

ZON25-06 TIA Sarival Logistics_Stamped.pdf Markup Summary

rfastje (8)

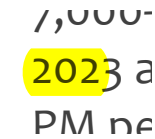


Subject: Stamp
Status:
Author: rfastje
Page Label: 43



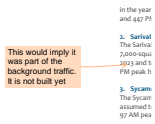
Subject: Highlight
Status:
Author: rfastje
Page Label: 50

Three (3) full access points are proposed along Sarival Avenue to serve the proposed development



Subject: Highlight
Status:
Author: rfastje
Page Label: 66

202



Subject: Callout
Status:
Author: rfastje
Page Label: 66

This would imply it was part of the background traffic. It is not built yet



Subject: Highlight
Status:
Author: rfastje
Page Label: 68

GLENDALE – SARIVAL-OLIVE TRAFFIC SIGNAL

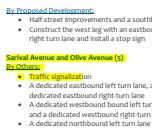
• City of Glendale Project #: CIPST24033 – Add intersection signalization at Sarival Ave and Olive Ave



Subject: Highlight
Status:
Author: rfastje
Page Label: 68

GLENDALE – SARIVAL-PEORIA INTERSECTION IMPROVEMENT

• City of Glendale Project #: CIPST24034 – Add intersection signalization at Sarival Ave and Peoria Ave. P



Subject: Highlight
Status:
Author: rfastje
Page Label: 69

Sarival Avenue and Olive Avenue (5)
By Others:
• Traffic signalizat



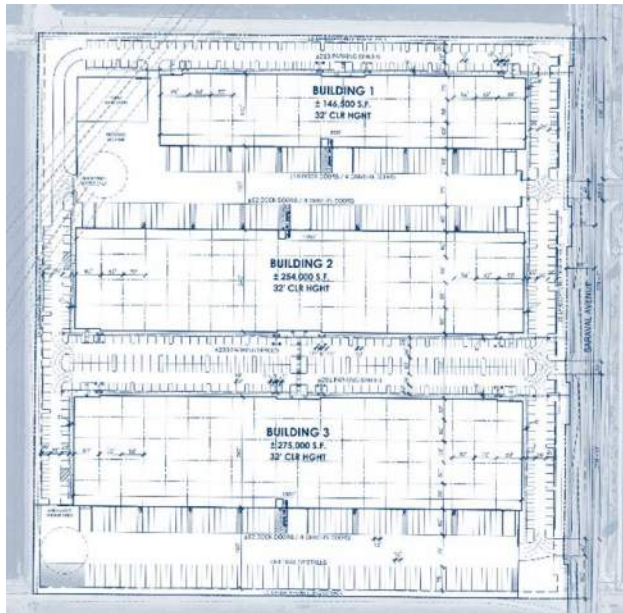
Subject: Highlight
Status:
Author: rfastje
Page Label: 85

RECOMMENDATIONS



Sarival Logistics

Traffic Impact Analysis



APPROVED
Rebecca Fastje
05/19/2025

Prepared for:



Evergreen-Sarival & Peoria, LLC
2390 E. Camelback Road, Suite 410
Phoenix, AZ 85016



Prepared by:



Lokahi, LLC
10555 N. 114th Street, Suite 105
Scottsdale, AZ 85259

Project Number: 25.5783
April 3, 2025

Table of Contents:

1. Introduction and Executive Summary	1
1.1. Purpose of Report and Study Objectives	1
1.2. Executive Summary.....	2
1.2.1. Existing Capacity Analysis.....	2
1.2.2. Trip Generation	2
1.2.3. Future Conditions	2
1.2.4. Recommendations.....	3
2. Proposed Development	4
2.1.1. Site Access.....	4
3. Existing Conditions.....	7
3.1. Study Area Land Use.....	7
3.2. Study Roadway Segments.....	7
3.3. Study Intersections	8
3.4. Site Accessibility	9
3.4.1. Roadway System.....	9
3.4.2. Pedestrian Facilities	9
3.4.3. Bicycle Facilities.....	9
3.4.4. Transit Facilities.....	9
3.5. Existing Traffic Counts	11
3.6. Existing Capacity Analysis.....	13
4. Projected Traffic.....	17
4.1. Trip Generation.....	17
4.2. Trip Distribution and Assignment	17
5. Future Conditions (Year 2030 – Opening Year)	20
5.1. Year 2030 Background Traffic Volumes.....	20
5.1.1. Annual Growth Rate	20
5.1.2. Surrounding Area Development.....	20
5.2. Year 2030 Build Traffic Volumes.....	22
5.3. Year 2030 Roadway Network.....	22
5.4. Year 2030 Capacity Analysis	24
6. Future Conditions (Year 2035 – 5 Years After the Opening Year)	32
6.1. Year 2035 Background Traffic Volumes	32
6.2. Year 2035 Build Traffic Volumes.....	32
6.3. Year 2035 Roadway Improvements	32
6.4. Year 2035 Capacity Analysis.....	32
7. Queue Analysis	38
8. Recommendations	39

Figures:

Figure 1 – Vicinity Map	5
Figure 2 – Site Plan	6
Figure 3 – Study Area	10
Figure 4 – Existing Traffic Volumes	12
Figure 5 – Existing Capacity Analysis	16
Figure 6 – Trip Distribution	18
Figure 7 – Site Traffic Volumes	19
Figure 8 – Surrounding Area Development	27
Figure 9 – Surrounding Area Development Traffic Volumes	28
Figure 10 – Year 2030 Background Traffic Volumes	29
Figure 11 – Year 2030 Build Traffic Volumes	30
Figure 12 – Year 2030 Build Capacity Analysis	31
Figure 13 – Year 2035 Background Traffic Volumes	35
Figure 14 – Year 2035 Build Traffic Volumes	36
Figure 15 – Year 2035 Build Capacity Analysis	37

Tables:

Table 1 – Level of Service Criteria	13
Table 2 – Existing Peak Hour LOS and Delay (1 of 2)	14
Table 3 – Existing Peak Hour LOS and Delay (2 of 2)	15
Table 4 – Trip Generation (Proposed Development)	17
Table 5 - Year 2030 Peak Hour LOS and Delay (1 of 2)	25
Table 6 - Year 2030 Peak Hour LOS and Delay (2 of 2)	26
Table 7 - Year 2035 Peak Hour LOS and Delay (1 of 2)	33
Table 8 - Year 2035 Peak Hour LOS and Delay (2 of 2)	34
Table 9 – Year 2035 Queuing Analysis	38

Appendices:

Appendix A – Proposed Site Plan.....	A
Appendix B – Traffic Count Data.....	B
Appendix C – Existing Capacity Analysis.....	C
Appendix D – Trip Generation.....	D
Appendix E – MAG Socioeconomic Projections.....	E
Appendix F – Surrounding Area Development TIAs.....	F
Appendix G – Year 2030 No Build Capacity Analysis.....	G
Appendix H – Year 2030 Build Capacity Analysis.....	H
Appendix I – Year 2035 No Build Capacity Analysis.....	I
Appendix J – Year 2035 Build Capacity Analysis.....	J

1. INTRODUCTION AND EXECUTIVE SUMMARY

1.1. PURPOSE OF REPORT AND STUDY OBJECTIVES

Lōkahi, LLC (Lōkahi) was retained by Evergreen-Sarival & Peoria, LLC to complete a Traffic Impact Analysis (TIA) for the proposed Sarival Logistics development, located near the southwest corner of Sarival Avenue and Peoria Avenue. The site is located within Maricopa County unincorporated area and adjacent to City of Glendale city limits. The TIA will be prepared for submittal to the City of Glendale, the City of Surprise, the Maricopa County Department of Transportation (MCDOT), and the Arizona Department of Transportation (ADOT).

The proposed Sarival Logistics development will be comprised of three (3) industrial buildings totaling 675,500 square feet. The opening year is anticipated in 2030.

The objective of this Traffic Impact Analysis is to analyze the traffic related impacts of the proposed development to the adjacent roadway network. See [Figure 1](#) for the vicinity map.

This Traffic Impact Study includes:

- Level of service analysis for the existing conditions weekday AM and PM peak hours
- Trip generation for the proposed development
- Level of service analysis for the opening year (2030) weekday AM and PM peak hours
- Level of service analysis for 5 years after the opening year (2035) weekday AM and PM peak hours
- Queue analysis

The following are the study area intersections included in this study:

1. Peoria Avenue and Loop 303 Southbound Ramp
2. Peoria Avenue and Loop 303 Northbound Ramp
3. Sarival Avenue and Peoria Avenue
4. Sarival Avenue and Brown Street/Driveway A
5. Sarival Avenue and Olive Avenue
6. Sarival Avenue and Northern Parkway Westbound Ramp
7. Sarival Avenue and Northern Parkway Eastbound Ramp
8. Sarival Avenue and Driveway B
9. Sarival Avenue and Driveway C

1.2. EXECUTIVE SUMMARY

This report presents the analyses and results of a Traffic Impact Analysis prepared for the proposed Sarival Logistics development, located on the west side of Sarival Avenue approximately 1,300 feet south of Peoria Avenue. The site is located within Maricopa County unincorporated area and adjacent to City of Glendale city limits. The proposed development will be comprised of three (3) buildings totaling 675,000 square feet. The opening year is anticipated in 2030.

1.2.1. EXISTING CAPACITY ANALYSIS

The weekday AM and PM peak hour existing capacity analyses were completed for the study intersections as a baseline analysis of current operations. The existing LOS results are shown in **Table 2** and **Table 3**.

1.2.2. TRIP GENERATION

The trip generation for the proposed development was calculated using the Institute of Transportation Engineers (ITE) publication *Trip Generation, 11th Edition*. The proposed Sarival Logistics is anticipated to generate a total of 2,277 weekday trips, with 230 trips occurring during the AM peak hour and 230 trips occurring during the PM peak hour.

Land Use	ITE Code	Qty	Unit	Weekday	AM Peak Hour		PM Peak Hour			
				Total	Total	In	Out	Total	In	Out
Industrial Park	130	675.5	1000 Sq. Ft. GFA	2,277	230	186	44	230	51	179

1.2.3. FUTURE CONDITIONS

Future capacity analyses were completed with and without the buildout of the proposed Sarival Logistics development for the opening year and 5 years after the opening year. The year 2030 and 2035 background traffic volumes include a 3.50% annual growth rate based on Maricopa Associations of Governments (MAG) socioeconomic projections, as well as the traffic volumes generated by known surrounding developments.

