

Arrow Highway Traffic Impact Analysis

City of Upland, California

October 31, 2025

Prepared by:



TJW ENGINEERING, INC.

9841 Irvine Center Drive, Suite 200

Irvine, CA 92618

949.878.3509 | www.tjwengineering.com

October 31, 2025



TJW ENGINEERING, INC.
TRAFFIC ENGINEERING &
TRANSPORTATION PLANNING
CONSULTANTS

Mr. Matthew Esquivel
WARMINGTON RESIDENTIAL
3090 Pullman Street
Costa Mesa, CA 92626

Subject: Traffic Impact Analysis – Arrow Highway, City of Upland, CA

Dear Mr. Esquivel:

TJW ENGINEERING, INC. (TJW) is pleased to present you with this traffic impact analysis for the proposed 124 single-family attached residential units located along West Arrow Highway west of North San Antonio Avenue in the City of Upland, California.

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

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

Sincerely,

A handwritten signature in blue ink, appearing to read "Th Wheat", is written over the circular professional engineer seal for Thomas Joseph Wheat.

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

A handwritten signature in blue ink, appearing to read "David Chew", is written over the circular professional planner seal for David Chew.

David Chew, PTP
Transportation Planner

A handwritten signature in blue ink, appearing to read "Travis Yokota", is written over the circular professional planner seal for Travis Yokota.

Travis Yokota
Assistant Transportation Planner



Arrow Highway Traffic Impact Analysis

City of Upland, California

October 31, 2025

Prepared for:

Mr. Matthew Esquivel

WARMINGTON RESIDENTIAL

3090 Pullman Street

Costa Mesa, CA 92626

Prepared by:

Thomas Wheat, PE, TE

David Chew, PTP

Travis Yokota



TJW ENGINEERING, INC.

9841 Irvine Center Drive, Suite 200

Irvine, CA 92618

949.878.3509 | www.tjwengineering.com

Table of Contents

1.0	EXECUTIVE SUMMARY	6
1.1	SUMMARY OF LEVEL OF SERVICE ANALYSIS RESULTS	6
2.0	INTRODUCTION	8
2.1	PROJECT DESCRIPTION	8
2.2	STUDY AREA	8
2.3	INTERSECTION ANALYSIS METHODOLOGY	9
2.4	PERFORMANCE CRITERIA	11
3.0	EXISTING CONDITIONS	15
3.1	EXISTING CIRCULATION NETWORK/STUDY AREA CONDITIONS	15
3.2	PEDESTRIAN AND BICYCLE FACILITIES	15
3.3	EXISTING PUBLIC TRANSIT SERVICES	15
3.4	EXISTING TRAFFIC VOLUMES	15
3.5	EXISTING CONDITIONS INTERSECTION LEVEL OF SERVICE ANALYSIS	16
4.0	PROPOSED PROJECT	19
4.1	PROJECT DESCRIPTION	19
4.2	PROJECT TRIP GENERATION	19
4.3	PROJECT TRIP DISTRIBUTION	19
4.4	CORNER SIGHT DISTANCE ANALYSIS	20
5.0	OPENING YEAR TRAFFIC CONDITIONS	23
5.1	ROADWAY IMPROVEMENTS	23
5.2	CUMULATIVE PROJECTS	23
5.3	OPENING YEAR TRAFFIC VOLUMES	24
5.4	EXISTING PLUS PROJECT INTERSECTION LOS ANALYSIS	24
6.0	OPENING YEAR PLUS PROJECT TRAFFIC CONDITIONS	27
6.1	ROADWAY IMPROVEMENTS	27
6.2	OPENING YEAR PLUS PROJECT TRAFFIC VOLUMES	27
6.3	OPENING YEAR PLUS PROJECT INTERSECTION LEVEL OF SERVICE ANALYSIS	27



List of Tables

Table 1: HCM – LOS & Delay Ranges – Signalized Intersections 9

Table 2: LOS & Delay Ranges –Unsignalized Intersections..... 10

Table 3: Roadway Characteristics in the Study Area..... 15

Table 4: Intersection Analysis – Existing Conditions 16

Table 5: Proposed Project Trip Generation 19

Table 6: Cumulative Projects Trip Generation 23

Table 7: Intersection Analysis – Opening Year Conditions 24

Table 8: Intersection Analysis – Opening Year Plus Project Conditions 28

List of Exhibits

Exhibit 1: Project Location 12

Exhibit 2: Proposed Project Site Plan..... 13

Exhibit 3: Project Study Area 14

Exhibit 4: Lane Geometry and Intersection Controls 17

Exhibit 5: Existing Conditions AM and PM Peak Hour Volumes 18

Exhibit 6: Proposed Project Trip Distribution 21

Exhibit 7: Sight Distance Analysis 22

Exhibit 8: Cumulative Project Locations 25

Exhibit 9: Opening Year Conditions AM and PM Peak Hour Volumes..... 26

Exhibit 10: Opening Year Plus Project Lane Geometry and Traffic Controls 29

Exhibit 11: Opening Year Plus Project Conditions AM and PM Peak Hour Volumes 30

Appendices

- Appendix A: Glossary of Terminology
- Appendix B: City of Upland Documents
- Appendix C: Existing Traffic Counts
- Appendix D: HCM Analysis Sheets



1.0 EXECUTIVE SUMMARY

This traffic impact analysis (TIA) analyzes the projected traffic operations associated with the proposed project located along West Arrow Highway west of North San Antonio Avenue in the City of Upland, California. The purpose of this TIA is to evaluate potential circulation system deficiencies that may result from the development of the proposed project, and to recommend improvements to achieve acceptable operations, if applicable. This analysis has been prepared in coordination with the City of Upland and follows the *City of Upland General Plan* (General Plan) (September 2015) and the *City of Upland Traffic Impact Analysis Guidelines* (City Guidelines) (July 2020).

The project proposes the construction of 124 single family attached residential units. Site access is planned via one proposed full access driveway on West Arrow Highway. The project site is currently designated for Medium Single Family Residential (SFR-M) and Institutional (I) land use. It is zoned for Single Family Residential 7,500 (RS-7.5) and Public (PB). The project site is currently vacant.

The proposed project is anticipated to be built and generating trips in 2027. The proposed project is projected to generate 893 daily trips which includes 60 AM peak hour trips and 71 PM peak hour trips.

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

1. North San Antonio Avenue / West Arrow Highway
2. North Mountain Avenue / West Arrow Highway
3. Project Driveway / West Arrow Highway.

The study intersections are analyzed for the following study scenarios:

- Existing Traffic Conditions
- Opening Year Traffic Conditions
- Opening Year Plus Project Traffic Conditions.

1.1 SUMMARY OF LEVEL OF SERVICE ANALYSIS RESULTS

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

Table ES-1
Summary of Transportation Deficiencies at Study Intersections

Intersection			Study Scenario		
			Existing	Opening Year	Opening Year + Project
1	North San Antonio Avenue	West Arrow Highway	No Deficiencies	No Deficiencies	No Deficiencies
2	North Mountain Avenue	West Arrow Highway	No Deficiencies	No Deficiencies	No Deficiencies
3	Project Driveway	West Arrow Highway	N/A	N/A	No Deficiencies

Existing Traffic Conditions

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

Opening Year Traffic Conditions

The study intersection is projected to operate at an acceptable LOS during the AM and PM peak hours for *Opening Year* traffic conditions.

Opening Year Plus Project Traffic Conditions

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

2.0 INTRODUCTION

This traffic impact analysis (TIA) analyzes the projected traffic operations associated with the proposed project located along West Arrow Highway west of North San Antonio Avenue in the City of Upland, California. The purpose of this TIA is to evaluate potential circulation system deficiencies that may result from the development of the proposed project, and to recommend improvements to achieve acceptable operations, if applicable. This analysis has been prepared in coordination with the City of Upland and follows the *City of Upland General Plan* (General Plan) (September 2015) and the *City of Upland Traffic Impact Analysis Guidelines* (City Guidelines) (July 2020).

2.1 PROJECT DESCRIPTION

The project proposes the construction of 124 single family attached residential units. Site access is planned via one proposed full access driveway on West Arrow Highway. The project site is currently designated for Medium Single Family Residential (SFR-M) and Institutional (I) land use. It is zoned for Single Family Residential 7,500 (RS-7.5) Public (PB). The project site is currently vacant.

The proposed project is anticipated to be built and generating trips in 2027. **Exhibit 1** displays a map of the project site location. **Exhibit 2** shows project site plan.

2.2 STUDY AREA

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

1. North San Antonio Avenue / West Arrow Highway
2. North Mountain Avenue / West Arrow Highway
3. Project Driveway / West Arrow Highway.

Exhibit 3 shows the location of the study intersections. Both intersections are located within the City of Upland.

The study intersections are analyzed for the following study scenarios:

- Existing Traffic Conditions
- Opening Year Traffic Conditions
- Opening Year Plus Project Traffic Conditions.

Traffic operations are evaluated for the following time periods:



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

2.3 INTERSECTION ANALYSIS METHODOLOGY

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

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

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

Table 1:
HCM – LOS & Delay Ranges – Signalized Intersections

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

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



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

Unsignalized intersection operations are analyzed utilizing the HCM 7th Edition methodology. Intersection operation for unsignalized intersections is based on the weighted average control delay expressed in seconds of delay per vehicle. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. At a two-way or side-street stop-controlled intersection, LOS is calculated for each stop-controlled minor street movement, for the left-turn movement(s) from the major street, and for the intersection as a whole. For approaches consisting of a single lane, the delay is calculated as the average of all movements in that lane.

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

Table 2:
LOS & Delay Ranges –Unsignalized Intersections

Level of Service	Description	Delay (in seconds)
A	Very favorable progression; most vehicles arrive during green signal and do not stop. Short cycle lengths.	0 – 10.00
B	Good progression, short cycle lengths. More vehicles stop than for LOS A.	10.01 – 15.00
C	Fair progression; longer cycle lengths. Individual cycle failures may begin to appear. The number of vehicles stopping is significant, though many vehicles still pass through without stopping.	15.01 – 25.00
D	Progression less favorable, longer cycle length and high flow/capacity ratio. The proportion of vehicles that pass through without stopping diminishes. Individual cycle failures are obvious.	25.01 – 35.00
E	Severe congestion with some long-standing queues on critical approaches. Poor progression, long cycle lengths and high flow/capacity ratio. Individual cycle failures are frequent.	35.01 – 50.00
F	Very poor progression, long cycle lengths and many individual cycle failures. Arrival flow rates exceed capacity of intersection.	> 50.01

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

This analysis utilizes *PTV Vistro*, Version 2025 analysis software for all signalized and unsignalized intersections. Vistro is a macroscopic traffic software program that is based on the signalized intersection capacity analysis specified in Chapter 16 of the HCM. The level of service and capacity analysis performed within Vistro takes the optimization and coordination of signalized intersections within a network into consideration.

2.4 PERFORMANCE CRITERIA

The General Plan has established LOS D as the lowest acceptable LOS for peak-hour signalized and unsignalized intersection movements.



Legend:

 Project Site



Exhibit 1: Project Location

Arrow Highway Traffic Impact Analysis

WRI-25-002



Not to Scale





Legend:

-  Project Site
-  Study Intersection Location

3.0 EXISTING CONDITIONS

3.1 EXISTING CIRCULATION NETWORK/STUDY AREA CONDITIONS

The characteristics of the roadways in the vicinity of the proposed project site are described in **Table 3**. See **Appendix B** for a map of the City of Upland functional street classifications.

Table 3:
Roadway Characteristics in the Study Area

Roadway	Classification ¹	Jurisdiction	Direction	Existing Travel Lanes	Median Type ²	Speed Limit (mph)	On-Street Parking
North San Antonio Avenue	Secondary Arterial	Upland	North-South	3-4	TWLTL	35	No
North Mountain Avenue	Major Arterial	Upland	North-South	6	RM	45	No
West Arrow Highway	Secondary Arterial	Upland	East-West	3-4	TWLTL/NM	35-40	Yes

1: Sources: City of Upland General Plan (September 2015).

2: RM = Raised Median, TWLTL = Two-Way Left-Turn Lane, NM = No Median.

Exhibit 4 shows the *Existing* study intersection lane geometry and intersection controls.

3.2 PEDESTRIAN AND BICYCLE FACILITIES

West Arrow Highway has Class III bicycle routes in both eastbound and westbound directions. The General Plan indicates the City plans to upgrade this to Class II bicycle lanes. For pedestrians, paved sidewalks exist along both North San Antonio Avenue and West Arrow Highway. See **Appendix B** for maps of the City bicycle route system.

3.3 EXISTING PUBLIC TRANSIT SERVICES

The City of Upland is served by Omnitrans which provides bus service throughout the San Bernardino Valley. Omnitrans Route 85 provides service between the Chino Transit Center and Chaffrey College in Rancho Cucamonga. It travels along West Arrow Highway with two (2) stops within a one-half mile radius from the project site including to the east of the project at the intersection with North San Antonio Avenue and the west of the project at the intersection with North Maple Way. See **Appendix B** for a map of Omnitrans Route 85.

3.4 EXISTING TRAFFIC VOLUMES

To determine the *Existing* operation of the study intersections, AM and PM peak period traffic volumes for Intersection #1: North San Antonio Avenue / West Arrow Highway were collected on Tuesday, October 7, 2025. AM and PM peak period traffic volumes for Intersection #2: North Mountain Avenue / West Arrow



Highway were collected on Tuesday, October 21, 2025. Detailed traffic count data is provided in **Appendix C**. *Existing* AM and PM peak hour volumes at the *Existing* study intersection are shown in **Exhibit 5**.

3.5 EXISTING CONDITIONS INTERSECTION LEVEL OF SERVICE ANALYSIS

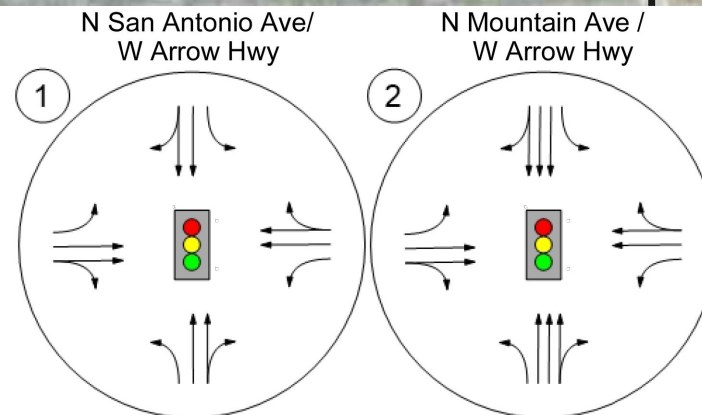
The AM and PM peak hour intersection analysis for *Existing* traffic conditions is shown in **Table 4**. Calculations are based on the existing geometrics at the study area intersections as shown in **Exhibit 4**. HCM analysis sheets are provided in **Appendix D**.

Table 4:
Intersection Analysis – Existing Conditions

Intersection			Control Type	Peak Hour	Existing Conditions	
					Delay ¹	LOS
1	North San Antonio Avenue	West Arrow Highway	Signal	AM	13.5	B
				PM	12.8	B
2	North Mountain Avenue	West Arrow Highway	Signal	AM	19.9	B
				PM	20.4	C

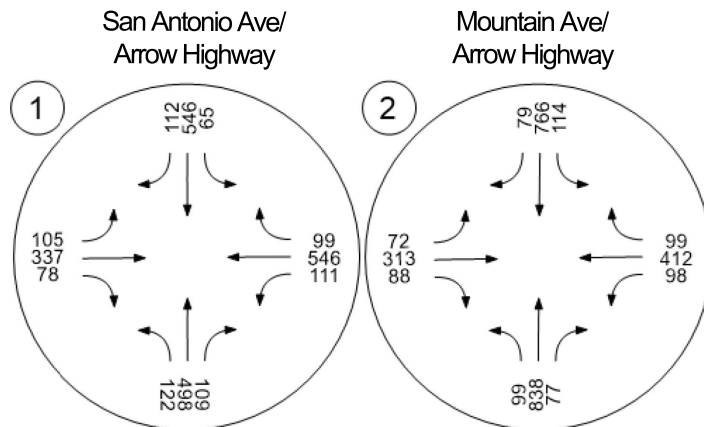
1: Delay shown in seconds per vehicle. Per the Highway Capacity Manual 7th Edition, overall average delay and LOS are shown for signalized and all-way stop-controlled intersections.

As shown in **Table 44**, the study intersection is currently operating at an acceptable LOS during the AM and PM peak hours under *Existing* traffic conditions.

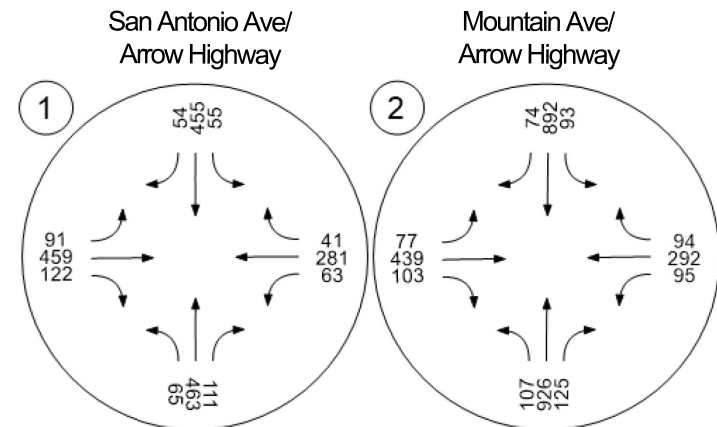




AM Peak Hour Volumes



PM Peak Hour Volumes



4.0 PROPOSED PROJECT

4.1 PROJECT DESCRIPTION

The project proposes the construction of 124 single family attached residential units. Site access is planned via one proposed full access driveway on West Arrow Highway. The project site is currently designated for Medium Single Family Residential (SFR-M) and Institutional (I) land use. It is zoned for Single Family Residential 7,500 (RS-7.5) and Public (PB). The project site is currently vacant. The proposed project is anticipated to be built and generating trips in 2027.

4.2 PROJECT TRIP GENERATION

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

Table 5 summarizes the projected AM peak hour, PM peak hour and daily trip generation of the proposed project. The proposed project is projected to generate 893 daily trips which includes 60 AM peak hour trips and 71 PM peak hour trips.

Table 5:
Proposed Project Trip Generation

Proposed Land Use ¹	ITE Code	Qty	Unit ²	Daily		AM Peak Hour					PM Peak Hour				
				Rate	Volume	Rate	In:Out Split	Volume			Rate	In:Out Split	Volume		
								In	Out	Total			In	Out	Total
Single-Family Attached Housing	215	124	DU	7.2	950	0.48	25:75	15	45	60	0.57	59:41	42	29	71

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

2: DU = Dwelling Unit.

4.3 PROJECT TRIP DISTRIBUTION

Projecting trip distribution involves the process of identifying probable destinations and traffic routes that will be utilized by the proposed project's traffic. The potential interaction between the proposed land use and surrounding regional access routes are considered to identify the probable routes onto which project traffic would distribute. The projected trip distribution for the proposed project is based on anticipated travel patterns to and from the project site. **Exhibit 6** shows the project proposed trip distribution.



4.4 CORNER SIGHT DISTANCE ANALYSIS

A corner sight distance analysis for the proposed project driveway has been prepared based on applicable Highway Design Manual (HDM) 7th Edition (July 2020) and California Manual on Uniform Traffic Control Devices (CA MUTCD) 11th Edition (January 2024) standards for corner sight distance analysis. Topic 405.1 of the HDM discusses corner sight distance. Corner sight distance refers to the area of the roadway that will allow the stopped vehicle to turn into the appropriate lane on the road. In accordance with the HDM, the minimum corner sight distance equation, $1.47V_mT_g$ with V_m representing the design speed in miles per hour (mph) of the major road and T_g representing the time gap in seconds for the minor road vehicles, is used. HDM **Table 405.1A** below shows the minimum corner sight distance time gap for unsignalized intersection.

Table 405.1A
Corner Sight Distance Time Gap (T_g) for Unsignalized Intersection

Design Vehicle	Left-turn from Stop (seconds)	Right-turn from Stop and Crossing Maneuver (seconds)
Passenger Car Private Road Intersection Rural Driveway	7.5	6.5
Single-Unit Truck Public Road Intersection	9.5	8.5
Combination Truck Major and Minor Roads on Routes: National Network Terminal or Service Access California Legal KpRA Advisory	11.5	10.5

Source: Highway Design Manual on Intersection Design Standards (July 1, 2020).

As shown in **Table 405.1A**, the design vehicle passenger car utilizes 6.5 seconds for right turn from stop. These time gaps and the 40 miles per hour speed limit on West Arrow Highway were used with the minimum corner sight distance equation to determine a 385' corner sight distance for right turns and a 445' corner sight distance for left turns. **Exhibit 7** shows the corner sight distances for both right and left turns at the project driveway on West Arrow Highway.



Legend:

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



Exhibit 6: Proposed Project Trip Distribution

Arrow Highway Traffic Impact Analysis

WRI-25-002



NOTE: FOR URBAN DRIVEWAYS, SECTION 405.1 OF THE HDM RECOMMENDS PARKING RESTRICTIONS BE SET PER CA MUTCD SECTION 3B.19.

