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1077	950	0	383	457
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	283	250	0	101	120
Total Analysis Volume [veh/h]	0	1134	1000	0	403	481
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	65
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Split	Split
Signal group	0	2	6	0	3	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	7	7	0	7	0
Maximum Green [s]	0	30	30	0	30	0
Amber [s]	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	0	42	42	0	23	0
Vehicle Extension [s]	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	7	0	7	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall		No	No		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	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
I, Upstream Filtering Factor	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	R
C, Cycle Length [s]	65	65	65	65
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	38	38	19	19
g / C, Green / Cycle	0.58	0.58	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.60	0.53	0.22	0.30
s, saturation flow rate [veh/h]	1900	1900	1810	1615
c, Capacity [veh/h]	1106	1106	533	476
d1, Uniform Delay [s]	13.59	11.98	20.81	22.94
k, delay calibration	0.50	0.50	0.11	0.19
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	33.60	11.98	2.21	28.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.03	0.90	0.76	1.01
d, Delay for Lane Group [s/veh]	47.18	23.96	23.02	51.01
Lane Group LOS	F	C	C	F
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	22.61	11.56	5.45	10.38
50th-Percentile Queue Length [ft/ln]	565.32	288.98	136.20	259.46
95th-Percentile Queue Length [veh/ln]	31.04	17.14	9.28	15.76
95th-Percentile Queue Length [ft/ln]	775.89	428.38	231.90	393.97

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	47.18	23.96	0.00	23.02	51.01
Movement LOS		F	C		C	F
d_A, Approach Delay [s/veh]	47.18		23.96		38.25	
Approach LOS	D		C		D	
d_I, Intersection Delay [s/veh]	36.87					
Intersection LOS	D					
Intersection V/C	0.953					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	32.50	32.50	32.50
l_b,int, Bicycle LOS Score for Intersection	6.004	5.782	4.132
Bicycle LOS	F	F	D

Sequence

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



Intersection Level Of Service Report

Intersection 9: Iowa Ave (NS) at Iowa Ave/I-215 NB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	162.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.324

Intersection Setup

Name	Iowa Ave		Iowa Ave		I-215 NB Ramps	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	90.00	100.00	100.00	100.00
Speed [mph]	30.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Iowa Ave		Iowa Ave		I-215 NB Ramps	
Base Volume Input [veh/h]	337	1001	572	735	19	478
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	2	3	0	0	17
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	337	1003	575	735	19	495
Peak Hour Factor	0.9860	0.9860	0.9860	0.9860	0.9860	0.9860
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	85	254	146	186	5	126
Total Analysis Volume [veh/h]	342	1017	583	745	19	502
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal group	1	0	3	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	7	0	7	7	7	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	62	0	34	68	34	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	R	L	C	C	R
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	58	58	30	64	30	30
g / C, Green / Cycle	0.45	0.45	0.23	0.49	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.19	0.63	0.32	0.39	0.01	0.31
s, saturation flow rate [veh/h]	1810	1615	1810	1900	1900	1615
c, Capacity [veh/h]	807	720	420	936	436	371
d1, Uniform Delay [s]	24.60	36.01	49.92	27.55	38.96	50.07
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.35	193.53	189.02	6.99	0.19	175.93
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.42	1.41	1.39	0.80	0.04	1.35
d, Delay for Lane Group [s/veh]	24.95	229.54	238.93	34.53	39.15	226.00
Lane Group LOS	C	F	F	C	D	F
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	7.30	60.98	35.27	19.91	0.50	30.12
50th-Percentile Queue Length [ft/ln]	182.45	1524.58	881.71	497.79	12.52	752.97
95th-Percentile Queue Length [veh/ln]	11.73	91.51	52.95	27.23	0.90	45.47
95th-Percentile Queue Length [ft/ln]	293.21	2287.63	1323.77	680.75	22.54	1136.81

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	24.95	229.54	238.93	34.53	39.15	226.00
Movement LOS	C	F	F	C	D	F
d_A, Approach Delay [s/veh]	178.05		124.27		219.19	
Approach LOS	F		F		F	
d_I, Intersection Delay [s/veh]	162.47					
Intersection LOS	F					
Intersection V/C	1.324					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	54.47
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.480
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	65.00	65.00	65.00
l_b,int, Bicycle LOS Score for Intersection	4.132	6.324	4.992
Bicycle LOS	D	F	E

Sequence

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



Intersection Level Of Service Report

Intersection 10: I-215 SB Ramps/La Crosse Ave (NS) at Barton Rd (EW)

Control Type:	Roundabout	Delay (sec / veh):	12.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes		

Intersection Setup

Name	La Crosse Ave			I-215 SB Ramps			Barton Rd			Barton Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	La Crosse Ave			I-215 SB Ramps			Barton Rd			Barton Rd		
Base Volume Input [veh/h]	2	0	42	275	14	169	32	797	86	419	519	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	11	2	9	0	0	6	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]	2	0	42	275	14	180	34	806	86	419	525	8
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]	1	0	11	71	4	47	9	209	22	109	136	2
Total Analysis Volume [veh/h]	2	0	44	285	15	187	35	836	89	435	545	8
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			2			2		
Circulating Flow Rate [veh/h]	1156			982			735			37		
Exiting Flow Rate [veh/h]	539			43			734			1165		
Demand Flow Rate [veh/h]	2	0	42	275	14	180	34	806	86	419	525	8
Adjusted Demand Flow Rate [veh/h]	2	0	44	285	15	187	35	836	89	435	545	8

Lanes

Overwrite Calculated Critical Headway	No	No	No	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1420.00	1420.00	1350.00	1420.00	1350.00	1420.00
B (coefficient)	0.00102	0.00091	0.00091	0.00092	0.00085	0.00092	0.00085
HV Adjustment Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Entry Flow Rate [veh/h]	46	300	187	452	509	465	524
Capacity of Entry and Bypass Lanes [veh/h]	425	582	582	687	761	1305	1377
Pedestrian Impedance	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	425	582	582	687	761	1305	1377
X, volume / capacity	0.11	0.52	0.32	0.66	0.67	0.36	0.38

Movement, Approach, & Intersection Results

Lane LOS	B	C	B	C	C	A	A
95th-Percentile Queue Length [veh]	0.36	2.95	1.38	4.93	5.21	1.63	1.81
95th-Percentile Queue Length [ft]	9.05	73.85	34.62	123.17	130.19	40.80	45.30
Approach Delay [s/veh]	10.05	13.48		17.53		6.09	
Approach LOS	B	B		C		A	
Intersection Delay [s/veh]	12.04						
Intersection LOS	B						

Intersection Level Of Service Report
Intersection 11: I-215 NB Ramps (NS) at Barton Rd (EW)

Control Type:	Signalized	Delay (sec / veh):	17.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.692

Intersection Setup

Name	I-215 NB Off-Ramp			I-215 On-Ramp			Barton Rd			Barton Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	300.00	100.00	100.00	100.00	100.00	200.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	I-215 NB Off-Ramp			I-215 On-Ramp			Barton Rd			Barton Rd		
Base Volume Input [veh/h]	48	5	501	0	0	0	324	789	0	0	862	430
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	0	0	0	0	0	7	2	0	0	3	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]	51	5	501	0	0	0	331	791	0	0	865	430
Peak Hour Factor	0.9720	0.9720	0.9720	0.9500	0.9500	0.9500	0.9720	0.9720	0.9500	0.9500	0.9720	0.9720
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	1	129	0	0	0	85	203	0	0	222	111
Total Analysis Volume [veh/h]	52	5	515	0	0	0	341	814	0	0	890	442
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	7	0	0	0	0	7	7	0	0	7	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	21	0	0	0	0	18	39	0	0	21	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	10	0	0	10	0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R		L	C	C	R
C, Cycle Length [s]	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
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	12	12		13	40	23	23
g / C, Green / Cycle	0.20	0.20	0.20		0.22	0.66	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.03	0.16	0.16		0.19	0.23	0.25	0.27
s, saturation flow rate [veh/h]	1810	1620	1615		1810	3618	3618	1615
c, Capacity [veh/h]	368	329	329		402	2401	1357	606
d1, Uniform Delay [s]	19.65	22.74	22.74		22.43	4.39	15.58	16.18
k, delay calibration	0.11	0.11	0.11		0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.17	4.25	4.27		5.05	0.38	2.49	7.55
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.14	0.79	0.79		0.85	0.34	0.66	0.73
d, Delay for Lane Group [s/veh]	19.83	27.00	27.01		27.48	4.78	18.07	23.73
Lane Group LOS	B	C	C		C	A	B	C
Critical Lane Group	No	No	Yes		Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.58	3.62	3.61		4.71	1.44	4.78	5.72
50th-Percentile Queue Length [ft/ln]	14.40	90.58	90.36		117.87	35.93	119.48	142.88
95th-Percentile Queue Length [veh/ln]	1.04	6.52	6.51		8.28	2.59	8.36	9.64
95th-Percentile Queue Length [ft/ln]	25.91	163.05	162.65		206.90	64.67	209.11	240.90

Movement, Approach, & Intersection Results

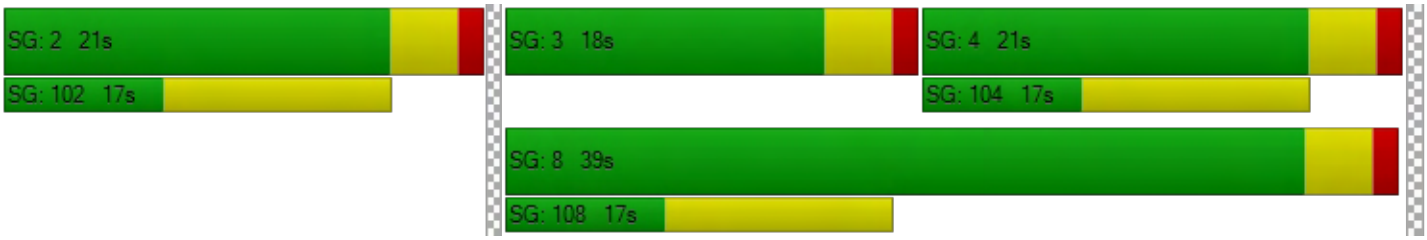
d_M, Delay for Movement [s/veh]	19.83	27.00	27.01	0.00	0.00	0.00	27.48	4.78	0.00	0.00	18.07	23.73
Movement LOS	B	C	C				C	A			B	C
d_A, Approach Delay [s/veh]	26.35			0.00			11.48			19.95		
Approach LOS	C			A			B			B		
d_I, Intersection Delay [s/veh]	17.95											
Intersection LOS	B											
Intersection V/C	0.692											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
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]	20.01	20.01	0.00	20.01
l_p,int, Pedestrian LOS Score for Intersection	2.104	2.169	0.000	2.883
Crosswalk LOS	B	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	567	0	1167	567
d_b, Bicycle Delay [s]	15.41	30.00	5.21	15.41
l_b,int, Bicycle LOS Score for Intersection	2.503	4.132	2.512	2.659
Bicycle LOS	B	D	B	B

Sequence

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



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Scenario 2 Year 2040 With Project
1/18/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
5	La Cadena Dr/Iowa Ave (NS) at La Cadena Dr (EW)	Signalized	HCM 6th Edition	NB Left	0.856	28.8	C
6	La Cadena Dr (NS) at Maryknoll Dr (EW)	Signalized	HCM 6th Edition	EB Left	0.755	20.6	C
7	La Cadena Dr (NS) at Cadena Creek Dwy/I-215 SB On-Ramp (EW)	Signalized	HCM 6th Edition	NB Left	0.628	18.8	B
8	Iowa Ave (NS) at I-215 SB Off -Ramp (EW)	Signalized	HCM 6th Edition	SB Thru	0.841	22.4	C
9	Iowa Ave (NS) at Iowa Ave/I-215 NB Ramps (EW)	Signalized	HCM 6th Edition	WB Thru	0.611	23.7	C

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

Intersection Level Of Service Report

Intersection 5: La Cadena Dr/Iowa Ave (NS) at La Cadena Dr (EW)

Control Type:	Signalized	Delay (sec / veh):	28.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.856

Intersection Setup

Name	Iowa Ave		La Cadena Dr		La Cadena Dr	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0
Pocket Length [ft]	130.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Iowa Ave		La Cadena Dr		La Cadena Dr	
Base Volume Input [veh/h]	135	811	756	1161	519	211
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	6	2	18	1	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	135	817	758	1179	520	211
Peak Hour Factor	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560
Other Adjustment Factor	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	214	198	0	136	55
Total Analysis Volume [veh/h]	141	855	793	0	544	221
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	85
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Overlap
Signal group	5	2	6	0	3	8
Auxiliary Signal Groups						5,8
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	7	7	7	0	7	7
Maximum Green [s]	30	30	30	0	30	30
Amber [s]	3.0	3.0	3.0	0.0	3.0	3.0
All red [s]	1.0	1.0	1.0	0.0	1.0	1.0
Split [s]	12	31	19	0	54	54
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	3.0
Walk [s]	0	7	7	0	7	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
Minimum Recall	No	No	No		No	No
Maximum Recall	No	No	No		No	No
Pedestrian Recall	No	No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	85	85	85	85	85	85
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	8	49	37	37	28	40
g / C, Green / Cycle	0.09	0.58	0.44	0.44	0.33	0.47
(v / s)_i Volume / Saturation Flow Rate	0.08	0.24	0.42	0.00	0.30	0.14
s, saturation flow rate [veh/h]	1810	3618	1900	2859	1810	1615
c, Capacity [veh/h]	172	2089	827	1244	595	760
d1, Uniform Delay [s]	37.78	9.95	23.28	0.00	27.42	13.81
k, delay calibration	0.11	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.23	0.60	22.75	0.00	6.07	0.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.41	0.96	0.00	0.91	0.29
d, Delay for Lane Group [s/veh]	47.01	10.54	46.03	0.00	33.49	14.02
Lane Group LOS	D	B	D	A	C	B
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.13	3.64	18.20	0.00	10.39	2.28
50th-Percentile Queue Length [ft/ln]	78.29	90.89	454.96	0.00	259.81	56.96
95th-Percentile Queue Length [veh/ln]	5.64	6.54	25.19	0.00	15.68	4.10
95th-Percentile Queue Length [ft/ln]	140.91	163.60	629.86	0.00	391.99	102.53

Movement, Approach, & Intersection Results

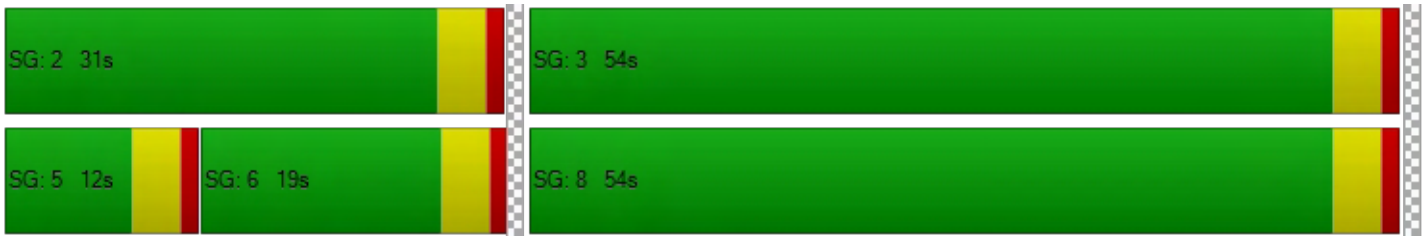
d_M, Delay for Movement [s/veh]	47.01	10.54	46.03	0.00	33.49	14.02
Movement LOS	D	B	D	A	C	B
d_A, Approach Delay [s/veh]	15.71		46.03		27.86	
Approach LOS	B		D		C	
d_I, Intersection Delay [s/veh]	28.76					
Intersection LOS	C					
Intersection V/C	0.856					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	42.50	42.50	42.50
l_b,int, Bicycle LOS Score for Intersection	4.954	5.441	4.132
Bicycle LOS	E	F	D

Sequence

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



Intersection Level Of Service Report
Intersection 6: La Cadena Dr (NS) at Maryknoll Dr (EW)

Control Type:	Signalized	Delay (sec / veh):	20.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.755

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Maryknoll Dr			Dwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			Yes		

Volumes

Name	La Cadena Dr			La Cadena Dr			Maryknoll Dr			Dwy		
Base Volume Input [veh/h]	42	299	6	22	1161	151	361	0	119	20	0	14
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	0	0	18	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]	42	300	6	22	1179	151	361	0	119	20	0	14
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	79	2	6	310	40	95	0	31	5	0	4
Total Analysis Volume [veh/h]	44	316	6	23	1241	159	380	0	125	21	0	15
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 Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	7	0	0	7	0	0	7	0	0	7	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	35	0	0	35	0	0	25	0	0	25	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	C
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	51	51	51	51	51	51	21	21	21
g / C, Green / Cycle	0.64	0.64	0.64	0.64	0.64	0.64	0.26	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.11	0.08	0.09	0.02	0.37	0.38	0.34	0.08	0.29
s, saturation flow rate [veh/h]	391	1900	1888	1075	1900	1826	1118	1615	123
c, Capacity [veh/h]	238	1209	1201	702	1209	1161	385	426	104
d1, Uniform Delay [s]	17.37	5.78	5.78	7.57	8.45	8.49	31.80	23.48	24.52
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.38	0.11	0.29
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.70	0.23	0.23	0.09	2.10	2.23	37.10	0.38	5.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.18	0.13	0.13	0.03	0.59	0.59	0.99	0.29	0.35
d, Delay for Lane Group [s/veh]	19.07	6.01	6.01	7.65	10.55	10.73	68.90	23.86	29.77
Lane Group LOS	B	A	A	A	B	B	E	C	C
Critical Lane Group	No	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.61	0.83	0.83	0.15	5.56	5.45	11.39	1.90	0.65
50th-Percentile Queue Length [ft/ln]	15.19	20.75	20.69	3.80	139.02	136.20	284.87	47.55	16.37
95th-Percentile Queue Length [veh/ln]	1.09	1.49	1.49	0.27	9.43	9.28	16.93	3.42	1.18
95th-Percentile Queue Length [ft/ln]	27.34	37.36	37.24	6.85	235.71	231.90	423.28	85.59	29.47

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	19.07	6.01	6.01	7.65	10.63	10.73	68.90	68.90	23.86	29.77	29.77	29.77
Movement LOS	B	A	A	A	B	B	E	E	C	C	C	C
d_A, Approach Delay [s/veh]	7.58			10.59			57.75			29.77		
Approach LOS	A			B			E			C		
d_I, Intersection Delay [s/veh]	20.63											
Intersection LOS	C											
Intersection V/C	0.755											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
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]	0.00	0.00	0.00	29.76
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	1.767
Crosswalk LOS	F	F	F	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	775	775	525	525
d_b, Bicycle Delay [s]	15.01	15.01	21.76	21.76
l_b,int, Bicycle LOS Score for Intersection	1.862	2.734	2.393	1.619
Bicycle LOS	A	B	B	A

Sequence

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



Intersection Level Of Service Report

Intersection 7: La Cadena Dr (NS) at Cadena Creek Dwy/I-215 SB On-Ramp (EW)

Control Type:	Signalized	Delay (sec / veh):	18.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.628

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Cadena Creek Dwy			I-215 SB On-Ramp		
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 Pocket	1	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	236.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00			50.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name	La Cadena Dr			La Cadena Dr			Cadena Creek Dwy			I-215 SB On-Ramp		
Base Volume Input [veh/h]	14	265	0	727	558	56	80	23	32	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	0	16	2	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	266	0	743	560	56	80	23	32	0	0	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	70	0	196	147	15	21	6	8	0	0	0
Total Analysis Volume [veh/h]	15	280	0	782	589	59	84	24	34	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	0	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	18	11	0	38	31	0	0	11	0	0	0	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall	No	No		No	No			No				
Maximum Recall	No	No		No	No			No				
Pedestrian Recall	No	No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	L	C	C	R	
C, Cycle Length [s]	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	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	2	14	14	28	40	6	6	
g / C, Green / Cycle	0.03	0.23	0.23	0.47	0.67	0.11	0.11	
(v / s)_i Volume / Saturation Flow Rate	0.01	0.07	0.07	0.43	0.35	0.06	0.02	
s, saturation flow rate [veh/h]	1810	1900	1900	1810	1870	1829	1615	
c, Capacity [veh/h]	51	429	429	845	1244	196	173	
d1, Uniform Delay [s]	28.66	19.46	19.46	15.04	5.16	25.47	24.48	
k, delay calibration	0.11	0.50	0.50	0.28	0.50	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	3.19	2.02	2.02	11.14	1.56	2.39	0.55	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.30	0.33	0.33	0.92	0.52	0.55	0.20	
d, Delay for Lane Group [s/veh]	31.85	21.47	21.47	26.18	6.73	27.86	25.03	
Lane Group LOS	C	C	C	C	A	C	C	
Critical Lane Group	No	Yes	No	Yes	No	Yes	No	
50th-Percentile Queue Length [veh/ln]	0.24	1.65	1.65	9.66	2.29	1.54	0.45	
50th-Percentile Queue Length [ft/ln]	5.92	41.27	41.27	241.40	57.36	38.42	11.30	
95th-Percentile Queue Length [veh/ln]	0.43	2.97	2.97	14.75	4.13	2.77	0.81	
95th-Percentile Queue Length [ft/ln]	10.65	74.29	74.29	368.81	103.25	69.15	20.33	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	31.85	21.47	21.47	26.18	6.73	6.73	27.86	27.86	25.03	0.00	0.00	0.00
Movement LOS	C	C	C	C	A	A	C	C	C			
d_A, Approach Delay [s/veh]	22.00			17.37			27.18			0.00		
Approach LOS	C			B			C			A		
d_I, Intersection Delay [s/veh]	18.84											
Intersection LOS	B											
Intersection V/C	0.628											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	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]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	233	900	233	0
d_b, Bicycle Delay [s]	23.41	9.08	23.41	30.00
l_b,int, Bicycle LOS Score for Intersection	1.803	3.919	1.794	4.132
Bicycle LOS	A	D	A	D

Sequence

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



Intersection Level Of Service Report
Intersection 8: Iowa Ave (NS) at I-215 SB Off-Ramp (EW)

Control Type:	Signalized	Delay (sec / veh):	22.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.841

Intersection Setup

Name	Iowa Ave		Iowa Ave		I-215 SB Off-Ramp	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		50.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Iowa Ave		Iowa Ave		I-215 SB Off-Ramp	
Base Volume Input [veh/h]	0	893	947	0	87	703
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	6	2	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	899	949	0	87	703
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	237	250	0	23	185
Total Analysis Volume [veh/h]	0	946	999	0	92	740
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Split	Split
Signal group	0	2	6	0	3	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	7	7	0	7	0
Maximum Green [s]	0	30	30	0	30	0
Amber [s]	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	0	38	38	0	22	0
Vehicle Extension [s]	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	7	0	7	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall		No	No		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	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
I, Upstream Filtering Factor	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	R
C, Cycle Length [s]	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	35	35	17	17
g / C, Green / Cycle	0.58	0.58	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.50	0.53	0.05	0.26
s, saturation flow rate [veh/h]	1900	1900	1810	2859
c, Capacity [veh/h]	1096	1096	525	830
d1, Uniform Delay [s]	10.73	11.36	15.96	20.43
k, delay calibration	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.05	12.82	0.16	3.60
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.91	0.18	0.89
d, Delay for Lane Group [s/veh]	19.78	24.18	16.11	24.04
Lane Group LOS	B	C	B	C
Critical Lane Group	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	10.60	10.76	0.89	4.89
50th-Percentile Queue Length [ft/ln]	265.02	269.08	22.32	122.37
95th-Percentile Queue Length [veh/ln]	15.94	16.14	1.61	8.52
95th-Percentile Queue Length [ft/ln]	398.51	403.59	40.17	213.08

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	19.78	24.18	0.00	16.11	24.04
Movement LOS		B	C		B	C
d_A, Approach Delay [s/veh]	19.78		24.18		23.16	
Approach LOS	B		C		C	
d_I, Intersection Delay [s/veh]	22.38					
Intersection LOS	C					
Intersection V/C	0.841					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	30.00	30.00	30.00
l_b,int, Bicycle LOS Score for Intersection	5.693	5.781	4.132
Bicycle LOS	F	F	D

Sequence

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



Intersection Level Of Service Report
Intersection 9: Iowa Ave (NS) at Iowa Ave/I-215 NB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	23.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.611

Intersection Setup

Name	Iowa Ave		Iowa Ave		I-215 NB Ramps	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	90.00	100.00	100.00	100.00
Speed [mph]	30.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Iowa Ave		Iowa Ave		I-215 NB Ramps	
Base Volume Input [veh/h]	429	1200	486	585	86	396
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	2	1	0	0	5
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	429	1202	487	585	86	401
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	113	316	128	154	23	106
Total Analysis Volume [veh/h]	452	1265	513	616	91	422
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Overlap
Signal group	1	6	3	8	4	4
Auxiliary Signal Groups		3,6				1,4
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	7	7	7	7	7	7
Maximum Green [s]	30	30	30	30	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	28	28	31	42	11	11
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	7	0	0	7	7	7
Pedestrian Clearance [s]	10	0	0	10	10	10
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
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
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	R	L	C	C	R
C, Cycle Length [s]	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
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	0.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	24	55	27	38	7	35
g / C, Green / Cycle	0.34	0.78	0.38	0.54	0.10	0.50
(v / s)_i Volume / Saturation Flow Rate	0.25	0.78	0.28	0.32	0.05	0.26
s, saturation flow rate [veh/h]	1810	1615	1810	1900	1900	1615
c, Capacity [veh/h]	620	1266	695	1032	194	811
d1, Uniform Delay [s]	20.17	7.56	18.56	10.82	29.67	11.77
k, delay calibration	0.14	0.50	0.20	0.50	0.50	0.16
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.22	25.15	2.89	2.55	7.94	0.79
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.73	1.00	0.74	0.60	0.47	0.52
d, Delay for Lane Group [s/veh]	22.39	32.71	21.45	13.37	37.61	12.56
Lane Group LOS	C	C	C	B	D	B
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	6.35	16.46	6.57	5.58	1.82	4.08
50th-Percentile Queue Length [ft/ln]	158.68	411.52	164.37	139.61	45.59	101.89
95th-Percentile Queue Length [veh/ln]	10.48	23.11	10.78	9.46	3.28	7.34
95th-Percentile Queue Length [ft/ln]	261.98	577.87	269.51	236.51	82.06	183.40