YEAR 2030 – OPENING YEAR

The year 2030 build capacity analysis results in all movements operating at a LOS D or better, or at the same capacity as the year 2030 no build conditions. A comparison of the year 2030 build and no build weekday AM and PM peak hour LOS and delay results are shown in **Table 5** and **Table 6**.

YEAR 2035 – 5 YEARS AFTER OPENING YEAR

The year 2035 build capacity analysis results in all movements operating at a LOS D or better, or at the same capacity as the year 2035 no build conditions. A comparison of the year 2035 build and no build weekday AM and PM peak hour LOS and delay results are shown in **Table 7** and **Table 8**.

1.2.4. RECOMMENDATIONS

The recommendations with the buildout of the proposed Sarival Logistics development include:

Half-Street Improvements Adjacent to the Project

- The developer will be responsible for the half street improvements adjacent to the project frontage along Sarival Avenue.

Sarival Avenue and Driveway A (4)

- Construct full access stop-controlled west leg of the existing Sarival Avenue and Brown Street intersection.
- Construct a 150-foot southbound right-turn lane.

Sarival Avenue and Driveway B (8)

- Construct full access stop-controlled driveway with a 150-foot southbound right-turn lane.

Sarival Avenue and Driveway C (9)

- Construct full access stop-controlled driveway with a 150-foot southbound right-turn lane.

2. PROPOSED DEVELOPMENT

The proposed Sarival Logistics development is located west of Sarival Avenue, approximately 1,300 feet south of Peoria Avenue. The site is located within Maricopa County unincorporated area and adjacent to City of Glendale city limits. See **Figure 1** for a vicinity map.

The proposed Sarival Logistics development will be comprised of three (3) industrial buildings totaling 675,500 square feet. The opening year is anticipated in 2030. The proposed building areas are as follows:

Building 1	146,500 sq. ft.
Building 2	254,000 sq. ft.
Building 3	275,000 sq. ft.

2.1.1. SITE ACCESS

Three (3) full access points are proposed along Sarival Avenue to serve the proposed development. Each driveway will include a dedicated right-turn lane. Left turns will be accommodated through the two-way left-turn lane along Sarival Avenue.

Sarival Avenue and Brown Street/Driveway A (4) is located approximately 1,700 feet south of Peoria Avenue at the existing Sarival Avenue and Brown Street intersection. Driveway A is a proposed full-access driveway that will serve as the west leg, converting the current T-intersection into a four-way, two-way stop-controlled intersection.

Sarival Avenue and Driveway B (8) is located approximately 420 feet south of Brown Street. Driveway B is a proposed full access stop-controlled driveway.

Sarival Avenue and Driveway C (9) is located approximately 420 feet south of Driveway B. Driveway C is a proposed full access stop-controlled driveway.

See **Figure 2** and **Appendix A** for the proposed site plan.

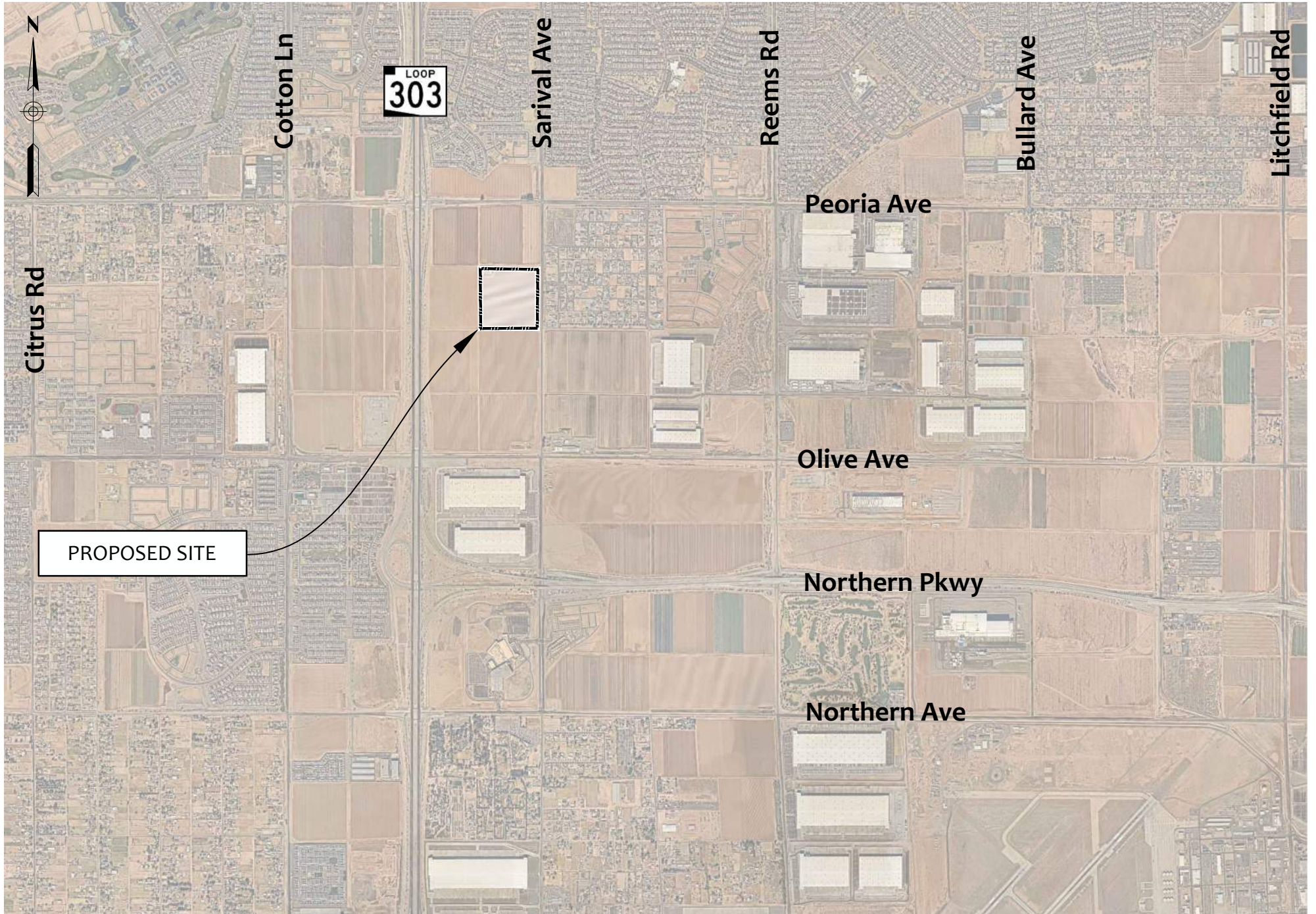


FIGURE 1 | VICINITY MAP

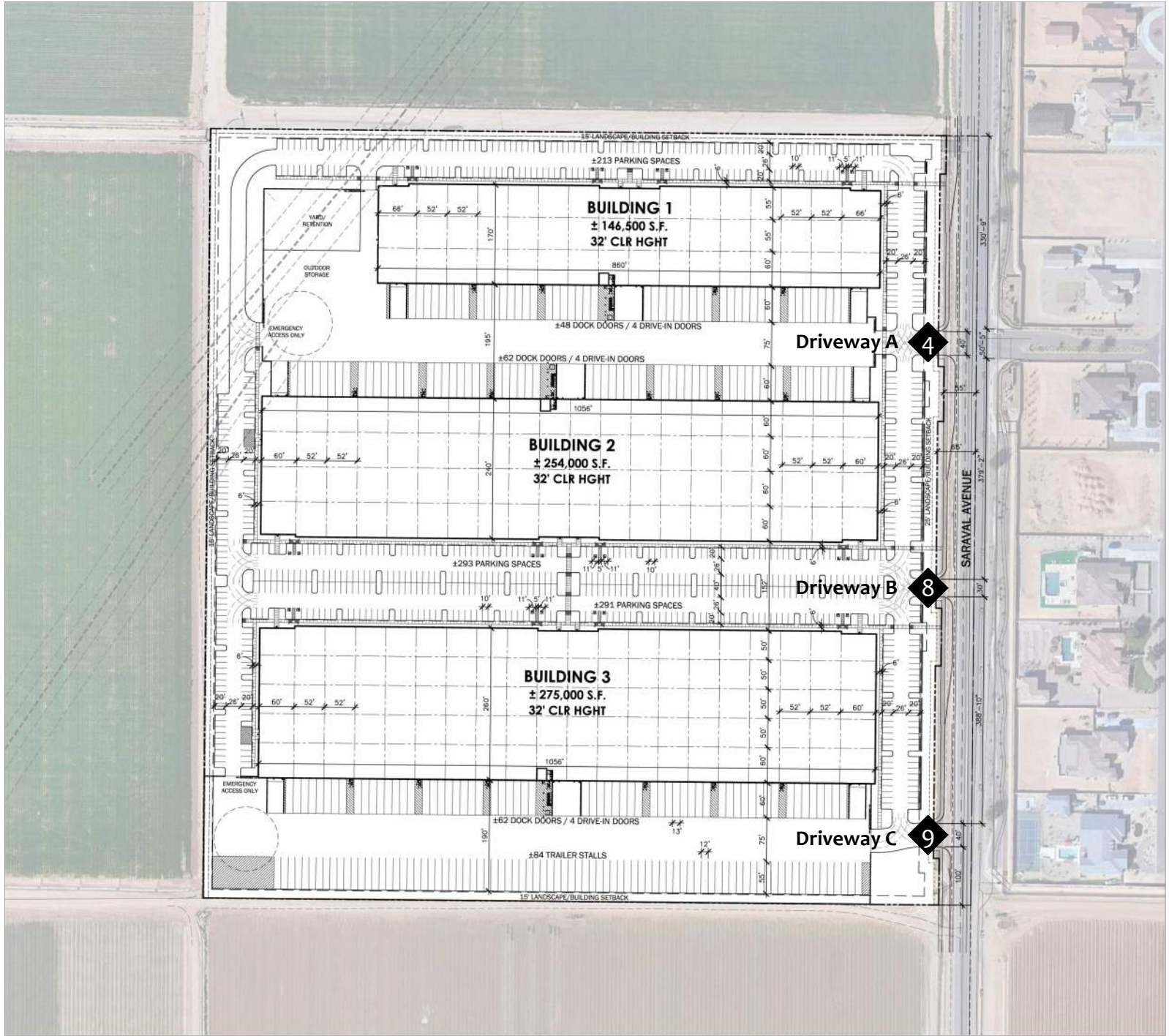


FIGURE 2 | SITE PLAN

3. EXISTING CONDITIONS

3.1. STUDY AREA LAND USE

The proposed approximate 38-acre site is located on one agricultural parcel (Assessor Parcel Number: 501-06-002C) within Maricopa County unincorporated area and adjacent to City of Glendale city limits. The existing zoning is Rural-43 (RU-43) according to the Maricopa County *What's My Zoning* web tool. The study area generally consists of agricultural, industrial, and residential land uses. The site is bordered directly by agricultural land to the north, south, and west with Sarival Avenue and residential land to the east.