*

SECTION 3B.19 RECOMMENDS A CLEARANCE OF **6- FEET** MEASURED FROM CURB RETURN SHOULD BE PROVIDED AT BOTH SIDES OF A DRIVEWAY.

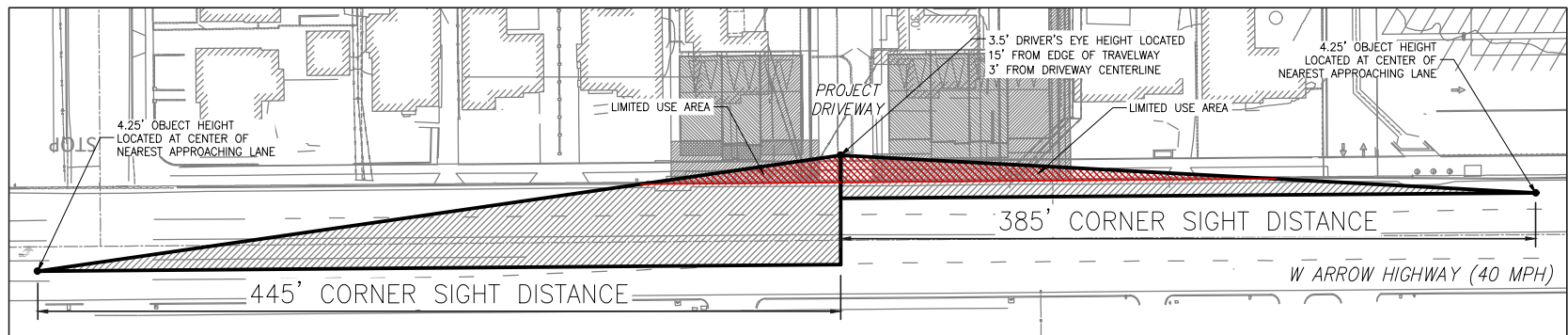
CORNER SIGHT DISTANCE NOTES:

FOR PRIVATE ROAD/RURAL DRIVEWAYS, THE HIGHWAY DESIGN MANUAL (HDM) RECOMMENDS CORNER SIGHT DISTANCE EQUAL $(1.47)(V_m)(T_g)$.

RIGHT-TURN: $V_m=40\text{MPH}$, $T_g=6.5$
CORNER SIGHT DISTANCE: 385'

LEFT-TURN: $V_m=40\text{MPH}$, $T_g=7.5$
CORNER SIGHT DISTANCE: 445'

W ARROW HIGHWAY/PROJECT DRIVEWAY



SCALE: 1" = 16'

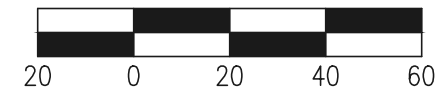


Exhibit 7: Sight Distance Analysis

5.0 OPENING YEAR TRAFFIC CONDITIONS

The *Opening Year* traffic conditions intersection analysis is intended to evaluate the near-term traffic conditions at the project opening year including traffic generated by nearby cumulative projects.

5.1 ROADWAY IMPROVEMENTS

The lane geometry and intersection controls assumed to be in place for the *Opening Year* conditions scenario are consistent with those previously shown in **Exhibit 4**.

5.2 CUMULATIVE PROJECTS

Other reasonably foreseeable land use projects in development which are either approved or are currently being processed by the City of Upland and located in the study area are included as part of an *Opening Year* analysis scenario. A list and description of cumulative projects and their current development status was generated for this analysis through consultation with City of Upland staff. **Exhibit 8** shows a map of the approved cumulative project locations within a one-mile radius of the proposed project. A summary of the cumulative projects including their land uses and trip generation are shown in **Table 6**.

Table 6:
Cumulative Projects Trip Generation

Project		Land Use ¹	ITE Code	Qty	Unit ²	Daily		AM Peak Hour				PM Peak Hour					
						Rate	Volume	Rate	In:Out Split	Volume			Rate	In:Out Split	Volume		
										In	Out	Total			In	Out	Total
1	Vernon Drive Apts	Multifamily Housing (Low-Rise)	220	20	DU	6.74	135	0.4	24:76	2	6	8	0.51	63:37	6	4	10
		Affordable Housing	223	4	DU	4.81	19	0.5	29:71	1	1	2	0.46	59:41	1	1	2
2	Firefly Cottage	Fast Casual Restaurant	930	2.6	TSF	97.14	257	1.43	50:50	2	2	4	12.55	55:45	18	15	33
3	City Ventures	Multifamily Housing (Low-Rise)	220	27	DU	6.74	182	0.4	24:76	3	8	11	0.51	63:37	9	5	14
		Affordable Housing	223	5	DU	4.81	24	0.5	29:71	1	2	3	0.46	59:41	1	1	2
4	Euclid Villas	Affordable Housing	223	81	DU	4.81	390	0.5	29:71	12	29	41	0.46	59:41	22	15	37
		Strip Retail Plaza (<40k)	822	1.5	TSF	54.45	82	2.36	60:40	2	2	4	6.59	50:50	5	5	10
5	Magnolia Villas	Affordable Housing	223	93	DU	4.81	447	0.5	29:71	14	33	47	0.46	59:41	25	18	43
6	The Courtyard	Multifamily Housing (Low-Rise)	220	36	DU	6.74	243	0.4	24:76	3	11	14	0.51	63:37	11	7	18

(continued on the next page)

Results	Daily Volume	AM Peak Hour	In	Out	Total	PM Peak Hour	In	Out	Total
Net Total	1,779		40	94	134		98	71	169

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

2: TSF = Thousand Square Feet.

5.3 OPENING YEAR TRAFFIC VOLUMES

Opening Year volumes are *Existing* volumes projected to the project anticipated opening year, 2027, plus volumes generated by nearby cumulative projects. To project volumes for the project opening year, the City of Upland provided an annual growth rate of two (2) percent for the two (2) years to 2027 which was applied to *Existing* volumes. Trips generated by nearby cumulative projects were then added.

$$\text{Opening Year Volumes} = (\text{Existing (2025) Counts} * 1.02^2) + \text{Cumulative Projects}$$

Exhibit 9 shows the *Opening Year* AM and PM peak hour volumes at the study intersections.

5.4 EXISTING PLUS PROJECT INTERSECTION LOS ANALYSIS

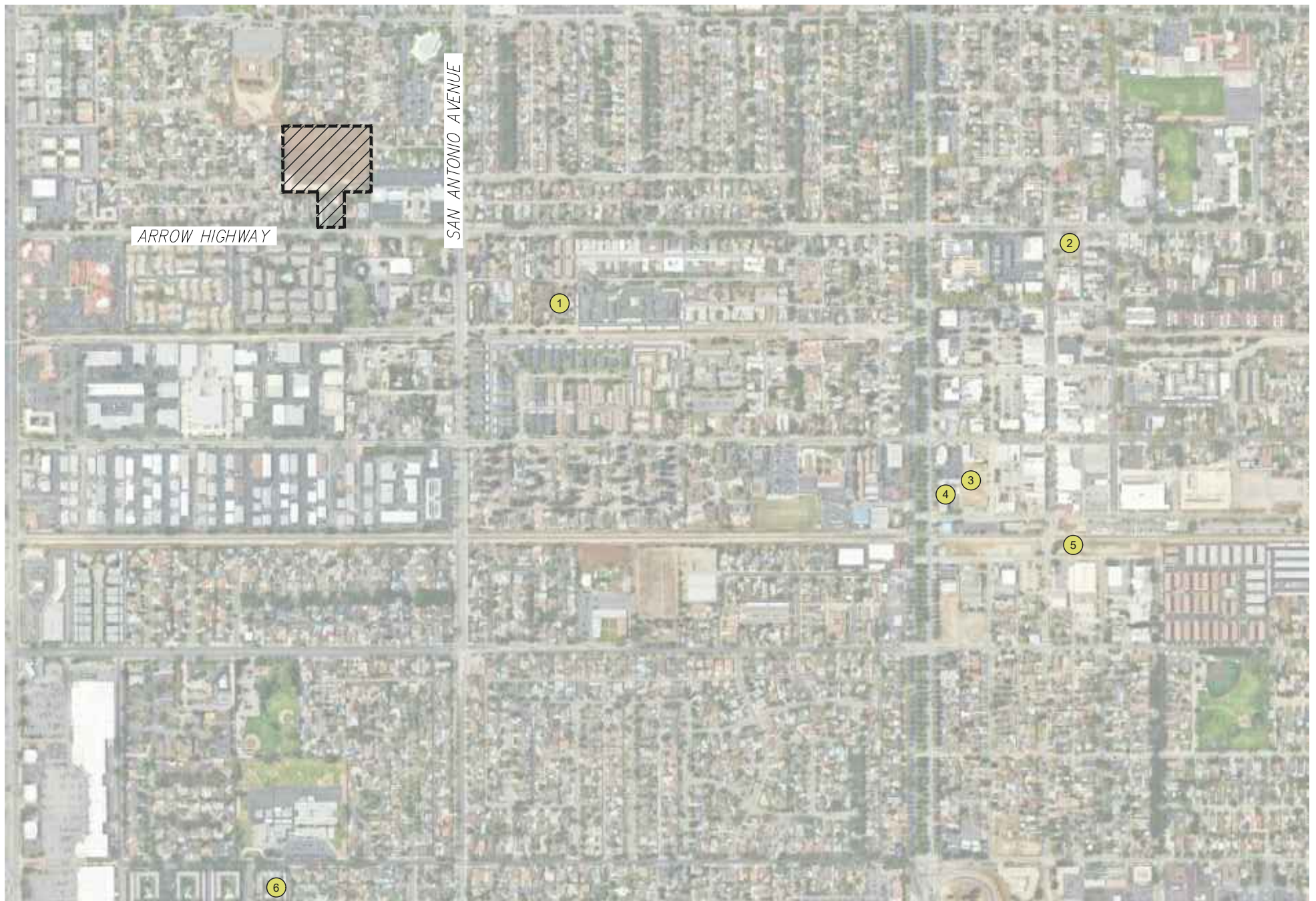
The intersection analysis of AM and PM peak hours in *Opening Year* traffic conditions is shown in **Table 7**. HCM worksheets are provided in **Appendix C**.

Table 7:
Intersection Analysis – Opening Year Conditions

Intersection			Control Type	Peak Hour	Opening Year Conditions	
					Delay ¹	LOS
1	North San Antonio Avenue	West Arrow Highway	Signal	AM	13.8	B
				PM	12.9	B
2	North Mountain Avenue	West Arrow Highway	Signal	AM	20.2	C
				PM	21.0	C

1: Delay shown in seconds per vehicle. Per the Highway Capacity Manual 7th Edition, overall average delay and LOS are shown for signalized and all-way stop-controlled intersections.

As shown in **Table 77**, the study intersections are projected to continue to operate at an acceptable LOS during the AM and PM peak hours for *Opening Year* traffic conditions.



Legend:



Project Site



Approximate Cumulative Project Locations



Exhibit 8: Cumulative Projects Location

Arrow Highway Traffic Impact Analysis

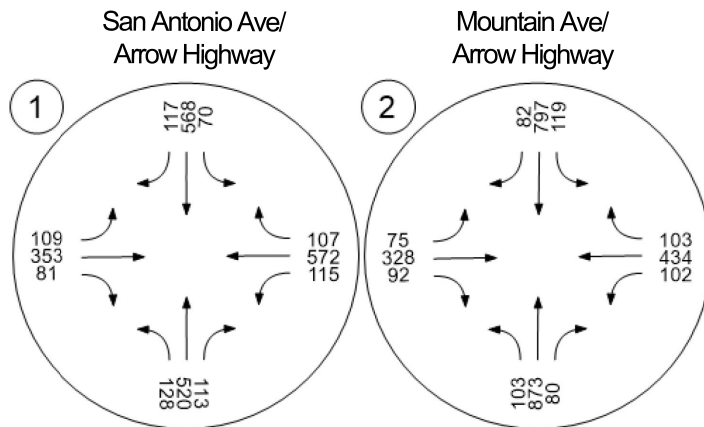
WRI-25-002



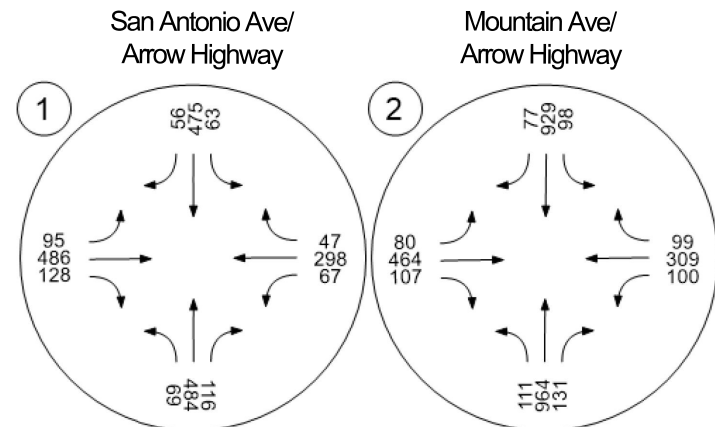
Not to Scale



AM Peak Hour Volumes



PM Peak Hour Volumes



6.0 OPENING YEAR PLUS PROJECT TRAFFIC CONDITIONS

The *Opening Year Plus Project* traffic conditions analysis is intended evaluate the near-term traffic conditions at the project opening year including traffic generated by both the project itself and nearby cumulative projects.

6.1 ROADWAY IMPROVEMENTS

The lane geometry and intersection controls assumed to be in place for the *Opening Year Plus Project* conditions scenario are consistent with those under *Existing* conditions with the addition of the project driveway as shown in **Exhibit 10**.

6.2 OPENING YEAR PLUS PROJECT TRAFFIC VOLUMES

Opening Year Plus Project volumes are *Existing* volumes projected to the project anticipated opening year, 2027, plus volumes generated by the project itself and nearby cumulative projects. To project volumes for the project opening year, the City of Upland provided an annual growth rate of two (2) percent for the two (2) years to 2027 which was applied to *Existing* volumes. Trips generated by the project itself plus nearby cumulative projects were then added.

$$\text{Opening Year Plus Project Volumes} = (\text{Existing (2025) Counts} * 1.02^2) + \text{Project} + \text{Cumulative Projects}$$

Exhibit 11 displays the *Opening Year Plus Project* AM and PM peak hour volumes.

6.3 OPENING YEAR PLUS PROJECT INTERSECTION LEVEL OF SERVICE ANALYSIS

The intersection analysis of AM and PM peak hour volumes under *Opening Year Plus Project* traffic conditions is shown in **Table 8**. HCM analysis sheets are provided in **Appendix D**.

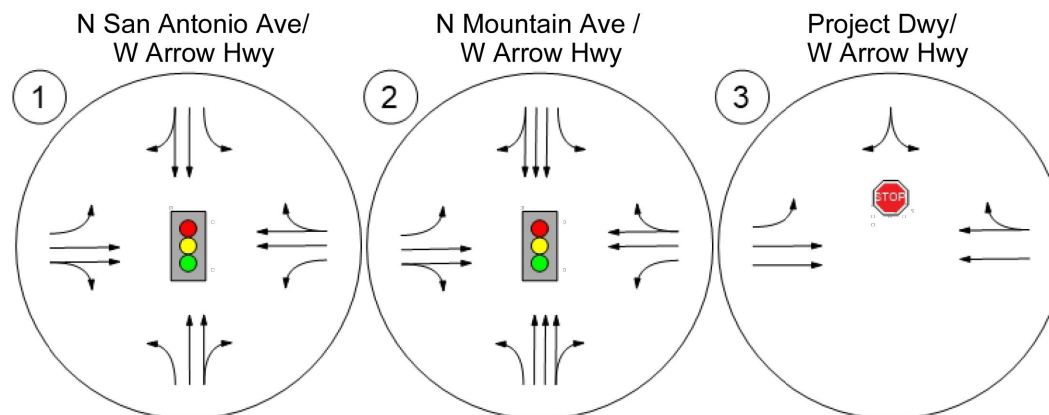
Table 8:
Intersection Analysis – Opening Year Plus Project Conditions

Intersection			Control Type ¹	Peak Hour	Opening Year		Opening Year + Project	
					Delay ²	LOS	Delay ²	LOS
1	North San Antonio Avenue	West Arrow Highway	Signal	AM	13.8	B	13.9	B
				PM	12.9	B	13.0	B
2	North Mountain Avenue	West Arrow Highway	Signal	AM	20.2	C	20.4	C
				PM	21.0	C	21.2	C
3	Project Driveway	West Arrow Highway	TWSC	AM	-	-	19.7	C
				PM	-	-	14.9	C

1: TWSC = Two-Way Stop-Control.

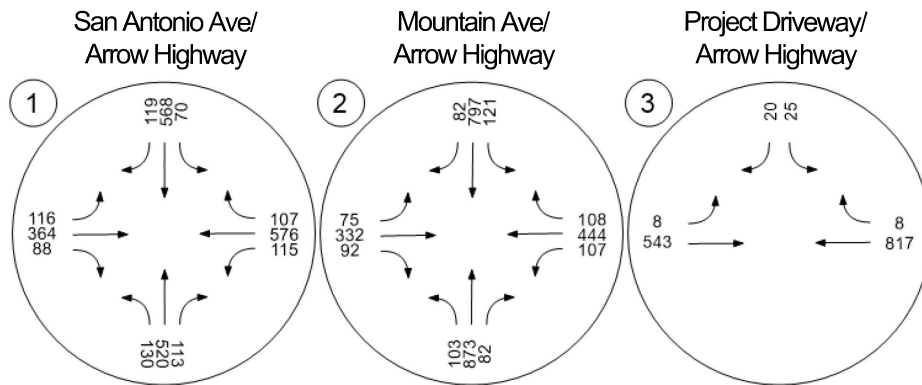
2: Delay shown in seconds per vehicle. Per the Highway Capacity Manual 7th Edition, overall average delay and LOS are shown for signalized and all-way stop-controlled intersections. For intersections with one-or-two-way stop-control, the delay and LOS for the worst individual movement is shown.

As shown in **Table 8**, the study intersections are projected to continue to operate at an acceptable LOS during the AM and PM peak hours of *Opening Year Plus Project* traffic conditions.

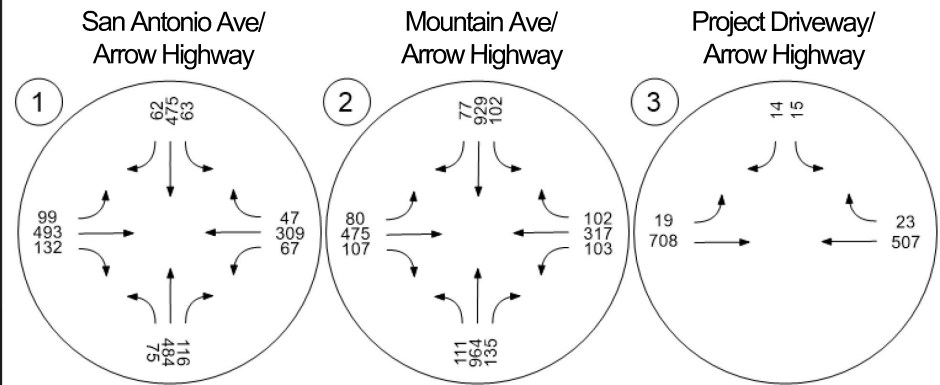




AM Peak Hour Volumes



PM Peak Hour Volumes



APPENDIX

Appendix A: Glossary of Terminology

Appendix B: City of Upland Documents

Appendix C: Existing Traffic Counts

Appendix D: HCM Analysis Sheets



APPENDIX A

GLOSSARY OF TERMINOLOGY

Glossary of Terminology

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.*

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.*

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.*

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.*

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.*

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

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

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.*

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.*

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

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

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 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.*

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

VEHICLE MILES 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

CITY OF UPLAND DOCUMENTS

SCOPING AGREEMENT FOR TRAFFIC IMPACT STUDY

This letter acknowledges the City of Upland requirements for traffic impact analysis of the following project. The analysis must follow the latest City of Upland Traffic Study Guidelines.

Case No. TT-25-0003, DPR-25-0005

Related Cases -

SP No. _____

EIR No. _____

GPA No. _____

CZ No. _____

Project Name: Arrow Highway

Project Address: West Arrow Highway

Project Description: 124 single-family attached residential units

	<u>Consultant</u>	<u>Developer</u>
Name:	<u>TJW Engineering, Inc.</u>	<u>Warmington Residential</u>
Address:	<u>9841 Irvine Center Drive, Suite 200</u>	<u>3090 Pullman Street</u>
	<u>Irvine, CA 92620</u>	<u>Costa Mesa, CA 92626</u>
Telephone:	<u>949-878-3509</u>	
Fax:		

A. Trip Generation Source: (ITE Trip Generation Latest Edition that provides appropriate Land Use Code)

Current GP Land Use _SFR-M and I

Proposed Land Use

Current Zoning RS-7.5 and PB

Proposed Zoning

Current Trip Generation	In	Out	Total	Proposed Trip Generation	In	Out	Total
AM Trips	_____	_____	_____	15	45	60	
PM Trips	_____	_____	_____	42	29	71	

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

A pass-by trip discount of 25% is allowed for appropriate land uses. The pass-by trips at adjacent study area intersections and project driveways shall be indicated on a report figure.