Movement, Approach, & Intersection Results

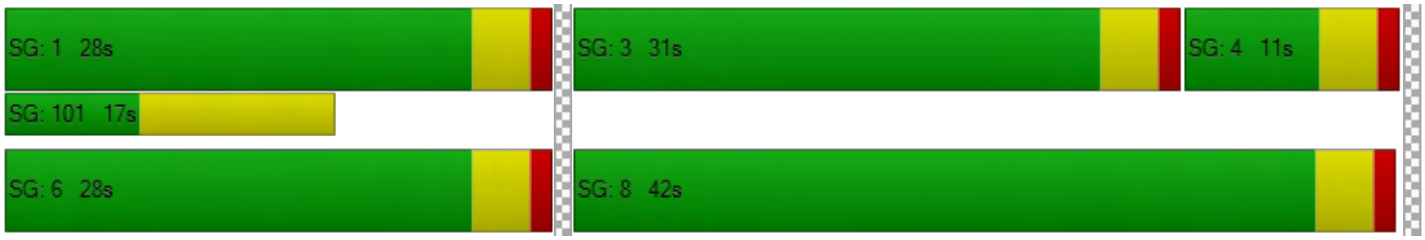
d_M, Delay for Movement [s/veh]	22.39	32.71	21.45	13.37	37.61	12.56
Movement LOS	C	C	C	B	D	B
d_A, Approach Delay [s/veh]	29.99		17.04		17.00	
Approach LOS	C		B		B	
d_I, Intersection Delay [s/veh]	23.66					
Intersection LOS	C					
Intersection V/C	0.611					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	24.86
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.440
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	35.00	35.00	35.00
l_b,int, Bicycle LOS Score for Intersection	4.132	5.995	4.979
Bicycle LOS	D	F	E

Sequence

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



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Scenario 2 Year 2040 With Project
1/18/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
5	La Cadena Dr/Iowa Ave (NS) at La Cadena Dr (EW)	Signalized	HCM 6th Edition	NB Left	0.987	51.6	D
6	La Cadena Dr (NS) at Maryknoll Dr (EW)	Signalized	HCM 6th Edition	NB Left	0.701	11.0	B
7	La Cadena Dr (NS) at Cadena Creek Dwy/I-215 SB On-Ramp (EW)	Signalized	HCM 6th Edition	NB Left	0.757	24.4	C
8	Iowa Ave (NS) at I-215 SB Off -Ramp (EW)	Signalized	HCM 6th Edition	EB Left	0.873	24.0	C
9	Iowa Ave (NS) at Iowa Ave/I-215 NB Ramps (EW)	Signalized	HCM 6th Edition	WB Thru	0.974	15.7	B

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

Intersection Level Of Service Report

Intersection 5: La Cadena Dr/Iowa Ave (NS) at La Cadena Dr (EW)

Control Type:	Signalized	Delay (sec / veh):	51.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.987

Intersection Setup

Name	Iowa Ave		La Cadena Dr		La Cadena Dr	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0
Pocket Length [ft]	130.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Iowa Ave		La Cadena Dr		La Cadena Dr	
Base Volume Input [veh/h]	231	1190	755	1394	680	225
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	20	2	10	3	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	231	1210	757	1404	683	225
Peak Hour Factor	0.9710	0.9710	0.9710	0.9710	0.9710	0.9710
Other Adjustment Factor	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	59	312	195	0	176	58
Total Analysis Volume [veh/h]	238	1246	780	0	703	232
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	105
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Overlap
Signal group	5	2	6	0	3	8
Auxiliary Signal Groups						5,8
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	7	7	7	0	7	7
Maximum Green [s]	30	30	30	0	30	30
Amber [s]	3.0	3.0	3.0	0.0	3.0	3.0
All red [s]	1.0	1.0	1.0	0.0	1.0	1.0
Split [s]	17	62	45	0	43	43
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	3.0
Walk [s]	0	7	7	0	7	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
Minimum Recall	No	No	No		No	No
Maximum Recall	No	No	No		No	No
Pedestrian Recall	No	No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	13	58	41	41	39	56
g / C, Green / Cycle	0.12	0.55	0.39	0.39	0.37	0.53
(v / s)_i Volume / Saturation Flow Rate	0.13	0.34	0.41	0.00	0.39	0.14
s, saturation flow rate [veh/h]	1810	3618	1900	2859	1810	1615
c, Capacity [veh/h]	226	2002	742	1116	670	862
d1, Uniform Delay [s]	45.92	15.96	32.00	0.00	33.05	13.34
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	42.32	1.47	47.51	0.00	48.21	0.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.05	0.62	1.05	0.00	1.05	0.27
d, Delay for Lane Group [s/veh]	88.24	17.43	79.51	0.00	81.27	13.51
Lane Group LOS	F	B	F	A	F	B
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	8.29	9.19	26.80	0.00	24.46	2.70
50th-Percentile Queue Length [ft/ln]	207.16	229.85	669.92	0.00	611.54	67.47
95th-Percentile Queue Length [veh/ln]	13.28	14.17	36.59	0.00	33.69	4.86
95th-Percentile Queue Length [ft/ln]	332.05	354.17	914.84	0.00	842.22	121.44

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	88.24	17.43	79.51	0.00	81.27	13.51
Movement LOS	F	B	F	A	F	B
d_A, Approach Delay [s/veh]	28.79		79.51		64.45	
Approach LOS	C		E		E	
d_I, Intersection Delay [s/veh]	51.58					
Intersection LOS	D					
Intersection V/C	0.987					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	52.50	52.50	52.50
l_b,int, Bicycle LOS Score for Intersection	5.357	5.419	4.132
Bicycle LOS	F	F	D

Sequence

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



Intersection Level Of Service Report
Intersection 6: La Cadena Dr (NS) at Maryknoll Dr (EW)

Control Type:	Signalized	Delay (sec / veh):	11.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.701

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Maryknoll Dr			Dwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			Yes		

Volumes

Name	La Cadena Dr			La Cadena Dr			Maryknoll Dr			Dwy		
Base Volume Input [veh/h]	108	703	8	2	1296	381	230	0	75	9	0	2
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	3	0	0	10	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]	108	706	8	2	1306	381	230	0	75	9	0	2
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	186	2	1	344	100	61	0	20	2	0	1
Total Analysis Volume [veh/h]	114	743	8	2	1375	401	242	0	79	9	0	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	7	0	0	7	0	0	7	0	0	7	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	63	0	0	63	0	0	27	0	0	27	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	C
C, Cycle Length [s]	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
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	41	41	41	41	41	41	11	11	11
g / C, Green / Cycle	0.68	0.68	0.68	0.68	0.68	0.68	0.19	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.42	0.20	0.20	0.00	0.47	0.50	0.16	0.05	0.04
s, saturation flow rate [veh/h]	272	1900	1893	723	1900	1758	1553	1615	267
c, Capacity [veh/h]	199	1282	1277	519	1282	1186	418	310	160
d1, Uniform Delay [s]	23.92	3.96	3.96	6.05	6.03	6.34	23.21	20.63	20.51
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	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
d2, Incremental Delay [s]	11.38	0.58	0.58	0.01	3.22	4.15	1.27	0.43	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
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.57	0.29	0.29	0.00	0.70	0.74	0.58	0.25	0.07
d, Delay for Lane Group [s/veh]	35.31	4.55	4.55	6.06	9.25	10.49	24.48	21.06	20.68
Lane Group LOS	D	A	A	A	A	B	C	C	C
Critical Lane Group	No	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.10	0.96	0.96	0.01	3.90	4.19	3.25	0.94	0.13
50th-Percentile Queue Length [ft/ln]	52.50	24.10	24.03	0.23	97.52	104.76	81.27	23.44	3.20
95th-Percentile Queue Length [veh/ln]	3.78	1.74	1.73	0.02	7.02	7.54	5.85	1.69	0.23
95th-Percentile Queue Length [ft/ln]	94.50	43.39	43.26	0.42	175.53	188.57	146.28	42.18	5.76

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	35.31	4.55	4.55	6.06	9.68	10.49	24.48	24.48	21.06	20.68	20.68	20.68
Movement LOS	D	A	A	A	A	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	8.60			9.86			23.64			20.68		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	11.02											
Intersection LOS	B											
Intersection V/C	0.701											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	11.0
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]	0.00	0.00	0.00	20.01
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	1.704
Crosswalk LOS	F	F	F	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1967	1967	767	767
d_b, Bicycle Delay [s]	0.01	0.01	11.41	11.41
l_b,int, Bicycle LOS Score for Intersection	2.273	3.026	2.089	1.578
Bicycle LOS	B	C	B	A

Sequence

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



Intersection Level Of Service Report

Intersection 7: La Cadena Dr (NS) at Cadena Creek Dwy/I-215 SB On-Ramp (EW)

Control Type:	Signalized	Delay (sec / veh):	24.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.757

Intersection Setup

Name	La Cadena Dr			La Cadena Dr			Cadena Creek Dwy			I-215 SB On-Ramp		
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 Pocket	1	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	236.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00			50.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name	La Cadena Dr			La Cadena Dr			Cadena Creek Dwy			I-215 SB On-Ramp		
Base Volume Input [veh/h]	31	738	12	754	560	81	62	14	19	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	3	0	8	2	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	31	741	12	762	562	81	62	14	19	0	0	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	195	3	201	148	21	16	4	5	0	0	0
Total Analysis Volume [veh/h]	33	780	13	802	592	85	65	15	20	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	75
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	0	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	12	11	0	53	52	0	0	11	0	0	0	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall	No	No		No	No			No				
Maximum Recall	No	No		No	No			No				
Pedestrian Recall	No	No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	L	C	C	R	
C, Cycle Length [s]	75	75	75	75	75	75	75	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	4	21	21	36	53	6	6	
g / C, Green / Cycle	0.05	0.28	0.28	0.47	0.71	0.08	0.08	
(v / s)_i Volume / Saturation Flow Rate	0.02	0.21	0.21	0.44	0.36	0.04	0.01	
s, saturation flow rate [veh/h]	1810	1900	1889	1810	1859	1826	1615	
c, Capacity [veh/h]	87	537	534	859	1318	152	134	
d1, Uniform Delay [s]	34.66	24.44	24.44	18.62	5.00	33.02	31.97	
k, delay calibration	0.11	0.50	0.50	0.23	0.50	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	2.71	8.89	8.95	10.08	1.43	2.83	0.51	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.38	0.74	0.74	0.93	0.51	0.53	0.15	
d, Delay for Lane Group [s/veh]	37.38	33.34	33.39	28.69	6.43	35.85	32.48	
Lane Group LOS	D	C	C	C	A	D	C	
Critical Lane Group	No	No	Yes	Yes	No	Yes	No	
50th-Percentile Queue Length [veh/ln]	0.61	7.05	7.01	12.73	2.91	1.50	0.35	
50th-Percentile Queue Length [ft/ln]	15.33	176.13	175.33	318.23	72.83	37.43	8.81	
95th-Percentile Queue Length [veh/ln]	1.10	11.40	11.36	18.58	5.24	2.69	0.63	
95th-Percentile Queue Length [ft/ln]	27.60	284.96	283.91	464.51	131.10	67.37	15.86	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	37.38	33.36	33.39	28.69	6.43	6.43	35.85	35.85	32.48	0.00	0.00	0.00
Movement LOS	D	C	C	C	A	A	D	D	C			
d_A, Approach Delay [s/veh]	33.52			18.50			35.17			0.00		
Approach LOS	C			B			D			A		
d_I, Intersection Delay [s/veh]	24.36											
Intersection LOS	C											
Intersection V/C	0.757											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	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]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	187	1280	187	0
d_b, Bicycle Delay [s]	30.83	4.86	30.83	37.50
l_b,int, Bicycle LOS Score for Intersection	2.241	4.000	1.725	4.132
Bicycle LOS	B	D	A	D

Sequence

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



Intersection Level Of Service Report
Intersection 8: Iowa Ave (NS) at I-215 SB Off-Ramp (EW)

Control Type:	Signalized	Delay (sec / veh):	24.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.873

Intersection Setup

Name	Iowa Ave		Iowa Ave		I-215 SB Off-Ramp	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		50.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Iowa Ave		Iowa Ave		I-215 SB Off-Ramp	
Base Volume Input [veh/h]	0	1057	948	0	383	457
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	20	2	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1077	950	0	383	457
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	283	250	0	101	120
Total Analysis Volume [veh/h]	0	1134	1000	0	403	481
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	65
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Split	Split
Signal group	0	2	6	0	3	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	7	7	0	7	0
Maximum Green [s]	0	30	30	0	30	0
Amber [s]	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	0	44	44	0	21	0
Vehicle Extension [s]	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	7	0	7	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall		No	No		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	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
I, Upstream Filtering Factor	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	R
C, Cycle Length [s]	65	65	65	65
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	41	41	16	16
g / C, Green / Cycle	0.63	0.63	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.60	0.53	0.22	0.17
s, saturation flow rate [veh/h]	1900	1900	1810	2859
c, Capacity [veh/h]	1187	1187	457	722
d1, Uniform Delay [s]	11.37	9.68	23.38	21.85
k, delay calibration	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	17.44	7.36	5.75	1.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.96	0.84	0.88	0.67
d, Delay for Lane Group [s/veh]	28.81	17.04	29.13	22.92
Lane Group LOS	C	B	C	C
Critical Lane Group	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	16.67	8.71	6.24	3.18
50th-Percentile Queue Length [ft/ln]	416.83	217.70	156.05	79.54
95th-Percentile Queue Length [veh/ln]	23.37	13.55	10.34	5.73
95th-Percentile Queue Length [ft/ln]	584.24	338.68	258.48	143.17

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	28.81	17.04	0.00	29.13	22.92
Movement LOS		C	B		C	C
d_A, Approach Delay [s/veh]	28.81		17.04		25.75	
Approach LOS	C		B		C	
d_I, Intersection Delay [s/veh]	24.01					
Intersection LOS	C					
Intersection V/C	0.873					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	32.50	32.50	32.50
l_b,int, Bicycle LOS Score for Intersection	6.004	5.782	4.132
Bicycle LOS	F	F	D

Sequence

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



Intersection Level Of Service Report

Intersection 9: Iowa Ave (NS) at Iowa Ave/I-215 NB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	15.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.974

Intersection Setup

Name	Iowa Ave		Iowa Ave		I-215 NB Ramps	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	90.00	100.00	100.00	100.00
Speed [mph]	30.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Iowa Ave		Iowa Ave		I-215 NB Ramps	
Base Volume Input [veh/h]	337	1001	572	735	19	478
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	2	3	0	0	17
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	337	1003	575	735	19	495
Peak Hour Factor	0.9860	0.9860	0.9860	0.9860	0.9860	0.9860
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	85	254	146	186	5	126
Total Analysis Volume [veh/h]	342	1017	583	745	19	502
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Overlap
Signal group	1	6	3	8	4	4
Auxiliary Signal Groups		3,6				1,4
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	7	7	7	7	7	7
Maximum Green [s]	30	30	30	30	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	21	21	28	39	11	11
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	7	0	0	7	7	7
Pedestrian Clearance [s]	10	0	0	10	10	10
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
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
Detector Length [ft]	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

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	R	L	C	C	R
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	0.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	17	44	23	35	8	29
g / C, Green / Cycle	0.28	0.73	0.38	0.58	0.14	0.49
(v / s)_i Volume / Saturation Flow Rate	0.19	0.63	0.32	0.39	0.01	0.31
s, saturation flow rate [veh/h]	1810	1615	1810	1900	1900	1615
c, Capacity [veh/h]	513	1177	685	1109	263	788
d1, Uniform Delay [s]	19.02	5.98	17.11	8.57	22.53	11.42
k, delay calibration	0.11	0.50	0.19	0.50	0.50	0.17
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.50	8.55	5.29	3.25	0.53	1.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.67	0.86	0.85	0.67	0.07	0.64
d, Delay for Lane Group [s/veh]	20.53	14.52	22.40	11.83	23.07	12.80
Lane Group LOS	C	B	C	B	C	B
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.04	7.27	6.84	5.15	0.26	4.43
50th-Percentile Queue Length [ft/ln]	100.96	181.72	171.07	128.71	6.49	110.72
95th-Percentile Queue Length [veh/ln]	7.27	11.69	11.13	8.87	0.47	7.88
95th-Percentile Queue Length [ft/ln]	181.72	292.26	278.32	221.73	11.69	197.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	20.53	14.52	22.40	11.83	23.07	12.80
Movement LOS	C	B	C	B	C	B
d_A, Approach Delay [s/veh]	16.03		16.47		13.17	
Approach LOS	B		B		B	
d_I, Intersection Delay [s/veh]	15.75					
Intersection LOS	B					
Intersection V/C	0.974					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	20.01
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.440
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	30.00	30.00	30.00
l_b,int, Bicycle LOS Score for Intersection	4.132	6.324	4.992
Bicycle LOS	D	F	E

Sequence

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



APPENDIX E

TRAFFIC SIGNAL WARRANT ANALYSIS

PEAK HOUR VOLUME WARRANT
(Rural Areas)

Existing AM

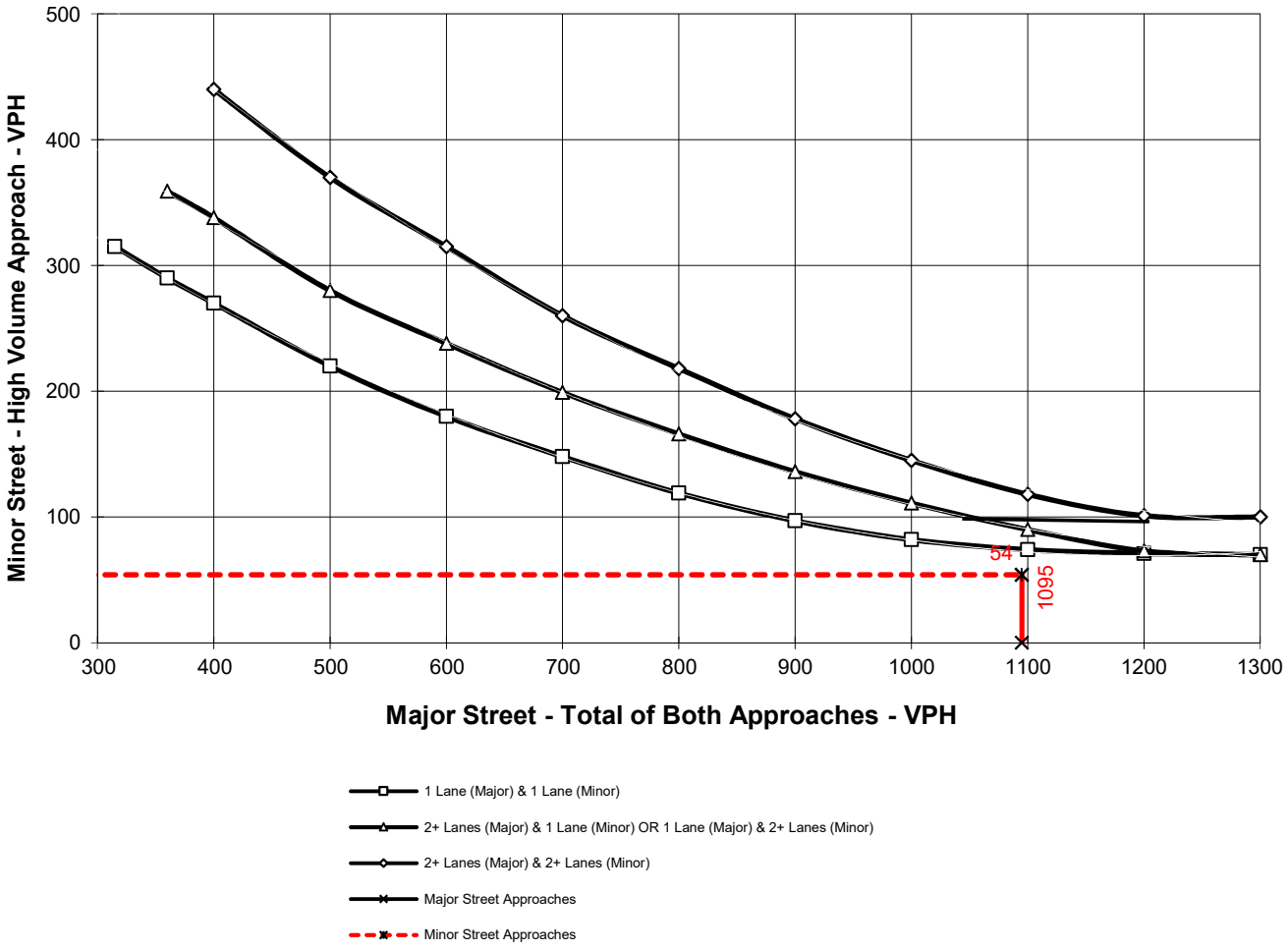
Major Street Name = **La Cadena Dr**

Total of Both Approaches (VPH) = **1095**
Number of Approach Lanes Major Street = **2**

Minor Street Name = **MaryKnoll Dr**

High Volume Approach (VPH) = **54**
Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



** NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

PEAK HOUR VOLUME WARRANT
(Rural Areas)

Existing PM

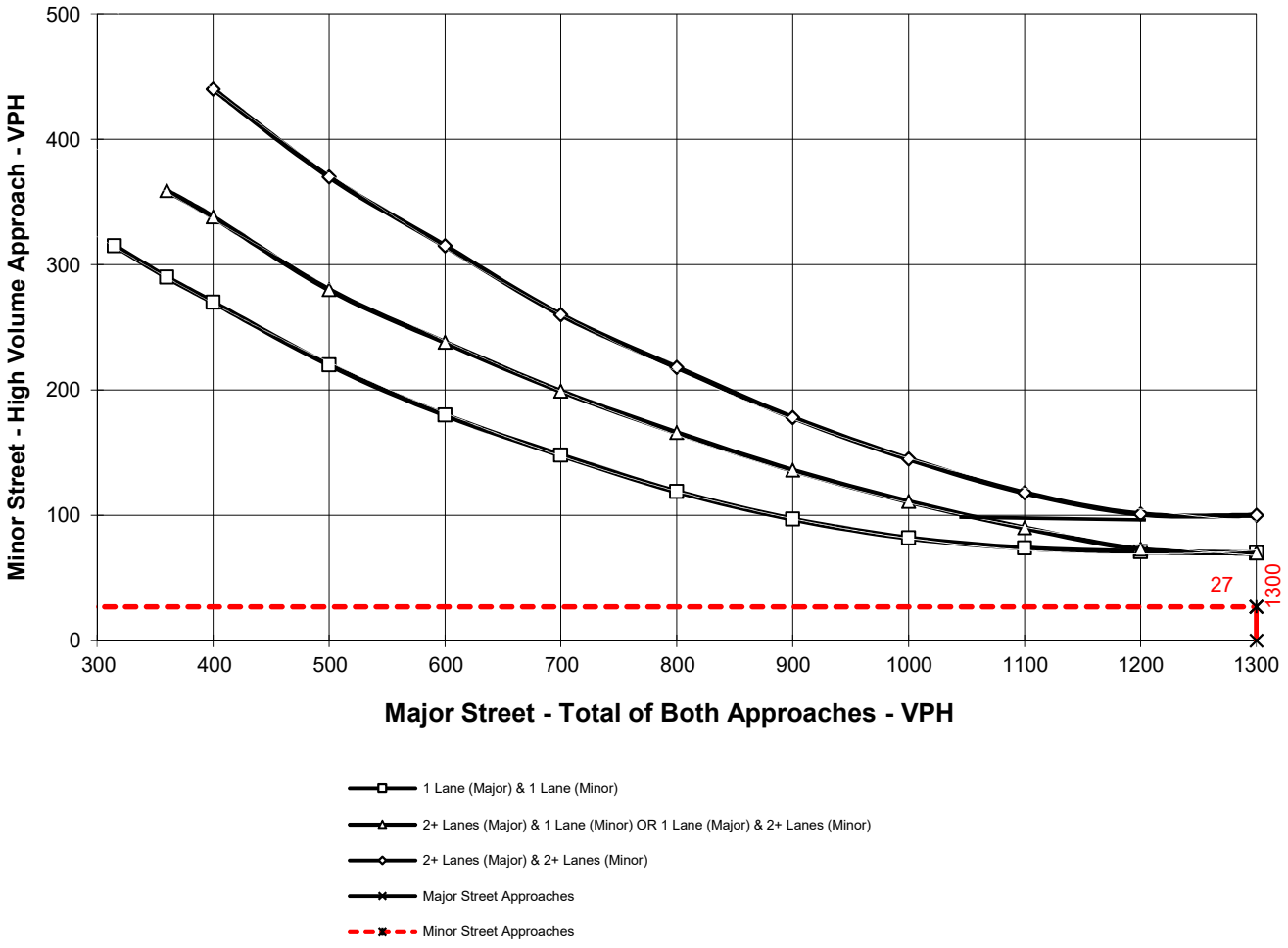
Major Street Name = **La Cadena Dr**

Total of Both Approaches (VPH) = **1442**
Number of Approach Lanes Major Street = **2**