The study area includes the following municipalities: City of Glendale, the City of Surprise, Maricopa Department of Transportation (MCDOT) and the Arizona Department of Transportation (ADOT). **Sections 3.2** and **3.3** provide detailed descriptions of the study roadway segments and intersections. See **Figure 3** for the study area.

3.2. STUDY ROADWAY SEGMENTS

Loop 303 is a north-south freeway that serves the western and northern areas in the Phoenix metropolitan area. Loop 303 provides three (3) travel lanes in each direction. There is a posted speed limit of 65 miles per hour (mph).

Sarival Avenue is a north-south roadway that provides two (2) northbound travel lanes and one (1) southbound travel lane with a two-way left turn lane (TWLTL) north of Brown Street. South of Brown Street to Olive Avenue, one (1) travel lane is provided in each direction. South of Olive Avenue, one (1) northbound travel lane and three (3) southbound travel lanes are provided. The *Envision Glendale 2040 General Plan*, dated September 2016, classifies Sarival Avenue as an arterial roadway. All Traffic Data Services, LLC collected 24-hour traffic counts on Wednesday, February 26, 2025, along Sarival Avenue, south of Brown Street. The recorded counts indicate an average daily traffic (ADT) of 5,510 vehicles per day (vpd). There is a posted speed limit of 45 mph.

Peoria Avenue is an east-west roadway that provides one (1) travel lane in each direction of west of Sarival Avenue. East of Sarival Avenue, two (2) travel lanes and a bike lane are provided in each direction with a two-way left-turn lane. The *Envision Glendale 2040 General Plan* classifies Peoria Avenue as an arterial. The *Surprise 2040 General Plan*, dated July 2024, classifies Peoria Avenue as a major arterial. All Traffic Data Services, LLC collected 24-hour traffic counts on Wednesday, February 26, 2025, along Peoria Avenue, west of Sarival Avenue. The recorded counts indicate an ADT of 10,840 vpd. There is a posted speed limit of 45 mph.

Olive Avenue is an east-west roadway that provides one (1) travel lane in each direction. The *Envision Glendale 2040 General Plan* classifies Olive Avenue as an arterial roadway. The *MCDOT Major Streets and Routes Plan*, dated June 2011, classifies Olive Avenue as a principal arterial. All Traffic Data Services, LLC collected 24-hour traffic counts on Wednesday, February 26, 2025, along Olive Avenue, west of Sarival Avenue. The recorded counts indicate an ADT of 9,118 vpd. There is a posted speed limit of 45 mph.

3.3. STUDY INTERSECTIONS

Peoria Avenue and Loop 303 Southbound Ramps (1) is the intersection at the southbound ramps of the signalized diamond interchange. The southbound approach provides one (1) dedicated left turn lane, one (1) through lane, and one (1) dedicated right turn lane. The eastbound approach provides one (1) left turn trap lane, one (1) through lane and one (1) dedicated right turn lane. The westbound approach provides one (1) left turn lane and one (1) through lane.

Peoria Avenue and State Route 303L Northbound Ramps (2) is the intersection at the northbound ramps of the signalized diamond interchange. The northbound approach provides one (1) dedicated left turn lane, one (1) through lane, and one (1) dedicated right turn lane. The eastbound approach provides one (1) dedicated left turn lane and one (1) through lane. The westbound approach provides one (1) left turn trap lane, one (1) through lane, and one (1) dedicated right turn lane.

Sarival Avenue and Peoria Avenue (3) currently operates as an all-way stop-controlled intersection. The northbound approach provides one (1) dedicated left turn lane, one (1) through lane, and one (1) shared through-right lane. The southbound and eastbound approaches each provide one (1) dedicated left turn lane and one (1) shared through-right lane. The westbound approach provides one (1) dedicated left turn lane, one (1) through lane, and one (1) right turn trap lane.

Sarival Avenue and Brown Street (4) operates as a one-way stop-controlled T-intersection, with the stop control on the westbound approach. The northbound approach provides one (1) through lane and (1) shared through-right lane. The southbound approach provides one (1) dedicated left turn lane (via the TWLTL) and one (1) through lane. The westbound approach does not provide pavement markings; however, the available pavement width allows for one (1) dedicated left turn lane and one (1) dedicated right turn lane.

Sarival Avenue and Olive Avenue (5) currently operates as an all-way stop-controlled intersection. Each approach provides one (1) shared left-through-right turn lane. A railroad crossing exists approximately 50 feet north of the intersection.

Sarival Avenue and Northern Parkway Westbound Ramp (6) is the intersection at the westbound ramp of the signalized half-diamond interchange. The northbound approach provides one (1) through lane. The southbound approach provides two (2) left turn trap lanes and one (1) through lane. The westbound approach provides two (2) dedicated left turn lanes and one (1) dedicated right turn lane.

Sarival Avenue and Northern Parkway Eastbound Ramp (7) is the intersection at the eastbound ramp of the signalized half-diamond interchange. The northbound approach provides one (1) through lane and one (1) dedicated right turn lane. The southbound approach provides two (2) dedicated left turn lanes and two (2) through lanes.

3.4.SITE ACCESSIBILITY

3.4.1. ROADWAY SYSTEM

Loop 303 is a major freeway in the Phoenix metropolitan area which connects Interstate 10 (I-10) in Goodyear to Interstate 17 (I-17) near north Phoenix. Loop 303 is accessible approximately one-half mile northwest of the site at the Peoria Avenue traffic interchange. Northern Parkway is a major east-west limited access parkway with grade separated interchanges in the West Valley from US-60 (Grand Avenue) to Loop 303. Northern Parkway is accessible approximately one mile south of the site at the Sarival Avenue traffic interchange. The City of Glendale and Surprise street networks are generally build as grid systems with arterial roadways at one-mile intervals, complemented by collector streets.

3.4.2. PEDESTRIAN FACILITIES

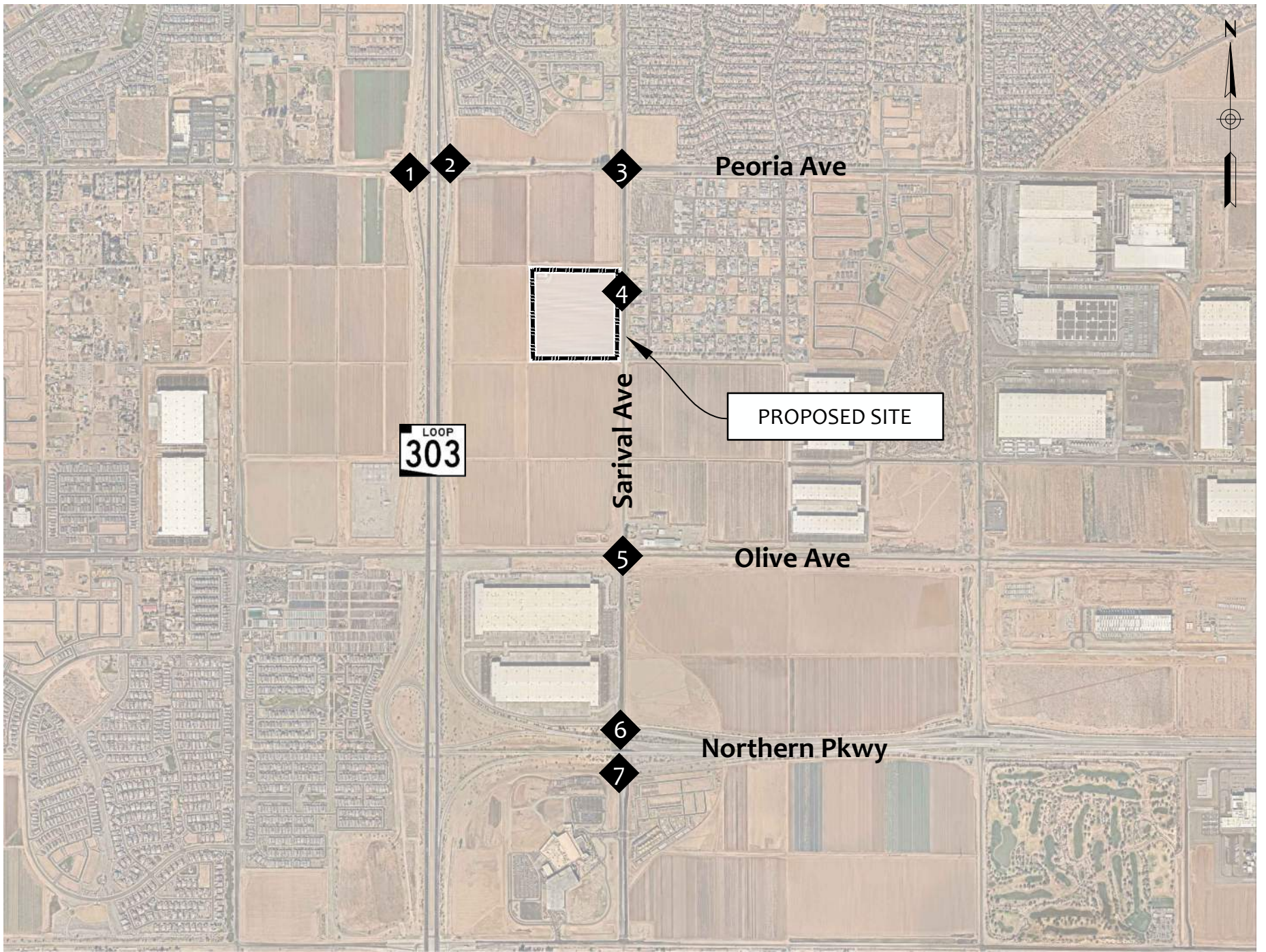
Pedestrian facilities and connectivity within the study area are limited. Sidewalks are provided along the east side of Sarival Avenue for an approximate half mile south of Peoria Avenue , along the west side of Sarival Avenue from Olive Avenue to Northern Parkway and at the Northern Parkway traffic interchange. Peoria Avenue provides sidewalks on both sides of the roadway east of Sarival Avenue and at the Loop 303 traffic interchange.