B. Trip Geographic Distribution: N % S % E % W %
(attach exhibit for detailed assignment)

C. Background Traffic

Project Build-out Year: Provide realistic opening year, considering
Include time needed for approvals and construction.

Annual Ambient Growth Rate: 2%

Phase Year(s) 2027

Other area projects to be analyzed: List has been provided by the City of Upland

Model/Forecast methodology Highway Capacity Manual, latest edition

Scoping Agreement – Page 2

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

- | | |
|--|-----------|
| 1. N. San Antonio Ave. / W. Arrow Hwy. | 6. _____ |
| 2. N. Mountain Ave. / W. Arrow Hwy. | 7. _____ |
| 3. Project Dwy. / W. Arrow Hwy. | 8. _____ |
| 4. _____ | 9. _____ |
| 5. _____ | 10. _____ |

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

- | | |
|----------|----------|
| 1. N/A | 4. _____ |
| 2. _____ | 5. _____ |
| 3. _____ | 6. _____ |

F. Other Jurisdictional Impacts

Is this project within a City's Sphere of Influence or one-mile radius of City boundaries? ☐ Yes ☐ No

If so, name of City Jurisdiction: Ontario

G. Site Plan (please attach reduced copy)

H. Specific issues to be addressed in the Study (in addition to the standard analysis described in the Guideline) (To be filled out by Public Works Department)

(NOTE: If the traffic study states that "a traffic signal is warranted" (or "a traffic signal appears to be warranted," or similar statement) at an existing unsignalized intersection under existing conditions, 8-hour approach traffic volume information must be submitted in addition to the peak hourly turning movement counts for that intersection.)

Existing, Opening Year, Opening Year Plus Project Conditions.

Sight distance analysis at project driveway.

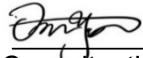
I. Existing Conditions

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

Date of counts TBD

***NOTE* Traffic Study Submittal Form and appropriate fee must be submitted with, or prior to submittal of this form. Public Works Department staff will not process the Scoping Agreement prior to receipt of the fee.**

Recommended by:



Consultant's Representative

10/20/2025
Date

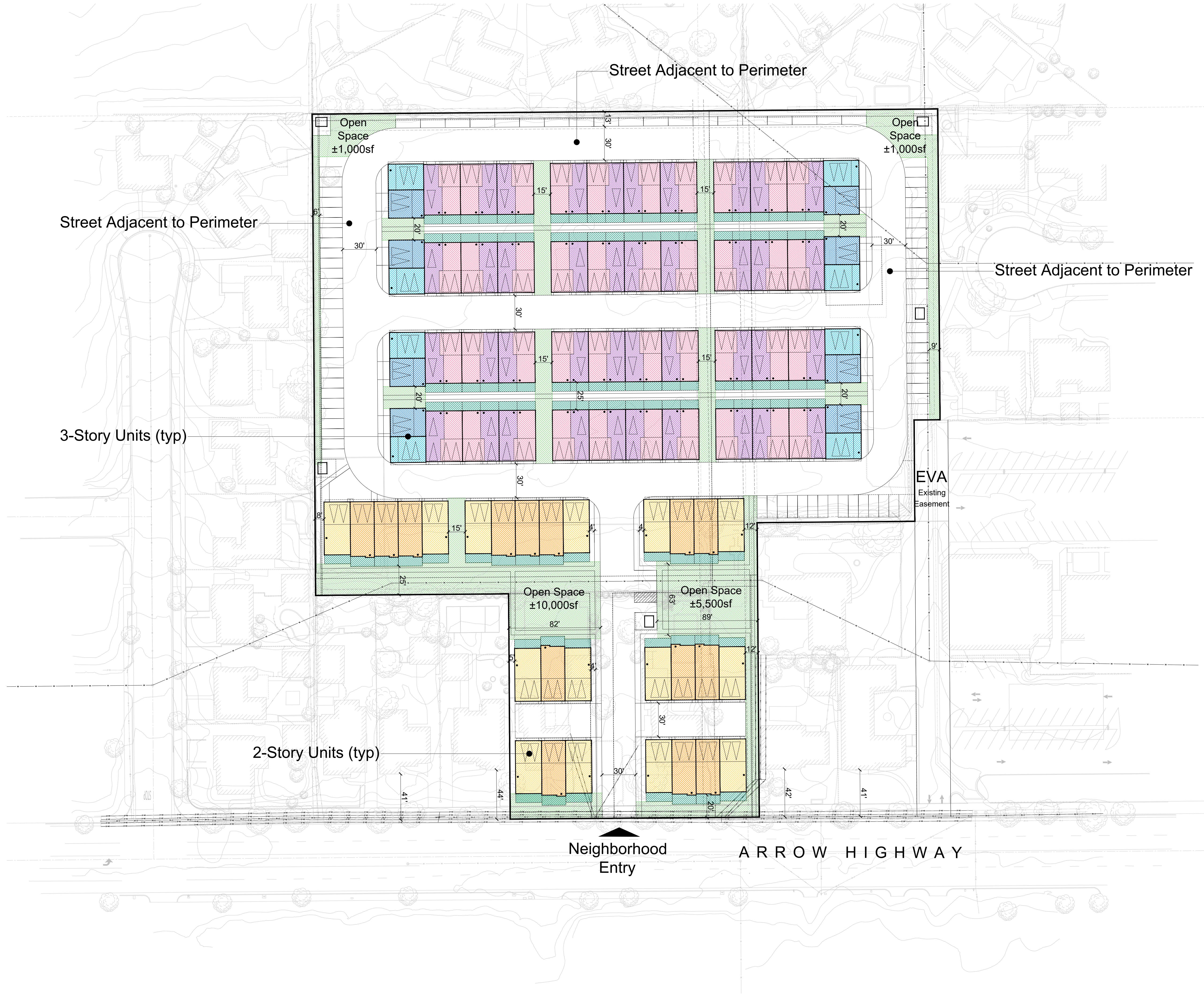
Approved Scoping Agreement:

City of Upland
Development Services Department

Date

Scoping Agreement Submitted on _____

Revised on _____



SITE INFORMATION
City: Upland
County: San Bernardino County
Zoning:

RM-20 DEVELOPMENT STANDARDS
Density: 20 du/ac
Max Building Height: 40'
Front Setback: 20'
Side Setback: 5'
Rear Setback: 15'
Multi-Family Bldg Sep: 15'
Private Outdoor Living Space: 100sf/unit (min 8' dim)
Common Outdoor Living Space: 250 sf/unit (25' clear on any side)
Parking Required per City Code:
1 bd: 1 sp/unit (covered)
2bd: 2 sp/unit (covered)
3bd+: 2.5 sp/unit (2 covered)
Guest parking 100+ units: 1 per 6 units

SITE SUMMARY
Site Area: ±6.1 ac

Units:
3-Story Units
8 units - Plan 1 (1459sf - 3bd/2.5ba, sxs)
8 units - Plan 2 (1476sf - 3bd/2.5ba, sxs)
40 units - Plan 3 (1440sf - 3bd/3ba, tandem)
40 units - Plan 4 (1700sf - 4bd/4ba, sxs)
2-Story Units
14 units - Plan 5 (1461sf - 3bd/2.5ba, sxs)
14 units - Plan 6 (1550sf - 3bd+loft (Opt bed4)/2.5ba, sxs)
124 units - Total

Density: ±20.3 du/ac

Parking Required: 2.67 sp/unit

Parking Provided:
248 spaces - Garages
83 spaces - Open
331 spaces - Total (±2.67 sp/unit)

Open Space Required: 250sf/unit (min 25' dim?)

Usable Open Space Provided*: ±17,500sf (±140sf/unit)
*min 25' dim

Additional Open Space Provided*: ±17,500sf (±140sf/unit)
*no min size or dimension

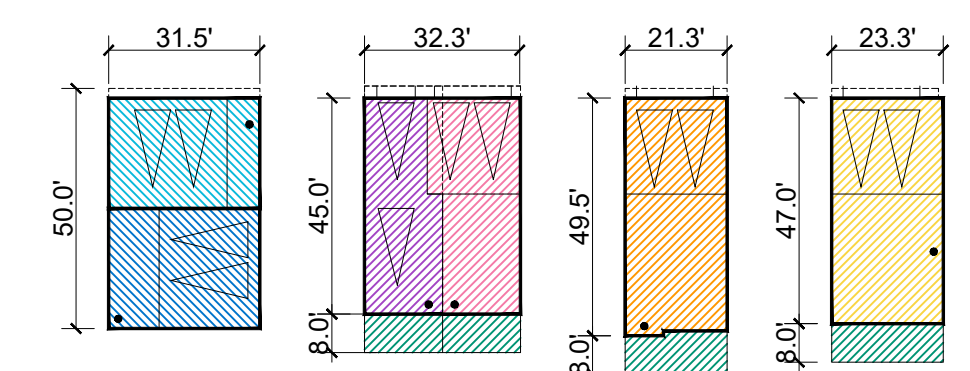


Table 1
Project Trip Generation

Proposed Land Use ¹	ITE Code	Qty	Unit ²	Daily		AM Peak Hour					PM Peak Hour				
				Rate	Volume	Rate	In:Out Split	Volume			Rate	In:Out Split	Volume		
								In	Out	Total			In	Out	Total
Single-Family Attached Housing	215	124	DU	7.2	893	0.48	25:75	15	45	60	0.57	59:41	42	29	71

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

2: DU = Dwelling Units.

Trip Distribution

Arrow Highway
WRI-25-002



Map Date: 07/31/12; Source: Fehr & Peers

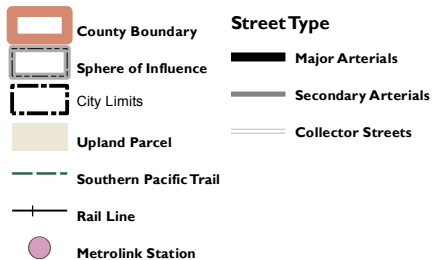
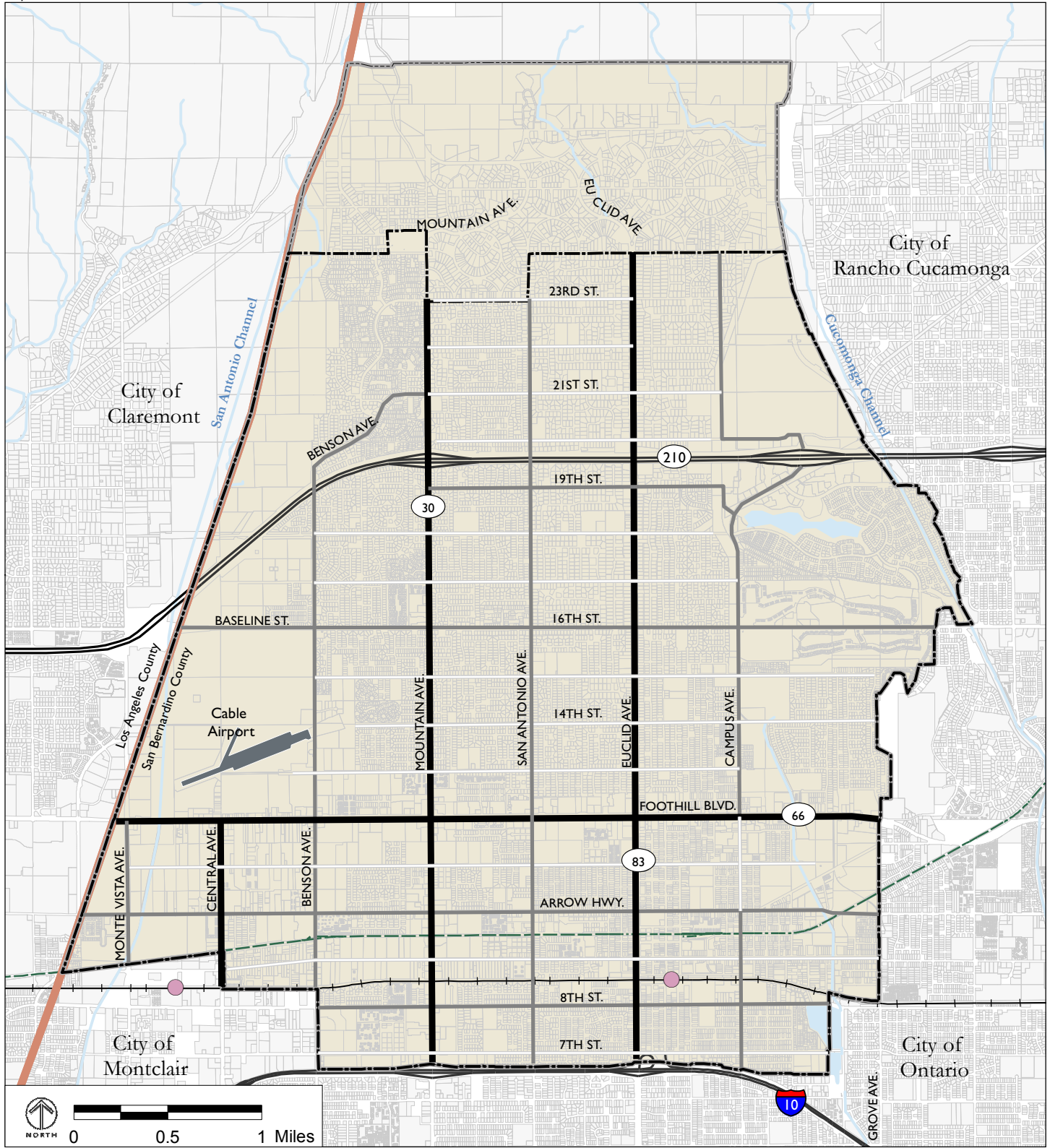
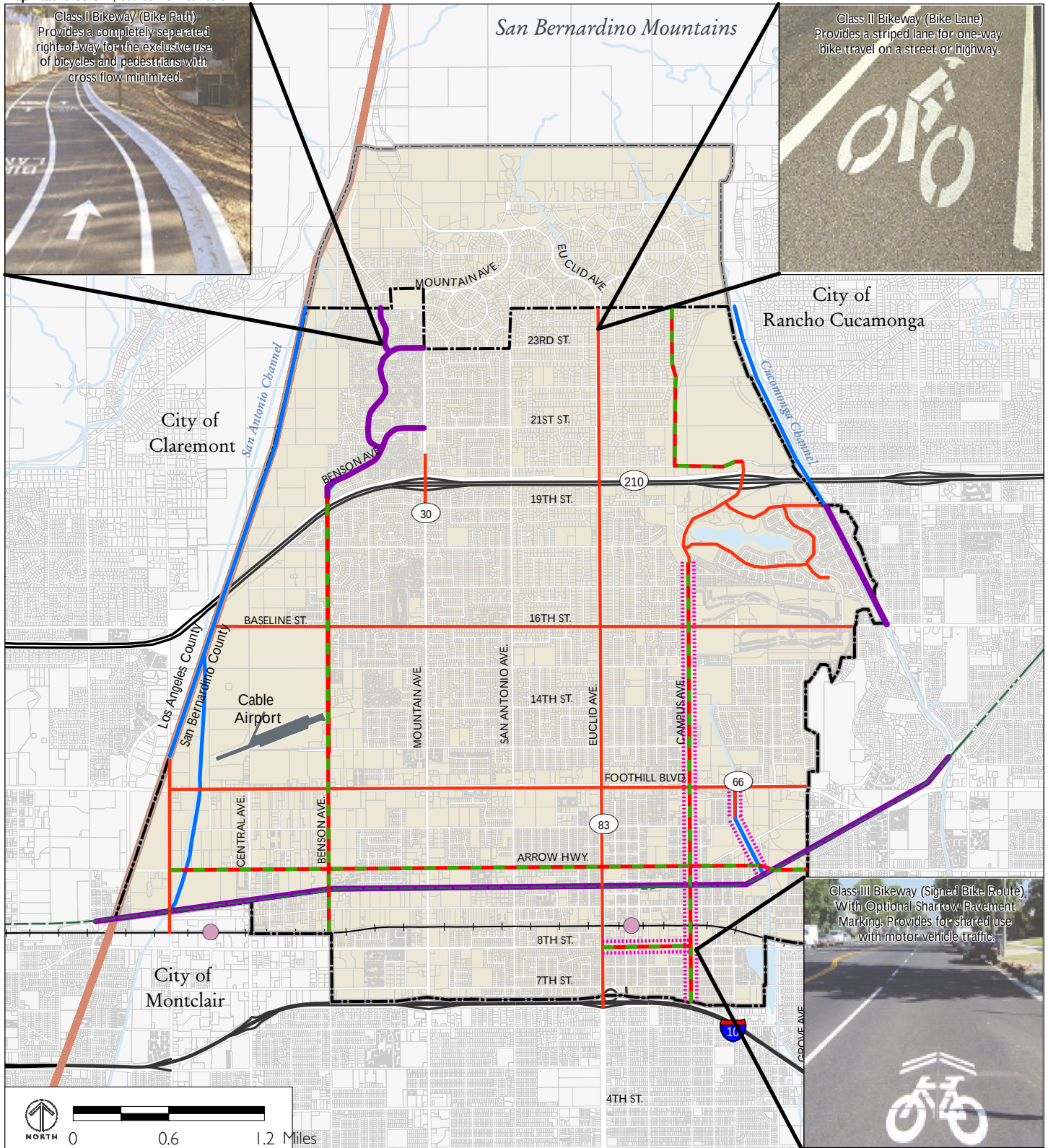


FIGURE CIR-1
ROADWAY SYSTEM

Map Date: 07/31/12; Source: Fehr & Peers



- Existing Bicycle Routes**
- Class I
 - Class II/III
 - Existing Class III; Upgrade to Class II
- Future Bicycle Routes**
- Class I
 - Priority Bike Lanes*
- Legend:**
- City Limits
 - Sphere of Influence
 - County Boundary
 - Metrolink Station
 - Rail Line
 - Southern Pacific Trail

*Priority Bike Lanes are bike lanes selected according to proximity to Downtown and to improve connections between Downtown and Memorial Park.



FIGURE CIR-2
BICYCLE ROUTES

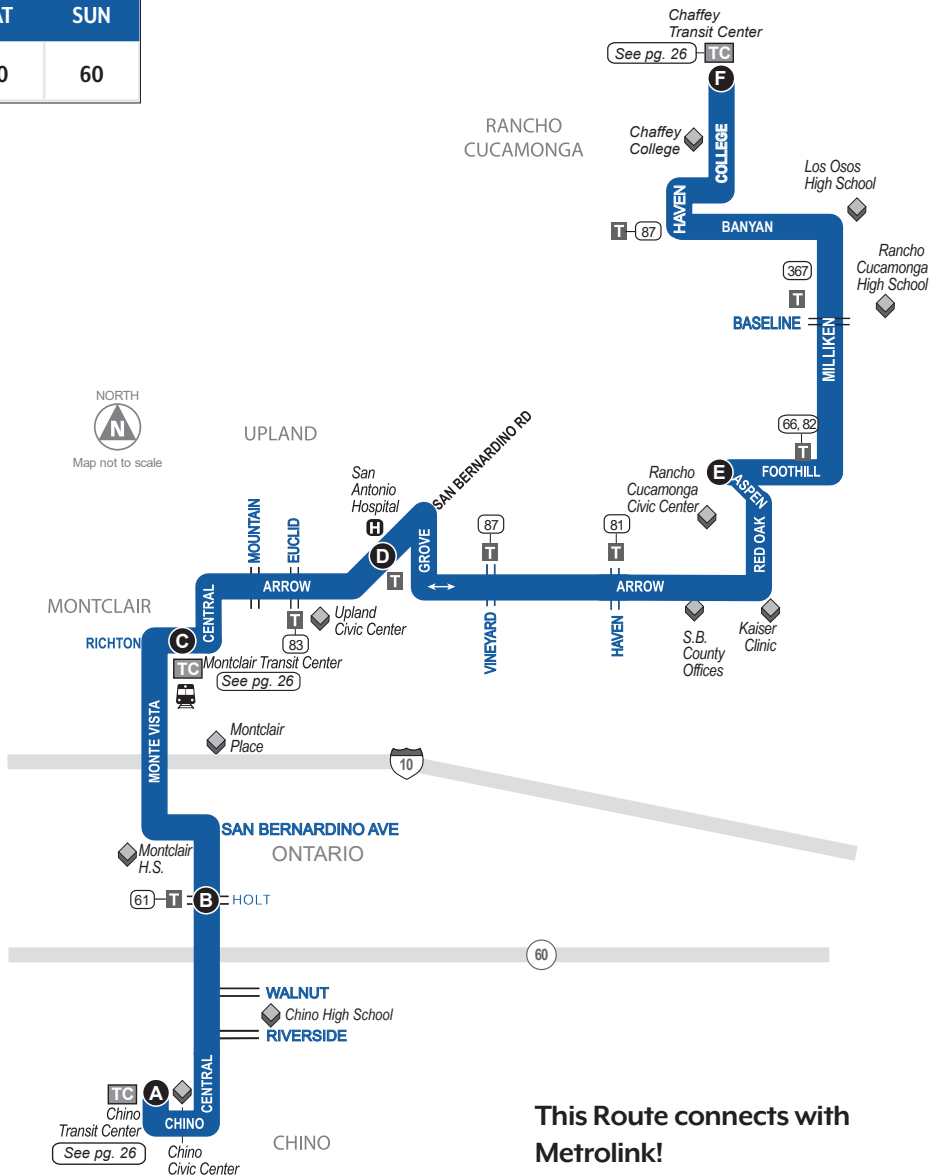
85

CHINO - MONTCLAIR - CHAFFEY COLLEGE

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

FREQUENCY

M-F	SAT	SUN
30	60	60



This Route connects with Metrolink!