Minor Street Name = **MaryKnoll Dr**

High Volume Approach (VPH) = **27**
Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



** NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

PEAK HOUR VOLUME WARRANT
(Rural Areas)

Existing AM

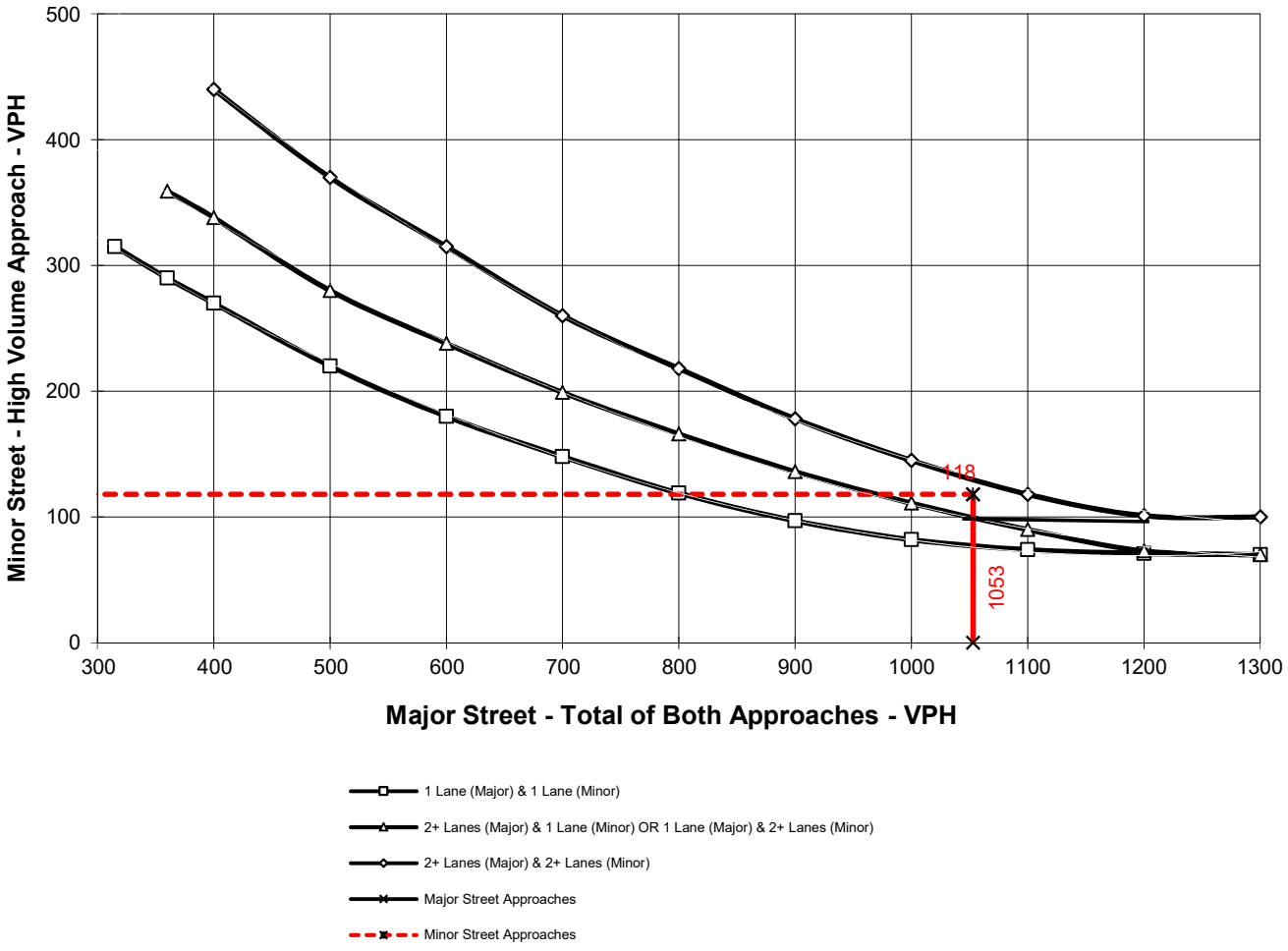
Major Street Name = **La Cadena Dr**

Total of Both Approaches (VPH) = **1053**
Number of Approach Lanes Major Street = **2**

Minor Street Name = **I-215 SB On-Ramp**

High Volume Approach (VPH) = **118**
Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL



** NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

PEAK HOUR VOLUME WARRANT
(Rural Areas)

Existing PM

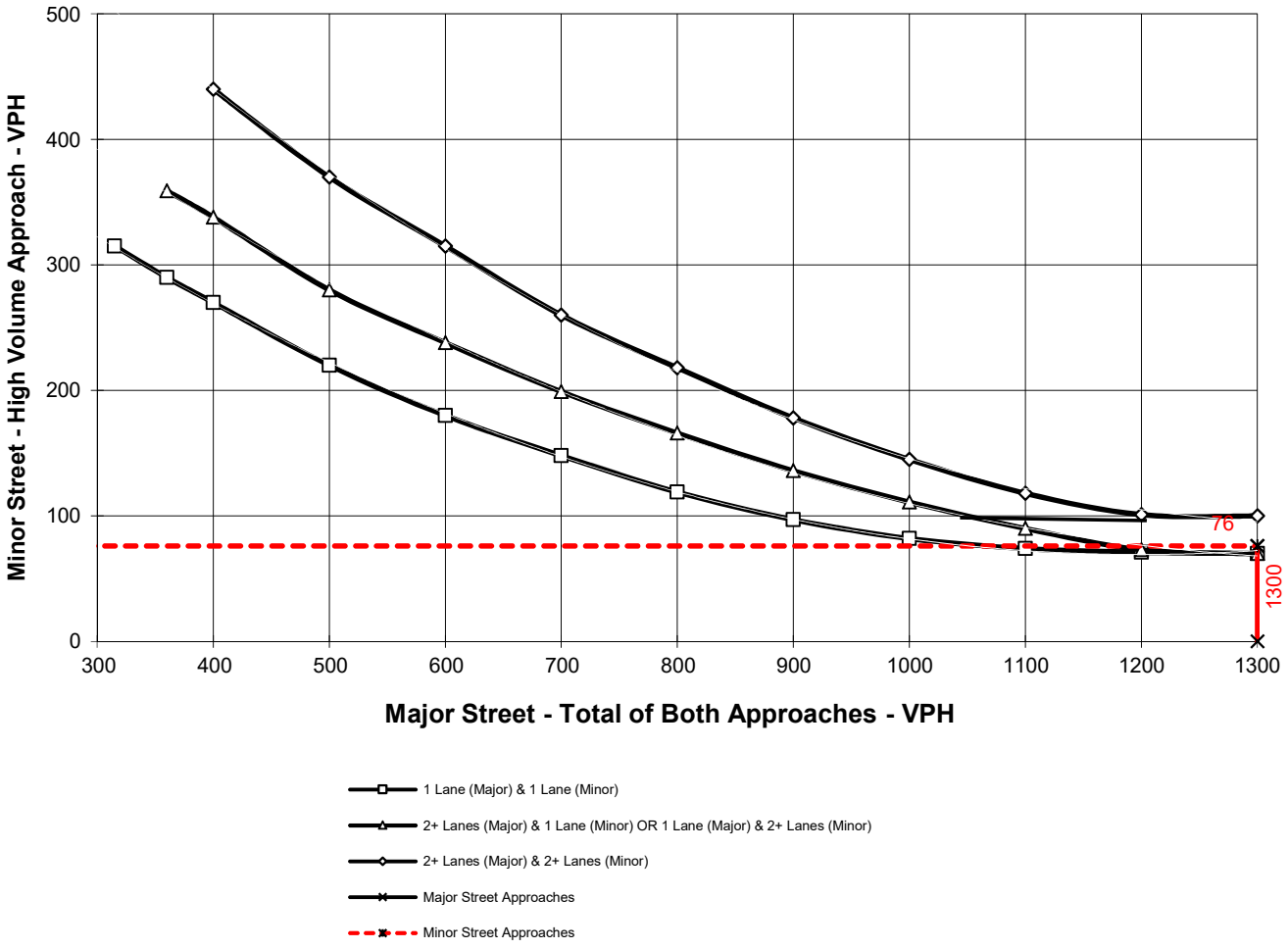
Major Street Name = **La Cadena Dr**

Total of Both Approaches (VPH) = **1429**
Number of Approach Lanes Major Street = **2**

Minor Street Name = **I-215 SB On-Ramp**

High Volume Approach (VPH) = **76**
Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL



** NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

PEAK HOUR VOLUME WARRANT
(Rural Areas)

Existing Plus Project AM

Major Street Name = **La Cadena Dr**

Total of Both Approaches (VPH) = **1114**

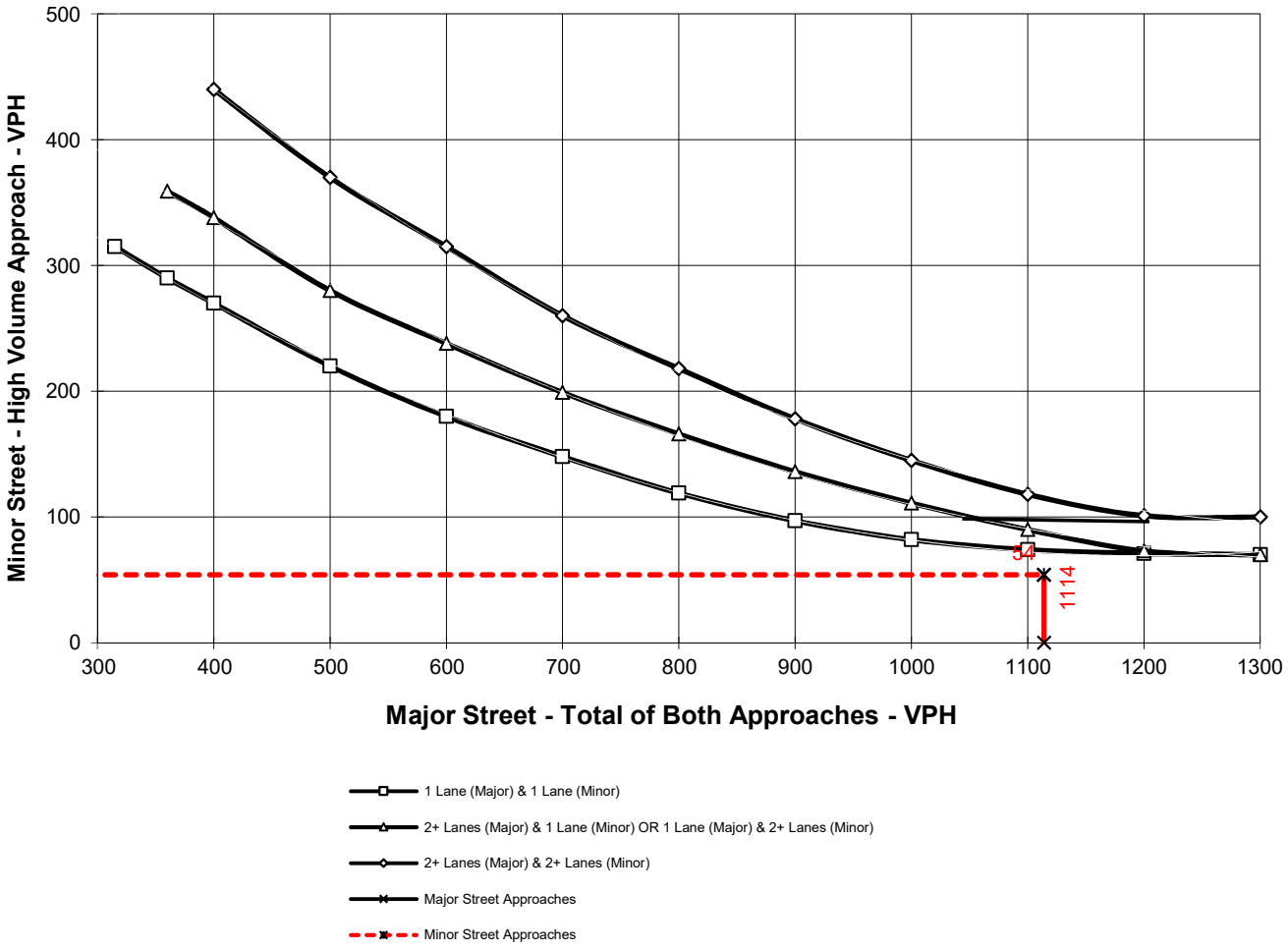
Number of Approach Lanes Major Street = **2**

Minor Street Name = **MaryKnoll Dr**

High Volume Approach (VPH) = **54**

Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



** NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

PEAK HOUR VOLUME WARRANT
(Rural Areas)

Existing Plus Project PM

Major Street Name = **La Cadena Dr**

Total of Both Approaches (VPH) = **1455**

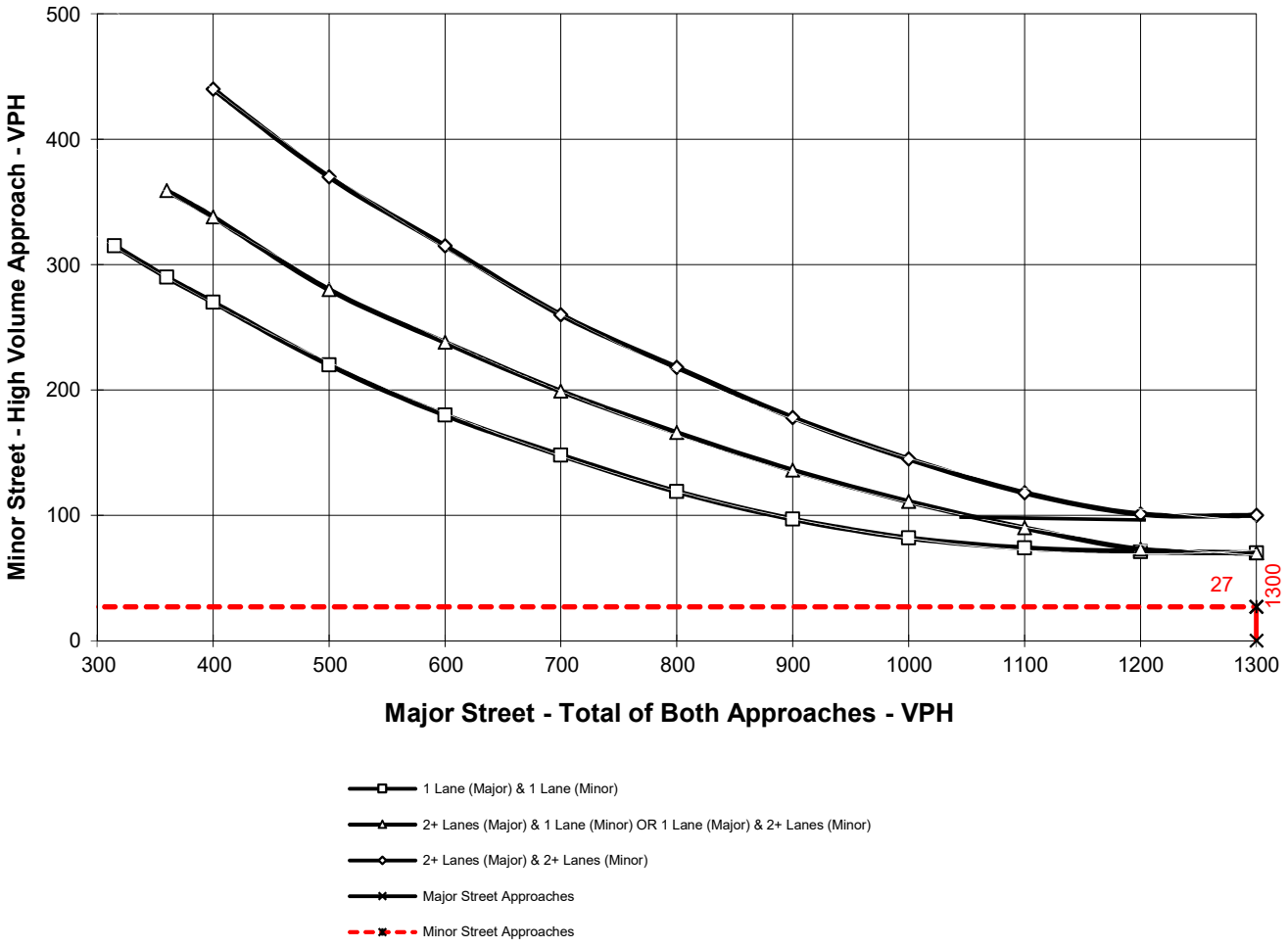
Number of Approach Lanes Major Street = **2**

Minor Street Name = **MaryKnoll Dr**

High Volume Approach (VPH) = **27**

Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



** NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

PEAK HOUR VOLUME WARRANT
(Rural Areas)

Existing Plus Project AM

Major Street Name = **La Cadena Dr**

Total of Both Approaches (VPH) = **1072**

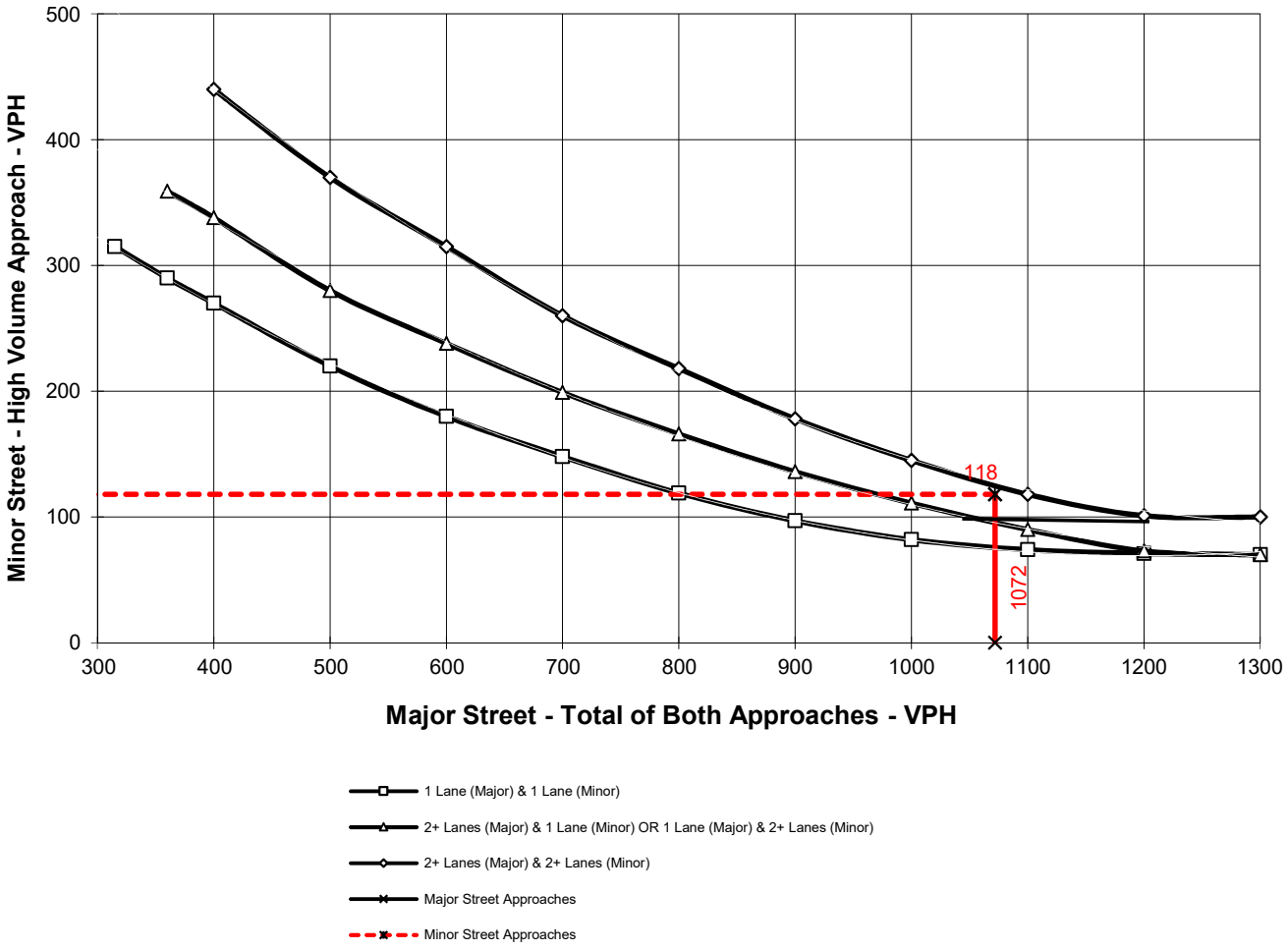
Number of Approach Lanes Major Street = **2**

Minor Street Name = **I-215 SB On-Ramp**

High Volume Approach (VPH) = **118**

Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL



** NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

PEAK HOUR VOLUME WARRANT
(Rural Areas)

Existing Plus Project PM

Major Street Name = **La Cadena Dr**

Total of Both Approaches (VPH) = **1442**

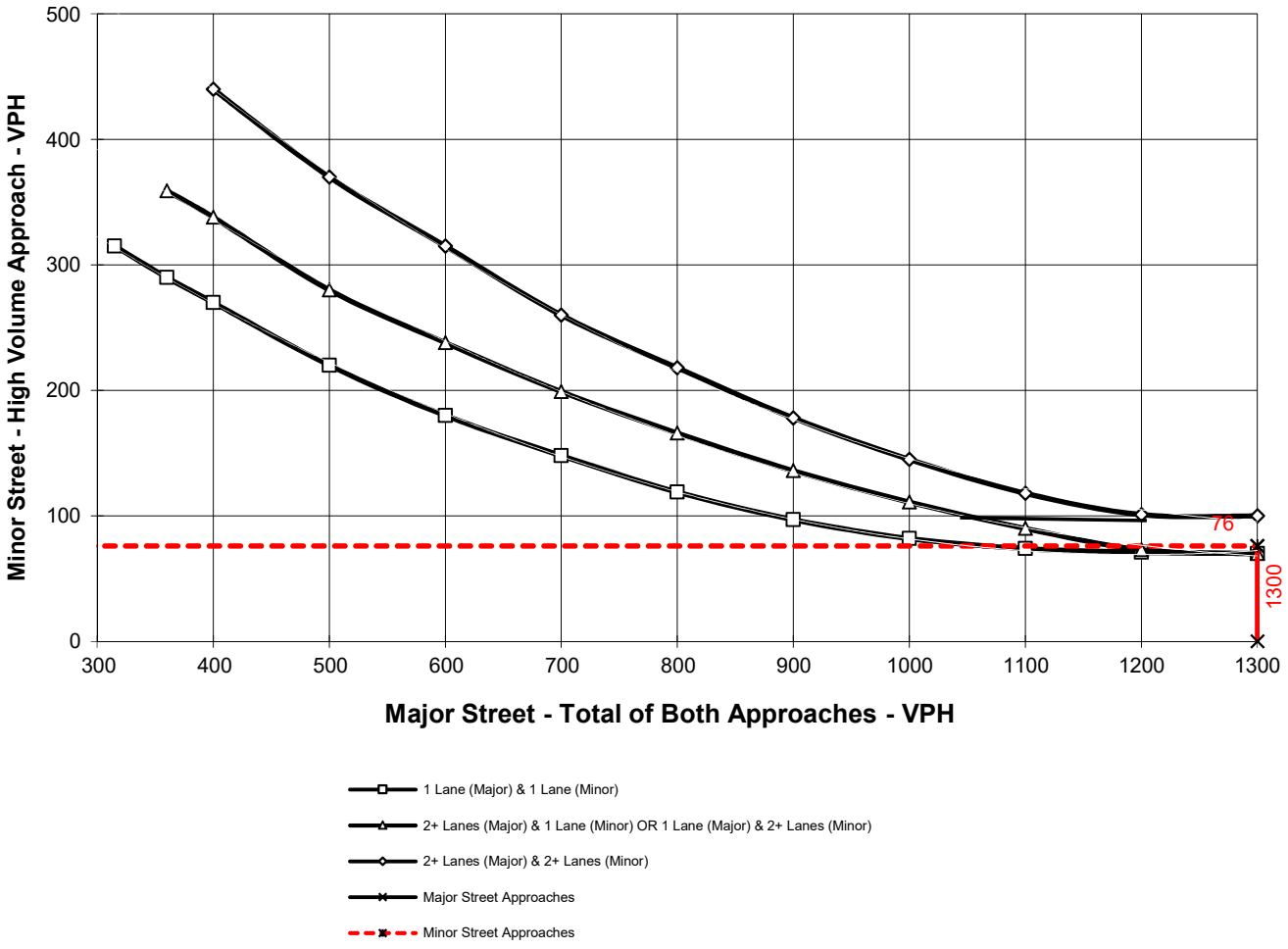
Number of Approach Lanes Major Street = **2**