3.4.3. BICYCLE FACILITIES

Marked bike lanes are provided on both sides of Peoria Avenue, east of Sarival Avenue.

3.4.4. TRANSIT FACILITIES

There are no transit facilities operating within the study area.



LEGEND

◆ Intersection

FIGURE 3 | STUDY AREA

3.5. EXISTING TRAFFIC COUNTS

A local data collection firm, All Traffic Data Services, LCC, was utilized to collect traffic counts. On Wednesday, February 26, 2025, 4 hours of typical weekday turning movement counts were obtained during the AM (7:00 to 9:00 am) and PM (4:00 to 6:00 pm) peak hours at the following intersections:

1. Peoria Avenue and Loop 303 Southbound Ramp
2. Peoria Avenue and Loop 303 Northbound Ramp
3. Sarival Avenue and Peoria Avenue
4. Sarival Avenue and Brown Street
5. Sarival Avenue and Olive Avenue
6. Sarival Avenue and Northern Parkway Westbound Ramp
7. Sarival Avenue and Northern Parkway Eastbound Ramp

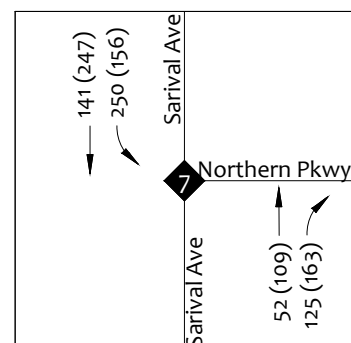
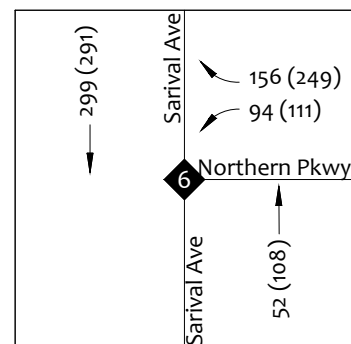
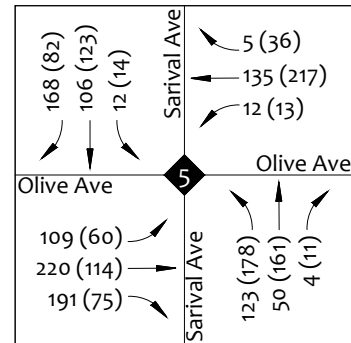
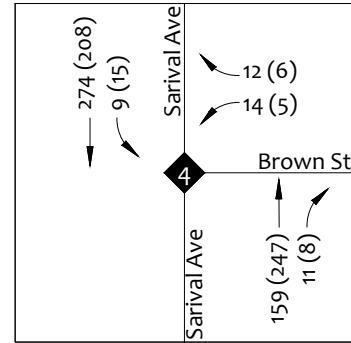
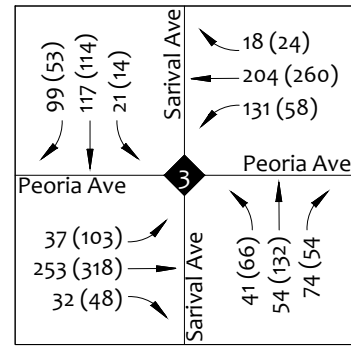
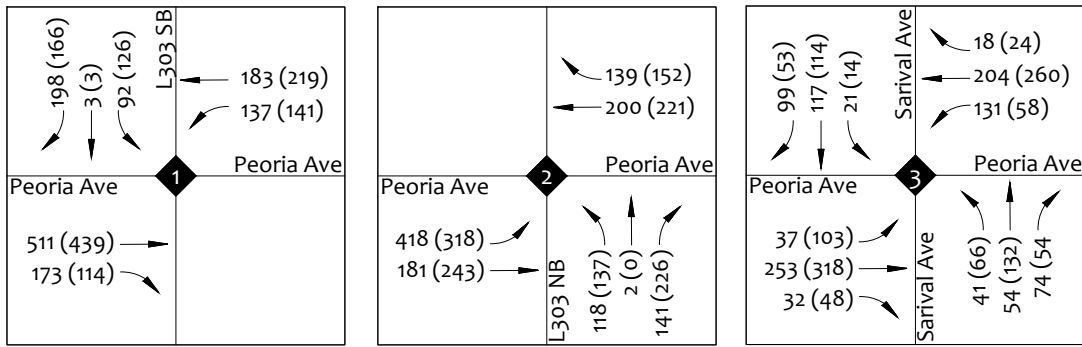
The turning movement counts were then analyzed for the highest 1-hour within each time period. The following peak hours were analyzed throughout this study:

- AM Peak Hour 7:15 am – 8:15 am
- PM Peak Hour 4:15 pm – 5:15 pm

Additionally, on February 26, 2025, typical weekday bi-directional tube counts for 24-hours in 15-minute intervals were collected along the following roadway segments:

- Peoria Avenue, west of Sarival Avenue
- Sarival Avenue, south of Brown Street
- Olive Avenue, west of Sarival Avenue

See [Appendix B](#) for detailed traffic count data. See [Figure 4](#) for the existing AM and PM peak hour traffic volumes.



LEGEND

AM (PM) Peak Hour Traffic Volumes

Intersection

<ADT> Average Daily Traffic

FIGURE 4 | EXISTING TRAFFIC VOLUMES

3.6.EXISTING CAPACITY ANALYSIS

The existing conditions capacity analysis was completed for the study intersections using traffic analysis software, *Synchro Version 12*. The level of service for the study area intersections were primarily evaluated using the 7th Edition of the *Highway Capacity Manual (HCM)*. HCM 7th Edition methodology does not support clustered signalized freeway ramp intersections. Thus, the level of service for the clustered intersections were evaluated using *Synchro* methodologies.

The existing peak hour factors (PHF) obtained from the traffic counts and traffic signal timing from the City of Glendale and Surprise were used for the existing capacity analysis.

Table 1 is from the 7th Edition of the *Highway Capacity Manual* Exhibit 19-8 and 20-2, which lists the Level of Service (LOS) thresholds for signalized and unsignalized intersections.

Table 1 – Level of Service Criteria

Level of Service	Control Delay per Vehicle (s/veh)	
	Signalized Intersections	Unsignalized Intersections
A	≤ 10	0 - 10
B	> 10-20	> 10-15
C	> 20-35	> 15-25
D	> 35-55	> 25-35
E	> 55-80	> 35-50
F	> 80	> 50

The existing AM and PM peak hour level of service and delay for signalized and unsignalized intersections are shown in **Table 2** and **Table 3**.

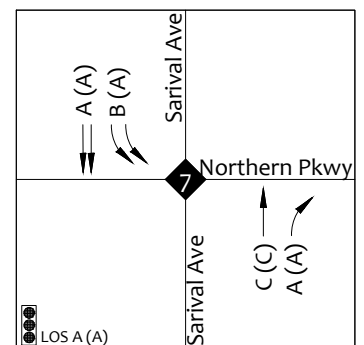
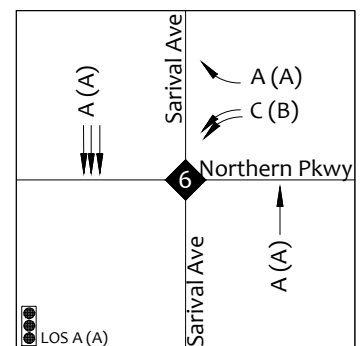
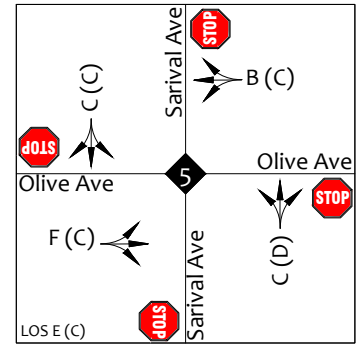
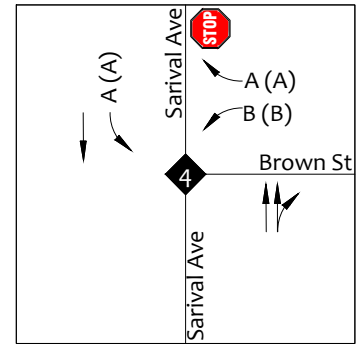
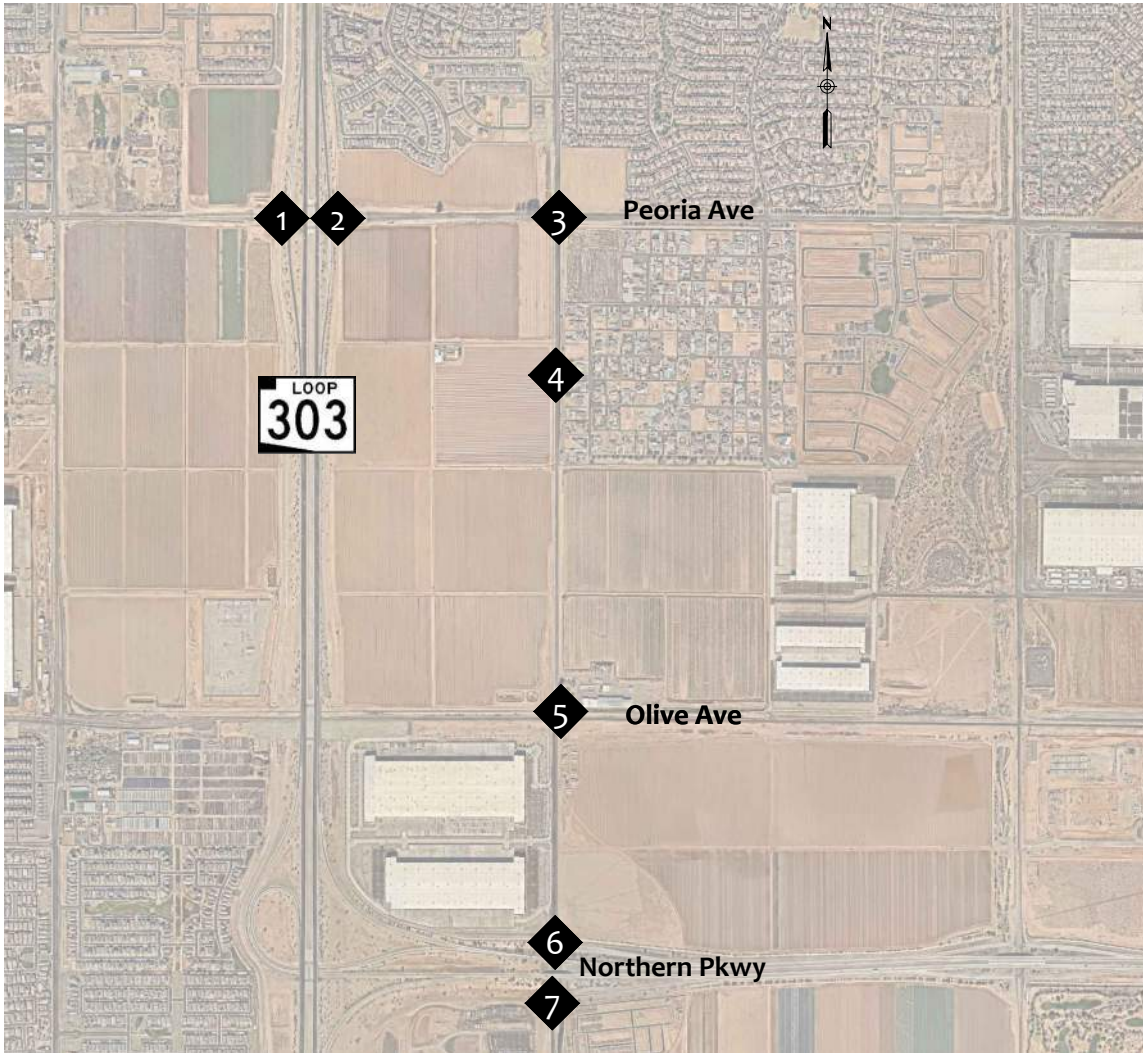
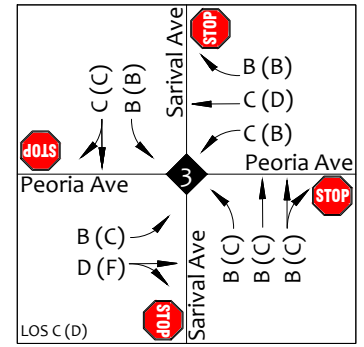
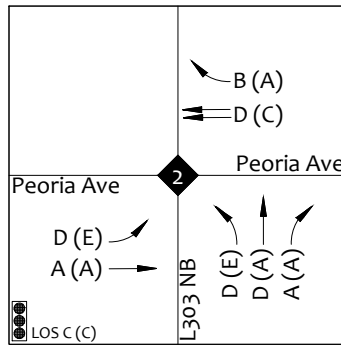
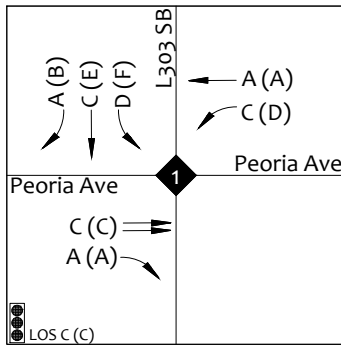
The existing lane configurations, traffic control, and existing LOS results are shown in **Figure 5**. The detailed capacity analysis sheets can be found in **Appendix C**.