Esta ruta conecta con Metrolink

ROUTE 85: MONDAY - FRIDAY

Chaffey College	Foothill & Spruce	San Antonio Hospital	Montclair Transit Center	Central & Holt	Chino Transit Center	Chino Transit Center	Central & Holt	Montclair Transit Center	San Antonio Hospital	Foothill & Spruce	Chaffey College
F	E	D	C	B	A	A	B	C	D	E	F
SOUTHBOUND						NORTHBOUND					
			4:32	4:43	4:54	4:20	4:32	4:47	5:00	5:13	5:27
						5:20	5:34	5:50	6:03	6:18	6:35
						5:50	6:04	6:20	6:33	6:48	7:05
4:40	4:56	5:13	5:32	5:43	5:54	6:20	6:35	6:52	7:07	7:24	7:46
						6:50	7:05	7:22	7:37	7:54	8:16
5:40	5:56	6:14	6:33	6:45	6:58	7:20	7:36	7:56	8:11	8:28	8:49
6:01	6:17	6:35	6:52	7:06	7:20	7:50	8:06	8:26	8:41	8:58	9:19
6:34	6:50	7:08	7:25	7:39	7:53	8:20	8:36	8:54	9:09	9:26	9:44
7:01	7:19	7:39	7:59	8:13	8:28	8:50	9:06	9:24	9:39	9:56	10:14
7:31	7:49	8:09	8:29	8:43	8:58	9:20	9:36	9:54	10:09	10:26	10:44
8:01	8:21	8:41	9:01	9:15	9:30	9:50	10:07	10:24	10:39	10:56	11:14
8:31	8:49	9:08	9:28	9:42	9:57	10:20	10:37	10:54	11:09	11:26	11:44
9:01	9:19	9:38	9:58	10:12	10:27	10:50	11:10	11:27	11:42	11:59	12:19
9:31	9:49	10:08	10:28	10:42	10:57	11:20	11:40	11:57	12:12	12:29	12:49
10:01	10:19	10:37	10:57	11:11	11:26	11:50	12:10	12:27	12:42	12:59	1:19
10:31	10:49	11:07	11:27	11:41	11:56	12:15	12:35	12:52	1:07	1:24	1:44
11:01	11:19	11:37	11:59	12:13	12:29	12:50	1:10	1:27	1:42	1:59	2:19
11:31	11:49	12:07	12:29	12:43	12:59	1:15	1:35	1:53	2:08	2:26	2:46
12:01	12:19	12:37	12:59	1:13	1:29	1:50	2:10	2:28	2:43	3:01	3:21
12:31	12:49	1:09	1:31	1:47	2:03	2:15	2:35	2:53	3:10	3:29	3:51
1:01	1:20	1:40	2:00	2:16	2:32	2:50	3:10	3:28	3:45	4:04	4:26
1:31	1:50	2:12	2:33	2:52	3:08	3:15	3:36	3:55	4:13	4:36	4:58
2:04	2:24	2:46	3:05	3:21	3:37	3:50	4:11	4:29	4:45	5:04	5:24
2:31	2:51	3:13	3:32	3:48	4:04	4:20	4:41	4:59	5:15	5:34	5:54
3:04	3:24	3:46	4:05	4:21	4:37	4:50	5:10	5:28	5:44	6:02	6:22
3:34	3:54	4:16	4:35	4:51	5:07	5:20	5:40	5:58	6:14	6:32	6:52
4:04	4:28	4:50	5:09	5:28	5:44	5:50	6:09	6:27	6:42	6:59	7:19
4:31	4:55	5:17	5:36	5:55	6:11	6:20	6:39	6:57	7:12	7:29	7:49
5:04	5:22	5:44	6:02	6:18	6:34	6:50	7:05	7:19			
5:34	5:52	6:10	6:27	6:42	6:56	7:20	7:34	7:48	8:02	8:15	8:32
6:01	6:19	6:37	6:54	7:09	7:23	7:50	8:05	8:19			
6:34	6:52	7:10	7:27	7:40	7:54	8:20	8:34	8:48	9:02	9:15	9:32
7:04	7:22	7:40	7:57	8:10	8:24						
7:39	7:56	8:14	8:30	8:43	8:55	9:20	9:34	9:48	10:02	10:15	10:32
8:04	8:21	8:39	8:55	9:08	9:20						
9:04	9:19	9:37	9:52	10:04	10:15						

ROUTE 85: SATURDAY

F	E	D	C	B	A	A	B	C	D	E	F
SOUTHBOUND						NORTHBOUND					
						6:00	6:13	6:25	6:38	6:52	7:08
						7:00	7:14	7:27	7:40	7:54	8:11
						8:00	8:16	8:29	8:42	8:56	9:13
						9:00	9:17	9:31	9:44	9:58	10:15
						10:00	10:18	10:32	10:45	11:01	11:19
6:29	6:44	7:00	7:13	7:25	7:36	11:00	11:19	11:36	11:49	12:05	12:22
7:30	7:48	8:05	8:19	8:32	8:44	12:00	12:19	12:36	12:49	1:05	1:22
8:30	8:48	9:05	9:19	9:33	9:48	1:00	1:19	1:36	1:49	2:05	2:22
9:30	9:48	10:05	10:19	10:34	10:49	2:00	2:17	2:35	2:48	3:03	3:20
10:30	10:48	11:05	11:19	11:34	11:49	3:00	3:17	3:36	3:49	4:04	4:21
11:30	11:48	12:06	12:20	12:35	12:50	4:00	4:17	4:34	4:47	5:02	5:19
12:30	12:48	1:06	1:20	1:36	1:51	5:00	5:17	5:34	5:47	6:02	6:19
1:30	1:48	2:06	2:20	2:36	2:51	6:00	6:15	6:32	6:45	7:00	7:17
2:30	2:48	3:06	3:20	3:36	3:51						
3:30	3:48	4:05	4:19	4:35	4:50						
4:30	4:48	5:05	5:19	5:35	5:50						
5:30	5:48	6:05	6:18	6:32	6:47						
6:30	6:48	7:05	7:18	7:32	7:44						

ROUTE 85: SUNDAY

Chaffey College	Foothill & Spruce	San Antonio Hospital	Montclair Transit Center	Central & Holt	Chino Transit Center	Chino Transit Center	Central & Holt	Montclair Transit Center	San Antonio Hospital	Foothill & Spruce	Chaffey College
F	E	D	C	B	A	A	B	C	D	E	F
SOUTHBOUND						NORTHBOUND					
						6:00	6:12	6:24	6:37	6:50	7:05
						7:00	7:14	7:26	7:39	7:52	8:08
6:36	6:50	7:05	7:18	7:31	7:42	8:00	8:14	8:28	8:41	8:55	9:11
7:32	7:48	8:03	8:17	8:30	8:43	9:00	9:15	9:29	9:42	9:56	10:12
8:34	8:50	9:05	9:19	9:32	9:45	10:00	10:17	10:31	10:44	10:58	11:16
9:34	9:50	10:05	10:19	10:32	10:45	11:00	11:17	11:33	11:46	12:00	12:18
10:34	10:50	11:05	11:19	11:32	11:45	12:00	12:17	12:34	12:47	1:02	1:20
11:34	11:50	12:06	12:20	12:34	12:48	1:00	1:17	1:34	1:47	2:02	2:20
12:34	12:50	1:06	1:20	1:35	1:49	2:00	2:17	2:34	2:47	3:02	3:20
1:32	1:50	2:06	2:20	2:35	2:49	3:00	3:17	3:34	3:47	4:02	4:20
2:32	2:50	3:07	3:21	3:36	3:50	4:00	4:17	4:33	4:46	5:01	5:19
3:34	3:50	4:06	4:20	4:35	4:49	5:00	5:17	5:32	5:45	6:00	6:18
4:32	4:48	5:04	5:18	5:33	5:47	6:00	6:15	6:30	6:43	6:57	7:13
5:30	5:46	6:02	6:16	6:30	6:43						
6:32	6:48	7:03	7:17	7:30	7:43						



RULES OF THE ROAD REGLAS DE LA CARRETERA

One Seat Per Customer Please

Un asiento por cliente por favor

Please be considerate of other passengers - limit your shopping bags to what you can hold on your lap or fits directly in front of your seat on the floor. We're sorry, but bags that block the aisle or interfere with the comfort of other passengers (such as oversized or leaking bags) won't be allowed on the bus.

Por favor, tenga en cuenta a otros pasajeros - limite sus bolsas de compra a lo que puede sostener en su regazo o directamente en frente de su asiento en el piso. Lo sentimos, pero las bolsas que bloquean el pasillo o interfieren con la comodidad de otros pasajeros (como bolsas de gran tamaño o que gotean) no se permitirán en el autobús.

APPENDIX C

EXISTING TRAFFIC COUNTS

INTERSECTION TURNING MOVEMENT COUNTS

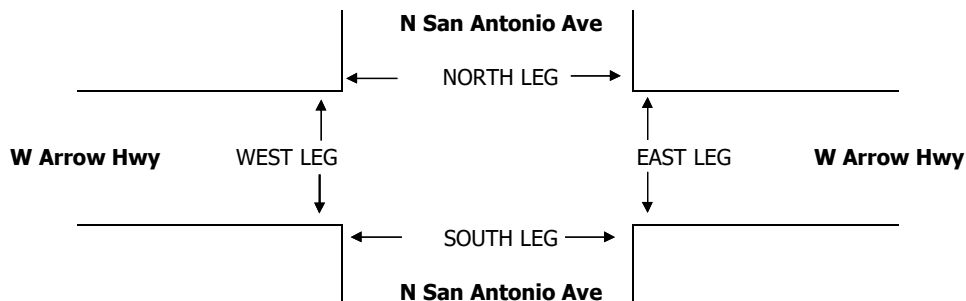
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Tue, Oct 7, 25	LOCATION: NORTH & SOUTH: EAST & WEST:	Upland N San Antonio Ave W Arrow Hwy	PROJECT #: LOCATION #: CONTROL:	SC5673 1 SIGNAL
-------------------------	---	--	---------------------------------------	-----------------------

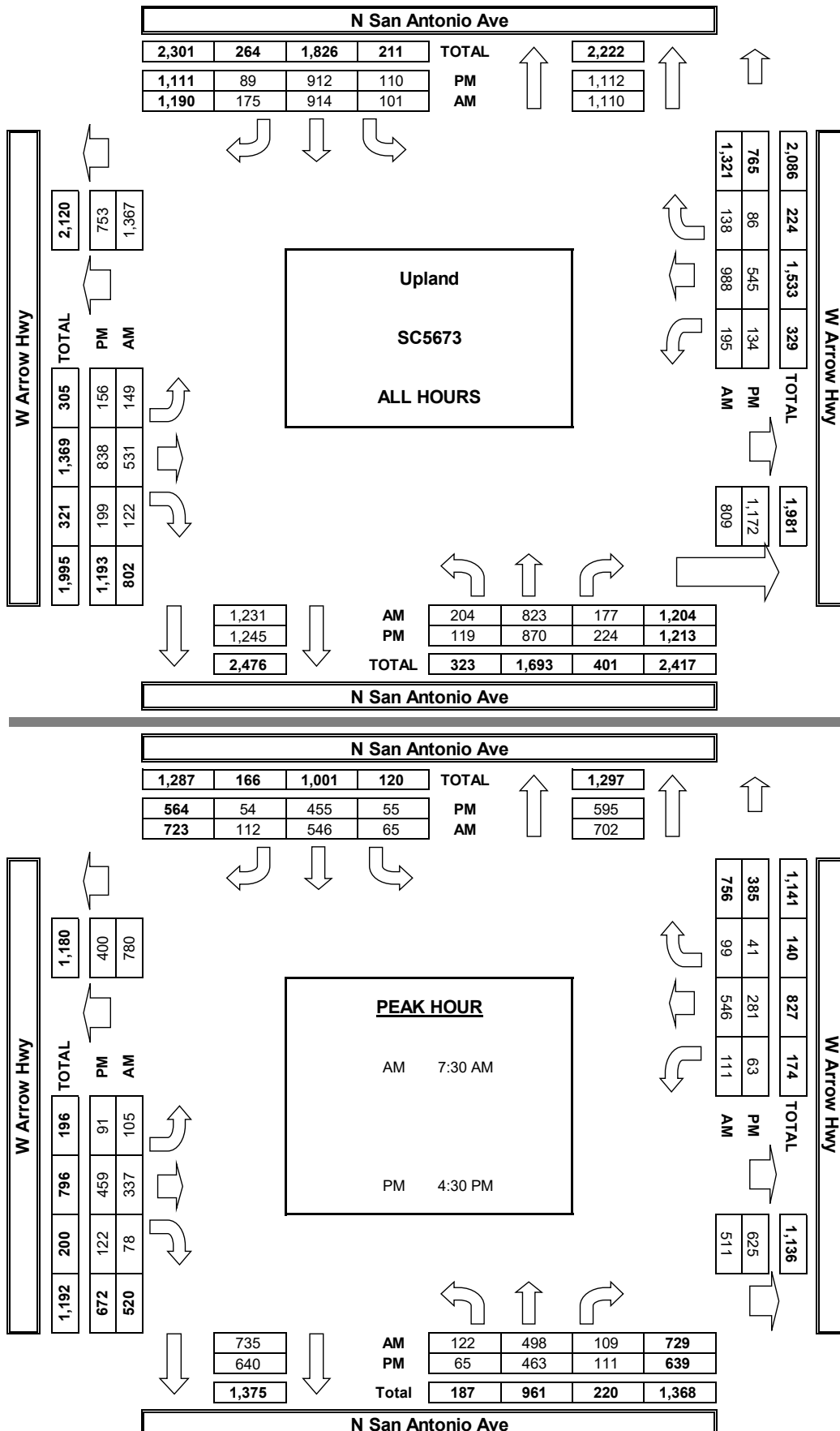
NOTES:	AM PM MD OTHER OTHER	▲ N ◀ W S ▼	E ▶
--------	----------------------------------	-------------------------	-----

	NORTHBOUND N San Antonio Ave			SOUTHBOUND N San Antonio Ave			EASTBOUND W Arrow Hwy			WESTBOUND W Arrow Hwy			
LANES:	NL 1	NT 2	NR 0	SL 1	ST 2	SR 0	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	TOTAL

AM	7:00 AM	14	56	14	2	62	14	11	30	9	16	111	9	348
	7:15 AM	20	93	15	10	105	9	12	45	13	23	109	13	467
	7:30 AM	36	130	31	12	124	32	15	89	17	17	157	28	688
	7:45 AM	44	100	24	17	145	41	17	93	27	28	151	19	706
	8:00 AM	20	116	23	15	125	14	29	66	21	28	116	23	596
	8:15 AM	22	152	31	21	152	25	44	89	13	38	122	29	738
	8:30 AM	26	98	21	14	124	24	8	55	15	20	127	9	541
	8:45 AM	22	78	18	10	77	16	13	64	7	25	95	8	433
	VOLUMES	204	823	177	101	914	175	149	531	122	195	988	138	4,517
	APPROACH %	17%	68%	15%	8%	77%	15%	19%	66%	15%	15%	75%	10%	
PM	APP/DEPART	1,204	/	1,110	1,190	/	1,231	802	/	809	1,321	/	1,367	0
	BEGIN PEAK HR	7:30 AM												
	VOLUMES	122	498	109	65	546	112	105	337	78	111	546	99	2,728
	APPROACH %	17%	68%	15%	9%	76%	15%	20%	65%	15%	15%	72%	13%	
	PEAK HR FACTOR	0.889			0.890			0.890			0.936			0.924
	APP/DEPART	729	/	702	723	/	735	520	/	511	756	/	780	0
	4:00 PM	10	96	40	23	113	9	16	117	14	11	57	12	518
	4:15 PM	7	101	26	6	117	11	21	99	18	24	72	9	511
	4:30 PM	10	131	31	22	115	15	15	101	24	18	70	15	567
	4:45 PM	15	115	26	10	110	13	18	95	33	16	71	9	531
PM	5:00 PM	19	107	30	13	145	15	24	142	31	12	75	4	617
	5:15 PM	21	110	24	10	85	11	34	121	34	17	65	13	545
	5:30 PM	18	108	24	14	104	5	13	73	24	23	62	10	478
	5:45 PM	19	102	23	12	123	10	15	90	21	13	73	14	515
	VOLUMES	119	870	224	110	912	89	156	838	199	134	545	86	4,282
	APPROACH %	10%	72%	18%	10%	82%	8%	13%	70%	17%	18%	71%	11%	
	APP/DEPART	1,213	/	1,112	1,111	/	1,245	1,193	/	1,172	765	/	753	0
	BEGIN PEAK HR	4:30 PM												
	VOLUMES	65	463	111	55	455	54	91	459	122	63	281	41	2,260
	APPROACH %	10%	72%	17%	10%	81%	10%	14%	68%	18%	16%	73%	11%	
	PEAK HR FACTOR	0.929			0.815			0.853			0.934			0.916
	APP/DEPART	639	/	595	564	/	640	672	/	625	385	/	400	0



AimTD LLC
TURNING MOVEMENT COUNTS



INTERSECTION TURNING MOVEMENT COUNTS

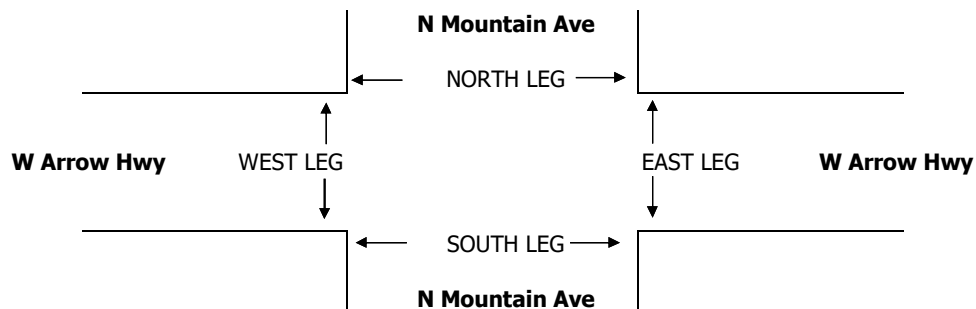
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Tue, Oct 21, 25	LOCATION: NORTH & SOUTH: EAST & WEST:	Upland N Mountain Ave W Arrow Hwy	PROJECT #: LOCATION #: CONTROL:	SC 1 SIGNAL
--------------------------	---	---	---------------------------------------	-------------------

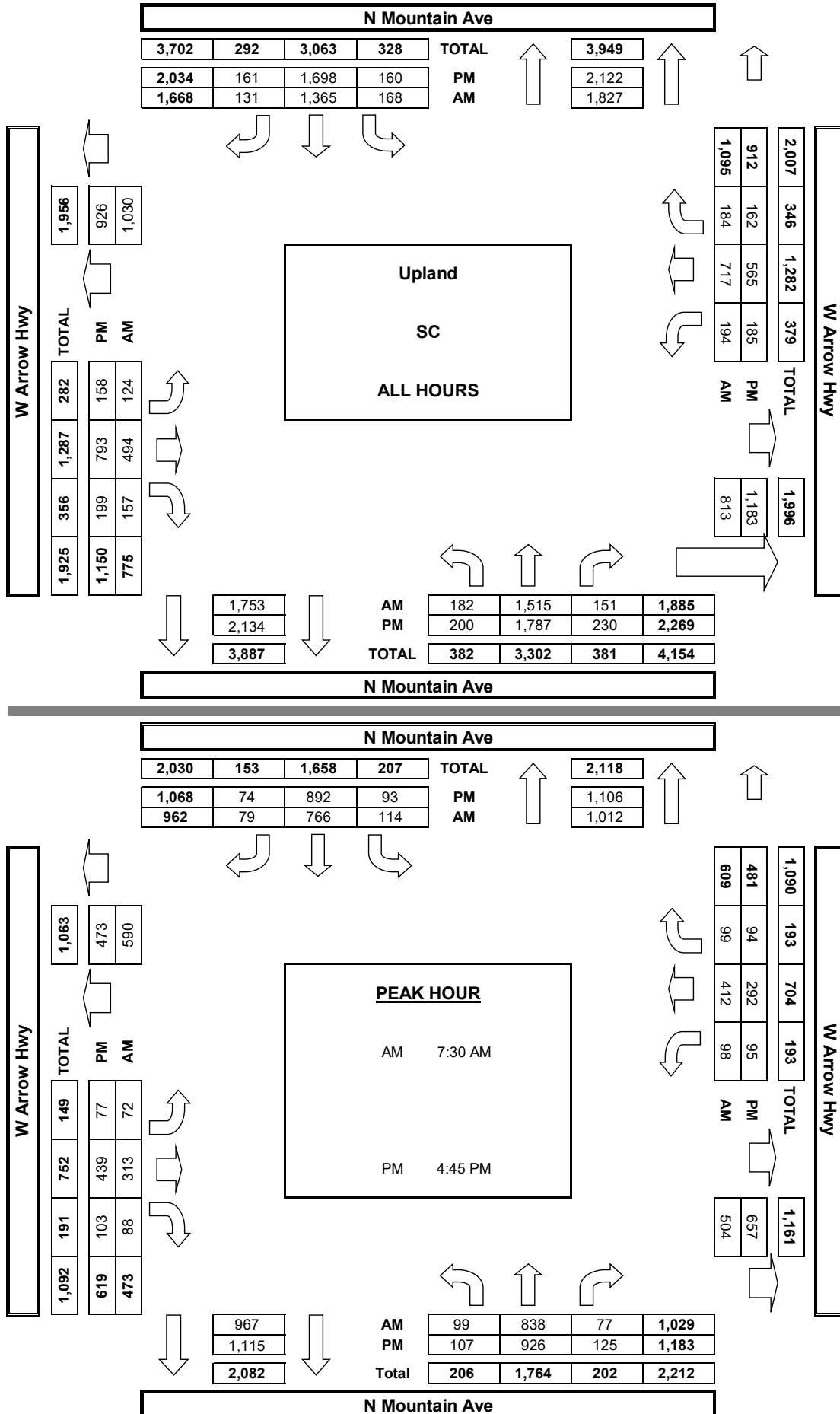
NOTES:	AM PM MD OTHER OTHER	▲ N S ▼	◀ W E ▶
--------	----------------------------------	------------------	------------