Minor Street Name = **I-215 SB On-Ramp**

High Volume Approach (VPH) = **76**

Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL



** NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

PEAK HOUR VOLUME WARRANT
(Rural Areas)

Opening Year 2020 Without Project AM

Major Street Name = **La Cadena Dr**

Total of Both Approaches (VPH) = **1453**

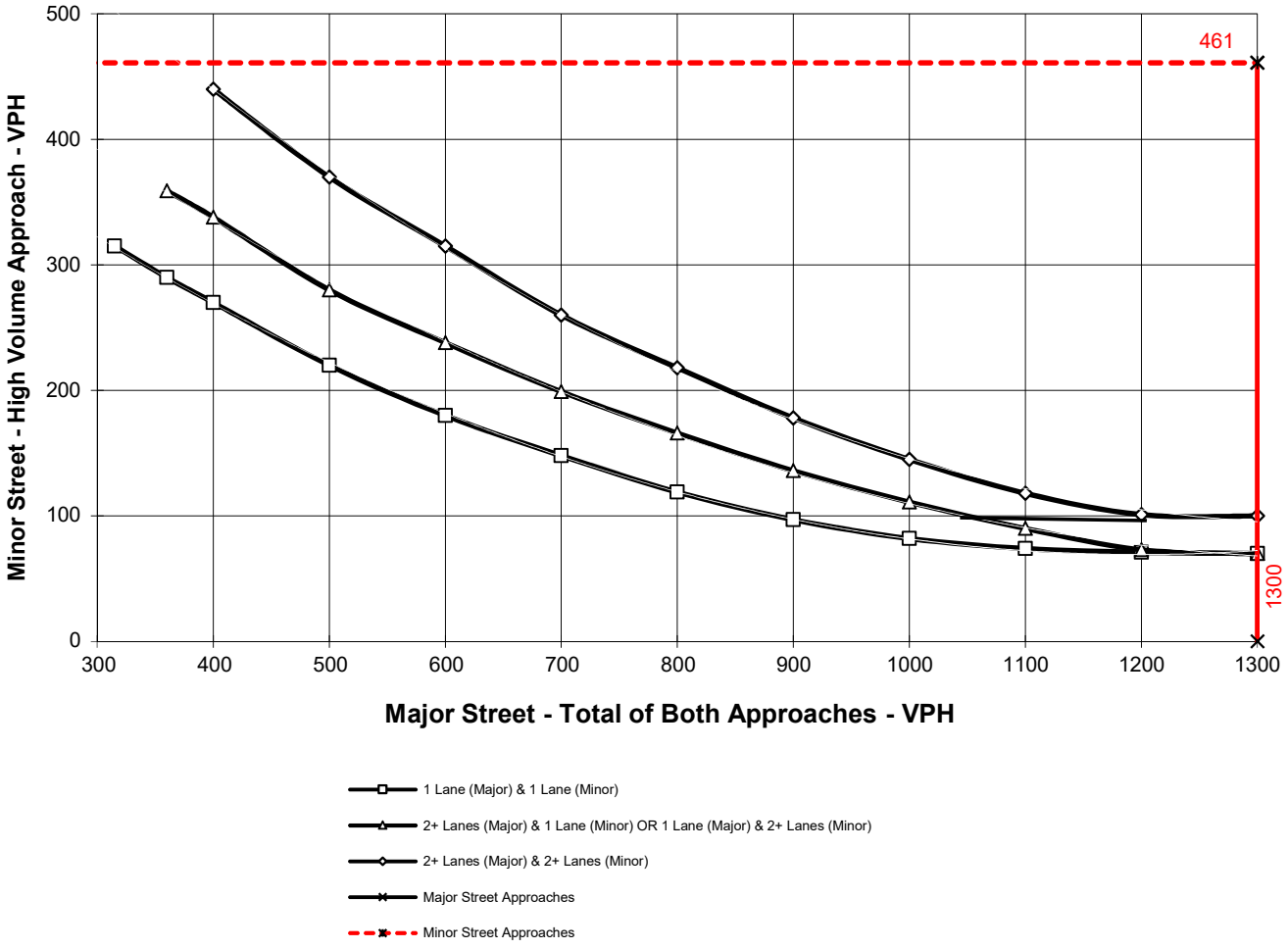
Number of Approach Lanes Major Street = **2**

Minor Street Name = **MaryKnoll Dr**

High Volume Approach (VPH) = **461**

Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL



** NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

PEAK HOUR VOLUME WARRANT
(Rural Areas)

Opening Year 2020 Without Project PM

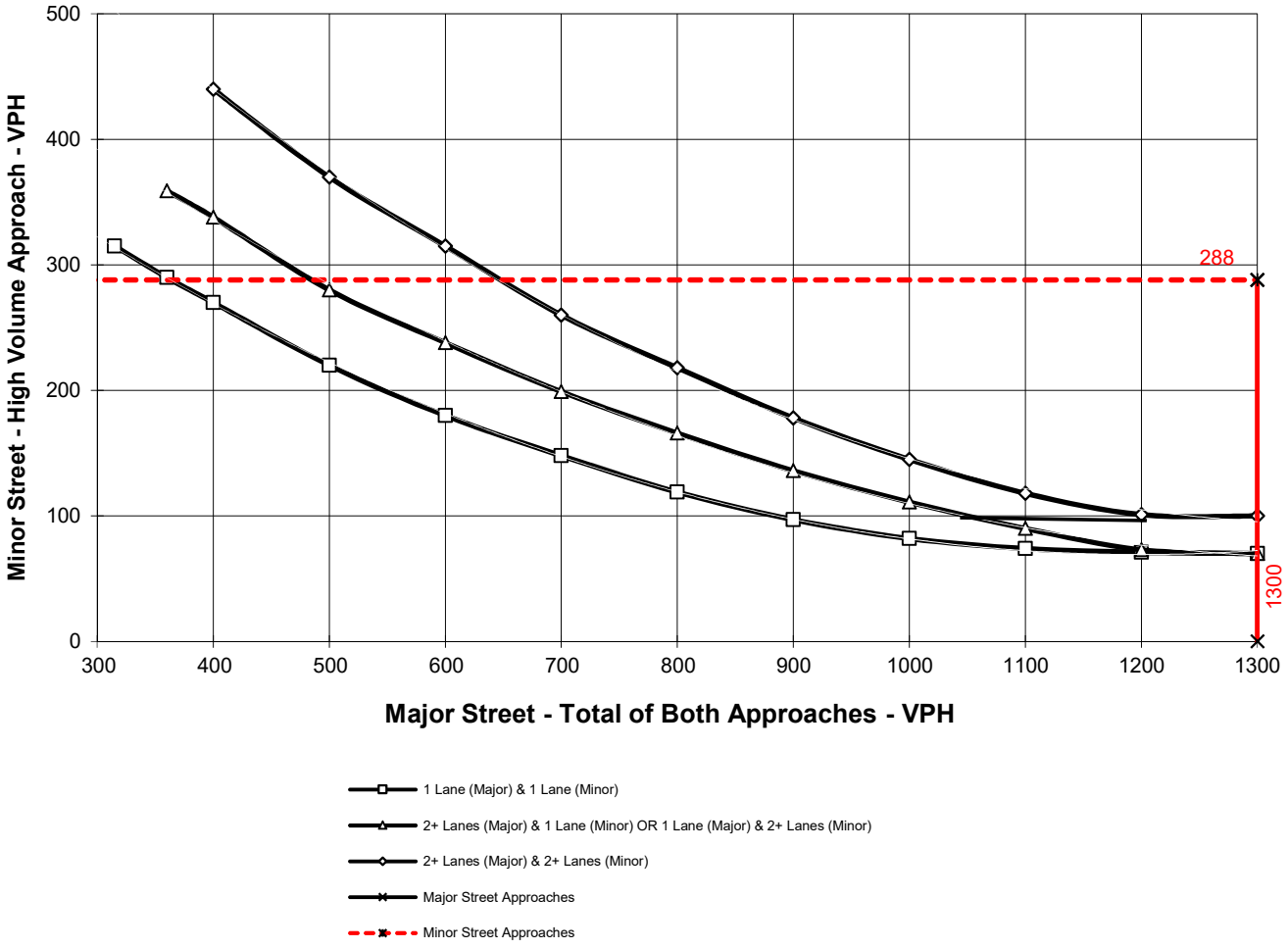
Major Street Name = **La Cadena Dr**

Total of Both Approaches (VPH) = **2132**
Number of Approach Lanes Major Street = **2**

Minor Street Name = **MaryKnoll Dr**

High Volume Approach (VPH) = **288**
Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL



** NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

PEAK HOUR VOLUME WARRANT
(Rural Areas)

Opening Year 2020 Without Project AM

Major Street Name = **La Cadena Dr**

Total of Both Approaches (VPH) = **1342**

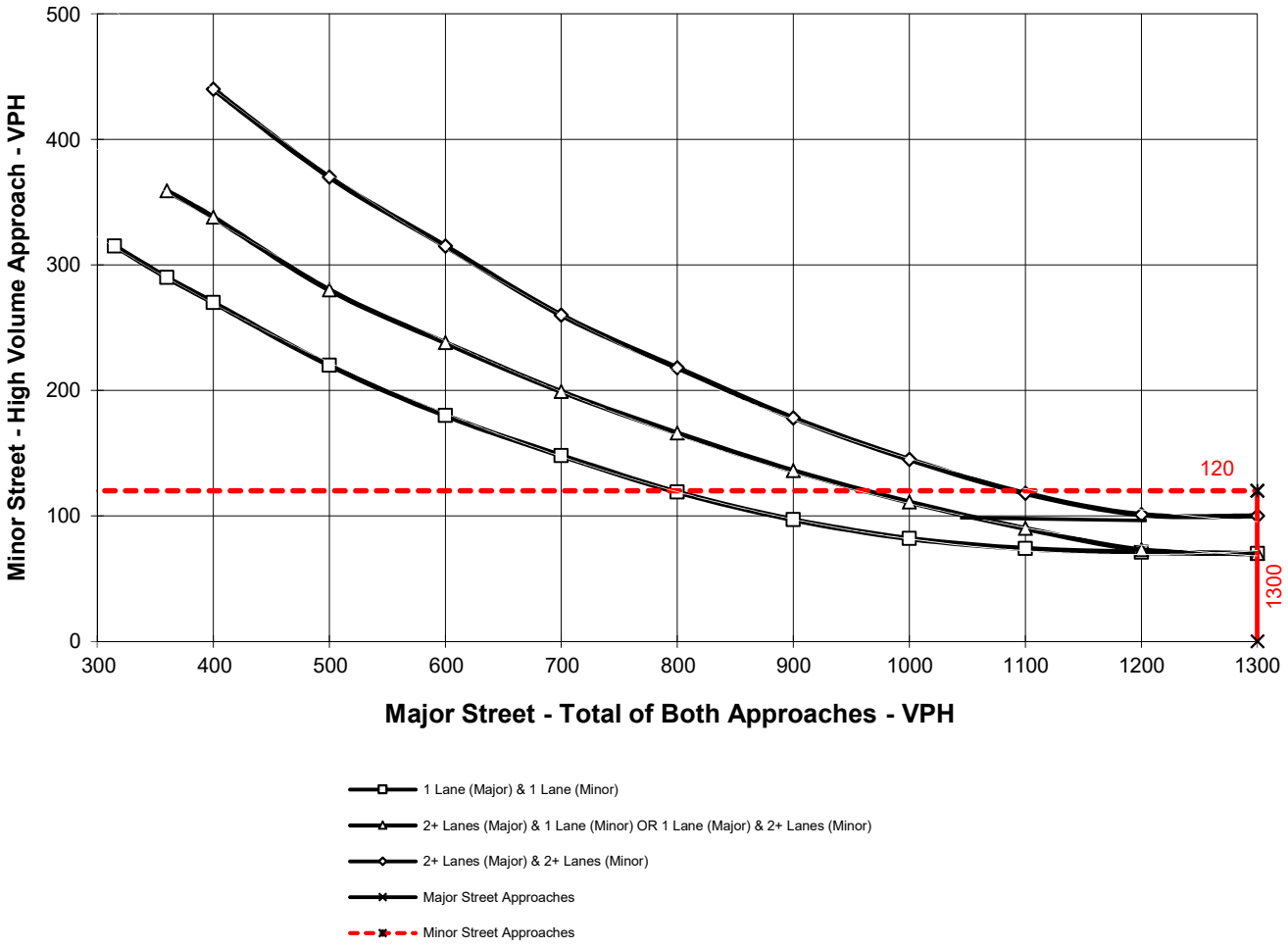
Number of Approach Lanes Major Street = **2**

Minor Street Name = **I-215 SB On-Ramp**

High Volume Approach (VPH) = **120**

Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL



** NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

PEAK HOUR VOLUME WARRANT
(Rural Areas)

Opening Year 2020 Without Project PM

Major Street Name = **La Cadena Dr**

Total of Both Approaches (VPH) = **1805**

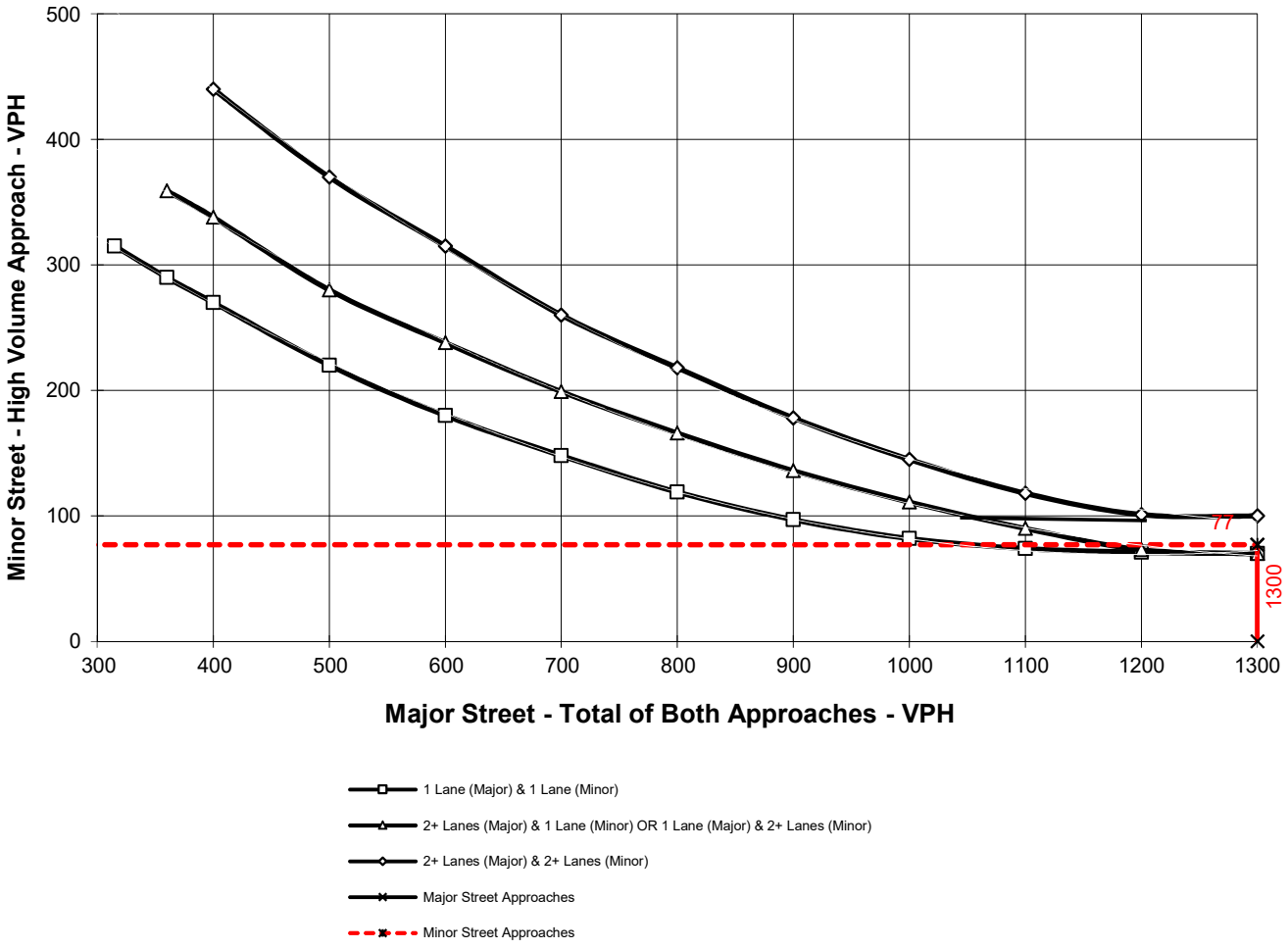
Number of Approach Lanes Major Street = **2**

Minor Street Name = **I-215 SB On-Ramp**

High Volume Approach (VPH) = **77**

Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL



** NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

PEAK HOUR VOLUME WARRANT
(Rural Areas)

Opening Year 2020 With Project AM

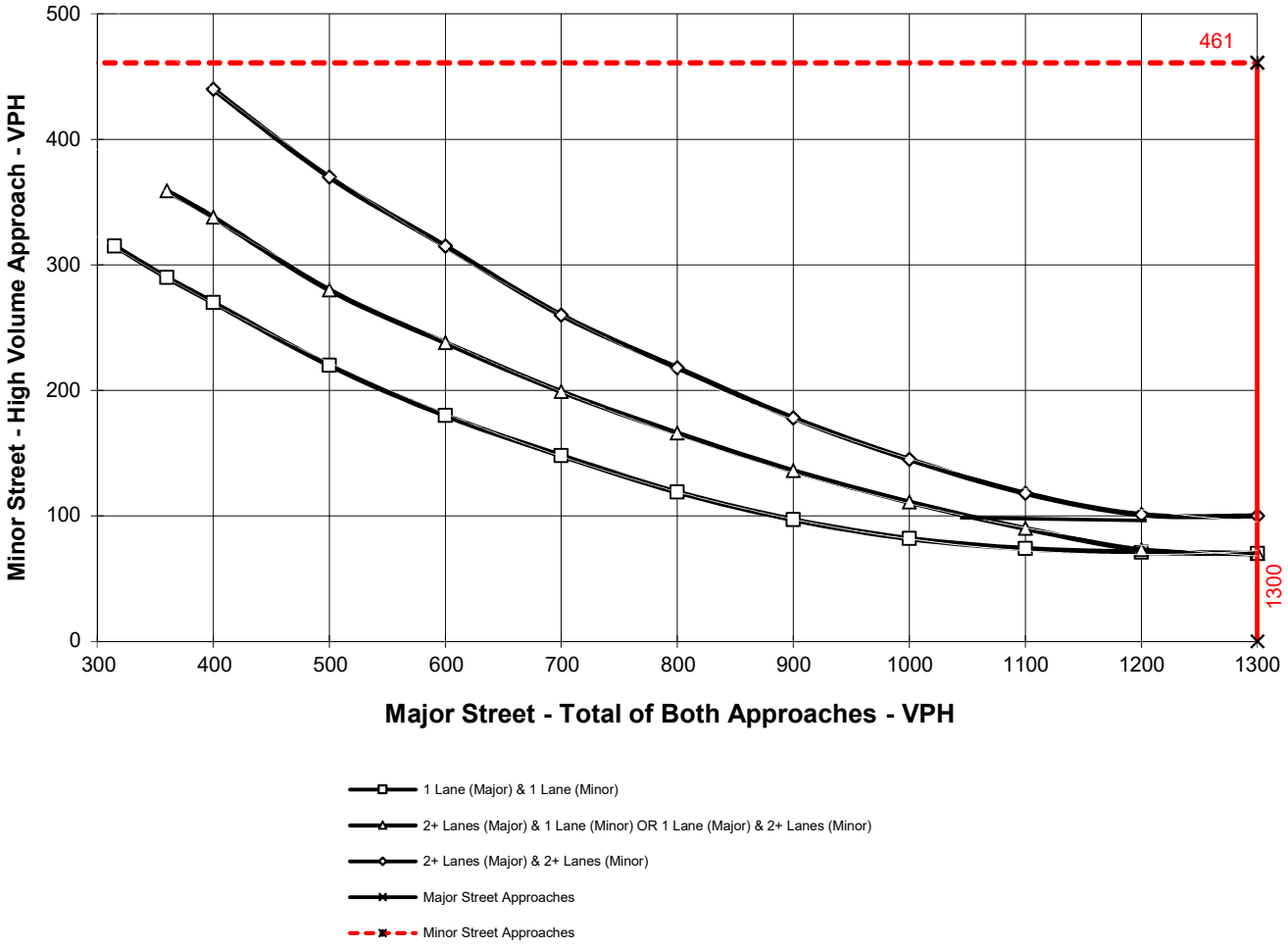
Major Street Name = **La Cadena Dr**

Total of Both Approaches (VPH) = **1472**
Number of Approach Lanes Major Street = **2**

Minor Street Name = **MaryKnoll Dr**

High Volume Approach (VPH) = **461**
Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL



** NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

PEAK HOUR VOLUME WARRANT
(Rural Areas)

Opening Year 2020 With Project PM

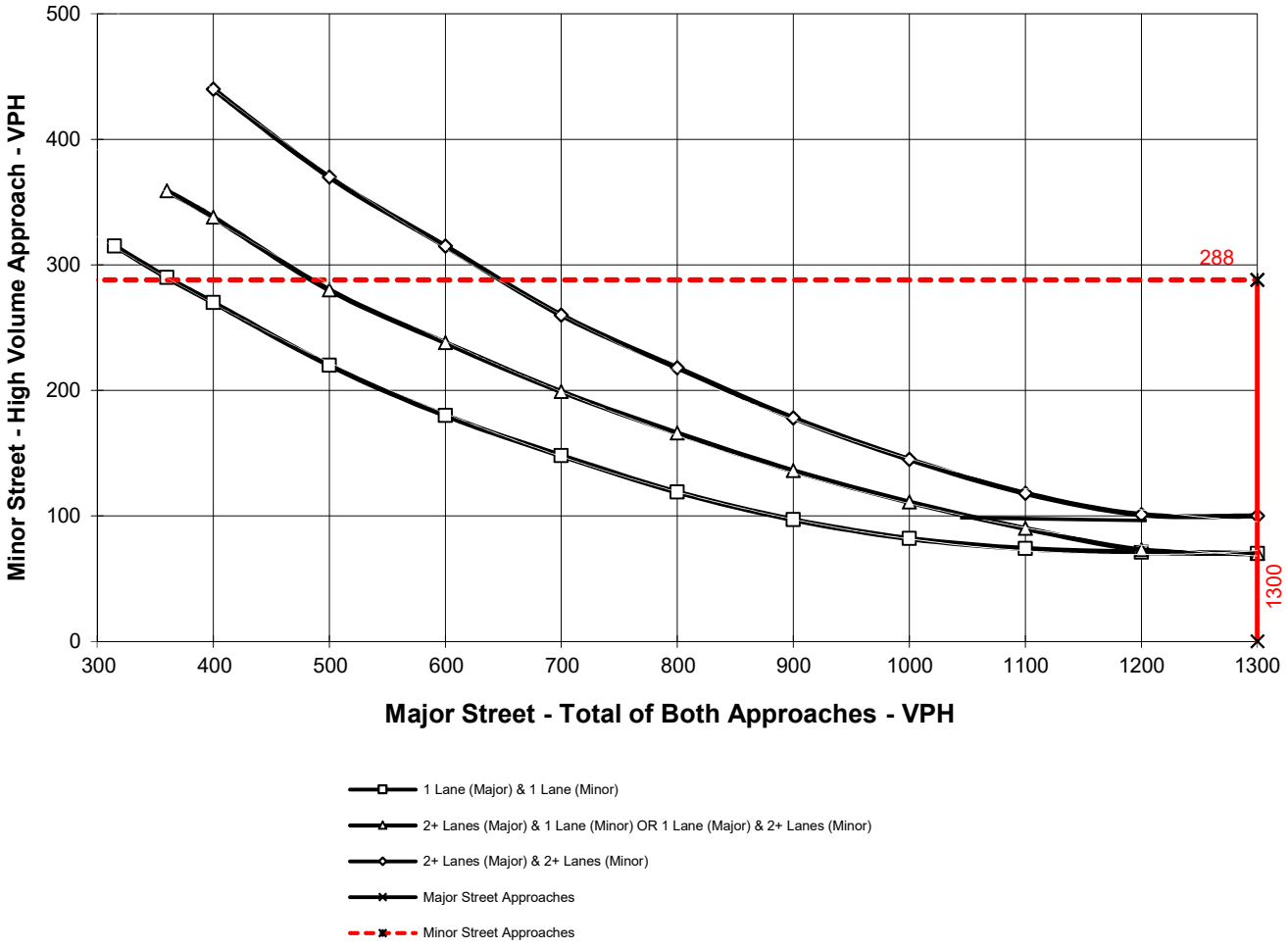
Major Street Name = **La Cadena Dr**

Total of Both Approaches (VPH) = **2145**
Number of Approach Lanes Major Street = **2**

Minor Street Name = **MaryKnoll Dr**

High Volume Approach (VPH) = **288**
Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL



** NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

PEAK HOUR VOLUME WARRANT
(Rural Areas)