Table 2 – Existing Peak Hour LOS and Delay (1 of 2)

Intersection	Existing			
	AM PEAK		PM PEAK	
	LOS	DELAY	LOS	DELAY
Peoria Ave/Loop 303 SB Ramp (1) - Signalized				
Intersection	C	21.5	C	31.4
EB Thru	C	33.5	C	23.5
EB Right	A	6.0	A	0.9
WB Left	C	27.3	D	51.1
WB Thru	A	6.7	A	2.0
SB Left	D	36.7	F	139.8
SB Thru	C	33.0	E	55.3
SB Right	A	8.0	B	11.6
Peoria Ave/Loop 303 NB Ramp (2) - Signalized				
Intersection	C	26.3	C	30.4
EB Left	D	36.6	E	69.6
EB Thru	A	0.5	A	0.7
WB Thru	D	40.9	C	26.7
WB Right	B	10.3	A	4.6
NB Left	D	45.9	E	79.8
NB Thru	D	36.0	A	0.0
NB Right	A	9.4	A	1.2
Sarival Ave/Peoria Ave (3) - Unsignalized				
Intersection	C	19.8	D	31.2
NB Left	B	13.2	C	15.2
NB Thru	B	12.4	C	15.2
NB Shared Thru-Right	B	13.5	C	15.1
EB Left	B	12.1	C	15.2
EB Shared Thru-Right	D	28.2	F	57.3
WB Left	C	15.8	B	14.0
WB Thru	C	19.1	D	32.1
WB Right	B	10.2	B	11.3
SB Left	B	12.1	B	13.1
SB Shared Thu-Right	C	20.1	C	20.8
Sarival Ave/Brown St (4) - Unsignalized				
WB Left	B	12.7	B	13.0
WB Right	A	8.9	A	9.2
SB Left	A	7.6	A	7.9
SB Thu	A	0.0	A	0

Table 3 – Existing Peak Hour LOS and Delay (2 of 2)

Intersection	Existing			
	AM PEAK		PM PEAK	
	LOS	DELAY	LOS	DELAY
Sarival Ave/Olive Ave (5) - Unsignalized				
Intersection	E	44.1	C	23.9
NB Shared Left-Thru-Right	C	16.6	D	32.3
EB Shared Left-Thru-Right	F	75.2	C	20.1
WB Shared Left-Thru-Right	B	14.6	C	21.6
SB Shared Left-Thru-Right	C	20.6	C	17.6
Sarival Ave/Northern Pkwy WB Ramp (6) - Signalized				
Intersection	A	9.5	A	9.1
WB Dual Left	C	20.6	B	19.8
WB Right	A	5.5	A	5.2
NB Thru	A	6.4	A	6.9
SB Thru	A	8.6	A	9.1
Sarival Ave/Northern Pkwy EB Ramp (7) - Signalized				
Intersection	A	7.9	A	7.2
NB Thru	C	21.2	C	22.3
NB Right	A	5.7	A	5.5
SB Dual Left	B	10.6	A	9.9



LEGEND

AM (PM) Peak Hour Capacity Analysis



Intersection



Lane Configuration

FIGURE 5 | EXISTING CAPACITY ANALYSIS

4. PROJECTED TRAFFIC

4.1. TRIP GENERATION

The trip generation for the proposed development was calculated utilizing the Institute of Transportation Engineers (ITE) publication entitled Trip Generation, 11th Edition. The ITE rates are based on studies that measured the trip generation characteristics for various types of land uses. The rates are expressed in terms of trips per unit of land use type. This publication is considered to be the standard for the transportation engineering profession.

The trip generation for the proposed Sarival Logistics industrial development was calculated utilizing ITE Land Use Code 130 – Industrial Park. According to the Trip Generation Manual, “an industrial park contains several individual industrial or related facilities. It is characterized by a mix of manufacturing, service, and warehouse facilities with a wide variation in the proportion of each type of use from one location to another. Many industrial parks contain highly diversified facilities. Some parks have a large number of small businesses and others have one or two dominant industries.”

The trip generation for the proposed development is shown in **Table 4**. The proposed development is anticipated to generate a total of 2,277 weekday trips, with 230 trips occurring during the AM peak hour and 230 trips occurring during the PM peak hour.

Table 4 – Trip Generation (Proposed Development)

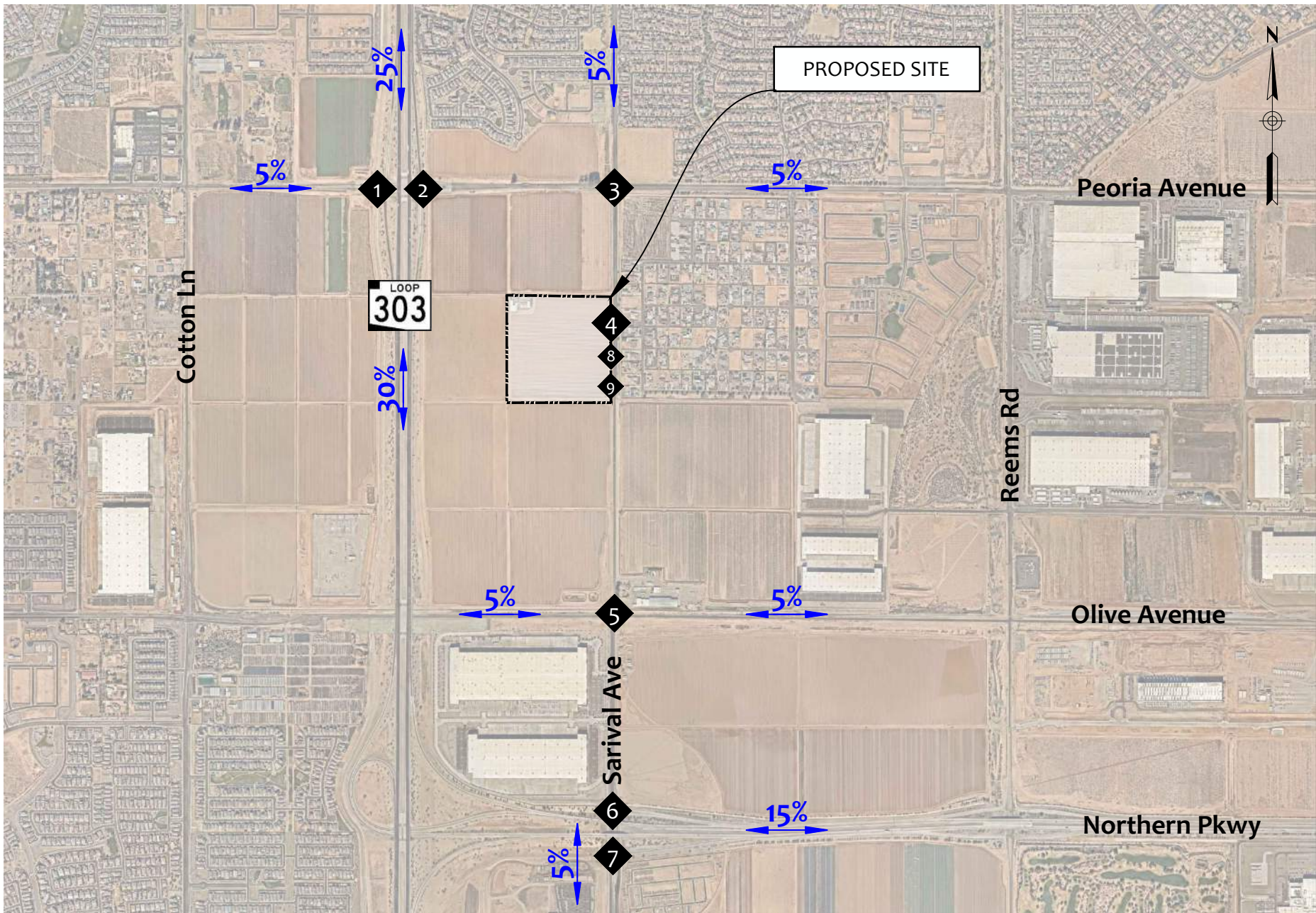
Land Use	ITE Code	Qty	Unit	Weekday	AM Peak Hour		PM Peak Hour			
				Total	Total	In	Out	Total	In	Out
Industrial Park	130	676	1000 Sq. Ft. GFA	2,277	230	186	44	230	51	179

Detailed trip generation calculations can be found in **Appendix D**.