	NORTHBOUND N Mountain Ave			SOUTHBOUND N Mountain Ave			EASTBOUND W Arrow Hwy			WESTBOUND W Arrow Hwy			
LANES:	NL 1	NT 3	NR 0	SL 1	ST 3	SR 0	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	TOTAL

AM	7:00 AM	20	127	18	10	141	10	8	33	23	23	49	12	474
	7:15 AM	16	179	14	11	152	11	11	36	23	24	80	21	578
	7:30 AM	20	226	12	21	204	19	25	83	25	25	105	31	796
	7:45 AM	22	223	16	33	219	20	13	75	24	20	99	17	781
	8:00 AM	24	183	20	29	186	21	16	70	19	32	107	22	729
	8:15 AM	33	206	29	31	157	19	18	85	20	21	101	29	749
	8:30 AM	25	220	24	15	156	10	15	59	7	28	98	29	686
	8:45 AM	22	151	18	18	150	21	18	53	16	21	78	23	589
	VOLUMES	182	1,515	151	168	1,365	131	124	494	157	194	717	184	5,423
	APPROACH %	10%	80%	8%	10%	82%	8%	16%	64%	20%	18%	65%	17%	
PM	APP/DEPART	1,885	/	1,827	1,668	/	1,753	775	/	813	1,095	/	1,030	0
	BEGIN PEAK HR	7:30 AM												
	VOLUMES	99	838	77	114	766	79	72	313	88	98	412	99	3,073
	APPROACH %	10%	81%	7%	12%	80%	8%	15%	66%	19%	16%	68%	16%	
	PEAK HR FACTOR	0.942			0.878			0.889			0.946			0.962
	APP/DEPART	1,029	/	1,012	962	/	967	473	/	504	609	/	590	0
	4:00 PM	18	206	21	18	232	16	25	85	30	30	70	20	771
	4:15 PM	28	216	22	23	170	21	14	86	29	26	73	16	724
	4:30 PM	26	226	27	13	217	22	19	100	25	18	67	21	781
	4:45 PM	25	223	25	34	209	19	15	96	21	30	67	20	784
PM	5:00 PM	37	229	42	19	246	21	23	128	27	22	83	29	906
	5:15 PM	24	231	24	16	236	15	24	106	32	21	77	31	837
	5:30 PM	21	243	34	24	201	19	15	109	23	22	65	14	790
	5:45 PM	21	213	35	13	187	28	23	83	12	16	63	11	705
	VOLUMES	200	1,787	230	160	1,698	161	158	793	199	185	565	162	6,365
	APPROACH %	9%	79%	10%	8%	83%	8%	14%	69%	17%	20%	62%	18%	
	APP/DEPART	2,269	/	2,122	2,034	/	2,134	1,150	/	1,183	912	/	926	0
	BEGIN PEAK HR	4:45 PM												
	VOLUMES	107	926	125	93	892	74	77	439	103	95	292	94	3,351
	APPROACH %	9%	78%	11%	9%	84%	7%	12%	71%	17%	20%	61%	20%	
	PEAK HR FACTOR	0.942			0.924			0.869			0.897			0.916
	APP/DEPART	1,183	/	1,106	1,068	/	1,115	619	/	657	481	/	473	0



AimTD LLC
TURNING MOVEMENT COUNTS



APPENDIX D

HCM ANALYSIS WORKSHEETS

EXISTING
TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 1: N San Antonio Ave/W Arrow Hwy

Control Type:	Signalized	Delay (sec / veh):	13.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.382

Intersection Setup

Name	North San Antonio Avenue			North San Antonio Avenue			West Arrow Highway			West Arrow Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	50.00	100.00	100.00	60.00	100.00	100.00	65.00	100.00	100.00	90.00	100.00	115.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	75.00
Speed [mph]	35.00			35.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	North San Antonio Avenue			North San Antonio Avenue			West Arrow Highway			West Arrow Highway		
Base Volume Input [veh/h]	122	498	109	65	546	112	105	337	78	111	546	99
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	122	498	109	65	546	112	105	337	78	111	546	99
Peak Hour Factor	0.9240	0.9240	0.9240	0.9240	0.9240	0.9240	0.9240	0.9240	0.9240	0.9240	0.9240	0.9240
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]	33	135	29	18	148	30	28	91	21	30	148	27
Total Analysis Volume [veh/h]	132	539	118	70	591	121	114	365	84	120	591	107
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
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Flashing Yellow Arrow	No			No			No			No		
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Maximum Green [s]	0	27	0	0	27	0	0	25	0	0	25	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
Walk [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0
Pedestrian Clearance [s]	0.0	17.0	0.0	0.0	17.0	0.0	0.0	17.0	0.0	0.0	17.0	0.0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
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
Advanced 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
Advanced 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

Phasing & Timing: Pattern 1

Split [s]	0.0	31.0	0.0	0.0	31.0	0.0	0.0	29.0	0.0	0.0	29.0	0.0
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	10	0	0	10	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
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	

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	L	C	C	L	C	C
C, Calculated Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	29.6	29.6	29.6	29.6	29.6	29.6	22.4	22.4	22.4	22.4	22.4	22.4
g / C, Green / Cycle	0.49	0.49	0.49	0.49	0.49	0.49	0.37	0.37	0.37	0.37	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.18	0.18	0.18	0.09	0.19	0.19	0.15	0.12	0.12	0.13	0.19	0.19
s, saturation flow rate [veh/h]	750	1900	1783	789	1900	1789	759	1900	1779	956	1900	1800
c, Capacity [veh/h]	381	941	883	403	941	886	260	706	661	353	706	668
d1, Uniform Delay [s]	15.47	9.30	9.30	13.52	9.47	9.47	23.46	13.49	13.51	19.61	14.61	14.61
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.48	1.07	1.14	0.93	1.21	1.29	1.16	0.27	0.29	0.57	0.57	0.60
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.35	0.36	0.36	0.17	0.39	0.39	0.44	0.33	0.33	0.34	0.51	0.51
d, Delay for Lane Group [s/veh]	17.95	10.37	10.45	14.45	10.68	10.76	24.62	13.76	13.80	20.17	15.18	15.21
Lane Group LOS	B	B	B	B	B	B	C	B	B	C	B	B
Critical Lane Group	No	No	No	No	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.51	2.47	2.35	0.69	2.73	2.60	1.52	2.04	1.94	1.35	3.35	3.19
50th-Percentile Queue Length [ft/ln]	37.72	61.85	58.64	17.20	68.35	65.02	37.90	50.96	48.43	33.85	83.79	79.66
95th-Percentile Queue Length [veh/ln]	2.72	4.45	4.22	1.24	4.92	4.68	2.73	3.67	3.49	2.44	6.03	5.74
95th-Percentile Queue Length [ft/ln]	67.89	111.33	105.56	30.96	123.02	117.03	68.22	91.73	87.18	60.93	150.83	143.39

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	17.95	10.40	10.45	14.45	10.71	10.76	24.62	13.78	13.80	20.17	15.19	15.21
Movement LOS	B	B	B	B	B	B	C	B	B	C	B	B
d_A, Approach Delay [s/veh]	11.67			11.05			15.98			15.93		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	13.51											
Intersection LOS	B											
Intersection V/C	0.382											

Emissions

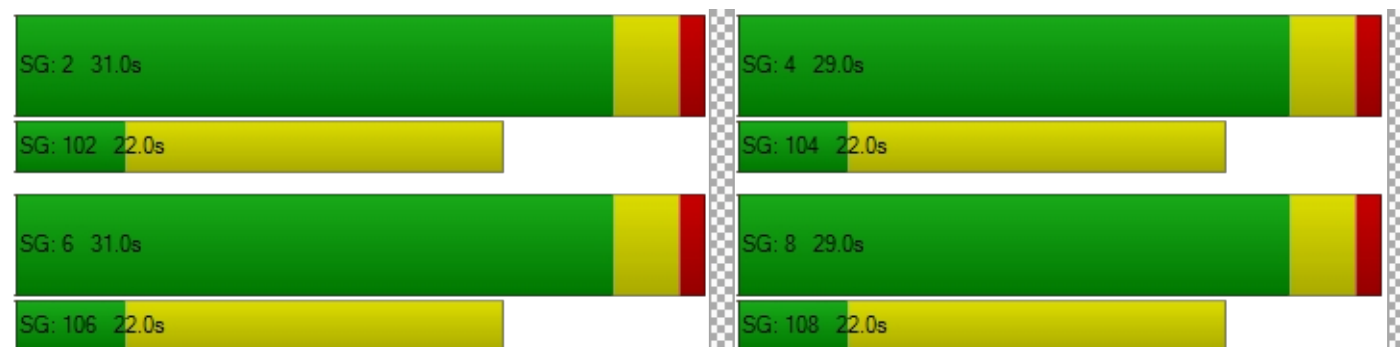
Vehicle Miles Traveled [mph]	10.96	28.12	26.45	5.52	28.90	27.28	16.60	33.58	31.80	8.96	26.74	25.37
Stops [stops/h]	90.52	148.44	140.74	41.29	164.03	156.04	90.96	122.31	116.24	81.25	201.10	191.19
Fuel consumption [US gal/h]	1.58	2.90	2.74	0.73	3.13	2.97	1.76	2.70	2.57	1.45	3.64	3.46
CO [g/h]	110.50	202.89	191.79	50.81	218.89	207.67	122.81	189.01	179.30	101.01	254.31	241.64
NOx [g/h]	21.50	39.47	37.32	9.89	42.59	40.40	23.90	36.77	34.89	19.65	49.48	47.01
VOC [g/h]	25.61	47.02	44.45	11.78	50.73	48.13	28.46	43.80	41.56	23.41	58.94	56.00

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0			9.0			9.0			9.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	21.68			21.68			21.68			21.68		
I_p,int, Pedestrian LOS Score for Intersectio	2.812			2.793			2.743			2.692		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	900			900			833			833		
d_b, Bicycle Delay [s]	9.08			9.08			10.21			10.21		
I_b,int, Bicycle LOS Score for Intersection	2.211			2.205			2.024			2.234		
Bicycle LOS	B			B			B			B		

Sequence

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



Intersection Level Of Service Report
Intersection 2: N Mountain Ave / W Arrow Hwy

Control Type:	Signalized	Delay (sec / veh):	19.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.386

Intersection Setup

Name	North Mountain Avenue			North Mountain Avenue			West Arrow Highway			West Arrow Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	225.00	100.00	100.00	240.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	North Mountain Avenue			North Mountain Avenue			West Arrow Highway			West Arrow Highway		
Base Volume Input [veh/h]	99	838	77	114	766	79	72	313	88	98	412	99
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	99	838	77	114	766	79	72	313	88	98	412	99
Peak Hour Factor	0.9620	0.9620	0.9620	0.9620	0.9620	0.9620	0.9620	0.9620	0.9620	0.9620	0.9620	0.9620
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	218	20	30	199	21	19	81	23	25	107	26
Total Analysis Volume [veh/h]	103	871	80	119	796	82	75	325	91	102	428	103
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
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Flashing Yellow Arrow							No			No		
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Maximum Green [s]	16	23	0	16	23	0	0	29	0	0	29	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	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	1.0	0.0
Walk [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0
Pedestrian Clearance [s]	0.0	17.0	0.0	0.0	17.0	0.0	0.0	24.0	0.0	0.0	24.0	0.0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	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	2.0	0.0
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
Advanced 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
Advanced 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

Phasing & Timing: Pattern 1

Split [s]	20.0	27.0	0.0	20.0	27.0	0.0	0.0	33.0	0.0	0.0	33.0	0.0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	10	0	5	10	0	0	10	0	0	10	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

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	L	C	C	L	C	C
C, Calculated Cycle Length [s]	80	80	80	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	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	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6.0	39.3	39.3	6.8	40.1	40.1	21.9	21.9	21.9	21.9	21.9	21.9
g / C, Green / Cycle	0.07	0.49	0.49	0.09	0.50	0.50	0.27	0.27	0.27	0.27	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.06	0.17	0.18	0.07	0.16	0.16	0.08	0.11	0.11	0.10	0.14	0.15
s, saturation flow rate [veh/h]	1810	3618	1819	1810	3618	1811	887	1900	1760	986	1900	1775
c, Capacity [veh/h]	135	1778	894	155	1817	909	193	519	480	234	519	484
d1, Uniform Delay [s]	36.31	12.53	12.54	35.80	11.82	11.83	34.15	23.83	23.88	32.57	24.70	24.73
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.47	0.56	1.11	7.77	0.47	0.94	1.28	0.53	0.59	1.28	0.83	0.91
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.36	0.36	0.77	0.32	0.32	0.39	0.41	0.42	0.44	0.53	0.53
d, Delay for Lane Group [s/veh]	44.78	13.09	13.65	43.57	12.29	12.77	35.43	24.35	24.47	33.85	25.53	25.64
Lane Group LOS	D	B	B	D	B	B	D	C	C	C	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.18	3.11	3.27	2.47	2.74	2.87	1.40	3.16	3.00	1.91	4.35	4.11
50th-Percentile Queue Length [ft/ln]	54.38	77.65	81.85	61.72	68.39	71.82	35.07	79.08	74.94	47.82	108.84	102.85
95th-Percentile Queue Length [veh/ln]	3.92	5.59	5.89	4.44	4.92	5.17	2.53	5.69	5.40	3.44	7.78	7.40
95th-Percentile Queue Length [ft/ln]	97.88	139.78	147.33	111.10	123.09	129.27	63.13	142.34	134.89	86.08	194.38	185.12

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	44.78	13.24	13.65	43.57	12.42	12.77	35.43	24.39	24.47	33.85	25.57	25.64
Movement LOS	D	B	B	D	B	B	D	C	C	C	C	C
d_A, Approach Delay [s/veh]	16.36			16.16			26.09			26.92		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	19.91											
Intersection LOS	B											
Intersection V/C	0.386											

Emissions

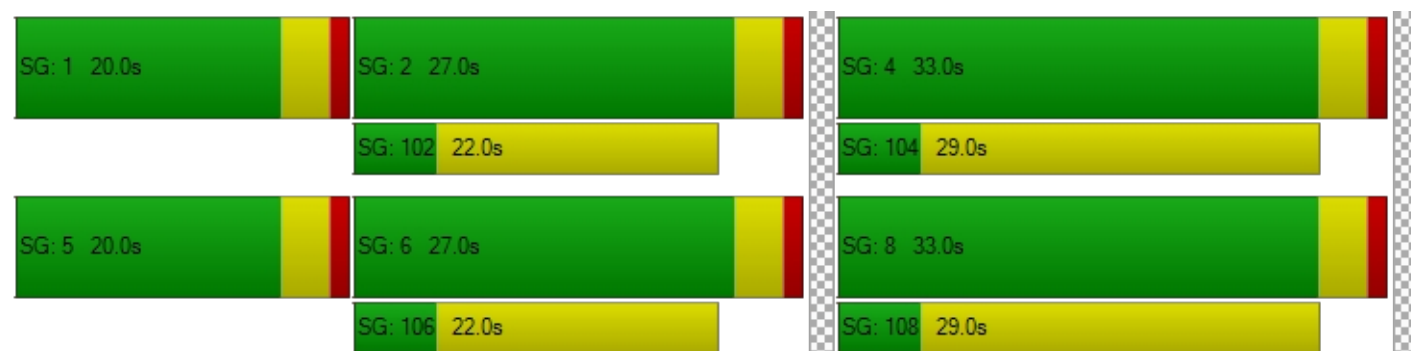
Vehicle Miles Traveled [mph]	8.26	50.70	25.58	9.35	45.90	23.08	5.17	14.75	13.92	40.10	107.51	101.23
Stops [stops/h]	97.88	279.56	147.33	111.10	246.19	129.27	63.13	142.34	134.89	86.08	195.90	185.12
Fuel consumption [US gal/h]	2.44	6.90	3.60	2.76	6.10	3.16	1.35	2.99	2.83	2.83	6.93	6.53
CO [g/h]	170.47	482.15	251.29	192.71	426.07	221.05	94.09	208.84	197.76	197.74	484.34	456.72
NOx [g/h]	33.17	93.81	48.89	37.49	82.90	43.01	18.31	40.63	38.48	38.47	94.23	88.86
VOC [g/h]	39.51	111.74	58.24	44.66	98.75	51.23	21.81	48.40	45.83	45.83	112.25	105.85

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0			9.0			9.0			9.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	31.51			31.51			31.51			31.51		
I_p,int, Pedestrian LOS Score for Intersectio	3.162			3.124			2.583			2.521		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	575			575			725			725		
d_b, Bicycle Delay [s]	20.31			20.31			16.26			16.26		
I_b,int, Bicycle LOS Score for Intersection	2.139			2.108			1.965			2.082		
Bicycle LOS	B			B			A			B		

Sequence

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



Intersection Level Of Service Report
Intersection 1: N San Antonio Ave/W Arrow Hwy

Control Type:	Signalized	Delay (sec / veh):	12.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.344

Intersection Setup

Name	North San Antonio Avenue			North San Antonio Avenue			West Arrow Highway			West Arrow Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	50.00	100.00	100.00	60.00	100.00	100.00	65.00	100.00	100.00	90.00	100.00	115.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	75.00
Speed [mph]	35.00			35.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	North San Antonio Avenue			North San Antonio Avenue			West Arrow Highway			West Arrow Highway		
Base Volume Input [veh/h]	65	463	111	55	455	54	91	459	122	63	281	41
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	65	463	111	55	455	54	91	459	122	63	281	41
Peak Hour Factor	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	126	30	15	124	15	25	125	33	17	77	11
Total Analysis Volume [veh/h]	71	505	121	60	497	59	99	501	133	69	307	45
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
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Flashing Yellow Arrow	No			No			No			No		
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Maximum Green [s]	0	26	0	0	26	0	0	26	0	0	26	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
Walk [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0
Pedestrian Clearance [s]	0.0	17.0	0.0	0.0	17.0	0.0	0.0	17.0	0.0	0.0	17.0	0.0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
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
Advanced 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
Advanced 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

Phasing & Timing: Pattern 1

Split [s]	0.0	30.0	0.0	0.0	30.0	0.0	0.0	30.0	0.0	0.0	30.0	0.0
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	10	0	0	10	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
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	

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	L	C	C	L	C	C
C, Calculated Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	33.0	33.0	33.0	33.0	33.0	33.0	19.0	19.0	19.0	19.0	19.0	19.0
g / C, Green / Cycle	0.55	0.55	0.55	0.55	0.55	0.55	0.32	0.32	0.32	0.32	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.08	0.17	0.17	0.07	0.15	0.15	0.09	0.17	0.17	0.09	0.09	0.10
s, saturation flow rate [veh/h]	866	1900	1775	812	1900	1830	1045	1900	1765	806	1900	1817
c, Capacity [veh/h]	510	1046	977	475	1046	1008	329	601	558	222	601	574
d1, Uniform Delay [s]	9.86	7.30	7.31	10.25	7.12	7.13	21.23	16.96	16.97	25.04	15.49	15.51
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.57	0.77	0.83	0.55	0.64	0.66	0.51	0.78	0.84	0.79	0.27	0.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.14	0.31	0.31	0.13	0.27	0.27	0.30	0.55	0.55	0.31	0.30	0.30
d, Delay for Lane Group [s/veh]	10.43	8.07	8.14	10.79	7.76	7.79	21.74	17.73	17.82	25.83	15.76	15.80
Lane Group LOS	B	A	A	B	A	A	C	B	B	C	B	B
Critical Lane Group	No	No	Yes	No	No	No	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	0.55	1.93	1.83	0.48	1.64	1.60	1.19	3.50	3.28	0.91	1.68	1.63
50th-Percentile Queue Length [ft/ln]	13.72	48.24	45.73	11.96	41.03	39.93	29.72	87.53	81.97	22.80	41.96	40.82
95th-Percentile Queue Length [veh/ln]	0.99	3.47	3.29	0.86	2.95	2.87	2.14	6.30	5.90	1.64	3.02	2.94
95th-Percentile Queue Length [ft/ln]	24.70	86.83	82.31	21.53	73.85	71.87	53.50	157.56	147.55	41.04	75.53	73.47