Opening Year 2020 With Project AM

Major Street Name = **La Cadena Dr**

Total of Both Approaches (VPH) = **1361**

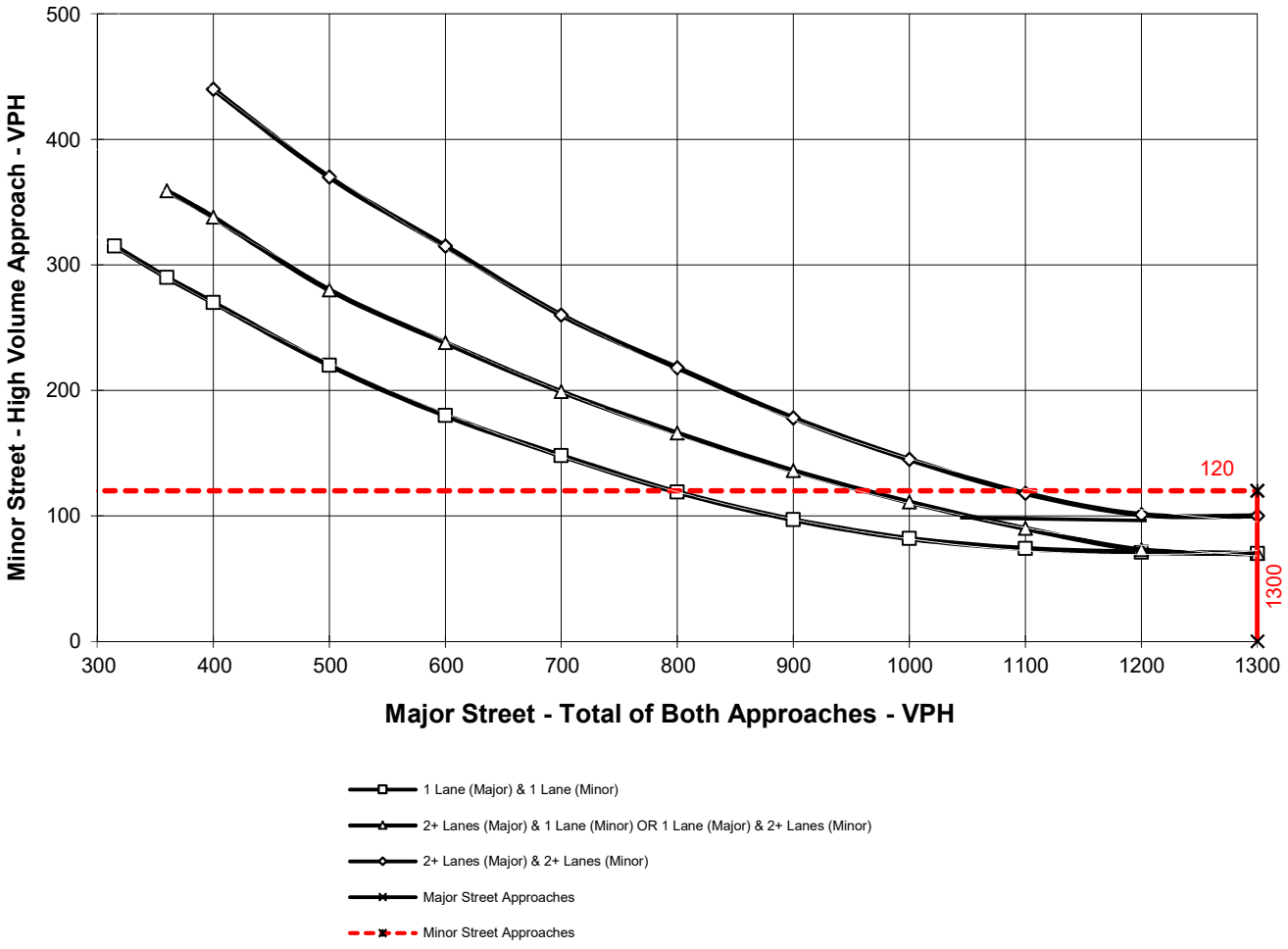
Number of Approach Lanes Major Street = **2**

Minor Street Name = **I-215 SB On-Ramp**

High Volume Approach (VPH) = **120**

Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL



** NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

PEAK HOUR VOLUME WARRANT
(Rural Areas)

Opening Year 2020 With Project PM

Major Street Name = **La Cadena Dr**

Total of Both Approaches (VPH) = **1818**

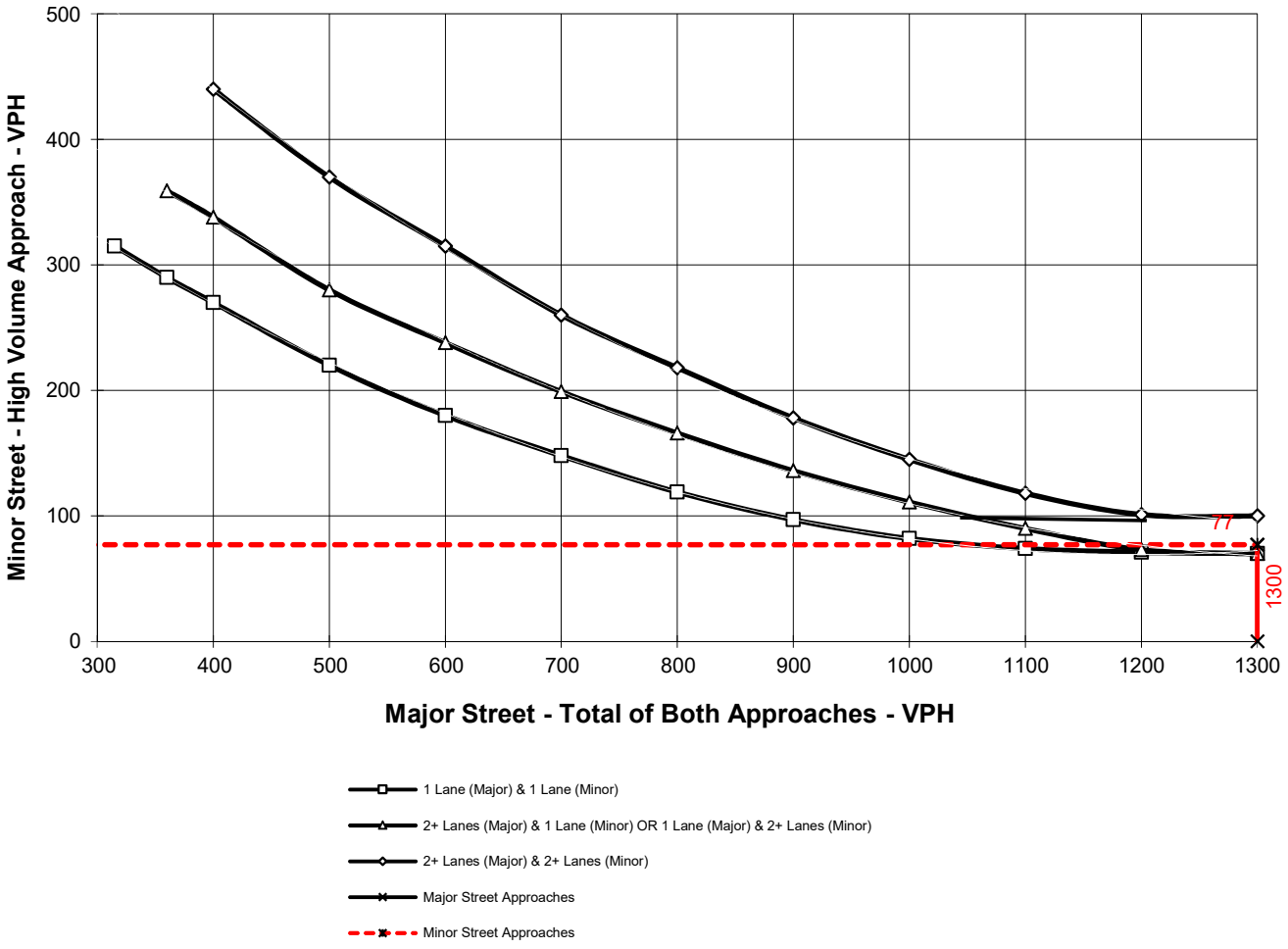
Number of Approach Lanes Major Street = **2**

Minor Street Name = **I-215 SB On-Ramp**

High Volume Approach (VPH) = **77**

Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL



** NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

PEAK HOUR VOLUME WARRANT
(Rural Areas)

Buildout Year 2040 Without Project AM

Major Street Name = **La Cadena Dr**

Total of Both Approaches (VPH) = **1681**

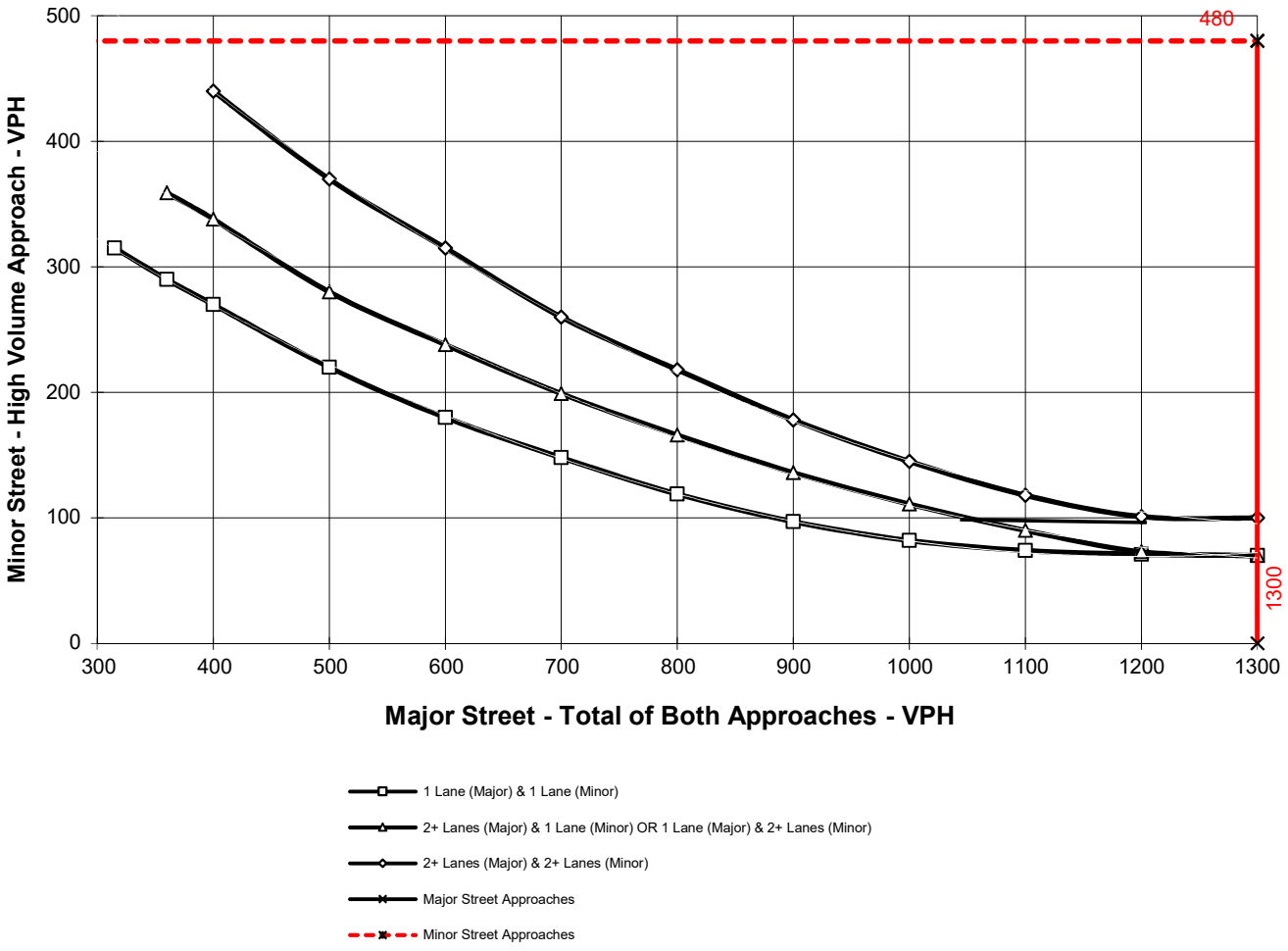
Number of Approach Lanes Major Street = **2**

Minor Street Name = **MaryKnoll Dr**

High Volume Approach (VPH) = **480**

Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL



** NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

PEAK HOUR VOLUME WARRANT
(Rural Areas)

Buildout Year 2040 Without Project PM

Major Street Name = **La Cadena Dr**

Total of Both Approaches (VPH) = **2498**

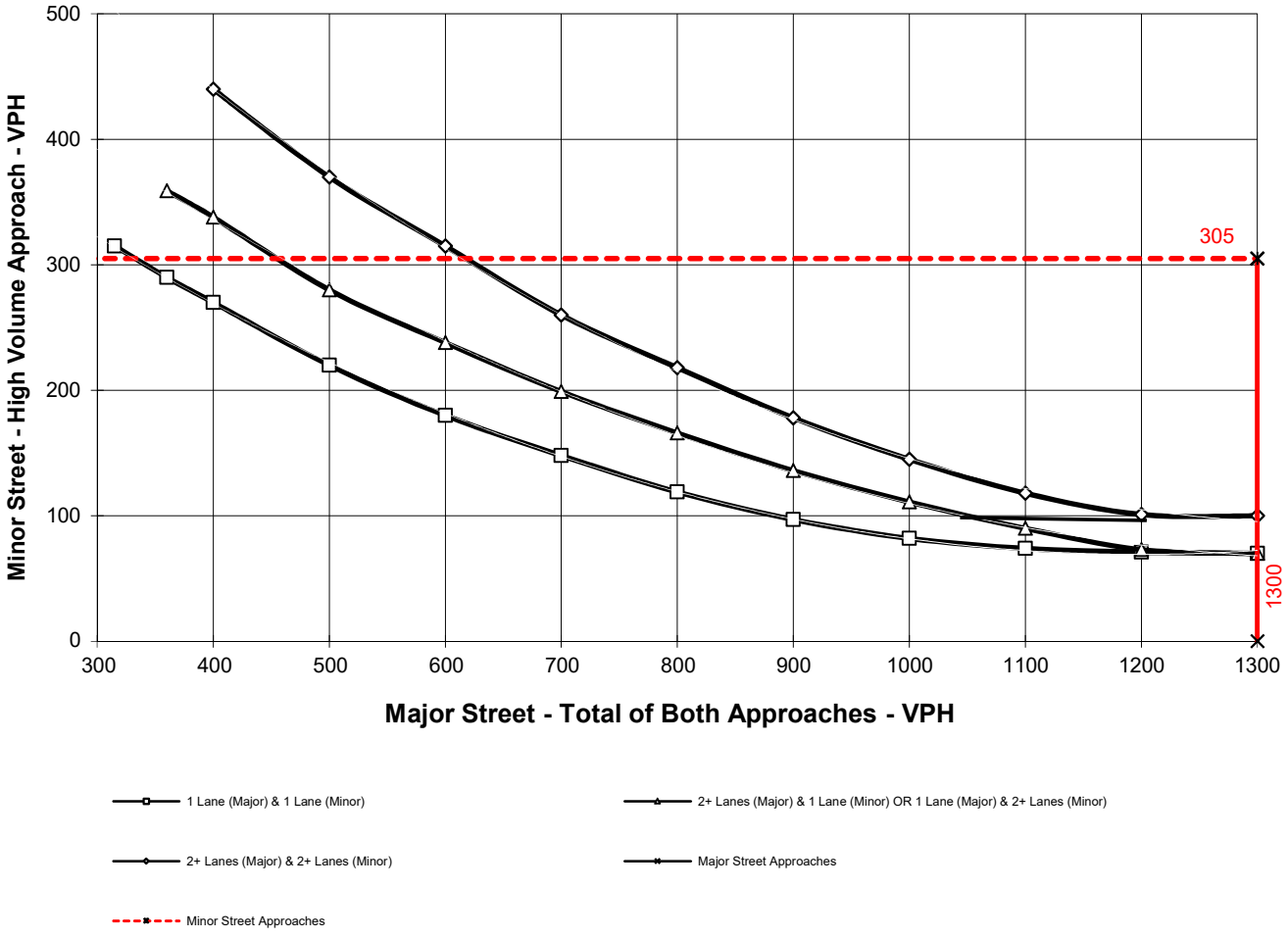
Number of Approach Lanes Major Street = **2**

Minor Street Name = **MaryKnoll Dr**

High Volume Approach (VPH) = **305**

Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL



** NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

PEAK HOUR VOLUME WARRANT
(Rural Areas)

Buildout Year 2040 Without Project AM

Major Street Name = **La Cadena Dr**

Total of Both Approaches (VPH) = **1620**

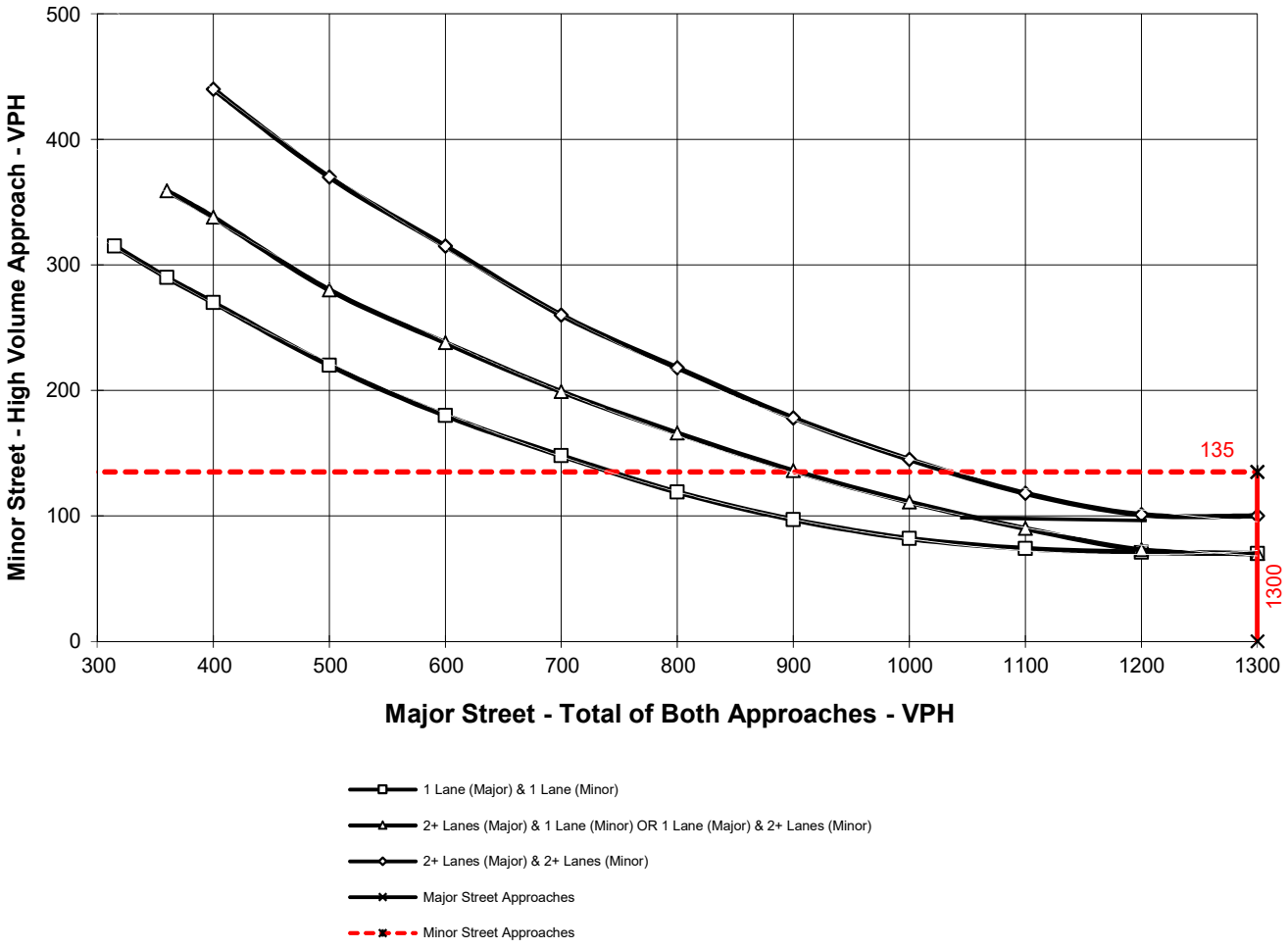
Number of Approach Lanes Major Street = **2**

Minor Street Name = **I-215 SB On-Ramp**

High Volume Approach (VPH) = **135**

Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL



** NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

PEAK HOUR VOLUME WARRANT
(Rural Areas)

Buildout Year 2040 Without Project PM

Major Street Name = **La Cadena Dr**

Total of Both Approaches (VPH) = **2176**

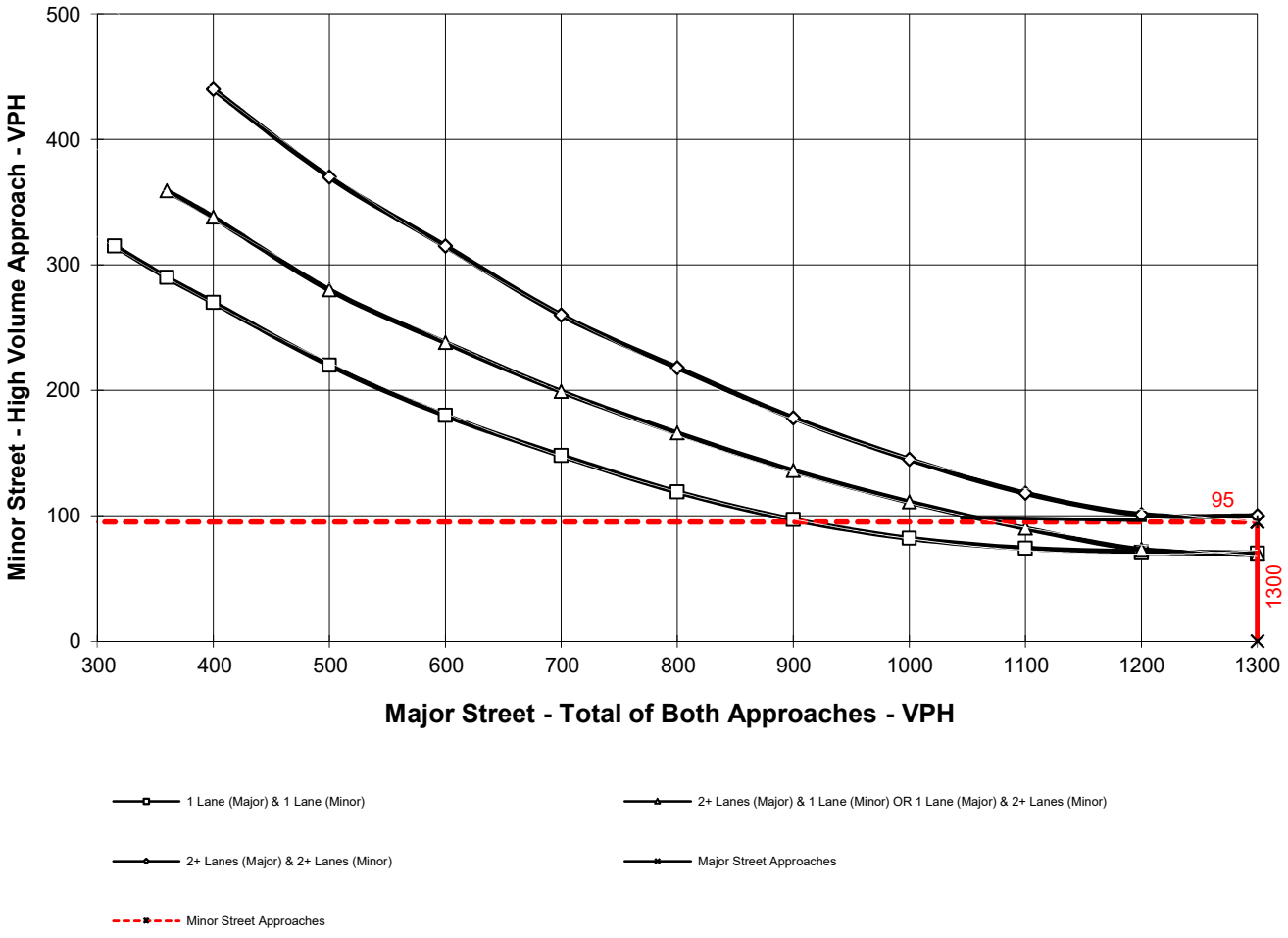
Number of Approach Lanes Major Street = **2**

Minor Street Name = **I-215 SB On-Ramp**

High Volume Approach (VPH) = **95**

Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL



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PEAK HOUR VOLUME WARRANT
(Rural Areas)