4.2. TRIP DISTRIBUTION AND ASSIGNMENT

The trip distribution procedure determines the general pattern of travel for vehicles entering and exiting the proposed development. The trip distribution for the proposed development is based on the distribution of the existing traffic with modifications to consider probable routes to/from the site . The trip distribution is shown in **Figure 6**.

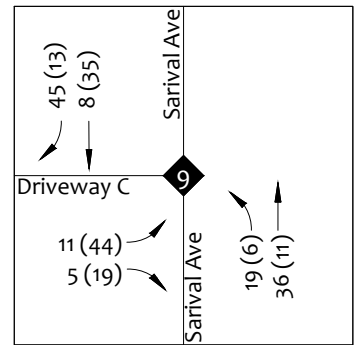
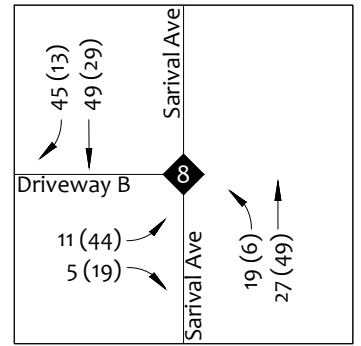
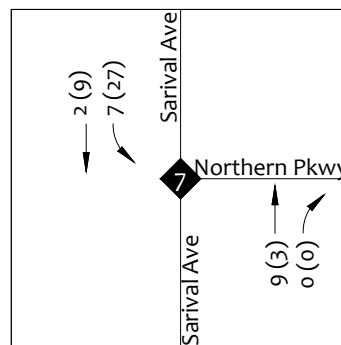
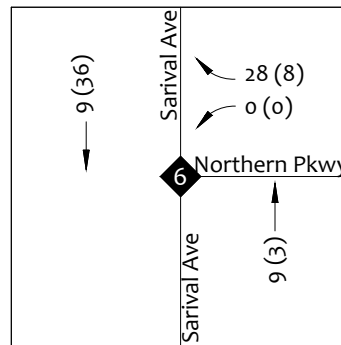
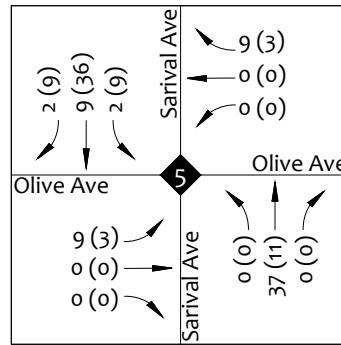
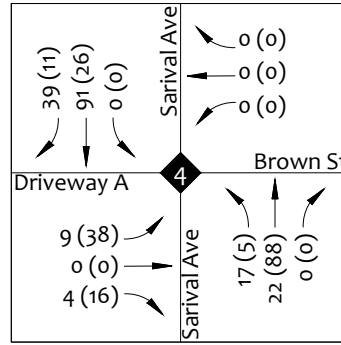
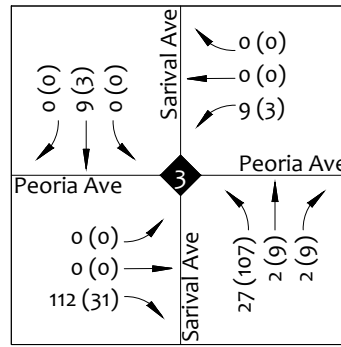
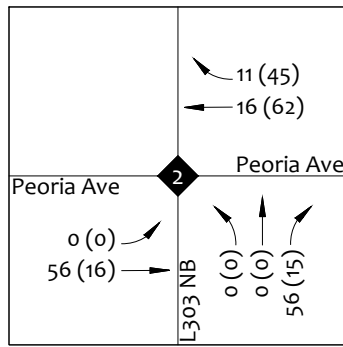
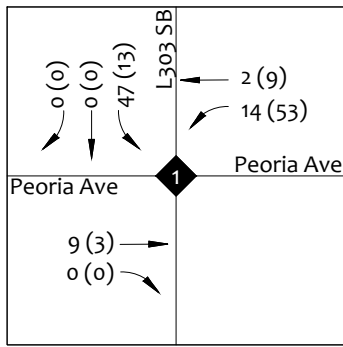
The trip assignment was based on permitted turn movements, as well as ease and probability of use respective to each land use within the mixed-use site. The site-generated traffic volumes are shown in **Figure 7**.



LEGEND

- XX% Trip Distribution
- ◆ Intersection

FIGURE 6 | TRIP DISTRIBUTION



- LEGEND**
- AM (PM) Peak Hour Traffic Volumes
 - Intersection
 - <ADT> Average Daily Traffic

FIGURE 7 | SITE TRAFFIC VOLUMES

5. FUTURE CONDITIONS (YEAR 2030 – OPENING YEAR)

The proposed Sarival Logistics development is anticipated to open in the year 2030. This section analyzes the effects the proposed development will have on the surrounding roadway network during the opening year.

5.1. YEAR 2030 BACKGROUND TRAFFIC VOLUMES

5.1.1. ANNUAL GROWTH RATE

The 2023 Maricopa Associations of Governments (MAG) Socioeconomic Projections were utilized to determine the annual growth rate based on data for Glendale within the study area – Regional Analysis Zone 254 (RAZ 254). The annual growth rate between 2020 and 2040 for population is 3.5%. A 3.50% annual growth rate was considered to project the year 2030 and 2035 background traffic volumes. See **Appendix E** for the MAG socioeconomic projections.

5.1.2. SURROUNDING AREA DEVELOPMENT

The following future developments located within the study area near were considered when projecting the future background volumes. Refer to Figure 8 for a map depicting the surrounding area developments included in the background traffic volumes.

1. Peoria & Sarival Avenue

The Peoria & Sarival development encompasses 956,932 square feet of industrial space and approximately 58,980 square feet of general retail. The project was assumed to be built out in the year 2026 and to generate a total of 5,532 weekday trips, with 240 AM peak hour trips and 447 PM peak hour trips.

2. Sarival Carioca

The Sarival Carioca development includes a twenty (20) fueling station gas station and 7,000-square-foot convenience store. The project was assumed to be built out in the year 2023 and to generate a total of 2,834 weekday trips, with 240 AM peak hour trips and 236 PM peak hour trips.

3. Sycamore Garcia

The Sycamore Garcia development is comprised of 240 multifamily units. The project was assumed to be built out in the year 2025 and to generate a total of 1,614 weekday trips, with 97 AM peak hour trips and 124 PM peak hour trips.

4. LIV Surprise

The Liv Surprise TIA includes a two-part residential development, with 252 multifamily units as the Liv Surprise development and an adjacent undefined development with 63 multifamily units. The project was assumed to be built out in the year 2030 and to generate a total of 1,808 weekday trips, with 166 AM peak hour trips and 147 PM peak hour trips.

5. Parkway 303 West

The Parkway 303 West development consists of 3,484,800 square feet of industrial park space and 84,000 square feet of shopping center space. The project was assumed to be built out in the year 2027 and to generate a total of 9,123 weekday trips, with 1,473 AM peak hour trips and 1,715 PM peak hour trips.

Individual TIA's have not been submitted for the following four projects. However, the Peoria Avenue Traffic Analysis prepared for the City of Surprise includes land use assumptions and estimated build-out density of the sites, as well as trip generation and assumed distribution and assignment for each parcel. For the purpose of this report each development was assumed to be built out by the year 2030.

6. Lowes Home Improvement Store

The Lowes Home Improvement Center development consists of 114,000 square feet of retail space and is anticipated to generate a total of 3,504 weekday trips, with 172 AM peak hour trips and 261 PM peak hour trips.

7. Sycamore Farms Apartments

The Sycamore Farms Apartment development consists of 128 multifamily units and is anticipated to generate a total of 896 weekday trips, with 63 AM peak hour trips and 76 PM peak hour trips.

8. NEC Sarival & Peoria Ave

The NEC Sarival & Peoria Ave development consists of 113,000 square feet of retail space and is anticipated to generate a total of 7,630 weekday trips, with 195 AM peak hour trips and 586 PM peak hour trips.

9. Walmart

The Walmart development consists of 181,300 square feet of retail space and is anticipated to generate a total of 9,159 weekday trips, with 337 AM peak hour trips and 785 PM peak hour trips.

Site traffic generated by the proposed surrounding area developments listed above were considered and added to the background traffic volumes. These surrounding development's traffic volumes are shown in **Figure 9**. Refer to **Appendix F** for excerpts from the surrounding area development TIAs.

The year 2030 background traffic volumes which include site trips generated by the surrounding developments (**Figure 9**) as well as the background trips generated by the 3.5% annual growth rate are shown in **Figure 10**.

5.2. YEAR 2030 BUILD TRAFFIC VOLUMES

To determine the year 2030 build traffic volumes, the site traffic volumes (**Figure 7**) are added to the year 2030 background traffic volumes (**Figure 10**). This represents the year 2030 traffic volumes with the buildout of the proposed Sarival Logistics development. The year 2030 build traffic volumes are shown in **Figure 11**.

5.3. YEAR 2030 ROADWAY NETWORK

The following roadway network improvements are considered in the future capacity analyses based on planned capital improvement projects and the numerous surrounding area developments planned for construction in the near future:

GLENDALE – SARIVAL-OLIVE TRAFFIC SIGNAL

- City of Glendale Project #: CIPST24033 – Add intersection signalization at Sarival Ave and Olive Ave. Per the City of Glendale FY 2025-2034 Capital Improvement Program, the project cost is planned to be equally shared between Glendale and MCDOT, with each contributing 50%.