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	10.43	8.09	8.14	10.79	7.77	7.79	21.74	17.76	17.82	25.83	15.78	15.80
Movement LOS	B	A	A	B	A	A	C	B	B	C	B	B
d_A, Approach Delay [s/veh]	8.34			8.07			18.31			17.43		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	12.78											
Intersection LOS	B											
Intersection V/C	0.344											

Emissions

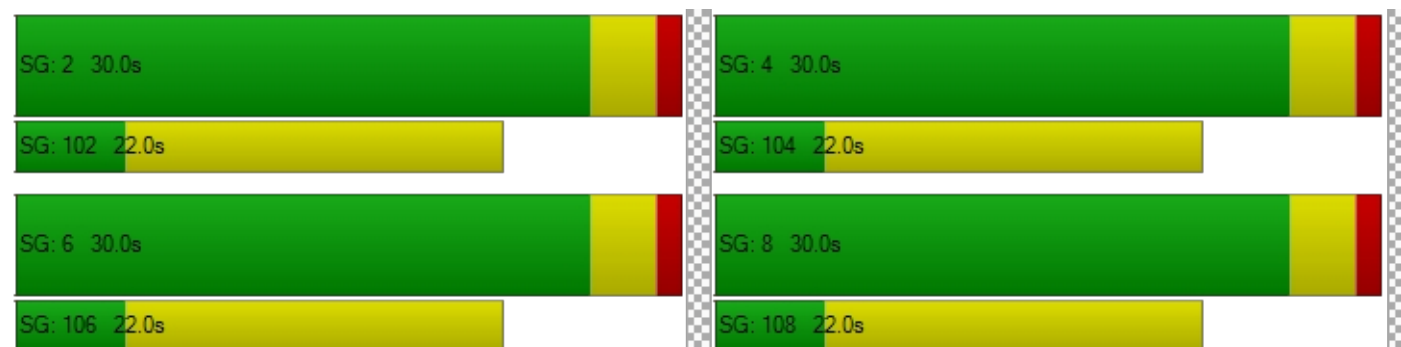
Vehicle Miles Traveled [mph]	5.90	26.81	25.18	4.73	22.29	21.58	14.42	47.77	44.56	5.15	13.34	12.94
Stops [stops/h]	32.93	115.77	109.75	28.71	98.47	95.83	71.33	210.08	196.73	54.72	100.71	97.96
Fuel consumption [US gal/h]	0.62	2.42	2.29	0.53	2.04	1.98	1.43	4.31	4.03	0.97	1.84	1.79
CO [g/h]	43.56	169.35	159.88	36.92	142.33	138.19	99.65	301.33	281.74	67.84	128.55	124.93
NOx [g/h]	8.48	32.95	31.11	7.18	27.69	26.89	19.39	58.63	54.82	13.20	25.01	24.31
VOC [g/h]	10.10	39.25	37.05	8.56	32.99	32.03	23.09	69.84	65.30	15.72	29.79	28.95

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0			9.0			9.0			9.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	21.68			21.68			21.68			21.68		
I_p,int, Pedestrian LOS Score for Intersectio	2.696			2.709			2.610			2.617		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	867			867			867			867		
d_b, Bicycle Delay [s]	9.63			9.63			9.63			9.63		
I_b,int, Bicycle LOS Score for Intersection	2.135			2.068			2.164			1.907		
Bicycle LOS	B			B			B			A		

Sequence

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



Intersection Level Of Service Report
Intersection 2: N Mountain Ave / W Arrow Hwy

Control Type:	Signalized	Delay (sec / veh):	20.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.430

Intersection Setup

Name	North Mountain Avenue			North Mountain Avenue			West Arrow Highway			West Arrow Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	225.00	100.00	100.00	240.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	North Mountain Avenue			North Mountain Avenue			West Arrow Highway			West Arrow Highway		
Base Volume Input [veh/h]	107	926	125	93	892	74	77	439	103	95	292	94
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	107	926	125	93	892	74	77	439	103	95	292	94
Peak Hour Factor	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	29	253	34	25	243	20	21	120	28	26	80	26
Total Analysis Volume [veh/h]	117	1011	136	102	974	81	84	479	112	104	319	103
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
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Flashing Yellow Arrow							No			No		
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Maximum Green [s]	15	25	0	14	24	0	0	29	0	0	29	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	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	1.0	0.0
Walk [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0
Pedestrian Clearance [s]	0.0	17.0	0.0	0.0	17.0	0.0	0.0	24.0	0.0	0.0	24.0	0.0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	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	2.0	0.0
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
Advanced 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
Advanced 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

Phasing & Timing: Pattern 1

Split [s]	19.0	29.0	0.0	18.0	28.0	0.0	0.0	33.0	0.0	0.0	33.0	0.0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	10	0	5	10	0	0	10	0	0	10	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

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	L	C	C	L	C	C
C, Calculated Cycle Length [s]	80	80	80	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	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	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6.7	36.9	36.9	5.9	36.1	36.1	25.2	25.2	25.2	25.2	25.2	25.2
g / C, Green / Cycle	0.08	0.46	0.46	0.07	0.45	0.45	0.32	0.32	0.32	0.32	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.06	0.21	0.21	0.06	0.19	0.19	0.09	0.16	0.16	0.12	0.11	0.12
s, saturation flow rate [veh/h]	1810	3618	1787	1810	3618	1826	980	1900	1777	839	1900	1744
c, Capacity [veh/h]	152	1666	823	133	1630	823	282	600	561	219	600	551
d1, Uniform Delay [s]	35.89	14.77	14.78	36.37	14.98	14.99	28.30	22.31	22.33	32.65	21.16	21.21
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.00	0.92	1.86	8.75	0.83	1.64	0.58	0.67	0.72	1.59	0.37	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	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.46	0.46	0.76	0.43	0.43	0.30	0.51	0.51	0.47	0.36	0.37
d, Delay for Lane Group [s/veh]	43.90	15.69	16.63	45.12	15.81	16.63	28.88	22.97	23.05	34.24	21.53	21.62
Lane Group LOS	D	B	B	D	B	B	C	C	C	C	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	2.44	4.31	4.48	2.16	3.94	4.17	1.38	4.42	4.17	1.99	3.10	2.91
50th-Percentile Queue Length [ft/ln]	60.96	107.76	111.96	54.10	98.53	104.33	34.54	110.41	104.23	49.65	77.51	72.72
95th-Percentile Queue Length [veh/ln]	4.39	7.72	7.95	3.90	7.09	7.51	2.49	7.86	7.50	3.57	5.58	5.24
95th-Percentile Queue Length [ft/ln]	109.73	192.88	198.72	97.39	177.36	187.80	62.17	196.57	187.61	89.36	139.51	130.89

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	43.90	15.92	16.63	45.12	16.04	16.63	28.88	23.00	23.05	34.24	21.56	21.62
Movement LOS	D	B	B	D	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	18.58			18.65			23.74			24.08		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	20.36											
Intersection LOS	C											
Intersection V/C	0.430											

Emissions

Vehicle Miles Traveled [mph]	9.39	61.56	30.44	8.01	55.05	27.84	5.79	20.98	19.75	40.88	85.77	80.13
Stops [stops/h]	109.73	387.92	201.52	97.39	354.71	187.80	62.17	198.73	187.61	89.36	139.51	130.89
Fuel consumption [US gal/h]	2.73	9.38	4.83	2.42	8.55	4.49	1.31	4.13	3.89	2.90	5.26	4.92
CO [g/h]	190.91	655.97	337.88	169.30	597.80	313.76	91.69	288.48	272.23	202.80	367.49	343.82
NOx [g/h]	37.14	127.63	65.74	32.94	116.31	61.05	17.84	56.13	52.97	39.46	71.50	66.89
VOC [g/h]	44.25	152.03	78.31	39.24	138.55	72.72	21.25	66.86	63.09	47.00	85.17	79.68

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0			9.0			9.0			9.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	31.51			31.51			31.51			31.51		
I_p,int, Pedestrian LOS Score for Intersectio	3.250			3.201			2.605			2.538		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	625			600			725			725		
d_b, Bicycle Delay [s]	18.91			19.60			16.26			16.26		
I_b,int, Bicycle LOS Score for Intersection	2.255			2.196			2.116			1.994		
Bicycle LOS	B			B			B			A		

Sequence

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



OPENING YEAR
TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 1: N San Antonio Ave/W Arrow Hwy

Control Type:	Signalized	Delay (sec / veh):	13.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.400

Intersection Setup

Name	North San Antonio Avenue			North San Antonio Avenue			West Arrow Highway			West Arrow Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	50.00	100.00	100.00	60.00	100.00	100.00	65.00	100.00	100.00	90.00	100.00	115.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	75.00
Speed [mph]	35.00			35.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	North San Antonio Avenue			North San Antonio Avenue			West Arrow Highway			West Arrow Highway		
Base Volume Input [veh/h]	122	498	109	65	546	112	105	337	78	111	546	99
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	2	0	2	0	0	0	2	0	0	4	4
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	128	520	113	70	568	117	109	353	81	115	572	107
Peak Hour Factor	0.9240	0.9240	0.9240	0.9240	0.9240	0.9240	0.9240	0.9240	0.9240	0.9240	0.9240	0.9240
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]	35	141	31	19	154	32	29	96	22	31	155	29
Total Analysis Volume [veh/h]	139	563	122	76	615	127	118	382	88	124	619	116
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
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Flashing Yellow Arrow	No			No			No			No		
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Maximum Green [s]	0	27	0	0	27	0	0	25	0	0	25	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
Walk [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0
Pedestrian Clearance [s]	0.0	17.0	0.0	0.0	17.0	0.0	0.0	17.0	0.0	0.0	17.0	0.0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
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
Advanced 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
Advanced 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

Phasing & Timing: Pattern 1

Split [s]	0.0	31.0	0.0	0.0	31.0	0.0	0.0	29.0	0.0	0.0	29.0	0.0
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	10	0	0	10	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
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	

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	L	C	C	L	C	C
C, Calculated Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	28.8	28.8	28.8	28.8	28.8	28.8	23.2	23.2	23.2	23.2	23.2	23.2
g / C, Green / Cycle	0.48	0.48	0.48	0.48	0.48	0.48	0.39	0.39	0.39	0.39	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.19	0.19	0.19	0.10	0.20	0.20	0.16	0.13	0.13	0.13	0.20	0.20
s, saturation flow rate [veh/h]	729	1900	1784	769	1900	1789	734	1900	1779	938	1900	1797
c, Capacity [veh/h]	355	914	858	377	914	860	263	733	686	361	733	693
d1, Uniform Delay [s]	17.03	9.93	9.93	14.76	10.12	10.12	23.19	12.97	12.99	19.07	14.13	14.13
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.23	1.23	1.32	1.20	1.41	1.50	1.20	0.26	0.28	0.56	0.56	0.60
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.39	0.39	0.39	0.20	0.42	0.42	0.45	0.33	0.33	0.34	0.52	0.52
d, Delay for Lane Group [s/veh]	20.26	11.16	11.25	15.96	11.52	11.62	24.39	13.23	13.27	19.63	14.69	14.73
Lane Group LOS	C	B	B	B	B	B	C	B	B	B	B	B
Critical Lane Group	No	No	No	No	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.73	2.72	2.58	0.80	3.01	2.86	1.57	2.08	1.98	1.38	3.47	3.29
50th-Percentile Queue Length [ft/ln]	43.16	68.03	64.48	20.01	75.29	71.54	39.19	52.11	49.45	34.46	86.67	82.21
95th-Percentile Queue Length [veh/ln]	3.11	4.90	4.64	1.44	5.42	5.15	2.82	3.75	3.56	2.48	6.24	5.92
95th-Percentile Queue Length [ft/ln]	77.68	122.45	116.06	36.02	135.53	128.77	70.54	93.80	89.00	62.04	156.01	147.98

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	20.26	11.19	11.25	15.96	11.56	11.62	24.39	13.24	13.27	19.63	14.70	14.73
Movement LOS	C	B	B	B	B	B	C	B	B	B	B	B
d_A, Approach Delay [s/veh]	12.73			11.98			15.48			15.42		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	13.80											
Intersection LOS	B											
Intersection V/C	0.400											

Emissions

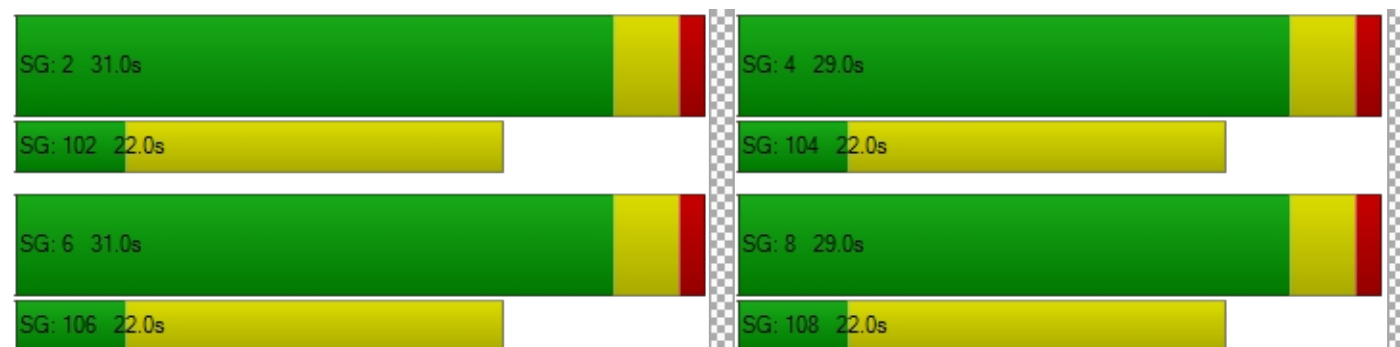
Vehicle Miles Traveled [mph]	11.54	29.32	27.57	6.00	30.14	28.42	17.18	35.18	33.27	9.26	28.19	26.68
Stops [stops/h]	103.58	163.27	154.75	48.03	180.70	171.70	94.05	125.06	118.67	82.71	208.02	197.31
Fuel consumption [US gal/h]	1.79	3.15	2.97	0.84	3.40	3.23	1.81	2.79	2.64	1.47	3.77	3.57
CO [g/h]	125.27	220.01	207.94	58.48	237.91	225.49	126.70	194.98	184.69	102.77	263.37	249.69
NOx [g/h]	24.37	42.81	40.46	11.38	46.29	43.87	24.65	37.94	35.93	20.00	51.24	48.58
VOC [g/h]	29.03	50.99	48.19	13.55	55.14	52.26	29.36	45.19	42.80	23.82	61.04	57.87

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0			9.0			9.0			9.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	21.68			21.68			21.68			21.68		
I_p,int, Pedestrian LOS Score for Intersectio	2.833			2.816			2.765			2.716		
Crosswalk LOS	C			C			C			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	900			900			833			833		
d_b, Bicycle Delay [s]	9.08			9.08			10.21			10.21		
I_b,int, Bicycle LOS Score for Intersection	2.239			2.234			2.045			2.268		
Bicycle LOS	B			B			B			B		

Sequence

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



Intersection Level Of Service Report
Intersection 2: N Mountain Ave / W Arrow Hwy

Control Type:	Signalized	Delay (sec / veh):	20.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.403

Intersection Setup

Name	North Mountain Avenue			North Mountain Avenue			West Arrow Highway			West Arrow Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	225.00	100.00	100.00	240.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	North Mountain Avenue			North Mountain Avenue			West Arrow Highway			West Arrow Highway		
Base Volume Input [veh/h]	99	838	77	114	766	79	72	313	88	98	412	99
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	0	0	0	0	0	2	0	0	5	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]	103	873	80	119	797	82	75	328	92	102	434	103
Peak Hour Factor	0.9620	0.9620	0.9620	0.9620	0.9620	0.9620	0.9620	0.9620	0.9620	0.9620	0.9620	0.9620
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	227	21	31	207	21	19	85	24	27	113	27
Total Analysis Volume [veh/h]	107	907	83	124	828	85	78	341	96	106	451	107
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
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Flashing Yellow Arrow							No			No		
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Maximum Green [s]	16	23	0	16	23	0	0	29	0	0	29	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	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	1.0	0.0
Walk [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0
Pedestrian Clearance [s]	0.0	17.0	0.0	0.0	17.0	0.0	0.0	24.0	0.0	0.0	24.0	0.0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	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	2.0	0.0
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
Advanced 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
Advanced 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

Phasing & Timing: Pattern 1

Split [s]	20.0	27.0	0.0	20.0	27.0	0.0	0.0	33.0	0.0	0.0	33.0	0.0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	10	0	5	10	0	0	10	0	0	10	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

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	L	C	C	L	C	C
C, Calculated Cycle Length [s]	80	80	80	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	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	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6.2	38.2	38.2	7.1	39.1	39.1	22.7	22.7	22.7	22.7	22.7	22.7
g / C, Green / Cycle	0.08	0.48	0.48	0.09	0.49	0.49	0.28	0.28	0.28	0.28	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.06	0.18	0.18	0.07	0.17	0.17	0.09	0.12	0.12	0.11	0.15	0.15
s, saturation flow rate [veh/h]	1810	3618	1820	1810	3618	1811	865	1900	1759	967	1900	1776
c, Capacity [veh/h]	140	1728	869	161	1769	885	196	539	499	238	539	504
d1, Uniform Delay [s]	36.18	13.34	13.35	35.66	12.56	12.57	33.89	23.29	23.34	32.21	24.19	24.21
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.29	0.64	1.27	7.63	0.53	1.07	1.31	0.52	0.57	1.30	0.82	0.89
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.38	0.38	0.77	0.34	0.34	0.40	0.42	0.42	0.45	0.53	0.54
d, Delay for Lane Group [s/veh]	44.47	13.98	14.63	43.29	13.09	13.64	35.20	23.80	23.91	33.52	25.01	25.11
Lane Group LOS	D	B	B	D	B	B	D	C	C	C	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.25	3.39	3.58	2.56	2.98	3.13	1.46	3.29	3.11	1.98	4.53	4.28
50th-Percentile Queue Length [ft/ln]	56.23	84.81	89.41	64.05	74.48	78.20	36.42	82.17	77.69	49.54	113.36	107.01
95th-Percentile Queue Length [veh/ln]	4.05	6.11	6.44	4.61	5.36	5.63	2.62	5.92	5.59	3.57	8.03	7.67
95th-Percentile Queue Length [ft/ln]	101.22	152.67	160.95	115.29	134.07	140.77	65.55	147.90	139.84	89.17	200.66	191.83

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	44.47	14.16	14.63	43.29	13.24	13.64	35.20	23.84	23.91	33.52	25.04	25.11
Movement LOS	D	B	B	D	B	B	D	C	C	C	C	C
d_A, Approach Delay [s/veh]	17.15			16.86			25.57			26.41		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	20.23											
Intersection LOS	C											
Intersection V/C	0.403											

Emissions

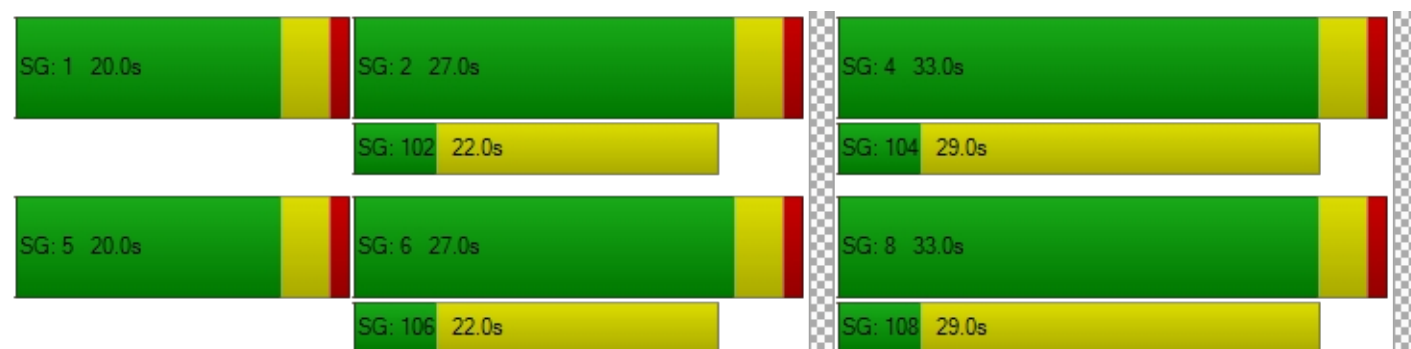
Vehicle Miles Traveled [mph]	8.58	52.79	26.62	9.74	47.74	23.99	5.38	15.51	14.60	41.67	113.01	106.34
Stops [stops/h]	101.22	305.33	160.95	115.29	268.15	140.77	65.55	147.90	139.84	89.17	204.04	192.61
Fuel consumption [US gal/h]	2.52	7.48	3.90	2.86	6.59	3.42	1.40	3.10	2.93	2.93	7.24	6.82
CO [g/h]	176.22	522.77	272.73	199.89	460.60	239.07	97.52	216.61	204.67	204.88	506.27	476.99
NOx [g/h]	34.29	101.71	53.06	38.89	89.62	46.52	18.97	42.14	39.82	39.86	98.50	92.81
VOC [g/h]	40.84	121.16	63.21	46.33	106.75	55.41	22.60	50.20	47.43	47.48	117.33	110.55