Buildout Year 2040 With Project AM

Major Street Name = **La Cadena Dr**

Total of Both Approaches (VPH) = **1700**

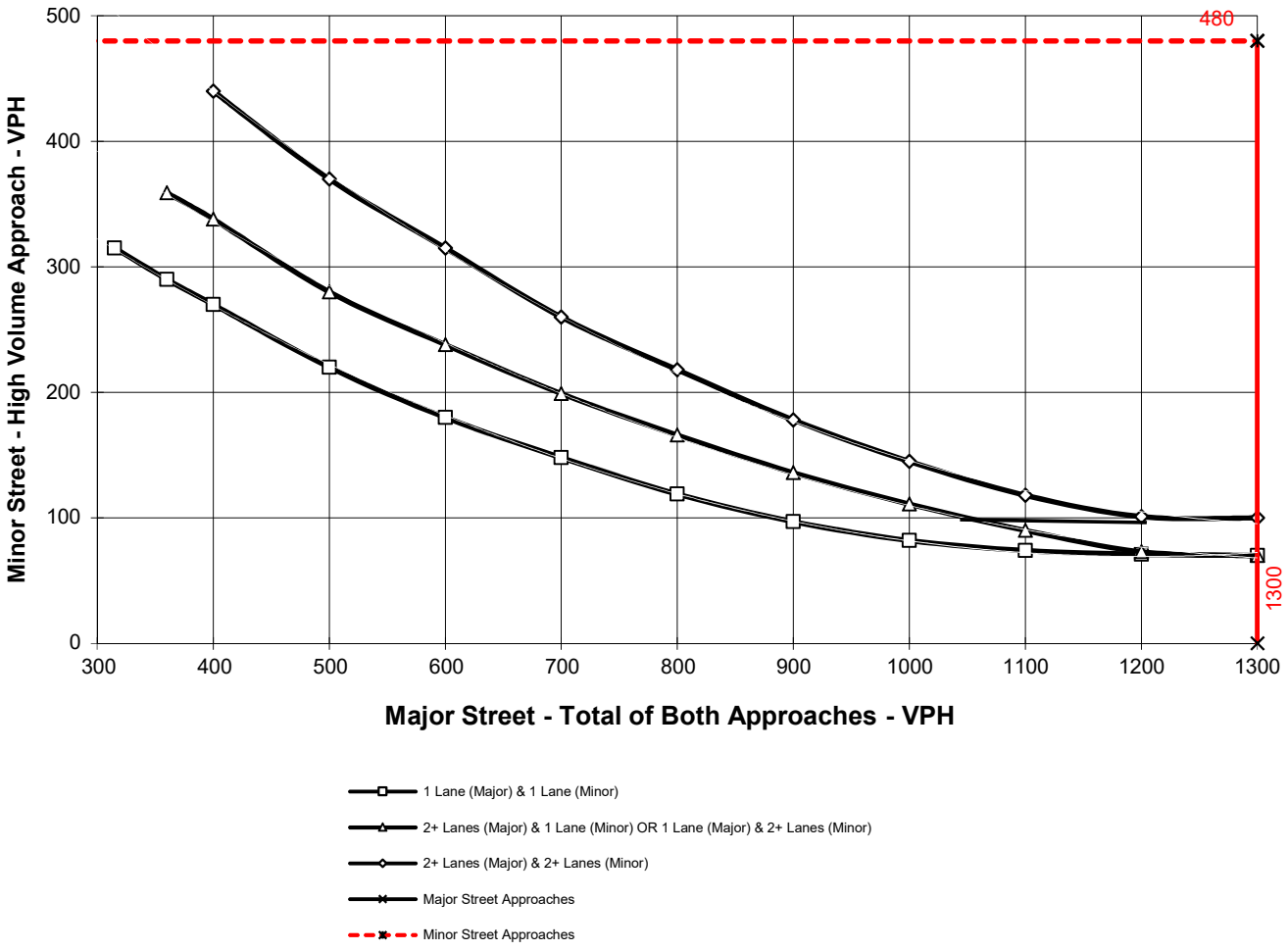
Number of Approach Lanes Major Street = **2**

Minor Street Name = **MaryKnoll Dr**

High Volume Approach (VPH) = **480**

Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL



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PEAK HOUR VOLUME WARRANT
(Rural Areas)

Buildout Year 2040 With Project PM

Major Street Name = **La Cadena Dr**

Total of Both Approaches (VPH) = **2511**

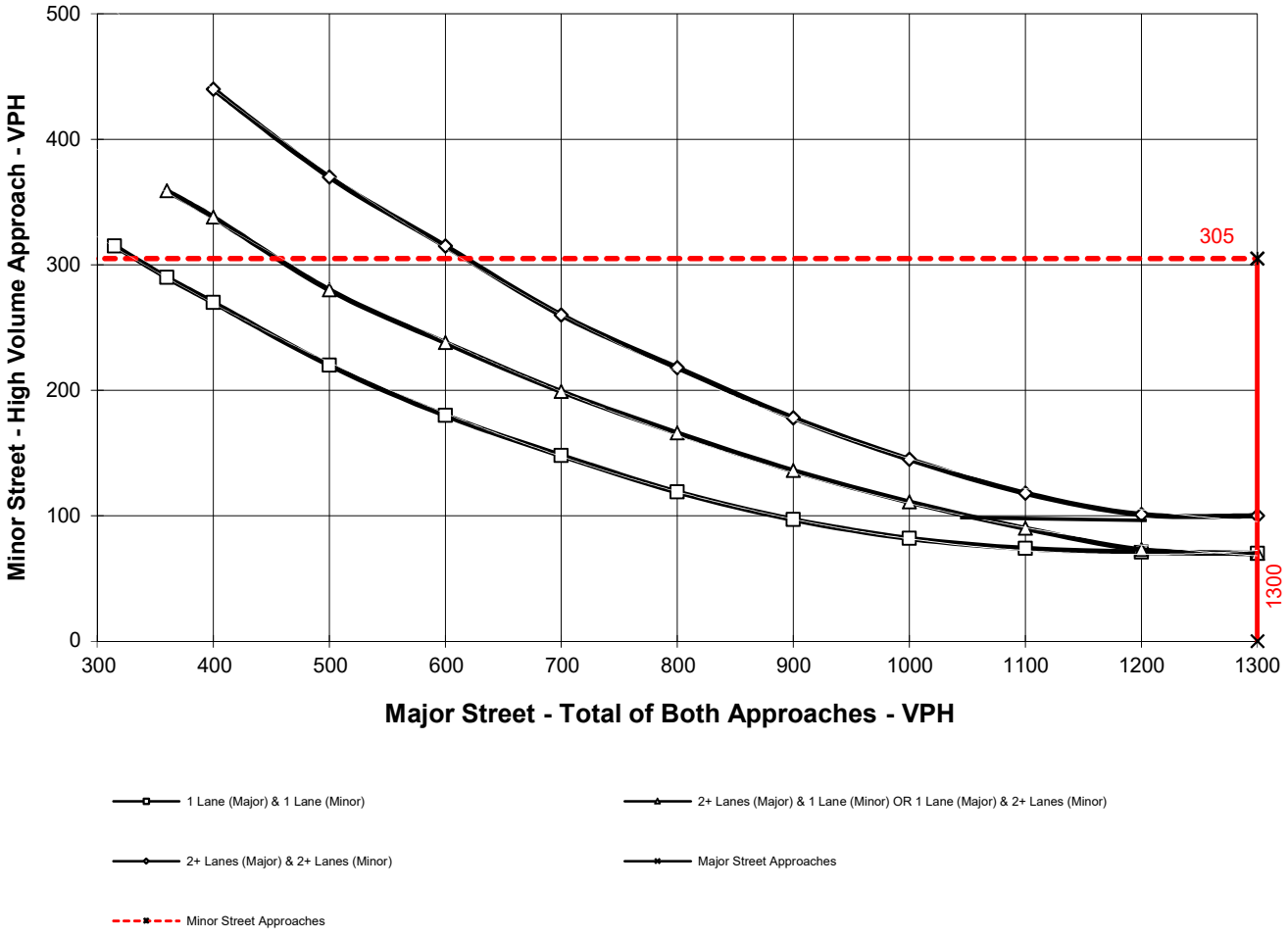
Number of Approach Lanes Major Street = **2**

Minor Street Name = **MaryKnoll Dr**

High Volume Approach (VPH) = **305**

Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL



** NOTE:
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PEAK HOUR VOLUME WARRANT
(Rural Areas)

Buildout Year 2040 With Project AM

Major Street Name = **La Cadena Dr**

Total of Both Approaches (VPH) = **1639**

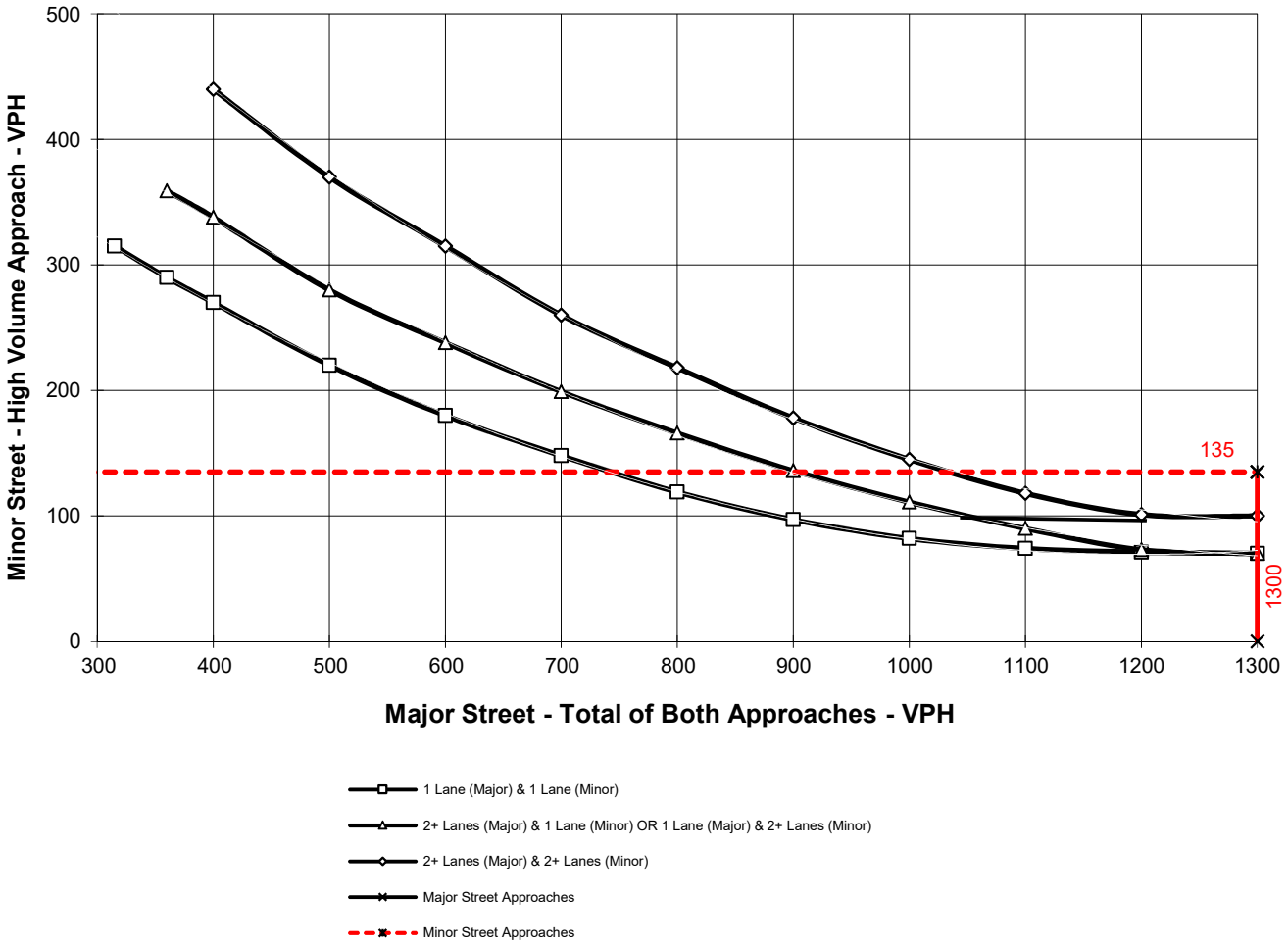
Number of Approach Lanes Major Street = **2**

Minor Street Name = **I-215 SB On-Ramp**

High Volume Approach (VPH) = **135**

Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL



** NOTE:
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PEAK HOUR VOLUME WARRANT
(Rural Areas)

Buildout Year 2040 With Project PM

Major Street Name = **La Cadena Dr**

Total of Both Approaches (VPH) = **2189**

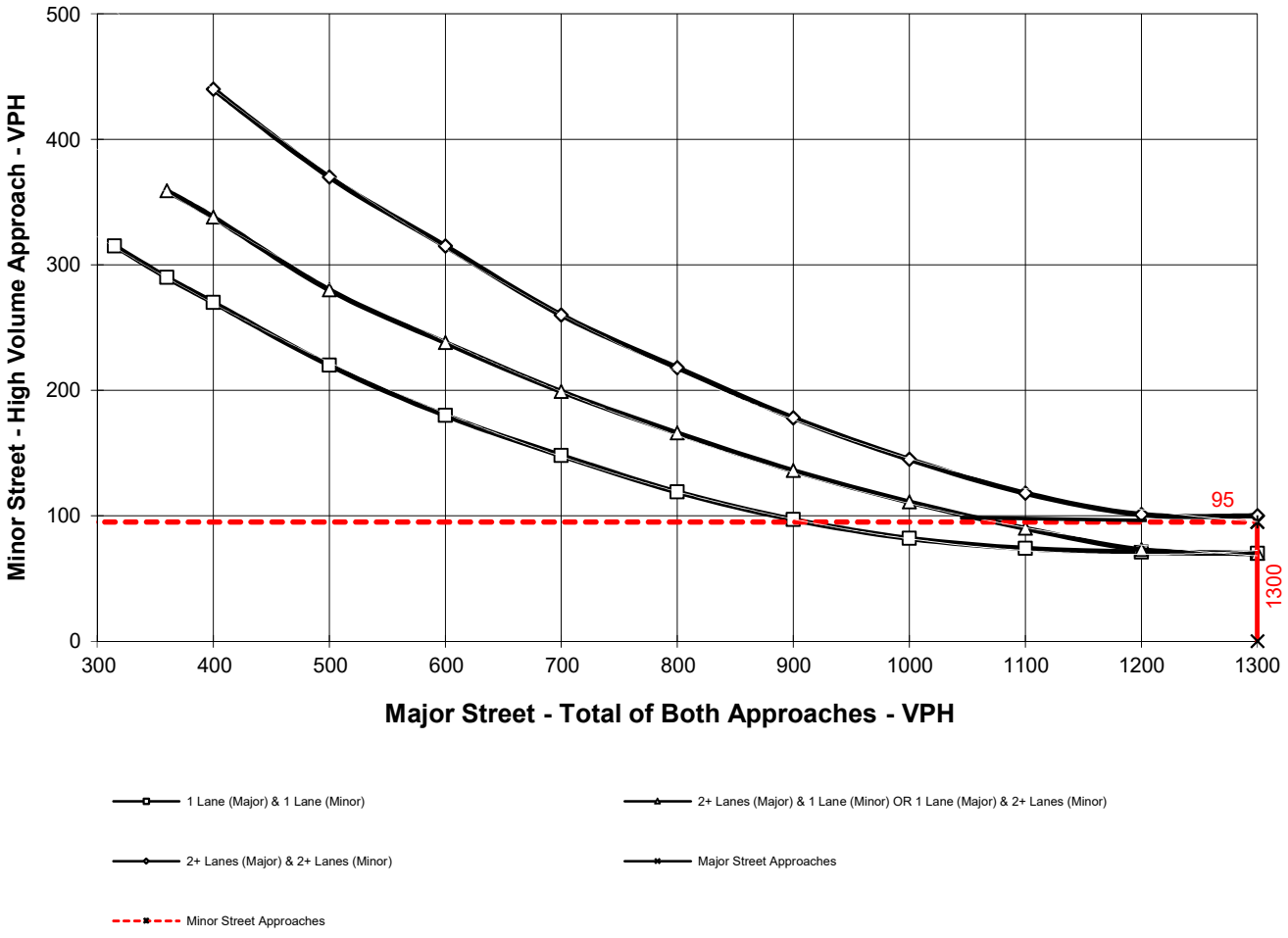
Number of Approach Lanes Major Street = **2**

Minor Street Name = **I-215 SB On-Ramp**

High Volume Approach (VPH) = **95**

Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL



** NOTE:
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APPENDIX F

TRAFFIC MODEL FORECASTING WORKSHEETS

LA CADEBA DR (NS) / TROPICA RANCHO RD (EW) - #1

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255

YEAR 2040 TRAFFIC CONDITIONS									
MORNING PEAK HOUR INPUT DATA					EVENING PEAK HOUR INPUT DATA				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	YEAR 2040 TOTAL	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	YEAR 2040 TOTAL
NORTH	LEFT	**0**	SOUTH LEG		NORTH	LEFT	**0**	SOUTH LEG	
BOUND	THRU	**740**	IN ...	**1,020**	BOUND	THRU	**889**	IN ...	**1,670**
	RIGHT	**0**	OUT ...	**1,350**		RIGHT	**0**	OUT ...	**1,470**
SOUTH	LEFT	**0**	NORTH LEG		SOUTH	LEFT	**0**	NORTH LEG	
BOUND	THRU	**763**	IN ...	**1,350**	BOUND	THRU	**1,290**	IN ...	**1,470**
	RIGHT	**0**	OUT ...	**1,020**		RIGHT	**0**	OUT ...	**1,670**
EAST	LEFT	**0**	WEST LEG		EAST	LEFT	**0**	WEST LEG	
BOUND	THRU	**0**	IN ...	**0**	BOUND	THRU	**0**	IN ...	**0**
	RIGHT	**1**	OUT ...	**0**		RIGHT	**0**	OUT ...	**0**
WEST	LEFT	**0**	EAST LEG		WEST	LEFT	**0**	EAST LEG	
BOUND	THRU	**0**	IN ...	**0**	BOUND	THRU	**0**	IN ...	**0**
	RIGHT	**0**	OUT ...	**0**		RIGHT	**0**	OUT ...	**0**

YEAR 2040 TRAFFIC CONDITIONS									
MORNING PEAK HOUR RESULTS					EVENING PEAK HOUR RESULTS				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2040 FORECAST	PEAK - DAILY RELATIONSHIP	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2040 FORECAST	PEAK - DAILY RELATIONSHIP
NORTH	LEFT	**0**	**0**	NORTH LEG	NORTH	LEFT	**0**	**0**	NORTH LEG
BOUND	THRU	**740**	**1,020**	RATIO **7.0%**	BOUND	THRU	**889**	**1,670**	RATIO **-**
	RIGHT	**0**	**0**	ADT 33,800		RIGHT	**0**	**0**	ADT 0
SOUTH	LEFT	**0**	**0**	SOUTH LEG	SOUTH	LEFT	**0**	**0**	SOUTH LEG
BOUND	THRU	**763**	**1,350**	RATIO **7.0%**	BOUND	THRU	**1,290**	**1,470**	RATIO **-**
	RIGHT	**0**	**0**	ADT 33,800		RIGHT	**0**	**0**	ADT 0
EAST	LEFT	**0**	**0**	EAST LEG	EAST	LEFT	**0**	**0**	EAST LEG
BOUND	THRU	**0**	**0**	RATIO **-**	BOUND	THRU	**0**	**0**	RATIO **-**
	RIGHT	**1**	**1**	ADT 0		RIGHT	**0**	**0**	ADT 0
WEST	LEFT	**0**	**0**	WEST LEG	WEST	LEFT	**0**	**0**	WEST LEG
BOUND	THRU	**0**	**0**	RATIO **-**	BOUND	THRU	**0**	**0**	RATIO **-**
	RIGHT	**0**	**0**	ADT 0		RIGHT	**0**	**0**	ADT 0

LA CADENA DR (NS) / LITTON AVE (EW) - #2

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255

YEAR 2040 TRAFFIC CONDITIONS									
MORNING PEAK HOUR INPUT DATA					EVENING PEAK HOUR INPUT DATA				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	YEAR 2040 TOTAL	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	YEAR 2040 TOTAL
NORTH	LEFT	**27**	SOUTH LEG		NORTH	LEFT	**39**	SOUTH LEG	
BOUND	THRU	**683**	IN ...	**990**	BOUND	THRU	**862**	IN ...	**1,680**
	RIGHT	**0**	OUT ...	**1,890**		RIGHT	**0**	OUT ...	**1,450**
SOUTH	LEFT	**0**	NORTH LEG		SOUTH	LEFT	**0**	NORTH LEG	
BOUND	THRU	**1,264**	IN ...	**1,870**	BOUND	THRU	**1,245**	IN ...	**1,470**
	RIGHT	**18**	OUT ...	**1,020**		RIGHT	**45**	OUT ...	**1,670**
EAST	LEFT	**59**	WEST LEG		EAST	LEFT	**25**	WEST LEG	
BOUND	THRU	**0**	IN ...	**100**	BOUND	THRU	**0**	IN ...	**50**
	RIGHT	**34**	OUT ...	**50**		RIGHT	**24**	OUT ...	**90**
WEST	LEFT	**0**	EAST LEG		WEST	LEFT	**0**	EAST LEG	
BOUND	THRU	**0**	IN ...	**0**	BOUND	THRU	**0**	IN ...	**0**
	RIGHT	**0**	OUT ...	**0**		RIGHT	**0**	OUT ...	**0**

YEAR 2040 TRAFFIC CONDITIONS									
MORNING PEAK HOUR RESULTS					EVENING PEAK HOUR RESULTS				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2040 FORECAST	PEAK - DAILY RELATIONSHIP	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2040 FORECAST	PEAK - DAILY RELATIONSHIP
NORTH	LEFT	**27**	**30**	NORTH LEG	NORTH	LEFT	**39**	**51**	NORTH LEG
BOUND	THRU	**683**	**957**	RATIO **8.6%**	BOUND	THRU	**862**	**1,643**	RATIO **-**
	RIGHT	**0**	**0**	ADT 33,700		RIGHT	**0**	**0**	ADT 0
SOUTH	LEFT	**0**	**0**	SOUTH LEG	SOUTH	LEFT	**0**	**0**	SOUTH LEG
BOUND	THRU	**1,264**	**1,853**	RATIO **8.5%**	BOUND	THRU	**1,245**	**1,427**	RATIO **-**
	RIGHT	**18**	**20**	ADT 33,700		RIGHT	**45**	**50**	ADT 0
EAST	LEFT	**59**	**65**	EAST LEG	EAST	LEFT	**25**	**28**	EAST LEG
BOUND	THRU	**0**	**0**	RATIO **-**	BOUND	THRU	**0**	**0**	RATIO **-**
	RIGHT	**34**	**37**	ADT 0		RIGHT	**24**	**26**	ADT 0
WEST	LEFT	**0**	**0**	WEST LEG	WEST	LEFT	**0**	**0**	WEST LEG
BOUND	THRU	**0**	**0**	RATIO **8.9%**	BOUND	THRU	**0**	**0**	RATIO **-**
	RIGHT	**0**	**0**	ADT 1,700		RIGHT	**0**	**0**	ADT 0

LA CADENA DR (NS) / PALM DR (EW) - #3

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255

YEAR 2040 TRAFFIC CONDITIONS									
MORNING PEAK HOUR INPUT DATA					EVENING PEAK HOUR INPUT DATA				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	YEAR 2040 TOTAL	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	YEAR 2040 TOTAL
NORTH	LEFT	**0**	SOUTH LEG		NORTH	LEFT	**0**	SOUTH LEG	
BOUND	THRU	**705**	IN ...	**990**	BOUND	THRU	**877**	IN ...	**1,660**
	RIGHT	**0**	OUT ...	**1,910**		RIGHT	**0**	OUT ...	**1,480**
SOUTH	LEFT	**0**	NORTH LEG		SOUTH	LEFT	**0**	NORTH LEG	
BOUND	THRU	**1,285**	IN ...	**1,890**	BOUND	THRU	**1,273**	IN ...	**1,480**
	RIGHT	**11**	OUT ...	**990**		RIGHT	**22**	OUT ...	**1,660**
EAST	LEFT	**0**	WEST LEG		EAST	LEFT	**0**	WEST LEG	
BOUND	THRU	**0**	IN ...	**30**	BOUND	THRU	**0**	IN ...	**20**
	RIGHT	**32**	OUT ...	**10**		RIGHT	**24**	OUT ...	**20**
WEST	LEFT	**0**	EAST LEG		WEST	LEFT	**0**	EAST LEG	
BOUND	THRU	**0**	IN ...	**0**	BOUND	THRU	**0**	IN ...	**0**
	RIGHT	**0**	OUT ...	**0**		RIGHT	**0**	OUT ...	**0**

YEAR 2040 TRAFFIC CONDITIONS									
MORNING PEAK HOUR RESULTS					EVENING PEAK HOUR RESULTS				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2040 FORECAST	PEAK - DAILY RELATIONSHIP	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2040 FORECAST	PEAK - DAILY RELATIONSHIP
NORTH	LEFT	**0**	**0**	NORTH LEG	NORTH	LEFT	**0**	**0**	NORTH LEG
BOUND	THRU	**705**	**990**	RATIO **8.6%**	BOUND	THRU	**877**	**1,660**	RATIO **-**
	RIGHT	**0**	**0**	ADT 33,700		RIGHT	**0**	**0**	ADT 0
SOUTH	LEFT	**0**	**0**	SOUTH LEG	SOUTH	LEFT	**0**	**0**	SOUTH LEG
BOUND	THRU	**1,285**	**1,880**	RATIO **8.6%**	BOUND	THRU	**1,273**	**1,460**	RATIO **-**
	RIGHT	**11**	**12**	ADT 33,700		RIGHT	**22**	**24**	ADT 0
EAST	LEFT	**0**	**0**	EAST LEG	EAST	LEFT	**0**	**0**	EAST LEG
BOUND	THRU	**0**	**0**	RATIO **-**	BOUND	THRU	**0**	**0**	RATIO **-**
	RIGHT	**32**	**35**	ADT 0		RIGHT	**24**	**26**	ADT 0
WEST	LEFT	**0**	**0**	WEST LEG	WEST	LEFT	**0**	**0**	WEST LEG
BOUND	THRU	**0**	**0**	RATIO **7.8%**	BOUND	THRU	**0**	**0**	RATIO **-**
	RIGHT	**0**	**0**	ADT 600		RIGHT	**0**	**0**	ADT 0