GLENDALE – SARIVAL-PEORIA INTERSECTION IMPROVEMENT

- City of Glendale Project #: CIPST24034 – Add intersection signalization at Sarival Ave and Peoria Ave. Per the City of Glendale FY 2025-2034 Capital Improvement Program, the project cost is planned to be shared between Glendale and the City of Surprise, with Glendale contributing 25% and Surprise contributing 75%.

SURPRISE - PEORIA AVENUE (SR303-SARIVAL)

- City of Surprise Project #: P65080 – Complete Peoria Avenue from Loop 303 to Sarival Avenue with its ultimate 6-lane cross section. Per the City of Surprise FY 2025 Adopted Budget, this project will be a joint effort with Maricopa County.

MCDOT - OLIVE AVENUE (SR303 TO REEMS ROAD)

- MCDOT Project #: TT0561-TT0562 – Widen Olive Avenue west of Loop 303 to Reems Road. The widened roadway will include four travel lanes with a center paved turn lane. The project will also install a traffic signal at the intersections of Sarival Avenue. The intersection will be widened to provide for additional turn lanes to improve capacity.

The following improved lane configurations are assumed at the study intersections:

Peoria Avenue and Loop 303 Southbound Ramp (1)

By Others:

- Three (3) additional eastbound through lanes
- A second westbound dedicated left-turn lane and two (2) additional westbound through lanes
- The southbound through lane restriped as a shared left-through-right lane

Peoria Avenue and Loop 303 Northbound Ramp (2)

By Others:

- A second eastbound dedicated left-turn lane and two (2) additional eastbound through lanes
- Three (3) additional westbound through lanes
- The northbound through-lane restriped as a shared left-through-right lane

Sarival Avenue and Peoria Avenue (3)

By Others:

- Traffic signalization
- An additional eastbound through lane and an eastbound dedicated right-turn lane
- The westbound right-turn lane restriped to a shared through-right- lane.

Sarival Avenue and Brown Street/Driveway A (4)

By Proposed Development:

- Half-street improvements and a southbound dedicated right turn lane
- Construct the west leg with an eastbound shared left-through lane and a dedicated right turn lane and install a stop sign

Sarival Avenue and Olive Avenue (5)

By Others:

- Traffic signalization
- A dedicated eastbound left turn lane, an additional eastbound through lane, and a dedicated eastbound right-turn lane
- A dedicated westbound bound left turn lane, an additional westbound through lane, and a dedicated westbound right-turn lane
- A dedicated northbound left turn lane and northbound shared through-right lane
- A dedicated southbound left turn lane and southbound shared through-right lane

Sarival Avenue and Driveway B (8)

By Proposed Development:

- Half-street improvements and a southbound dedicated right turn lane
- Construct the west leg with an eastbound dedicated left-turn lane and a dedicated right-turn lane and install a stop sign

Sarival Avenue and Driveway C (9)

By Proposed Development:

- Half-street improvements and a southbound dedicated right turn lane
- Construct the west leg with an eastbound dedicated left-turn lane and a dedicated right-turn lane and install a stop sign

5.4. YEAR 2030 CAPACITY ANALYSIS

The year 2030 no build and build capacity analyses were completed for the study intersections during the AM and PM peak hours using the methodology described in **Section 3.6**. The analysis was based on signal timing obtained by the City of Glendale and Surprise. Signal timing splits were optimized for the future traffic volumes. Peak hour factors (PHF) used for future conditions were assumed as follows:

- PHF = 0.80 for < 75 vph per lane
- PHF = 0.85 for 75-300 vph per lane
- PHF = 0.90 for > 300 vph per lane

The Heavy Vehicles setting in Synchro represents the percentage of trucks and buses for each traffic movement. The default value of 2% was adjusted to reflect the anticipated truck traffic generated by the proposed industrial development. According to the ITE manual, truck trips account for 6% of entering and 34% of exiting movements during the AM peak hour, and 20% of entering and 9% of exiting movements during the PM peak hour. These percentages were applied to the relevant traffic movements at the site access driveways.

The results of the year 2030 capacity analysis reveal that all movements operate at a LOS D or better, or at the same level of service as the year 2030 no build conditions.

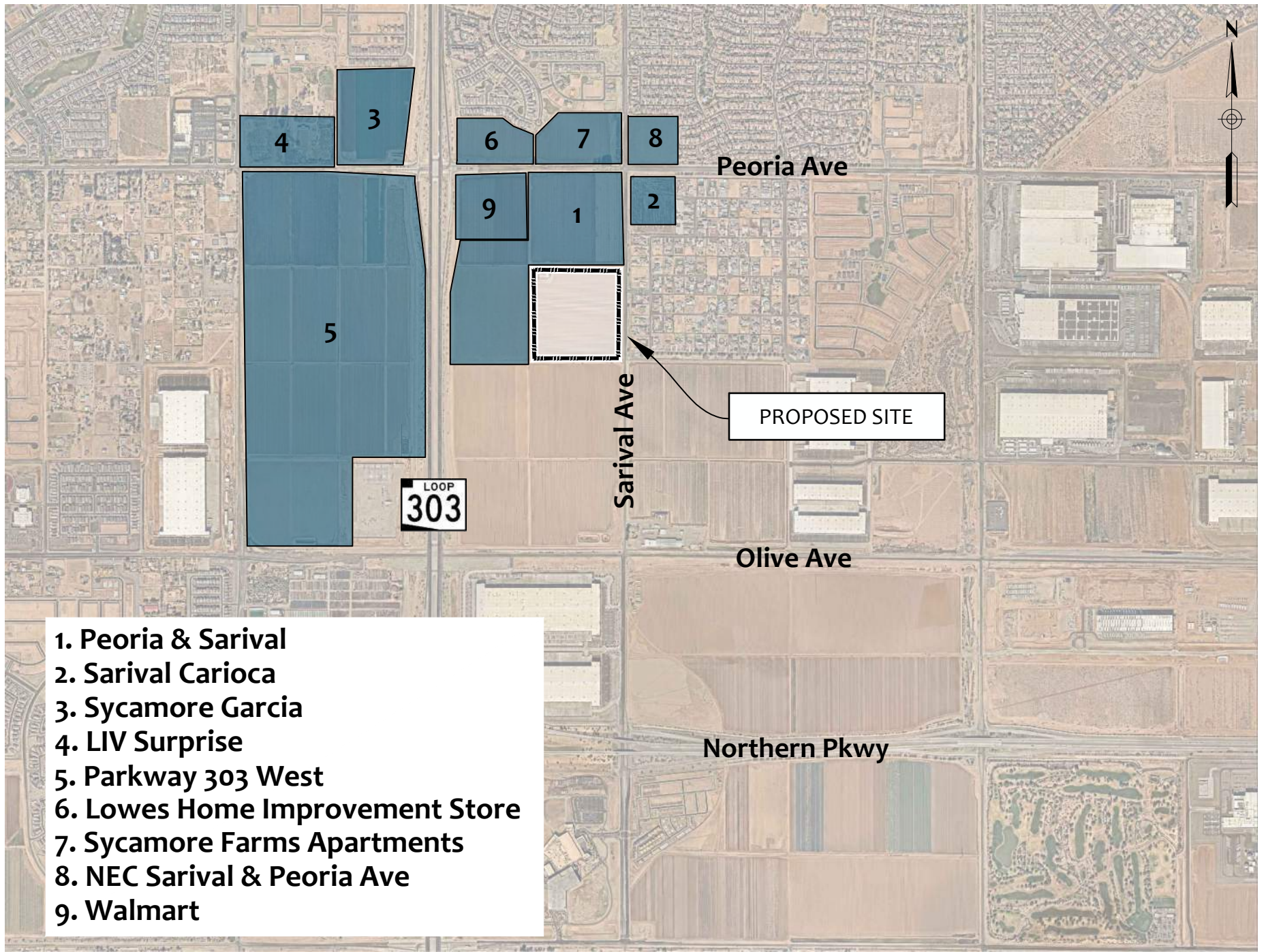
A comparison of the year 2030 build and no build AM and PM peak hour LOS and delay results are shown in **Table 5** and **Table 6**. The proposed lane configurations, traffic control, and 2030 build LOS results are shown in **Figure 12**. Detailed capacity analysis sheets for the year 2030 no build and build conditions can be found in **Appendix G** and **Appendix H**, respectively.

Table 5 - Year 2030 Peak Hour LOS and Delay (1 of 2)

Intersection	Year 2030 No Build				Year 2030 Build			
	AM PEAK		PM PEAK		AM PEAK		PM PEAK	
	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
Peoria Ave/Loop 303 SB Ramp (1) - Signalized								
Intersection	C	26.2	C	34.2	C	27.6	D	35.2
EB Thru	D	42.9	D	54.2	D	44.1	D	54.7
EB Right	A	6.5	A	7.7	A	6.5	A	7.7
WB Dual Left	C	34.8	E	55.5	D	36.3	E	58.1
WB Thru	A	2.2	A	3.3	A	2.3	A	3.0
SB Left	E	55.0	E	58.5	E	60.3	E	59.6
SB Shared Left-Thru-Right	C	29.3	D	40.2	C	29.7	D	43.9
SB Right	C	26.0	C	26.2	C	26.0	C	26.7
Peoria Ave/Loop 303 NB Ramp (2) - Signalized								
Intersection	C	32.8	C	31.0	C	33.3	C	31.3
EB Dual Left	C	34.6	D	42.0	C	32.4	D	42.4
EB Thru	A	0.4	A	0.5	A	0.4	A	0.5
WB Thru	D	50.6	D	50.6	D	52.3	D	50.6
WB Right	A	9.2	A	8.2	A	9.4	A	8.2
NB Left	E	66.7	E	72.4	E	72.9	E	72.8
NB Shared Left-Thru-Right	E	68.6	D	38.8	E	73.0	D	40.1
NB Right	A	8.8	B	14.3	A	8.7	B	16.5
Sarival Ave/Peoria Ave (3) - Signalized								
Intersection	A	8.7	C	24.0	B	10.1	C	29.3
EB Left	A	8.0	C	20.3	A	9.0	C	27.2
EB Thru	A	5.8	C	20.5	A	6.6	C	24.5
EB Right	A	5.2	B	16.4	A	6.4	B	19.8
WB Left	B	10.2	B	19.1	B	12.5	C	22.2
WB Thru	A	5.8	C	31.8	A	6.5	D	41.1
WB Shared Thru-Right	A	5.8	C	31.7	A	6.5	D	40.9
NB Left	B	14.3	B	18.3	B	17.8	C	22.3
NB Thru	B	10.8	B	19.5	B	12.6	B	19.3
NB Right	B	11.5	B	19.2	B	13.3	B	19.1
SB Left	B	11.6	C	20.7	B	13.6	C	23.7
SB Thru	B	11.2	C	23.7	B	13.1	C	27.2
SB Right	B	13.3	D	35.2	B	15.1	D	48.0
Sarival Ave/Brown St/Driveway A (4) - Unsignalized								
EB Left					C	21.7	C	21.4
EB Shared Thru-Right					B	10.6	A	9.9
WB Left	B	13.5	B	15.4	C	17.1	B	19.7
WB Thru/Thru-Right	A	9.4	A	9.8	A	9.4	A	10.0
NB Left					A	8.8	A	8.7
SB Left	A	8.0	A	8.4	A	8.1	A	8.6