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0			9.0			9.0			9.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	31.51			31.51			31.51			31.51		
I_p,int, Pedestrian LOS Score for Intersectio	3.185			3.145			2.597			2.532		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	575			575			725			725		
d_b, Bicycle Delay [s]	20.31			20.31			16.26			16.26		
I_b,int, Bicycle LOS Score for Intersection	2.163			2.130			1.984			2.107		
Bicycle LOS	B			B			A			B		

Sequence

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



Intersection Level Of Service Report
Intersection 1: N San Antonio Ave/W Arrow Hwy

Control Type:	Signalized	Delay (sec / veh):	12.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.362

Intersection Setup

Name	North San Antonio Avenue			North San Antonio Avenue			West Arrow Highway			West Arrow Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	50.00	100.00	100.00	60.00	100.00	100.00	65.00	100.00	100.00	90.00	100.00	115.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	75.00
Speed [mph]	35.00			35.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	North San Antonio Avenue			North San Antonio Avenue			West Arrow Highway			West Arrow Highway		
Base Volume Input [veh/h]	65	463	111	55	455	54	91	459	122	63	281	41
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	2	1	6	2	0	0	8	1	1	6	4
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	69	484	116	63	475	56	95	486	128	67	298	47
Peak Hour Factor	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	132	32	17	130	15	26	133	35	18	81	13
Total Analysis Volume [veh/h]	75	528	127	69	519	61	104	531	140	73	325	51
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Flashing Yellow Arrow	No			No			No			No		
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Maximum Green [s]	0	26	0	0	26	0	0	26	0	0	26	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
Walk [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0
Pedestrian Clearance [s]	0.0	17.0	0.0	0.0	17.0	0.0	0.0	17.0	0.0	0.0	17.0	0.0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
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
Advanced 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
Advanced 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

Phasing & Timing: Pattern 1

Split [s]	0.0	30.0	0.0	0.0	30.0	0.0	0.0	30.0	0.0	0.0	30.0	0.0
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	10	0	0	10	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
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	

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	L	C	C	L	C	C
C, Calculated Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	32.1	32.1	32.1	32.1	32.1	32.1	19.9	19.9	19.9	19.9	19.9	19.9
g / C, Green / Cycle	0.54	0.54	0.54	0.54	0.54	0.54	0.33	0.33	0.33	0.33	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.09	0.18	0.18	0.09	0.16	0.16	0.10	0.18	0.18	0.09	0.10	0.10
s, saturation flow rate [veh/h]	847	1900	1775	790	1900	1831	1023	1900	1765	779	1900	1812
c, Capacity [veh/h]	482	1018	950	446	1018	981	337	629	584	226	629	600
d1, Uniform Delay [s]	10.78	7.87	7.88	11.32	7.66	7.66	20.75	16.43	16.44	24.72	14.93	14.95
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.69	0.88	0.94	0.74	0.72	0.75	0.52	0.76	0.82	0.82	0.27	0.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.16	0.33	0.33	0.15	0.29	0.29	0.31	0.55	0.55	0.32	0.30	0.31
d, Delay for Lane Group [s/veh]	11.46	8.75	8.82	12.06	8.38	8.41	21.27	17.19	17.26	25.55	15.20	15.24
Lane Group LOS	B	A	A	B	A	A	C	B	B	C	B	B
Critical Lane Group	No	No	Yes	No	No	No	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	0.62	2.15	2.04	0.60	1.82	1.77	1.24	3.65	3.41	0.96	1.76	1.70
50th-Percentile Queue Length [ft/ln]	15.51	53.76	50.88	14.89	45.45	44.20	30.89	91.16	85.25	24.03	43.91	42.57
95th-Percentile Queue Length [veh/ln]	1.12	3.87	3.66	1.07	3.27	3.18	2.22	6.56	6.14	1.73	3.16	3.06
95th-Percentile Queue Length [ft/ln]	27.92	96.77	91.59	26.80	81.81	79.55	55.60	164.09	153.44	43.26	79.04	76.62

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	11.46	8.77	8.82	12.06	8.39	8.41	21.27	17.21	17.26	25.55	15.21	15.24
Movement LOS	B	A	A	B	A	A	C	B	B	C	B	B
d_A, Approach Delay [s/veh]	9.06			8.79			17.77			16.90		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	12.93											
Intersection LOS	B											
Intersection V/C	0.362											

Emissions

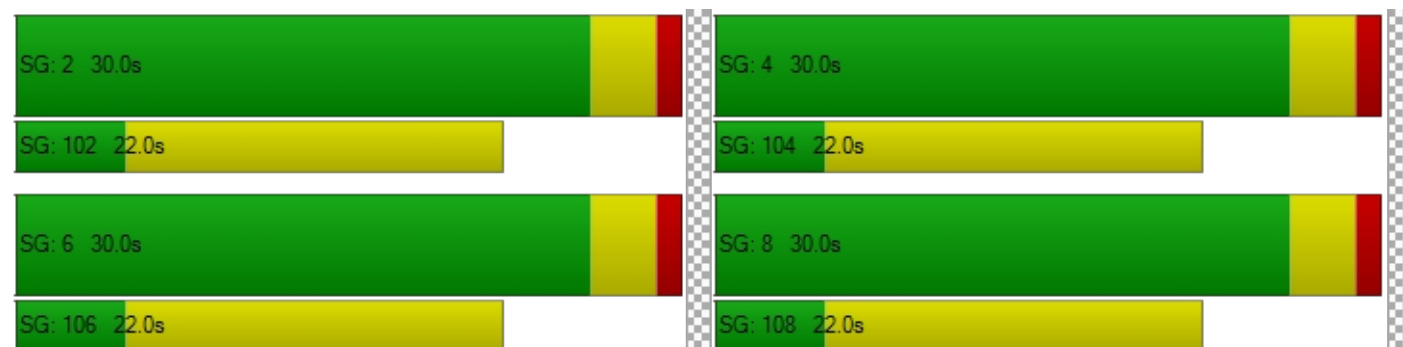
Vehicle Miles Traveled [mph]	6.23	28.07	26.33	5.45	23.26	22.51	15.14	50.58	47.13	5.45	14.27	13.80
Stops [stops/h]	37.23	129.03	122.11	35.73	109.08	106.07	74.13	218.79	204.59	57.68	105.38	102.16
Fuel consumption [US gal/h]	0.69	2.64	2.49	0.65	2.21	2.14	1.48	4.51	4.21	1.02	1.93	1.87
CO [g/h]	48.40	184.69	174.13	45.13	154.46	149.87	103.67	314.97	294.11	71.37	134.76	130.53
NOx [g/h]	9.42	35.93	33.88	8.78	30.05	29.16	20.17	61.28	57.22	13.89	26.22	25.40
VOC [g/h]	11.22	42.80	40.36	10.46	35.80	34.73	24.03	73.00	68.16	16.54	31.23	30.25

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0			9.0			9.0			9.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	21.68			21.68			21.68			21.68		
I_p,int, Pedestrian LOS Score for Intersectio	2.717			2.731			2.628			2.646		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	867			867			867			867		
d_b, Bicycle Delay [s]	9.63			9.63			9.63			9.63		
I_b,int, Bicycle LOS Score for Intersection	2.162			2.095			2.199			1.930		
Bicycle LOS	B			B			B			A		

Sequence

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



Intersection Level Of Service Report
Intersection 2: N Mountain Ave / W Arrow Hwy

Control Type:	Signalized	Delay (sec / veh):	21.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.450

Intersection Setup

Name	North Mountain Avenue			North Mountain Avenue			West Arrow Highway			West Arrow Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	225.00	100.00	100.00	240.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	North Mountain Avenue			North Mountain Avenue			West Arrow Highway			West Arrow Highway		
Base Volume Input [veh/h]	107	926	125	93	892	74	77	439	103	95	292	94
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	1	1	1	0	0	7	0	1	5	1
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	111	964	131	98	929	77	80	464	107	100	309	99
Peak Hour Factor	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	263	36	27	254	21	22	127	29	27	84	27
Total Analysis Volume [veh/h]	121	1052	143	107	1014	84	87	507	117	109	337	108
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
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Flashing Yellow Arrow							No			No		
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Maximum Green [s]	15	25	0	14	24	0	0	29	0	0	29	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	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	1.0	0.0
Walk [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0
Pedestrian Clearance [s]	0.0	17.0	0.0	0.0	17.0	0.0	0.0	24.0	0.0	0.0	24.0	0.0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	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	2.0	0.0
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
Advanced 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
Advanced 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

Phasing & Timing: Pattern 1

Split [s]	18.0	29.0	0.0	17.0	28.0	0.0	0.0	34.0	0.0	0.0	34.0	0.0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	10	0	5	10	0	0	10	0	0	10	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

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	L	C	C	L	C	C
C, Calculated Cycle Length [s]	80	80	80	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	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	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6.9	35.4	35.4	6.1	34.6	34.6	26.5	26.5	26.5	26.5	26.5	26.5
g / C, Green / Cycle	0.09	0.44	0.44	0.08	0.43	0.43	0.33	0.33	0.33	0.33	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.07	0.22	0.22	0.06	0.20	0.20	0.09	0.17	0.17	0.13	0.12	0.12
s, saturation flow rate [veh/h]	1810	3618	1786	1810	3618	1827	960	1900	1779	813	1900	1745
c, Capacity [veh/h]	156	1598	789	139	1564	790	290	630	589	224	630	578
d1, Uniform Delay [s]	35.78	16.01	16.01	36.22	16.14	16.15	27.57	21.53	21.55	32.22	20.35	20.39
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.93	1.12	2.27	8.56	1.00	1.98	0.57	0.64	0.69	1.63	0.36	0.40
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.50	0.50	0.77	0.47	0.47	0.30	0.51	0.51	0.49	0.37	0.37
d, Delay for Lane Group [s/veh]	43.71	17.13	18.28	44.78	17.15	18.13	28.14	22.17	22.24	33.86	20.71	20.79
Lane Group LOS	D	B	B	D	B	B	C	C	C	C	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	2.52	4.78	4.98	2.26	4.34	4.61	1.41	4.58	4.32	2.08	3.20	3.00
50th-Percentile Queue Length [ft/ln]	62.88	119.56	124.40	56.47	108.62	115.21	35.27	114.41	107.89	51.90	80.06	74.96
95th-Percentile Queue Length [veh/ln]	4.53	8.37	8.63	4.07	7.76	8.13	2.54	8.08	7.72	3.74	5.76	5.40
95th-Percentile Queue Length [ft/ln]	113.18	209.22	215.86	101.64	194.09	203.22	63.49	202.12	193.06	93.42	144.12	134.94

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	43.71	17.41	18.28	44.78	17.42	18.13	28.14	22.20	22.24	33.86	20.73	20.79
Movement LOS	D	B	B	D	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	19.92			19.90			22.93			23.33		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	20.98											
Intersection LOS	C											
Intersection V/C	0.450											

Emissions

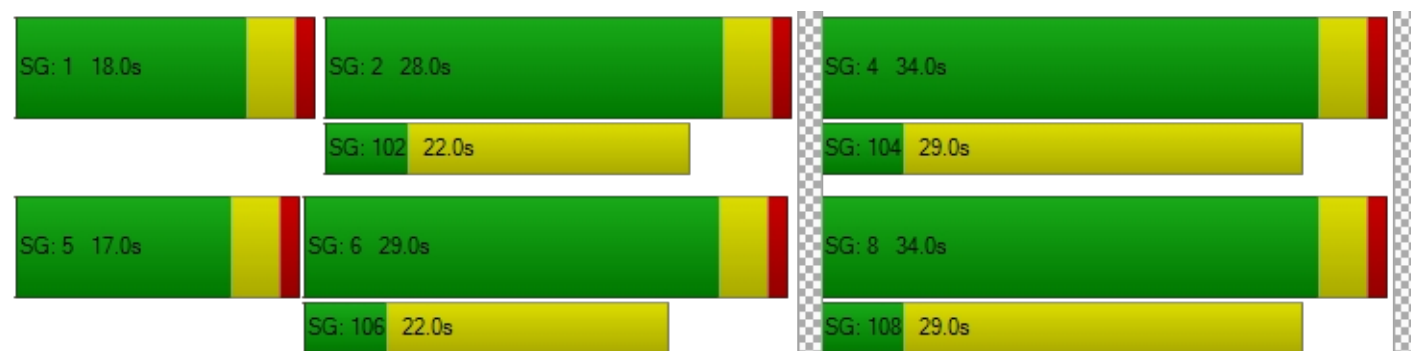
Vehicle Miles Traveled [mph]	9.71	64.16	31.69	8.41	57.30	28.97	6.00	22.16	20.84	42.85	90.52	84.42
Stops [stops/h]	113.18	430.42	223.92	101.64	391.04	207.37	63.49	205.94	194.20	93.42	144.12	134.94
Fuel consumption [US gal/h]	2.82	10.34	5.34	2.53	9.37	4.93	1.34	4.27	4.02	3.03	5.49	5.13
CO [g/h]	196.86	722.74	373.27	176.63	655.05	344.72	93.44	298.32	281.22	211.87	383.95	358.53
NOx [g/h]	38.30	140.62	72.63	34.37	127.45	67.07	18.18	58.04	54.71	41.22	74.70	69.76
VOC [g/h]	45.62	167.50	86.51	40.93	151.81	79.89	21.65	69.14	65.18	49.10	88.98	83.09

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0			9.0			9.0			9.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	31.51			31.51			31.51			31.51		
I_p,int, Pedestrian LOS Score for Intersectio	3.279			3.226			2.621			2.551		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	625			600			750			750		
d_b, Bicycle Delay [s]	18.91			19.60			15.63			15.63		
I_b,int, Bicycle LOS Score for Intersection	2.283			2.222			2.146			2.017		
Bicycle LOS	B			B			B			B		

Sequence

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



OPENING YEAR PLUS PROJECT
TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 1: N San Antonio Ave/W Arrow Hwy

Control Type:	Signalized	Delay (sec / veh):	13.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.402

Intersection Setup

Name	North San Antonio Avenue			North San Antonio Avenue			West Arrow Highway			West Arrow Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	50.00	100.00	100.00	60.00	100.00	100.00	65.00	100.00	100.00	90.00	100.00	115.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	75.00
Speed [mph]	35.00			35.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	North San Antonio Avenue			North San Antonio Avenue			West Arrow Highway			West Arrow Highway		
Base Volume Input [veh/h]	122	498	109	65	546	112	105	337	78	111	546	99
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	2	0	2	0	2	7	13	7	0	8	4
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	130	520	113	70	568	119	116	364	88	115	576	107
Peak Hour Factor	0.9240	0.9240	0.9240	0.9240	0.9240	0.9240	0.9240	0.9240	0.9240	0.9240	0.9240	0.9240
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]	35	141	31	19	154	32	31	98	24	31	156	29
Total Analysis Volume [veh/h]	141	563	122	76	615	129	126	394	95	124	623	116
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
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Flashing Yellow Arrow	No			No			No			No		
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Maximum Green [s]	0	27	0	0	27	0	0	25	0	0	25	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
Walk [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0
Pedestrian Clearance [s]	0.0	17.0	0.0	0.0	17.0	0.0	0.0	17.0	0.0	0.0	17.0	0.0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
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
Advanced 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
Advanced 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

Phasing & Timing: Pattern 1

Split [s]	0.0	30.0	0.0	0.0	30.0	0.0	0.0	30.0	0.0	0.0	30.0	0.0
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	10	0	0	10	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
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	

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	L	C	C	L	C	C
C, Calculated Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	28.1	28.1	28.1	28.1	28.1	28.1	23.9	23.9	23.9	23.9	23.9	23.9
g / C, Green / Cycle	0.47	0.47	0.47	0.47	0.47	0.47	0.40	0.40	0.40	0.40	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.19	0.19	0.19	0.10	0.20	0.20	0.17	0.13	0.13	0.13	0.20	0.20
s, saturation flow rate [veh/h]	728	1900	1784	769	1900	1787	731	1900	1775	922	1900	1798
c, Capacity [veh/h]	344	892	838	367	892	839	271	755	705	365	755	714
d1, Uniform Delay [s]	17.81	10.37	10.37	15.35	10.58	10.58	22.78	12.57	12.58	18.70	13.62	13.63
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.58	1.32	1.40	1.28	1.51	1.61	1.23	0.26	0.28	0.55	0.52	0.55
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.41	0.40	0.40	0.21	0.43	0.43	0.46	0.33	0.34	0.34	0.50	0.50
d, Delay for Lane Group [s/veh]	21.39	11.69	11.78	16.63	12.09	12.19	24.02	12.82	12.86	19.25	14.14	14.18
Lane Group LOS	C	B	B	B	B	B	C	B	B	B	B	B
Critical Lane Group	No	No	No	No	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.82	2.82	2.67	0.82	3.13	2.97	1.66	2.13	2.01	1.36	3.39	3.22
50th-Percentile Queue Length [ft/ln]	45.44	70.43	66.75	20.59	78.28	74.33	41.59	53.21	50.31	34.04	84.82	80.46
95th-Percentile Queue Length [veh/ln]	3.27	5.07	4.81	1.48	5.64	5.35	2.99	3.83	3.62	2.45	6.11	5.79
95th-Percentile Queue Length [ft/ln]	81.79	126.77	120.15	37.07	140.91	133.80	74.86	95.78	90.56	61.27	152.67	144.83

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	21.39	11.72	11.78	16.63	12.12	12.19	24.02	12.84	12.86	19.25	14.16	14.18
Movement LOS	C	B	B	B	B	B	C	B	B	B	B	B
d_A, Approach Delay [s/veh]	13.38			12.55			15.13			14.89		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	13.92											
Intersection LOS	B											
Intersection V/C	0.402											

Emissions

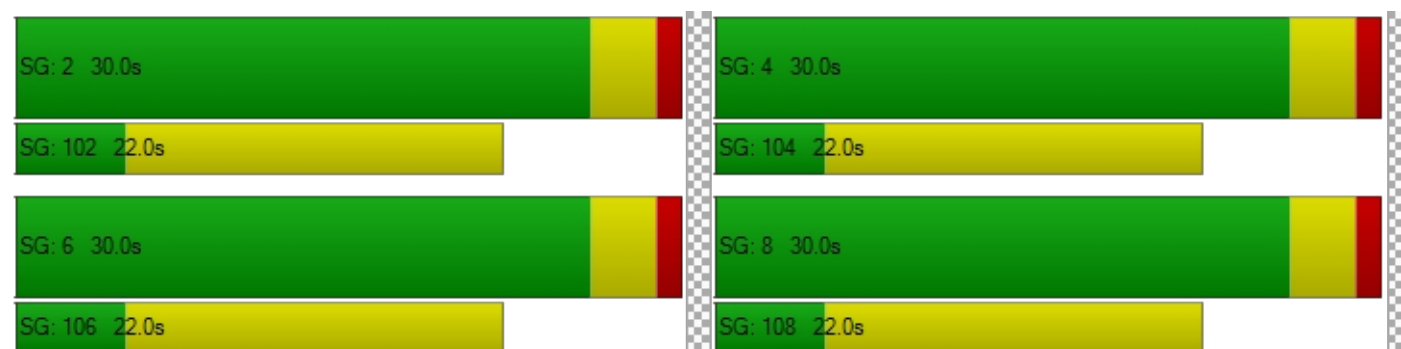
Vehicle Miles Traveled [mph]	11.71	29.32	27.57	6.00	30.23	28.48	18.35	36.66	34.55	9.26	28.34	26.83
Stops [stops/h]	109.05	169.03	160.20	49.42	187.88	178.40	99.81	127.71	120.75	81.69	203.56	193.11
Fuel consumption [US gal/h]	1.88	3.23	3.05	0.86	3.51	3.32	1.92	2.87	2.71	1.45	3.70	3.51
CO [g/h]	131.44	225.67	213.30	59.94	245.19	232.25	134.39	200.74	189.47	101.56	258.90	245.49
NOx [g/h]	25.57	43.91	41.50	11.66	47.70	45.19	26.15	39.06	36.86	19.76	50.37	47.76
VOC [g/h]	30.46	52.30	49.44	13.89	56.82	53.83	31.15	46.52	43.91	23.54	60.00	56.89

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0			9.0			9.0			9.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	21.68			21.68			21.68			21.68		
I_p,int, Pedestrian LOS Score for Intersectio	2.835			2.829			2.775			2.720		
Crosswalk LOS	C			C			C			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	867			867			867			867		
d_b, Bicycle Delay [s]	9.63			9.63			9.63			9.63		
I_b,int, Bicycle LOS Score for Intersection	2.241			2.236			2.067			2.272		
Bicycle LOS	B			B			B			B		

Sequence

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



Intersection Level Of Service Report
Intersection 2: N Mountain Ave / W Arrow Hwy

Control Type:	Signalized	Delay (sec / veh):	20.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.409