LA CADENA DR (NS) / BARTON RD (EW) - #4

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255

YEAR 2040 TRAFFIC CONDITIONS									
MORNING PEAK HOUR INPUT DATA					EVENING PEAK HOUR INPUT DATA				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	YEAR 2040 TOTAL	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	YEAR 2040 TOTAL
NORTH	LEFT	**0**	SOUTH LEG		NORTH	LEFT	**0**	SOUTH LEG	
BOUND	THRU	**538**	IN ...	**900**	BOUND	THRU	**774**	IN ...	**1,900**
	RIGHT	**147**	OUT ...	**1,980**		RIGHT	**153**	OUT ...	**1,420**
SOUTH	LEFT	**208**	NORTH LEG		SOUTH	LEFT	**256**	NORTH LEG	
BOUND	THRU	**1,105**	IN ...	**1,880**	BOUND	THRU	**1,014**	IN ...	**1,430**
	RIGHT	**0**	OUT ...	**970**		RIGHT	**0**	OUT ...	**1,660**
EAST	LEFT	**0**	WEST LEG		EAST	LEFT	**0**	WEST LEG	
BOUND	THRU	**0**	IN ...	**0**	BOUND	THRU	**0**	IN ...	**0**
	RIGHT	**0**	OUT ...	**0**		RIGHT	**0**	OUT ...	**0**
WEST	LEFT	**190**	EAST LEG		WEST	LEFT	**208**	EAST LEG	
BOUND	THRU	**0**	IN ...	**640**	BOUND	THRU	**0**	IN ...	**570**
	RIGHT	**164**	OUT ...	**490**		RIGHT	**136**	OUT ...	**810**

YEAR 2040 TRAFFIC CONDITIONS									
MORNING PEAK HOUR RESULTS					EVENING PEAK HOUR RESULTS				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2040 FORECAST	PEAK - DAILY RELATIONSHIP	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2040 FORECAST	PEAK - DAILY RELATIONSHIP
NORTH	LEFT	**0**	**0**	NORTH LEG	NORTH	LEFT	**0**	**0**	NORTH LEG
BOUND	THRU	**538**	**696**	RATIO **8.5%**	BOUND	THRU	**774**	**1,451**	RATIO **-**
	RIGHT	**147**	**207**	ADT 33,800		RIGHT	**153**	**442**	ADT 0
SOUTH	LEFT	**208**	**283**	SOUTH LEG	SOUTH	LEFT	**256**	**368**	SOUTH LEG
BOUND	THRU	**1,105**	**1,610**	RATIO **8.2%**	BOUND	THRU	**1,014**	**1,115**	RATIO **-**
	RIGHT	**0**	**0**	ADT 35,100		RIGHT	**0**	**0**	ADT 0
EAST	LEFT	**0**	**0**	EAST LEG	EAST	LEFT	**0**	**0**	EAST LEG
BOUND	THRU	**0**	**0**	RATIO **8.0%**	BOUND	THRU	**0**	**0**	RATIO **-**
	RIGHT	**0**	**0**	ADT 14,200		RIGHT	**0**	**0**	ADT 0
WEST	LEFT	**190**	**370**	WEST LEG	WEST	LEFT	**208**	**360**	WEST LEG
BOUND	THRU	**0**	**0**	RATIO **-**	BOUND	THRU	**0**	**0**	RATIO **-**
	RIGHT	**164**	**274**	ADT 0		RIGHT	**136**	**209**	ADT 0

LA CADENA DR (NS) / IOWA AVE (EW) - #5

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255

YEAR 2040 TRAFFIC CONDITIONS									
MORNING PEAK HOUR INPUT DATA					EVENING PEAK HOUR INPUT DATA				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	YEAR 2040 TOTAL	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	YEAR 2040 TOTAL
NORTH	LEFT	**77**	SOUTH LEG		NORTH	LEFT	**74**	SOUTH LEG	
BOUND	THRU	**516**	IN ...	**600**	BOUND	THRU	**626**	IN ...	**710**
	RIGHT	**0**	OUT ...	**650**		RIGHT	**0**	OUT ...	**850**
SOUTH	LEFT	**0**	NORTH LEG		SOUTH	LEFT	**0**	NORTH LEG	
BOUND	THRU	**474**	IN ...	**1,540**	BOUND	THRU	**303**	IN ...	**1,410**
	RIGHT	**834**	OUT ...	**900**		RIGHT	**866**	OUT ...	**1,620**
EAST	LEFT	**105**	WEST LEG		EAST	LEFT	**318**	WEST LEG	
BOUND	THRU	**0**	IN ...	**230**	BOUND	THRU	**0**	IN ...	**520**
	RIGHT	**101**	OUT ...	**980**		RIGHT	**159**	OUT ...	**1,010**
WEST	LEFT	**0**	EAST LEG		WEST	LEFT	**0**	EAST LEG	
BOUND	THRU	**0**	IN ...	**350**	BOUND	THRU	**0**	IN ...	**1,060**
	RIGHT	**0**	OUT ...	**230**		RIGHT	**0**	OUT ...	**240**

YEAR 2040 TRAFFIC CONDITIONS									
MORNING PEAK HOUR RESULTS					EVENING PEAK HOUR RESULTS				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2040 FORECAST	PEAK - DAILY RELATIONSHIP	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2040 FORECAST	PEAK - DAILY RELATIONSHIP
NORTH	LEFT	**77**	**85**	NORTH LEG	NORTH	LEFT	**74**	**81**	NORTH LEG
BOUND	THRU	**516**	**681**	RATIO **7.5%**	BOUND	THRU	**626**	**990**	RATIO **-**
	RIGHT	**0**	**0**	ADT 32,900		RIGHT	**0**	**0**	ADT 0
SOUTH	LEFT	**0**	**0**	SOUTH LEG	SOUTH	LEFT	**0**	**0**	SOUTH LEG
BOUND	THRU	**474**	**606**	RATIO **6.1%**	BOUND	THRU	**303**	**755**	RATIO **-**
	RIGHT	**834**	**961**	ADT 24,200		RIGHT	**866**	**994**	ADT 0
EAST	LEFT	**105**	**219**	EAST LEG	EAST	LEFT	**318**	**630**	EAST LEG
BOUND	THRU	**0**	**0**	RATIO **-**	BOUND	THRU	**0**	**0**	RATIO **-**
	RIGHT	**101**	**111**	ADT 0		RIGHT	**159**	**175**	ADT 0
WEST	LEFT	**0**	**0**	WEST LEG	WEST	LEFT	**0**	**0**	WEST LEG
BOUND	THRU	**0**	**0**	RATIO **6.6%**	BOUND	THRU	**0**	**0**	RATIO **-**
	RIGHT	**0**	**0**	ADT 20,700		RIGHT	**0**	**0**	ADT 0

LA CADENA DR (NS) / MARYKNOLL DR (EW) - #6

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255

YEAR 2040 TRAFFIC CONDITIONS									
MORNING PEAK HOUR INPUT DATA					EVENING PEAK HOUR INPUT DATA				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	YEAR 2040 TOTAL	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	YEAR 2040 TOTAL
NORTH	LEFT	**8**	SOUTH LEG		NORTH	LEFT	**27**	SOUTH LEG	
BOUND	THRU	**172**	IN ...	**230**	BOUND	THRU	**466**	IN ...	**800**
	RIGHT	**4**	OUT ...	**1,230**		RIGHT	**4**	OUT ...	**1,430**
SOUTH	LEFT	**20**	NORTH LEG		SOUTH	LEFT	**2**	NORTH LEG	
BOUND	THRU	**881**	IN ...	**1,160**	BOUND	THRU	**924**	IN ...	**1,360**
	RIGHT	**10**	OUT ...	**220**		RIGHT	**19**	OUT ...	**710**
EAST	LEFT	**19**	WEST LEG		EAST	LEFT	**9**	WEST LEG	
BOUND	THRU	**0**	IN ...	**60**	BOUND	THRU	**0**	IN ...	**30**
	RIGHT	**35**	OUT ...	**20**		RIGHT	**18**	OUT ...	**50**
WEST	LEFT	**12**	EAST LEG		WEST	LEFT	**5**	EAST LEG	
BOUND	THRU	**0**	IN ...	**30**	BOUND	THRU	**0**	IN ...	**10**
	RIGHT	**13**	OUT ...	**20**		RIGHT	**2**	OUT ...	**10**

YEAR 2040 TRAFFIC CONDITIONS									
MORNING PEAK HOUR RESULTS					EVENING PEAK HOUR RESULTS				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2040 FORECAST	PEAK - DAILY RELATIONSHIP	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2040 FORECAST	PEAK - DAILY RELATIONSHIP
NORTH	LEFT	**8**	**12**	NORTH LEG	NORTH	LEFT	**27**	**38**	NORTH LEG
BOUND	THRU	**172**	**199**	RATIO **6.9%**	BOUND	THRU	**466**	**703**	RATIO **-**
	RIGHT	**4**	**6**	ADT 20,800		RIGHT	**4**	**8**	ADT 0
SOUTH	LEFT	**20**	**22**	SOUTH LEG	SOUTH	LEFT	**2**	**2**	SOUTH LEG
BOUND	THRU	**881**	**1,161**	RATIO **6.9%**	BOUND	THRU	**924**	**1,396**	RATIO **-**
	RIGHT	**10**	**11**	ADT 21,000		RIGHT	**19**	**21**	ADT 0
EAST	LEFT	**19**	**21**	EAST LEG	EAST	LEFT	**9**	**10**	EAST LEG
BOUND	THRU	**0**	**0**	RATIO **62.0%**	BOUND	THRU	**0**	**0**	RATIO **-**
	RIGHT	**35**	**49**	ADT 100		RIGHT	**18**	**25**	ADT 0
WEST	LEFT	**12**	**20**	WEST LEG	WEST	LEFT	**5**	**9**	WEST LEG
BOUND	THRU	**0**	**0**	RATIO **10.3%**	BOUND	THRU	**0**	**0**	RATIO **-**
	RIGHT	**13**	**14**	ADT 900		RIGHT	**2**	**2**	ADT 0

LA CADENA DR (NS) / CADENA CREEK DWY/I-215 SB ON-RAMP (EW) - #7

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255

YEAR 2040 TRAFFIC CONDITIONS									
MORNING PEAK HOUR INPUT DATA					EVENING PEAK HOUR INPUT DATA				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	YEAR 2040 TOTAL	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	YEAR 2040 TOTAL
NORTH	LEFT	**9**	SOUTH LEG		NORTH	LEFT	**27**	SOUTH LEG	
BOUND	THRU	**110**	IN ...	**170**	BOUND	THRU	**449**	IN ...	**780**
	RIGHT	**0**	OUT ...	**490**		RIGHT	**6**	OUT ...	**410**
SOUTH	LEFT	**513**	NORTH LEG		SOUTH	LEFT	**500**	NORTH LEG	
BOUND	THRU	**375**	IN ...	**1,230**	BOUND	THRU	**373**	IN ...	**1,430**
	RIGHT	**46**	OUT ...	**230**		RIGHT	**74**	OUT ...	**800**
EAST	LEFT	**73**	WEST LEG		EAST	LEFT	**50**	WEST LEG	
BOUND	THRU	**17**	IN ...	**130**	BOUND	THRU	**9**	IN ...	**90**
	RIGHT	**28**	OUT ...	**70**		RIGHT	**17**	OUT ...	**110**
WEST	LEFT	**0**	EAST LEG		WEST	LEFT	**0**	EAST LEG	
BOUND	THRU	**0**	IN ...	**0**	BOUND	THRU	**0**	IN ...	**0**
	RIGHT	**0**	OUT ...	**750**		RIGHT	**0**	OUT ...	**980**

YEAR 2040 TRAFFIC CONDITIONS									
MORNING PEAK HOUR RESULTS					EVENING PEAK HOUR RESULTS				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2040 FORECAST	PEAK - DAILY RELATIONSHIP	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2040 FORECAST	PEAK - DAILY RELATIONSHIP
NORTH	LEFT	**9**	**14**	NORTH LEG	NORTH	LEFT	**27**	**31**	NORTH LEG
BOUND	THRU	**110**	**155**	RATIO **6.6%**	BOUND	THRU	**449**	**738**	RATIO **-**
	RIGHT	**0**	**0**	ADT 22,500		RIGHT	**6**	**12**	ADT 0
SOUTH	LEFT	**513**	**727**	SOUTH LEG	SOUTH	LEFT	**500**	**954**	SOUTH LEG
BOUND	THRU	**375**	**458**	RATIO **5.5%**	BOUND	THRU	**373**	**410**	RATIO **-**
	RIGHT	**46**	**56**	ADT 11,900		RIGHT	**74**	**81**	ADT 0
EAST	LEFT	**73**	**80**	EAST LEG	EAST	LEFT	**50**	**62**	EAST LEG
BOUND	THRU	**17**	**23**	RATIO **7.6%**	BOUND	THRU	**9**	**14**	RATIO **-**
	RIGHT	**28**	**32**	ADT 9,900		RIGHT	**17**	**19**	ADT 0
WEST	LEFT	**0**	**0**	WEST LEG	WEST	LEFT	**0**	**0**	WEST LEG
BOUND	THRU	**0**	**0**	RATIO **9.3%**	BOUND	THRU	**0**	**0**	RATIO **-**
	RIGHT	**0**	**0**	ADT 2,200		RIGHT	**0**	**0**	ADT 0

IOWA AVE (NS) / I-215 SB OFF-RAMP (EW) - #8

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255

YEAR 2040 TRAFFIC CONDITIONS									
MORNING PEAK HOUR INPUT DATA					EVENING PEAK HOUR INPUT DATA				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	YEAR 2040 TOTAL	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	YEAR 2040 TOTAL
NORTH	LEFT	**0**	SOUTH LEG		NORTH	LEFT	**0**	SOUTH LEG	
BOUND	THRU	**569**	IN ...	**870**	BOUND	THRU	**689**	IN ...	**1,080**
	RIGHT	**0**	OUT ...	**1,500**		RIGHT	**0**	OUT ...	**970**
SOUTH	LEFT	**0**	NORTH LEG		SOUTH	LEFT	**0**	NORTH LEG	
BOUND	THRU	**577**	IN ...	**810**	BOUND	THRU	**454**	IN ...	**690**
	RIGHT	**0**	OUT ...	**950**		RIGHT	**0**	OUT ...	**1,790**
EAST	LEFT	**29**	WEST LEG		EAST	LEFT	**45**	WEST LEG	
BOUND	THRU	**0**	IN ...	**770**	BOUND	THRU	**0**	IN ...	**1,010**
	RIGHT	**533**	OUT ...	**0**		RIGHT	**415**	OUT ...	**0**
WEST	LEFT	**0**	EAST LEG		WEST	LEFT	**0**	EAST LEG	
BOUND	THRU	**0**	IN ...	**0**	BOUND	THRU	**0**	IN ...	**0**
	RIGHT	**0**	OUT ...	**0**		RIGHT	**0**	OUT ...	**0**

YEAR 2040 TRAFFIC CONDITIONS									
MORNING PEAK HOUR RESULTS					EVENING PEAK HOUR RESULTS				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2040 FORECAST	PEAK - DAILY RELATIONSHIP	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2040 FORECAST	PEAK - DAILY RELATIONSHIP
NORTH	LEFT	**0**	**0**	NORTH LEG	NORTH	LEFT	**0**	**0**	NORTH LEG
BOUND	THRU	**569**	**893**	RATIO **7.4%**	BOUND	THRU	**689**	**1,107**	RATIO **-**
	RIGHT	**0**	**0**	ADT 23,600		RIGHT	**0**	**0**	ADT 0
SOUTH	LEFT	**0**	**0**	SOUTH LEG	SOUTH	LEFT	**0**	**0**	SOUTH LEG
BOUND	THRU	**577**	**797**	RATIO **9.6%**	BOUND	THRU	**454**	**648**	RATIO **-**
	RIGHT	**0**	**0**	ADT 24,800		RIGHT	**0**	**0**	ADT 0
EAST	LEFT	**29**	**57**	EAST LEG	EAST	LEFT	**45**	**683**	EAST LEG
BOUND	THRU	**0**	**0**	RATIO **-**	BOUND	THRU	**0**	**0**	RATIO **-**
	RIGHT	**533**	**703**	ADT 0		RIGHT	**415**	**457**	ADT 0
WEST	LEFT	**0**	**0**	WEST LEG	WEST	LEFT	**0**	**0**	WEST LEG
BOUND	THRU	**0**	**0**	RATIO **8.4%**	BOUND	THRU	**0**	**0**	RATIO **-**
	RIGHT	**0**	**0**	ADT 9,000		RIGHT	**0**	**0**	ADT 0

IOWA AVE (NS) / IOWA AVE/I-215 NB RAMPS (EW) - #9

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255

YEAR 2040 TRAFFIC CONDITIONS									
MORNING PEAK HOUR INPUT DATA					EVENING PEAK HOUR INPUT DATA				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	YEAR 2040 TOTAL	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	YEAR 2040 TOTAL
NORTH	LEFT	**0**	SOUTH LEG		NORTH	LEFT	**0**	SOUTH LEG	
BOUND	THRU	**0**	IN ...	**220**	BOUND	THRU	**0**	IN ...	**350**
	RIGHT	**0**	OUT ...	**360**		RIGHT	**0**	OUT ...	**170**
SOUTH	LEFT	**110**	NORTH LEG		SOUTH	LEFT	**141**	NORTH LEG	
BOUND	THRU	**0**	IN ...	**1,470**	BOUND	THRU	**0**	IN ...	**1,040**
	RIGHT	**1,000**	OUT ...	**630**		RIGHT	**728**	OUT ...	**850**
EAST	LEFT	**305**	WEST LEG		EAST	LEFT	**363**	WEST LEG	
BOUND	THRU	**532**	IN ...	**900**	BOUND	THRU	**668**	IN ...	**1,110**
	RIGHT	**0**	OUT ...	**1,110**		RIGHT	**0**	OUT ...	**810**
WEST	LEFT	**0**	EAST LEG		WEST	LEFT	**0**	EAST LEG	
BOUND	THRU	**33**	IN ...	**320**	BOUND	THRU	**17**	IN ...	**360**
	RIGHT	**264**	OUT ...	**810**		RIGHT	**327**	OUT ...	**1,000**

YEAR 2040 TRAFFIC CONDITIONS									
MORNING PEAK HOUR RESULTS					EVENING PEAK HOUR RESULTS				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2040 FORECAST	PEAK - DAILY RELATIONSHIP	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2040 FORECAST	PEAK - DAILY RELATIONSHIP
NORTH	LEFT	**0**	**0**	NORTH LEG	NORTH	LEFT	**0**	**0**	NORTH LEG
BOUND	THRU	**0**	**0**	RATIO **8.9%**	BOUND	THRU	**0**	**0**	RATIO **-**
	RIGHT	**0**	**0**	ADT 22,500		RIGHT	**0**	**0**	ADT 0
SOUTH	LEFT	**110**	**279**	SOUTH LEG	SOUTH	LEFT	**141**	**287**	SOUTH LEG
BOUND	THRU	**0**	**0**	RATIO **-**	BOUND	THRU	**0**	**0**	RATIO **-**
	RIGHT	**1,000**	**1,100**	ADT 6,800		RIGHT	**728**	**801**	ADT 0
EAST	LEFT	**305**	**336**	EAST LEG	EAST	LEFT	**363**	**472**	EAST LEG
BOUND	THRU	**532**	**585**	RATIO **8.2%**	BOUND	THRU	**668**	**735**	RATIO **-**
	RIGHT	**0**	**0**	ADT 14,600		RIGHT	**0**	**0**	ADT 0
WEST	LEFT	**0**	**0**	WEST LEG	WEST	LEFT	**0**	**0**	WEST LEG
BOUND	THRU	**33**	**36**	RATIO **9.2%**	BOUND	THRU	**17**	**19**	RATIO **-**
	RIGHT	**264**	**296**	ADT 22,400		RIGHT	**327**	**378**	ADT 0

I-215 SB RAMPS/LA CROSSE AVE (NS) / BARTON RD (EW) - #10

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255

YEAR 2040 TRAFFIC CONDITIONS									
MORNING PEAK HOUR INPUT DATA					EVENING PEAK HOUR INPUT DATA				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	YEAR 2040 TOTAL	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	YEAR 2040 TOTAL
NORTH	LEFT	**0**	SOUTH LEG		NORTH	LEFT	**2**	SOUTH LEG	
BOUND	THRU	**0**	IN ...	**10**	BOUND	THRU	**0**	IN ...	**40**
	RIGHT	**8**	OUT ...	**650**		RIGHT	**38**	OUT ...	**520**
SOUTH	LEFT	**116**	NORTH LEG		SOUTH	LEFT	**179**	NORTH LEG	
BOUND	THRU	**23**	IN ...	**470**	BOUND	THRU	**9**	IN ...	**410**
	RIGHT	**67**	OUT ...	**0**		RIGHT	**71**	OUT ...	**10**
EAST	LEFT	**1**	WEST LEG		EAST	LEFT	**1**	WEST LEG	
BOUND	THRU	**296**	IN ...	**460**	BOUND	THRU	**385**	IN ...	**890**
	RIGHT	**41**	OUT ...	**670**		RIGHT	**40**	OUT ...	**540**
WEST	LEFT	**321**	EAST LEG		WEST	LEFT	**234**	EAST LEG	
BOUND	THRU	**251**	IN ...	**1,050**	BOUND	THRU	**224**	IN ...	**850**
	RIGHT	**3**	OUT ...	**660**		RIGHT	**6**	OUT ...	**1,110**

YEAR 2040 TRAFFIC CONDITIONS									
MORNING PEAK HOUR RESULTS					EVENING PEAK HOUR RESULTS				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2040 FORECAST	PEAK - DAILY RELATIONSHIP	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2040 FORECAST	PEAK - DAILY RELATIONSHIP
NORTH	LEFT	**0**	**0**	NORTH LEG	NORTH	LEFT	**2**	**2**	NORTH LEG
BOUND	THRU	**0**	**0**	RATIO **8.4%**	BOUND	THRU	**0**	**0**	RATIO **-**
	RIGHT	**8**	**10**	ADT 5,600		RIGHT	**38**	**42**	ADT 0
SOUTH	LEFT	**116**	**249**	SOUTH LEG	SOUTH	LEFT	**179**	**275**	SOUTH LEG
BOUND	THRU	**23**	**49**	RATIO **9.9%**	BOUND	THRU	**9**	**14**	RATIO **-**
	RIGHT	**67**	**169**	ADT 6,700		RIGHT	**71**	**119**	ADT 0
EAST	LEFT	**1**	**1**	EAST LEG	EAST	LEFT	**1**	**2**	EAST LEG
BOUND	THRU	**296**	**401**	RATIO **8.0%**	BOUND	THRU	**385**	**797**	RATIO **-**
	RIGHT	**41**	**56**	ADT 21,300		RIGHT	**40**	**86**	ADT 0
WEST	LEFT	**321**	**545**	WEST LEG	WEST	LEFT	**234**	**419**	WEST LEG
BOUND	THRU	**251**	**501**	RATIO **7.7%**	BOUND	THRU	**224**	**419**	RATIO **-**
	RIGHT	**3**	**3**	ADT 14,700		RIGHT	**6**	**8**	ADT 0

I-215 NB RAMPS (NS) / BARTON RD (EW) - #11

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255

YEAR 2040 TRAFFIC CONDITIONS									
MORNING PEAK HOUR INPUT DATA					EVENING PEAK HOUR INPUT DATA				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	YEAR 2040 TOTAL	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	YEAR 2040 TOTAL
NORTH	LEFT	**30**	SOUTH LEG		NORTH	LEFT	**19**	SOUTH LEG	
BOUND	THRU	**0**	IN ...	**500**	BOUND	THRU	**2**	IN ...	**560**
	RIGHT	**303**	OUT ...	**0**		RIGHT	**343**	OUT ...	**0**
SOUTH	LEFT	**0**	NORTH LEG		SOUTH	LEFT	**0**	NORTH LEG	
BOUND	THRU	**0**	IN ...	**0**	BOUND	THRU	**0**	IN ...	**0**
	RIGHT	**0**	OUT ...	**590**		RIGHT	**0**	OUT ...	**760**
EAST	LEFT	**68**	WEST LEG		EAST	LEFT	**104**	WEST LEG	
BOUND	THRU	**353**	IN ...	**660**	BOUND	THRU	**427**	IN ...	**1,040**
	RIGHT	**0**	OUT ...	**1,050**		RIGHT	**0**	OUT ...	**910**
WEST	LEFT	**0**	EAST LEG		WEST	LEFT	**0**	EAST LEG	
BOUND	THRU	**546**	IN ...	**1,470**	BOUND	THRU	**497**	IN ...	**1,280**
	RIGHT	**391**	OUT ...	**1,000**		RIGHT	**229**	OUT ...	**1,210**

YEAR 2040 TRAFFIC CONDITIONS									
MORNING PEAK HOUR RESULTS					EVENING PEAK HOUR RESULTS				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2040 FORECAST	PEAK - DAILY RELATIONSHIP	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2040 FORECAST	PEAK - DAILY RELATIONSHIP
NORTH	LEFT	**30**	**58**	NORTH LEG	NORTH	LEFT	**19**	**48**	NORTH LEG
BOUND	THRU	**0**	**0**	RATIO **7.8%**	BOUND	THRU	**2**	**5**	RATIO **-**
	RIGHT	**303**	**441**	ADT 7,600		RIGHT	**343**	**501**	ADT 0
SOUTH	LEFT	**0**	**0**	SOUTH LEG	SOUTH	LEFT	**0**	**0**	SOUTH LEG
BOUND	THRU	**0**	**0**	RATIO **7.7%**	BOUND	THRU	**0**	**0**	RATIO **-**
	RIGHT	**0**	**0**	ADT 6,500		RIGHT	**0**	**0**	ADT 0
EAST	LEFT	**68**	**100**	EAST LEG	EAST	LEFT	**104**	**324**	EAST LEG
BOUND	THRU	**353**	**559**	RATIO **8.8%**	BOUND	THRU	**427**	**709**	RATIO **-**
	RIGHT	**0**	**0**	ADT 28,100		RIGHT	**0**	**0**	ADT 0
WEST	LEFT	**0**	**0**	WEST LEG	WEST	LEFT	**0**	**0**	WEST LEG
BOUND	THRU	**546**	**992**	RATIO **8.1%**	BOUND	THRU	**497**	**862**	RATIO **-**
	RIGHT	**391**	**490**	ADT 21,000		RIGHT	**229**	**430**	ADT 0

Post-Processed Forecasted Intersection Traffic Volumes - 2040nP

La Cadena Dr (NS) at Tropica Rancho Rd (EW)

Adj.		⇩	**1,870**	9.8%	PM		400			PM	9.8%	**1,670**	⇧	DATE	
	Flow	⇩	***1,870***	8.6%	AM		520			AM	8.6%	***1,220***	⇧	Flow	
⇦	⇦	Origin	ADT	36,100	PM	0	1,470	0		PM	36,100	ADT	Origin	⇦	⇦
0	***0***	ADT			AM	0	1,350	0		AM			ADT	***0***	**0**
0.0%	8.3%	12			PM	0	1,870	0		PM		1	1	0.0%	0.0%
PM	AM	PM	AM	PM	AM	0	1,870	0		AM	PM	AM	PM	AM	PM
						⇦	⇩	⇨							
		0	0	0	0	⇧	SB		⇧	0	0	0	0		
		0	0	0	0	⇨	EB	1	WB	⇦	0	0	0		
		0	1	0	1	⇩	NB		⇩	0	0	0	0		
						⇦	⇧	⇨							
PM	AM	PM	AM	PM	AM	0	1,220	0		AM	PM	AM	PM	AM	PM
0.0%	8.3%	12	10		PM	0	1,670	0		PM			1	0.0%	0.0%
0	***1***	ADT			AM	0	1,020	0		AM			ADT	***0***	**0**
⇨	⇨	Origin	ADT	36,100	PM	0	1,670	0		PM	36,100	ADT	Origin	⇨	⇨
	Flow	⇩	***1,871***	8.6%	AM		200			AM	8.6%	***1,220***	⇧	Flow	
Adj.		⇩	**1,870**	9.8%	PM					PM	9.8%	**1,670**	⇧		Adj.