Intersection Setup

Name	North Mountain Avenue			North Mountain Avenue			West Arrow Highway			West Arrow Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	225.00	100.00	100.00	240.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	North Mountain Avenue			North Mountain Avenue			West Arrow Highway			West Arrow Highway		
Base Volume Input [veh/h]	99	838	77	114	766	79	72	313	88	98	412	99
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	2	2	0	0	0	6	0	5	15	5
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	103	873	82	121	797	82	75	332	92	107	444	108
Peak Hour Factor	0.9620	0.9620	0.9620	0.9620	0.9620	0.9620	0.9620	0.9620	0.9620	0.9620	0.9620	0.9620
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	227	21	31	207	21	19	86	24	28	115	28
Total Analysis Volume [veh/h]	107	907	85	126	828	85	78	345	96	111	462	112
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
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Flashing Yellow Arrow							No			No		
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Maximum Green [s]	16	23	0	16	23	0	0	29	0	0	29	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	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	1.0	0.0
Walk [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0
Pedestrian Clearance [s]	0.0	17.0	0.0	0.0	17.0	0.0	0.0	24.0	0.0	0.0	24.0	0.0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	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	2.0	0.0
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
Advanced 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
Advanced 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

Phasing & Timing: Pattern 1

Split [s]	20.0	27.0	0.0	20.0	27.0	0.0	0.0	33.0	0.0	0.0	33.0	0.0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	10	0	5	10	0	0	10	0	0	10	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

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	L	C	C	L	C	C
C, Calculated Cycle Length [s]	80	80	80	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	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	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6.2	37.7	37.7	7.2	38.7	38.7	23.1	23.1	23.1	23.1	23.1	23.1
g / C, Green / Cycle	0.08	0.47	0.47	0.09	0.48	0.48	0.29	0.29	0.29	0.29	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.06	0.18	0.18	0.07	0.17	0.17	0.09	0.12	0.12	0.12	0.16	0.16
s, saturation flow rate [veh/h]	1810	3618	1818	1810	3618	1811	852	1900	1761	963	1900	1774
c, Capacity [veh/h]	140	1706	857	163	1752	877	195	548	508	242	548	511
d1, Uniform Delay [s]	36.18	13.66	13.66	35.60	12.79	12.80	33.82	23.01	23.06	32.06	24.00	24.02
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.30	0.66	1.32	7.58	0.54	1.09	1.32	0.50	0.56	1.35	0.83	0.90
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.39	0.39	0.77	0.35	0.35	0.40	0.41	0.42	0.46	0.54	0.54
d, Delay for Lane Group [s/veh]	44.48	14.32	14.99	43.18	13.33	13.89	35.14	23.51	23.62	33.41	24.83	24.93
Lane Group LOS	D	B	B	D	B	B	D	C	C	C	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.25	3.46	3.64	2.60	3.02	3.17	1.46	3.29	3.11	2.08	4.66	4.39
50th-Percentile Queue Length [ft/ln]	56.24	86.43	91.06	64.98	75.44	79.21	36.41	82.32	77.85	51.89	116.44	109.69
95th-Percentile Queue Length [veh/ln]	4.05	6.22	6.56	4.68	5.43	5.70	2.62	5.93	5.61	3.74	8.20	7.82
95th-Percentile Queue Length [ft/ln]	101.24	155.58	163.92	116.97	135.80	142.58	65.54	148.18	140.13	93.41	204.92	195.58

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	44.48	14.50	14.99	43.18	13.48	13.89	35.14	23.55	23.62	33.41	24.86	24.93
Movement LOS	D	B	B	D	B	B	D	C	C	C	C	C
d_A, Approach Delay [s/veh]	17.46			17.12			25.30			26.26		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	20.37											
Intersection LOS	C											
Intersection V/C	0.409											

Emissions

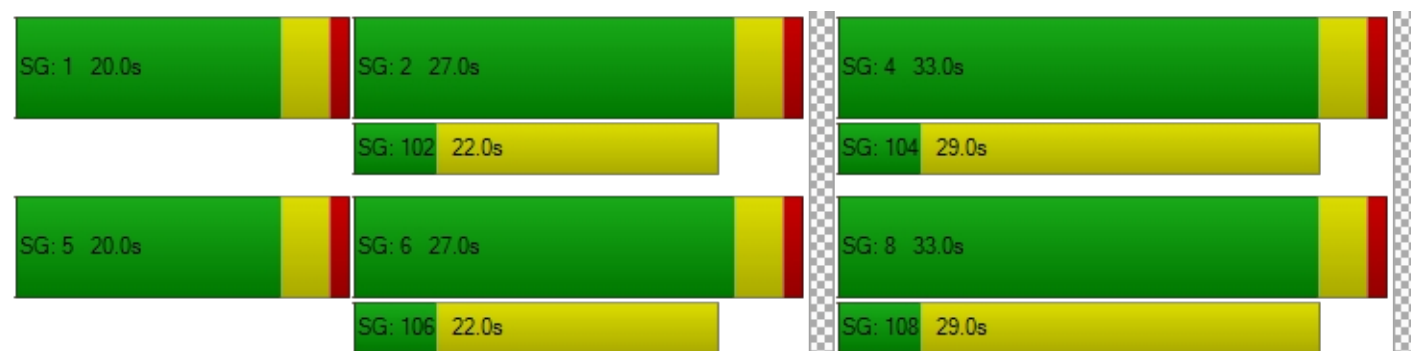
Vehicle Miles Traveled [mph]	8.58	52.91	26.66	9.90	47.74	23.99	5.38	15.65	14.74	43.64	116.37	109.28
Stops [stops/h]	101.24	311.16	163.92	116.97	271.59	142.58	65.54	148.18	140.13	93.41	209.59	197.45
Fuel consumption [US gal/h]	2.52	7.60	3.97	2.90	6.66	3.46	1.39	3.10	2.93	3.07	7.44	7.00
CO [g/h]	176.25	531.59	277.20	202.77	465.69	241.76	97.46	216.90	204.98	214.39	520.35	489.27
NOx [g/h]	34.29	103.43	53.93	39.45	90.61	47.04	18.96	42.20	39.88	41.71	101.24	95.19
VOC [g/h]	40.85	123.20	64.24	46.99	107.93	56.03	22.59	50.27	47.51	49.69	120.60	113.39

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0			9.0			9.0			9.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	31.51			31.51			31.51			31.51		
I_p,int, Pedestrian LOS Score for Intersectio	3.193			3.147			2.600			2.538		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	575			575			725			725		
d_b, Bicycle Delay [s]	20.31			20.31			16.26			16.26		
I_b,int, Bicycle LOS Score for Intersection	2.164			2.131			1.988			2.125		
Bicycle LOS	B			B			A			B		

Sequence

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



Intersection Level Of Service Report

Intersection 3: Project Dwy/W Arrow Hwy

Control Type:	Two-way stop	Delay (sec / veh):	24.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.122

Intersection Setup

Name	Project Driveway		West Arrow Highway		West Arrow Highway	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	75.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	Project Driveway		West Arrow Highway		West Arrow Highway	
Base Volume Input [veh/h]	0	0	0	520	780	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	25	20	8	2	5	8
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]	25	20	8	543	817	8
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	5	2	136	204	2
Total Analysis Volume [veh/h]	25	20	8	543	817	8
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.12	0.03	0.01	0.01	0.01	0.00
d_M, Delay for Movement [s/veh]	24.84	13.34	9.47	0.00	0.00	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.54	0.54	0.03	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	13.58	13.58	0.74	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	19.73		0.14		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	0.68					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 1: N San Antonio Ave/W Arrow Hwy

Control Type:	Signalized	Delay (sec / veh):	13.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.365

Intersection Setup

Name	North San Antonio Avenue			North San Antonio Avenue			West Arrow Highway			West Arrow Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	50.00	100.00	100.00	60.00	100.00	100.00	65.00	100.00	100.00	90.00	100.00	115.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	75.00
Speed [mph]	35.00			35.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	North San Antonio Avenue			North San Antonio Avenue			West Arrow Highway			West Arrow Highway		
Base Volume Input [veh/h]	65	463	111	55	455	54	91	459	122	63	281	41
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	7	2	1	6	2	6	4	15	5	1	17	4
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	75	484	116	63	475	62	99	493	132	67	309	47
Peak Hour Factor	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	132	32	17	130	17	27	135	36	18	84	13
Total Analysis Volume [veh/h]	82	528	127	69	519	68	108	538	144	73	337	51
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Flashing Yellow Arrow	No			No			No			No		
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Maximum Green [s]	0	26	0	0	26	0	0	26	0	0	26	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
Walk [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0
Pedestrian Clearance [s]	0.0	17.0	0.0	0.0	17.0	0.0	0.0	17.0	0.0	0.0	17.0	0.0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
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
Advanced 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
Advanced 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

Phasing & Timing: Pattern 1

Split [s]	0.0	30.0	0.0	0.0	30.0	0.0	0.0	30.0	0.0	0.0	30.0	0.0
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	10	0	0	10	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
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	

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	L	C	C	L	C	C
C, Calculated Cycle Length [s]	60	60	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	31.9	31.9	31.9	31.9	31.9	31.9	20.1	20.1	20.1	20.1	20.1	20.1
g / C, Green / Cycle	0.53	0.53	0.53	0.53	0.53	0.53	0.33	0.33	0.33	0.33	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.10	0.18	0.18	0.09	0.16	0.16	0.11	0.19	0.19	0.09	0.10	0.11
s, saturation flow rate [veh/h]	842	1900	1775	790	1900	1824	1011	1900	1764	771	1900	1814
c, Capacity [veh/h]	475	1011	944	443	1011	971	336	636	590	226	636	607
d1, Uniform Delay [s]	11.10	7.99	7.99	11.50	7.79	7.80	20.79	16.32	16.33	24.67	14.83	14.85
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.79	0.89	0.96	0.75	0.75	0.78	0.55	0.76	0.83	0.82	0.28	0.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.17	0.33	0.34	0.16	0.30	0.30	0.32	0.56	0.56	0.32	0.31	0.31
d, Delay for Lane Group [s/veh]	11.89	8.88	8.95	12.25	8.54	8.58	21.34	17.09	17.16	25.49	15.10	15.14
Lane Group LOS	B	A	A	B	A	A	C	B	B	C	B	B
Critical Lane Group	No	No	Yes	No	No	No	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	0.70	2.18	2.06	0.60	1.87	1.81	1.29	3.70	3.45	0.96	1.81	1.75
50th-Percentile Queue Length [ft/ln]	17.40	54.39	51.46	15.04	46.74	45.32	32.21	92.45	86.34	24.02	45.16	43.79
95th-Percentile Queue Length [veh/ln]	1.25	3.92	3.71	1.08	3.37	3.26	2.32	6.66	6.22	1.73	3.25	3.15
95th-Percentile Queue Length [ft/ln]	31.33	97.90	92.63	27.08	84.14	81.57	57.98	166.42	155.41	43.23	81.28	78.82

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	11.89	8.90	8.95	12.25	8.55	8.58	21.34	17.11	17.16	25.49	15.12	15.14
Movement LOS	B	A	A	B	A	A	C	B	B	C	B	B
d_A, Approach Delay [s/veh]	9.25			8.94			17.70			16.76		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	13.01											
Intersection LOS	B											
Intersection V/C	0.365											

Emissions

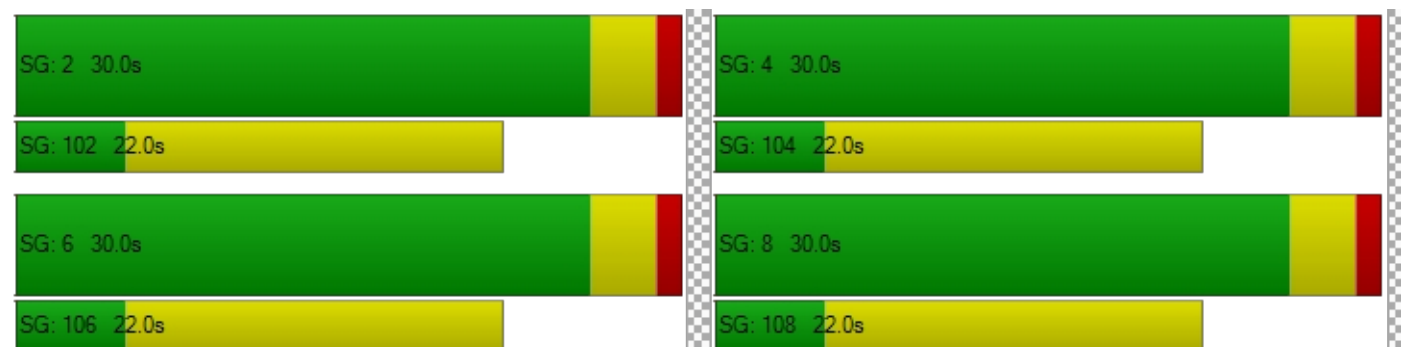
Vehicle Miles Traveled [mph]	6.81	28.08	26.32	5.45	23.58	22.74	15.73	51.44	47.87	5.45	14.73	14.24
Stops [stops/h]	41.77	130.54	123.51	36.11	112.18	108.76	77.31	221.89	207.21	57.64	108.37	105.10
Fuel consumption [US gal/h]	0.77	2.66	2.51	0.65	2.26	2.19	1.54	4.57	4.26	1.02	1.98	1.92
CO [g/h]	53.98	186.13	175.44	45.51	158.11	152.92	107.90	319.58	298.02	71.29	138.59	134.28
NOx [g/h]	10.50	36.21	34.13	8.85	30.76	29.75	20.99	62.18	57.98	13.87	26.96	26.13
VOC [g/h]	12.51	43.14	40.66	10.55	36.64	35.44	25.01	74.07	69.07	16.52	32.12	31.12

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0			9.0			9.0			9.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	21.68			21.68			21.68			21.68		
I_p,int, Pedestrian LOS Score for Intersectio	2.719			2.740			2.646			2.651		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	867			867			867			867		
d_b, Bicycle Delay [s]	9.63			9.63			9.63			9.63		
I_b,int, Bicycle LOS Score for Intersection	2.168			2.101			2.211			1.940		
Bicycle LOS	B			B			B			A		

Sequence

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



Intersection Level Of Service Report
Intersection 2: N Mountain Ave / W Arrow Hwy

Control Type:	Signalized	Delay (sec / veh):	21.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.457

Intersection Setup

Name	North Mountain Avenue			North Mountain Avenue			West Arrow Highway			West Arrow Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	225.00	100.00	100.00	240.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	North Mountain Avenue			North Mountain Avenue			West Arrow Highway			West Arrow Highway		
Base Volume Input [veh/h]	107	926	125	93	892	74	77	439	103	95	292	94
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	5	5	1	0	0	18	0	4	13	4
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	111	964	135	102	929	77	80	475	107	103	317	102
Peak Hour Factor	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	263	37	28	254	21	22	130	29	28	87	28
Total Analysis Volume [veh/h]	121	1052	147	111	1014	84	87	519	117	112	346	111
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
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Flashing Yellow Arrow							No			No		
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Maximum Green [s]	15	25	0	14	24	0	0	29	0	0	29	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	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	1.0	0.0
Walk [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0
Pedestrian Clearance [s]	0.0	17.0	0.0	0.0	17.0	0.0	0.0	24.0	0.0	0.0	24.0	0.0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	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	2.0	0.0
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
Advanced 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
Advanced 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

Phasing & Timing: Pattern 1

Split [s]	18.0	29.0	0.0	17.0	28.0	0.0	0.0	34.0	0.0	0.0	34.0	0.0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	10	0	5	10	0	0	10	0	0	10	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

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	L	C	C	L	C	C
C, Calculated Cycle Length [s]	80	80	80	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	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	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6.9	34.7	34.7	6.4	34.2	34.2	26.9	26.9	26.9	26.9	26.9	26.9
g / C, Green / Cycle	0.09	0.43	0.43	0.08	0.43	0.43	0.34	0.34	0.34	0.34	0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.07	0.22	0.22	0.06	0.20	0.20	0.09	0.17	0.17	0.14	0.12	0.13
s, saturation flow rate [veh/h]	1810	3618	1783	1810	3618	1827	949	1900	1781	804	1900	1745
c, Capacity [veh/h]	156	1567	772	144	1543	779	292	641	601	226	641	588
d1, Uniform Delay [s]	35.79	16.52	16.52	36.10	16.48	16.48	27.29	21.23	21.25	32.06	20.07	20.11
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.95	1.20	2.42	8.40	1.04	2.06	0.56	0.63	0.68	1.67	0.35	0.40
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.51	0.51	0.77	0.47	0.47	0.30	0.51	0.51	0.49	0.37	0.37
d, Delay for Lane Group [s/veh]	43.74	17.72	18.94	44.50	17.52	18.54	27.85	21.87	21.93	33.73	20.43	20.51
Lane Group LOS	D	B	B	D	B	B	C	C	C	C	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	2.52	4.91	5.11	2.33	4.41	4.68	1.40	4.63	4.37	2.13	3.27	3.06
50th-Percentile Queue Length [ft/ln]	62.90	122.85	127.76	58.33	110.23	116.97	35.07	115.67	109.15	53.32	81.68	76.38
95th-Percentile Queue Length [veh/ln]	4.53	8.55	8.82	4.20	7.85	8.23	2.52	8.15	7.79	3.84	5.88	5.50
95th-Percentile Queue Length [ft/ln]	113.22	213.74	220.45	105.00	196.33	205.65	63.12	203.87	194.82	95.97	147.03	137.49

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	43.74	18.01	18.94	44.50	17.81	18.54	27.85	21.89	21.93	33.73	20.45	20.51
Movement LOS	D	B	B	D	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	20.47			20.31			22.61			23.07		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	21.21											
Intersection LOS	C											
Intersection V/C	0.457											

Emissions

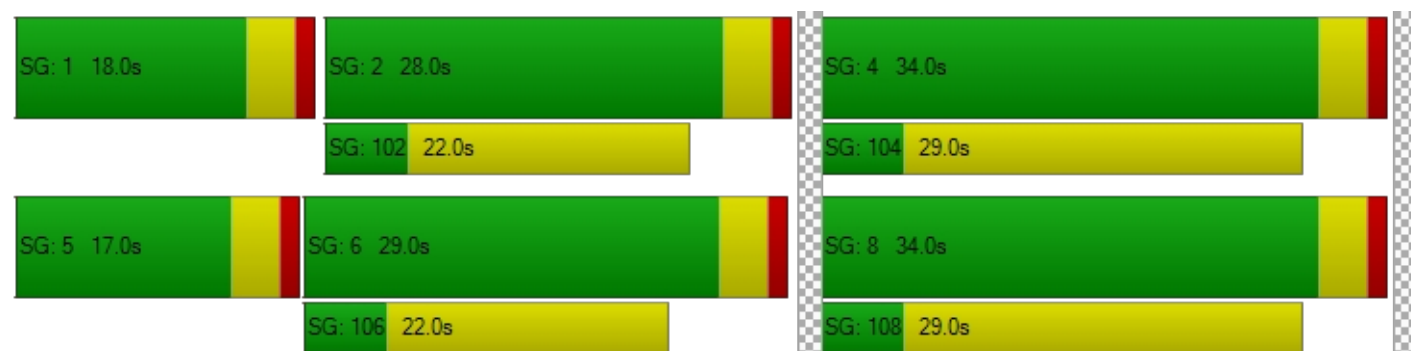
Vehicle Miles Traveled [mph]	9.71	64.41	31.77	8.72	57.31	28.97	6.00	22.58	21.25	44.03	93.01	86.64
Stops [stops/h]	113.22	442.26	229.97	105.00	396.84	210.54	63.12	208.21	196.46	95.97	147.03	137.49
Fuel consumption [US gal/h]	2.82	10.60	5.48	2.61	9.50	5.00	1.33	4.31	4.07	3.11	5.62	5.25
CO [g/h]	196.94	741.08	382.71	182.41	663.97	349.62	92.82	301.42	284.32	217.49	393.17	366.69
NOx [g/h]	38.32	144.19	74.46	35.49	129.18	68.02	18.06	58.64	55.32	42.32	76.50	71.35
VOC [g/h]	45.64	171.75	88.70	42.27	153.88	81.03	21.51	69.86	65.89	50.40	91.12	84.98

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0			9.0			9.0			9.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	31.51			31.51			31.51			31.51		
I_p,int, Pedestrian LOS Score for Intersectio	3.284			3.227			2.627			2.558		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	625			600			750			750		
d_b, Bicycle Delay [s]	18.91			19.60			15.63			15.63		
I_b,int, Bicycle LOS Score for Intersection	2.286			2.225			2.156			2.029		
Bicycle LOS	B			B			B			B		

Sequence

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



Intersection Level Of Service Report

Intersection 3: Project Dwy/W Arrow Hwy

Control Type:	Two-way stop	Delay (sec / veh):	18.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.055

Intersection Setup

Name	Project Driveway		West Arrow Highway		West Arrow Highway	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	75.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	Project Driveway		West Arrow Highway		West Arrow Highway	
Base Volume Input [veh/h]	0	0	0	672	481	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0404	1.0404	1.0404	1.0404	1.0404	1.0404
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	15	14	19	9	7	23
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]	15	14	19	708	507	23
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	4	5	177	127	6
Total Analysis Volume [veh/h]	15	14	19	708	507	23
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.02	0.02	0.01	0.01	0.00
d_M, Delay for Movement [s/veh]	18.94	10.60	8.50	0.00	0.00	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.24	0.24	0.06	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	5.96	5.96	1.38	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	14.91		0.22		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.46					
Intersection LOS	C					