Post-Processed Forecasted Intersection Traffic Volumes - 2040nP

La Cadena Dr (NS) at Litton Ave (EW)

Adj.		⇩	**1,877**	9.8%	PM			400			PM	9.8%	**1,671**	⇧	DATE	
	Flow	⇩	***1,873***	8.5%	AM						AM	8.5%	***1,222***	⇧	Flow	
⇦	⇦	Origin	ADT	36,200	PM		50	1,427	0		PM	36,200	ADT	Origin	⇦	⇦
101	***50***	ADT			AM		20	1,853	0		AM			ADT	***0***	**0**
8.6%	8.4%	1,800			PM		50	1,827	0		PM		1	1	0.0%	0.0%
PM	AM	PM	AM	PM	AM		20	1,853	0		AM	PM	AM	PM	AM	PM
							⇦	⇩	⇨							
		28	65	28	65	⇧		SB		⇧	0	0	0	0		
		0	0	0	0	⇨	EB	**2**	WB	⇦	0	0	0	0		
		26	37	26	37	⇩		NB		⇩	0	0	0	0		
							⇦	⇧	⇨							
PM	AM	PM	AM	PM	AM		30	1,157	0		AM	PM	AM	PM	AM	PM
8.6%	8.4%	1,800			PM		51	1,643	0		PM			1	0.0%	0.0%
54	***102***	ADT			AM		30	957	0		AM	1		ADT	***0***	**0**
⇨	⇨	Origin	ADT	36,201	PM		51	1,643	0		PM	36,201	ADT	Origin	⇨	⇨
	Flow	⇩	***1,890***	8.5%	AM			200			AM	8.5%	***1,187***	⇧	Flow	
Adj.		⇩	**1,853**	9.8%	PM						PM	9.8%	**1,694**	⇧		Adj.

Post-Processed Forecasted Intersection Traffic Volumes - 2040nP

La Cadena Dr (NS) at Palm Ave (EW)

Adj.		⇩	**1,884**	9.8%	PM			400			PM	9.8%	**1,660**	⇧	DATE	
	Flow	⇩	***1,892***	8.5%	AM						AM	8.5%	***1,190***	⇧	Flow	
⇦	⇦	Origin	ADT	36,200	PM		24	1,460	0		PM	36,200	ADT	Origin	⇦	⇦
24	***12***	ADT			AM		12	1,880	0		AM			ADT	***0***	**0**
8.3%	7.8%	600			PM		24	1,860	0		PM		1	1	0.0%	0.0%
PM	AM	PM	AM	PM	AM		12	1,880	0		AM	PM	AM	PM	AM	PM
							⇦	⇩	⇨							
		0	0	0	0	⇧		SB		⇧	0	0	0	0		
		0	0	0	0	⇨	EB	**3**	WB	⇦	0	0	0	0		
		26	35	26	35	⇩		NB		⇩	0	0	0	0		
							⇦	⇧	⇨							
PM	AM	PM	AM	PM	AM		0	1,190	0		AM	PM	AM	PM	AM	PM
8.3%	7.8%	600			PM		0	1,660	0		PM			1	0.0%	0.0%
26	***35***	ADT			AM		0	990	0		AM			ADT	***0***	**0**
⇨	⇨	Origin	ADT	36,200	PM		0	1,660	0		PM	36,200	ADT	Origin	⇨	⇨
	Flow	⇩	***1,915***	8.6%	AM			200			AM	8.6%	***1,190***	⇧	Flow	
Adj.		⇩	**1,886**	9.8%	PM						PM	9.8%	**1,660**	⇧		Adj.

Post-Processed Forecasted Intersection Traffic Volumes - 2040nP

La Cadena Dr (NS) at Barton Rd (EW)

Adj.		⇩	**1,933**	10.0%	PM			450			PM	10.0%	**1,660**	⇧	DATE	
	Flow	⇩	***1,893***	8.5%	AM						AM	8.5%	***1,190***	⇧	Flow	
⇦	⇦	Origin	ADT	36,100	PM		0	1,115	368		PM	36,100	ADT	Origin	⇦	⇦
0	***0***	ADT			AM		0	1,610	283		AM			ADT	***664***	**719**
0.0%	0.0%	1			PM		0	1,565	368		PM			15,900	8.4%	9.6%
PM	AM	PM	AM	PM	AM		0	1,610	283		AM	PM	AM	PM	AM	PM
							⇦	⇩	⇨							
		0	0	0	0	⇧		SB		⇧	294	209	274	209	20	
		0	0	0	0	⇨	EB	4	WB	⇦	0	0	0	0		
		0	0	0	0	⇩		NB		⇩	370	510	370	360		150
							⇦	⇧	⇨							
PM	AM	PM	AM	PM	AM		0	896	387		AM	PM	AM	PM	AM	PM
0.0%	0.0%	1	1		PM		0	1,451	442		PM			15,900	8.4%	9.6%
0	***0***	ADT			AM		0	696	207		AM			ADT	***670***	**810**
⇨	⇨	Origin	ADT	38,700	PM		0	1,451	442		PM	38,700	ADT	Origin	⇨	⇨
	Flow	⇩	***1,980***	8.4%	AM			200	180		AM	8.4%	***1,283***	⇧	Flow	
Adj.		⇩	**2,075**	10.3%	PM						PM	10.3%	**1,893**	⇧		Adj.

Post-Processed Forecasted Intersection Traffic Volumes - 2040nP

La Cadena Dr/Iowa Ave (NS) at La Cadena Dr (EW)

Adj.		⇩	**2,149**	10.4%	PM		400				PM	10.4%	**1,870**	⇧	DATE	
	Flow	⇩	***1,917***	8.4%	AM		200	150			AM	8.4%	***1,330***	⇧	Flow	
⇦	⇦	Origin	ADT	38,700	PM		994	755	0		PM	38,700	ADT	Origin	⇦	⇦
1,625	***1,296***	ADT			AM		961	606	0		AM			ADT	***0***	**0**
11.7%	9.4%	21,600			PM		1,394	755	0		PM		1	1	0.0%	0.0%
PM	AM	PM	AM	PM	AM		1,161	756	0		AM	PM	AM	PM	AM	PM
							⇦	⇩	⇨							
50	300	630	219	680	519	⇧		SB		⇧	0	0	0	0		
		0	0	0	0	⇨	EB	**5**	WB	⇦	0	0	0	0		
50	100	175	111	225	211	⇩		NB		⇩	0	0	0	0		
							⇦	⇧	⇨							
PM	AM	PM	AM	PM	AM		135	811	0		AM	PM	AM	PM	AM	PM
11.7%	9.4%	21,600			PM		231	1,190	0		PM			1	0.0%	0.0%
905	***730***	ADT			AM		85	681	0		AM			ADT	***0***	**0**
⇨	⇨	Origin	ADT	23,000	PM		81	990	0		PM	23,000	ADT	Origin	⇨	⇨
	Flow	⇩	***967***	8.3%	AM		50	130			AM	8.3%	***946***	⇧	Flow	
Adj.		⇩	**980**	10.4%	PM		150	200			PM	10.4%	**1,421**	⇧		Adj.

Post-Processed Forecasted Intersection Traffic Volumes - 2040nP

La Cadena Dr (NS) at Maryknoll Dr (EW)

Adj.		⇩	**1,679**	10.7%	PM		360	-100			PM	10.7%	**935**	⇧	DATE	
	Flow	⇩	***1,334***	8.2%	AM		140				AM	8.2%	***674***	⇧	Flow	
⇦	⇦	Origin	ADT	24,500	PM		21	1,396	2		PM	24,500	ADT	Origin	⇦	⇦
489	***193***	ADT			AM		11	1,161	22		AM			ADT	***34***	**11**
9.8%	8.3%	8,100			PM		381	1,296	2		PM			200	31.0%	10.5%
PM	AM	PM	AM	PM	AM		151	1,161	22		AM	PM	AM	PM	AM	PM
							⇦	⇩	⇨							
220	340	10	21	230	361	⇧		SB		⇧	14	2	14	2		
		0	0	0	0	⇨	EB	**6**	WB	⇦	0	0	0	0		
50	70	25	49	75	119	⇩		NB		⇩	20	9	20	9		
							⇦	⇧	⇨							
PM	AM	PM	AM	PM	AM		42	299	6		AM	PM	AM	PM	AM	PM
9.8%	8.3%	8,100	7,000		PM		108	703	8		PM			200	31.0%	10.5%
305	***480***	ADT			AM		12	199	6		AM			ADT	***28***	**10**
⇨	⇨	Origin	ADT	25,100	PM		38	703	8		PM	25,100	ADT	Origin	⇨	⇨
	Flow	⇩	***1,300***	6.6%	AM		30	100			AM	6.6%	***347***	⇧	Flow	
Adj.		⇩	**1,380**	8.8%	PM		70				PM	8.8%	**819**	⇧		Adj.

Post-Processed Forecasted Intersection Traffic Volumes - 2040nP

La Cadena Dr (NS) at Cadena Creek Dwy/I-215 SB On-Ramp (EW)

Adj.		⇩	**1,395**	8.5%	PM			150	-200		PM	8.5%	**800**	⇧	DATE	
	Flow	⇩	***1,341***	6.5%	AM			100			AM	6.5%	***345***	⇧	Flow	
⇦	⇦	Origin	ADT	25,800	PM		81	410	954		PM	25,800	ADT	Origin	⇦	⇦
112	***70***	ADT			AM		56	458	727		AM			ADT	***0***	**0**
8.6%	8.5%	2,400			PM		81	560	754		PM			11,300	6.6%	6.9%
PM	AM	PM	AM	PM	AM		56	558	727		AM	PM	AM	PM	AM	PM
							⇦	⇩	⇨							
		62	80	62	80	⇧		SB		⇧	0	0	0	0		
		14	23	14	23	⇨	EB	**7**	WB	⇦	0	0	0	0		
		19	32	19	32	⇩		NB		⇩	0	0	0	0		
							⇦	⇧	⇨							
PM	AM	PM	AM	PM	AM		14	265	0		AM	PM	AM	PM	AM	PM
8.6%	8.5%	2,400			PM		31	738	12		PM			11,300	6.6%	6.9%
95	***135***	ADT			AM		14	155	0		AM			ADT	***750***	**780**
⇨	⇨	Origin	ADT	13,900	PM		31	738	12		PM	13,900	ADT	Origin	⇨	⇨
	Flow	⇩	***590***	6.3%	AM			110			AM	6.3%	***279***	⇧	Flow	
Adj.		⇩	**579**	9.8%	PM						PM	9.8%	**781**	⇧		Adj.

Post-Processed Forecasted Intersection Traffic Volumes - 2040nP

Iowa Ave (NS) at I-215 SB Off-Ramp (EW)

Adj.		⇩	**948**	8.5%	PM			300			PM	8.5%	**1,440**	⇧	DATE	
	Flow	⇩	***947***	6.9%	AM			150			AM	6.9%	***980***	⇧	Flow	
⇦	⇦	Origin	ADT	28,000	PM		0	648	0		PM	28,000	ADT	Origin	⇦	⇦
0	***0***	ADT			AM		0	797	0		AM			ADT	***0***	**0**
6.4%	6.0%	13,100			PM		0	948	0		PM		1	1	0.0%	0.0%
PM	AM	PM	AM	PM	AM		0	947	0		AM	PM	AM	PM	AM	PM
							⇦	⇩	⇨							
-300	30	683	57	383	87	⇧		SB		⇧	0	0	0	0		
		0	0	0	0	⇨	EB	**8**	WB	⇦	0	0	0	0		
		457	703	457	703	⇩		NB		⇩	0	0	0	0		
							⇦	⇧	⇨							
PM	AM	PM	AM	PM	AM		0	893	0		AM	PM	AM	PM	AM	PM
6.4%	6.0%	13,100			PM		0	1,057	0		PM			1	0.0%	0.0%
840	***790***	ADT			AM		0	893	0		AM			ADT	***0***	**0**
⇨	⇨	Origin	ADT	25,400	PM		0	1,107	0		PM	25,400	ADT	Origin	⇨	⇨
	Flow	⇩	***1,650***	10.0%	AM						AM	10.0%	***893***	⇧	Flow	
Adj.		⇩	**1,405**	9.7%	PM			-50			PM	9.7%	**1,057**	⇧		Adj.

Post-Processed Forecasted Intersection Traffic Volumes - 2040nP

Iowa Ave (NS) at Iowa Ave/I-215 NB Ramps (EW)

Adj.		⇩	**1,338**	10.7%	PM		200		50		PM	10.7%	**1,050**	⇧	DATE	
	Flow	⇩	***1,629***	11.3%	AM		100		150		AM	11.3%	***882***	⇧	Flow	
⇦	⇦	Origin	ADT	22,300	PM		801	0	287		PM	22,300	ADT	Origin	⇦	⇦
1,020	***1,286***	ADT			AM		1,100	0	279		AM			ADT	***482***	**497**
10.0%	10.1%	23,300			PM		1,001	0	337		PM			16,300	9.2%	9.6%
PM	AM	PM	AM	PM	AM		1,200	0	429		AM	PM	AM	PM	AM	PM
							⇦	⇩	⇨							
100	150	472	336	572	486	⇧		SB		⇧	396	478	296	378	100	100
		735	585	735	585	⇨	EB	9	WB	⇦	86	19	36	19	50	
		0	0	0	0	⇩		NB		⇩	0	0	0	0		
							⇦	⇧	⇨							
PM	AM	PM	AM	PM	AM		0	0	0		AM	PM	AM	PM	AM	PM
10.0%	10.1%	23,300			PM		0	0	0		PM			16,300	9.2%	9.6%
1,307	***1,071***	ADT			AM		0	0	0		AM	1		ADT	***1,014***	**1,072**
⇨	⇨	Origin	ADT	1	PM		0	0	0		PM	1	ADT	Origin	⇨	⇨
	Flow	⇩	***0***	0.0%	AM						AM	0.0%	***0***	⇧	Flow	
Adj.		⇩	**0**	0.0%	PM						PM	0.0%	**0**	⇧		Adj.

Post-Processed Forecasted Intersection Traffic Volumes - 2040nP

I-215 SB Ramps/La Crosse Ave (NS) at Barton Rd (EW)

Adj.		⇩	**458**	10.4%	PM		50				PM	10.4%	**40**	⇧	DATE	
	Flow	⇩	***467***	9.9%	AM						AM	9.9%	***9***	⇧	Flow	
⇦	⇦	Origin	ADT	4,800	PM		119	14	275		PM	4,800	ADT	Origin	⇦	⇦
690	***670***	ADT			AM		169	49	249		AM			ADT	***1,049***	**946**
9.8%	8.1%	16,400			PM		169	14	275		PM			22,500	8.5%	9.2%
PM	AM	PM	AM	PM	AM		169	49	249		AM	PM	AM	PM	AM	PM
							⇦	⇩	⇨							
30	5	2	1	32	6	⇧		SB		⇧	3	8	3	8		
	200	797	401	797	601	⇨	EB	**10**	WB	⇦	501	519	501	419		100
		86	56	86	56	⇩		NB		⇩	545	419	545	419		
							⇦	⇧	⇨							
PM	AM	PM	AM	PM	AM		0	0	10		AM	PM	AM	PM	AM	PM
9.8%	8.1%	16,400			PM		2	0	42		PM			22,500	8.5%	9.2%
915	***663***	ADT			AM		0	0	10		AM			ADT	***860***	**1,114**
⇨	⇨	Origin	ADT	6,500	PM		2	0	42		PM	6,500	ADT	Origin	⇨	⇨
	Flow	⇩	***650***	10.2%	AM						AM	10.2%	***10***	⇧	Flow	
Adj.		⇩	**519**	8.7%	PM						PM	8.7%	**44**	⇧		Adj.

Post-Processed Forecasted Intersection Traffic Volumes - 2040nP

I-215 NB Ramps (NS) at Barton Rd (EW)

Adj.		⇩	**0**	8.7%	PM						PM	8.7%	**759**	⇧	DATE	
	Flow	⇩	***0***	7.4%	AM						AM	7.4%	***640***	⇧	Flow	
⇦	⇦	Origin	ADT	8,700	PM		0	0	0		PM	8,700	ADT	Origin	⇦	⇦
910	***1,050***	ADT			AM		0	0	0		AM			ADT	***1,482***	**1,292**
9.1%	8.6%	22,300			PM		0	0	0		PM			28,800	9.1%	9.0%
PM	AM	PM	AM	PM	AM		0	0	0		AM	PM	AM	PM	AM	PM
							⇦	⇩	⇨							
	50	324	100	324	150	⇧		SB		⇧	490	430	490	430		
80	150	709	559	789	709	⇨	EB	**11**	WB	⇦	992	862	992	862		
		0	0	0	0	⇩		NB		⇩	0	0	0	0		
							⇦	⇧	⇨							
PM	AM	PM	AM	PM	AM		58	0	441		AM	PM	AM	PM	AM	PM
9.1%	8.6%	22,300			PM		48	5	501		PM			28,800	9.1%	9.0%
1,113	***859***	ADT			AM		58	0	441		AM			ADT	***1,150***	**1,290**
⇨	⇨	Origin	ADT	6,400	PM		48	5	501		PM	6,400	ADT	Origin	⇨	⇨
	Flow	⇩	***0***	7.8%	AM						AM	7.8%	***499***	⇧	Flow	
Adj.		⇩	**0**	8.7%	PM						PM	8.7%	**554**	⇧		Adj.

APPENDIX G

PRELIMINARY CONSTRUCTION COST ESTIMATES FOR CONGESTION MANAGEMENT PROGRAM

PRELIMINARY CONSTRUCTION COST ESTIMATES
FOR
CONGESTION MANAGEMENT PLAN

Add One Lane Each Direction on Freeway

Asphalt Concrete Pavement	$2,300,000 Per Mile
Portland Cement Concrete Pavement	$2,800,000 Per Mile
Includes: Excavation Paving Section Barrier Shoulder Upgrade Drainage System Traffic Control Mobilization @10% Design @11% Construction Mgt. @12.5%	**Excludes:** Environmental Costs Right of Way Widening of Bridge Structures Added Retaining Walls Added Sound Walls

Widen Existing UC Structures

Total Cost =	$160 Per Square Foot
Includes: Structure Mobilization @10% Design @11% Construction Mgt. @12.5%	**Excludes:** Environmental Costs Right of Way Traffic Control Ramp Modifications Signal/Lighting Up Grades Drainage Upgrades Added Retaining Walls Added Sound Walls

Diamond Interchanges

$10,000,000	EACH	NEW IC	Minimal Row/Environmental
$15,000,000	EACH	NEW IC	Includes Row/Environmental
$20,000,000	EACH	EXISTING	Minimal Row/Environmental
$25,000,000	EACH	EXISTING	Includes Row/ Environmental

Includes: Structure Retaining Walls Soil Nail Walls Drainage System Ramps Mobilization @ 10% Design @ 11% Construction Mgt. @ 12.5%	**Excludes:** As listed

Retaining Walls

Height Feet	Structure Cost $/LF	Mobilization Design Constr. Mgt. $/LF	Total $/LF
4	$190	$70	$260
6	$260	$90	$350
8	$380	$140	$520
10	$430	$150	$580
12	$480	$170	$650
14	$590	$210	$800
16	$660	$240	$900
	Excludes: Environmental Costs Right of Way		

12' High Sound Walls (Masonry Block on Footing)

Structure Cost $/Mile	Mobilization Design Constr. Mgt. $/Mile	Total $/Mile
$800,000	$300,000	$1,100,000

Widen Conventional Highway

1. Add one outside lane (Work includes earthwork, modify existing drainage system and construct AC shoulder section.	
Asphalt Concrete Pavement	$1,000,000/Mile
2. Add one outside lane each direction (Work includes earthwork, modify existing drainage system and construct AC shoulder section)	
Asphalt Concrete Pavement	$2,000,000/Mile
With Median Concrete Barrier	$2,200,000/Mile
With Median Double Thrie Beam Barrier	$2,300,000/Mile

Local Interchange Improvements

1. New Interchange	
Urban Interchange	$10,000,000 to $17,000,000
Partial – Cloverleaf Interchange (Work includes new OC structure, earthwork, signal)	$6,000,000
Diamond Interchange (Work includes new OC structure, earthwork, signal)	$5,000,000

Local Interchange Improvements CONT...		
2.	Reconstruct Existing Interchange	
	Realign and widen existing ramps (to 2 lanes)	$750,000/Each Ramp
	Construct Loop on – ramps (Does not include realigning existing ramp)	$700,000/Each Ramp
	Upgrade existing Diamond IC to Partial – Cloverleaf	$6,000,000
3.	Improve Existing Interchange	
	Widen ramps (From one to two lanes)	$350,000/Each Ramp
	Widen existing OC structure	$110/Sq. Ft.
	Signalize ramp intersection	$90,000/Location
	Upgrade existing signal at ramp terminal	$75,000/Intersection
	Upgrade existing signal at ramp terminal (Add lights only)	$25,000/Each
4.	Ramp Metering System	$60,000/Each location
Intersection Improvements		
1.	Signalization of local intersection (with some roadwork)	$250,000
2.	Upgrade existing intersection signalization	$75,000
3.	Upgrade existing Traffic Controller/Assembles	$40,000/Each
4.	Install new signal	$90,000/location
5.	Add signal heads	$25,000/Intersection
6.	Construct left – turn lane (240' long)	$50,000/Each Location
7.	Street widening (12' wide) (Pavement only)	$180,000/Mile
8.	Curb and gutter (Type A2-8)	$15/LF

Other Improvements		
1.	Construct new OC structure (Does not include roadway work)	$100/Sq. Ft.
2.	Construct Retaining Walls (Type 1)	$285/LF (H=8') $360/LF (H=10') $460/LF (H=12') $560/LF (H=14')
3.	Construct Soundwall	$1,000,000/Mile (H=12')
4.	Traffic Management Plan	10% of total construction costs

NOTE: This cost estimate does not include the following items:

1. R/W engineering, appraisal, acquisition and utilities relocation costs.
2. Minor items and supplemental work (10%).
3. Mobilization (10%).
4. Contingencies (25%).
5. Landscaping costs.

General Note: **When adding a through lane, the minimum distance is 600' approach and 600' departure to the next intersection.**



GANDDINI GROUP, INC.
550 Parkcenter Drive, Suite 202, Santa Ana, CA 92705
714.795.3100 | www.ganddini.com