Table 6 - Year 2030 Peak Hour LOS and Delay (2 of 2)

Intersection	Year 2030 No Build				Year 2030 Build			
	AM PEAK		PM PEAK		AM PEAK		PM PEAK	
	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
Sarival Ave/Olive Ave (5) - Signalized								
Intersection	A	9.7	A	9.2	A	10.0	A	9.6
EB Left	B	12.0	B	14.8	B	12.7	B	15.6
EB Thru	B	10.1	B	11.6	B	10.5	B	12.3
EB Right	B	12.0	B	12.2	B	12.4	B	12.8
WB Left	B	11.2	B	12.3	B	11.6	B	13.0
WB Thru	A	9.7	B	12.3	B	10.1	B	12.9
WB Right	A	9.1	B	11.6	A	9.6	B	12.2
NB Left	B	12.5	B	10.8	B	13.0	B	11.7
NB Shared Thru-Right	A	6.0	A	5.6	A	6.4	A	5.6
SB Left	A	6.7	A	6.8	A	7.2	A	6.9
SB Shared Thru-Right	A	7.9	A	6.1	A	8.1	A	6.3
Sarival Ave/Northern Pkwy WB Ramp (6) - Signalized								
Intersection	A	8.7	A	9.0	A	8.8	A	8.7
WB Dual Left	C	21.9	C	21.5	C	23.1	C	23.7
WB Right	A	6.7	A	6.6	A	6.1	A	6.7
NB Thru	A	6.3	A	7.1	A	0.2	A	0.3
SB Thru	A	6.8	A	7.9	A	8.3	A	8.5
Sarival Ave/Northern Pkwy EB Ramp (7) - Signalized								
Intersection	A	7.9	A	7.9	B	19.2	B	17.2
NB Thru	C	20.9	C	23.8	C	24.1	C	25.5
NB Right	A	5.6	A	5.7	A	6.0	A	5.7
SB Dual Left	B	10.4	B	10.3	C	30.3	C	29.9
SB Thru	A	0.0	A	0.1	A	6.8	A	6.8
Sarival Ave/Driveway B (8) - Unsignalized								
NB Left					A	8.7	A	8.7
EB Right					C	15.4	B	16.1
EB Left					B	10.4	A	9.9
Sarival Ave/Driveway C (9) - Unsignalized								
NB Shared Left-Thru-Right					A	8.5	A	8.6
EB Right					B	14.4	B	15.2
EB Left					B	11.6	B	11.4



- 1. Peoria & Sarival
- 2. Sarival Carioca
- 3. Sycamore Garcia
- 4. LIV Surprise
- 5. Parkway 303 West
- 6. Lowes Home Improvement Store
- 7. Sycamore Farms Apartments
- 8. NEC Sarival & Peoria Ave
- 9. Walmart

FIGURE 8 | SURROUNDING AREA DEVELOPMENTS

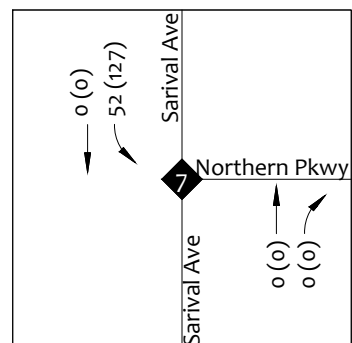
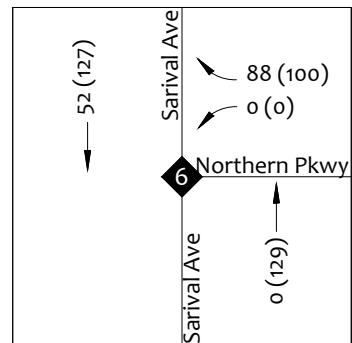
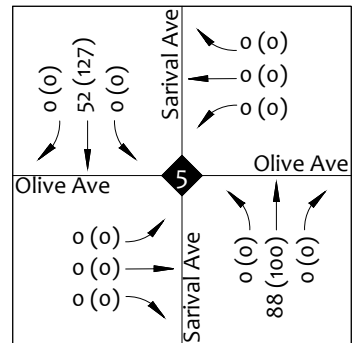
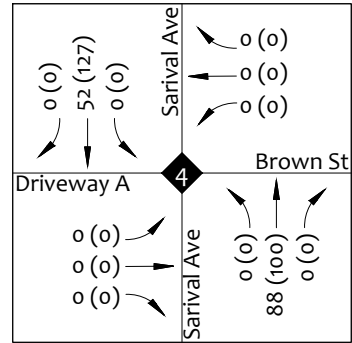
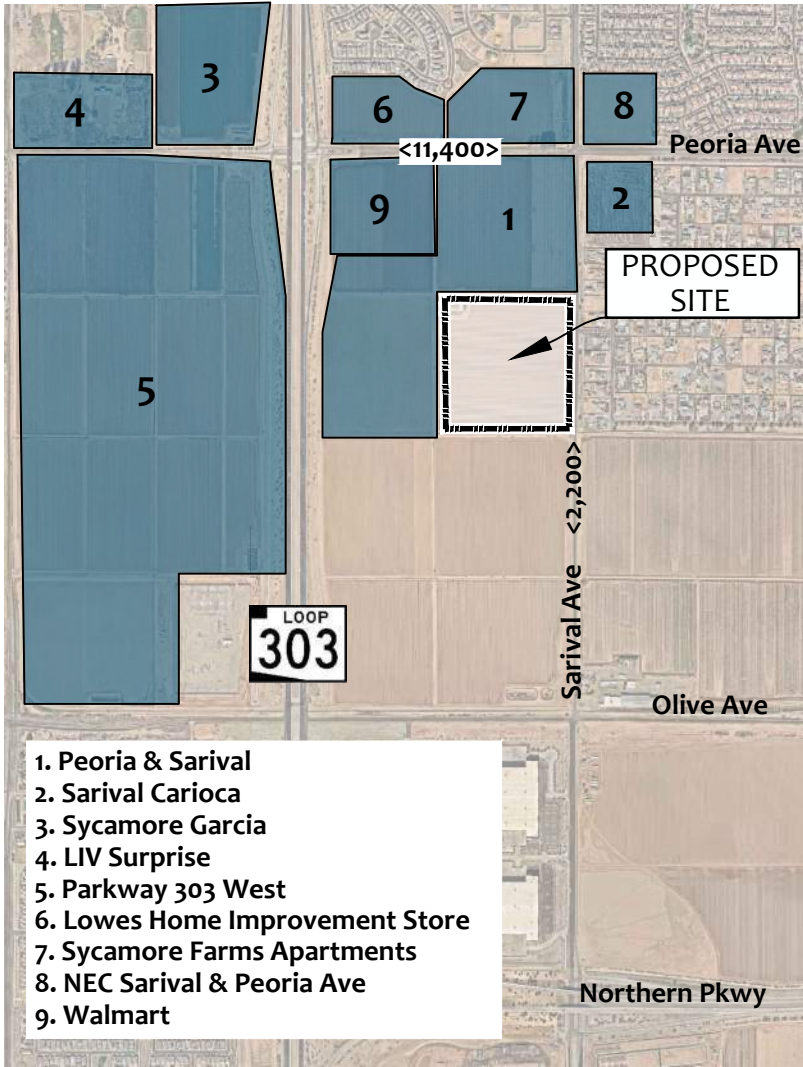
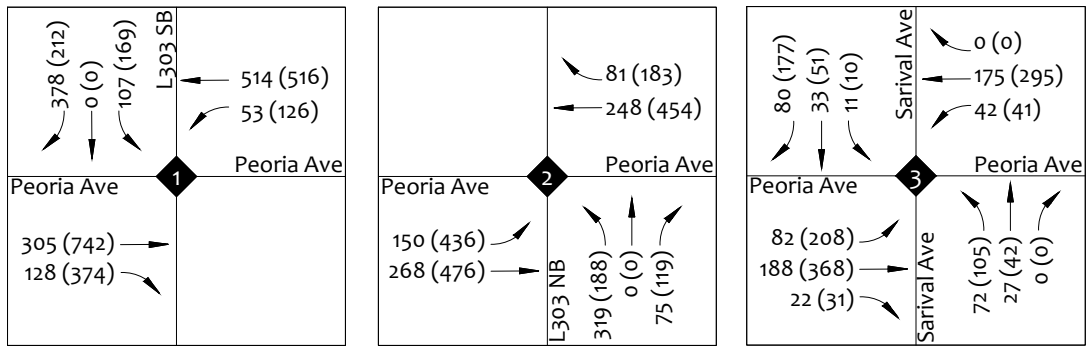
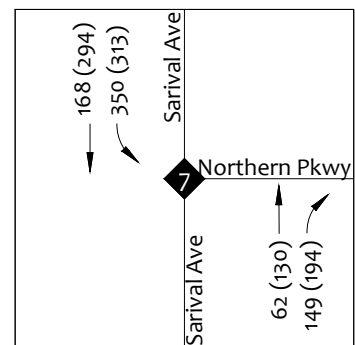
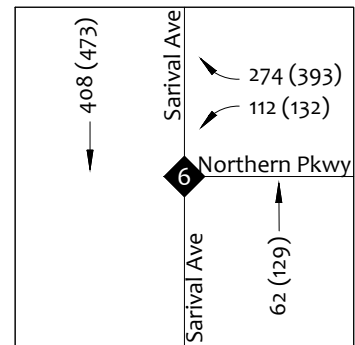
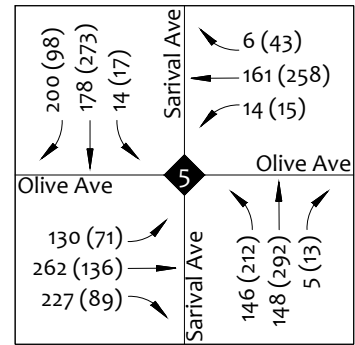
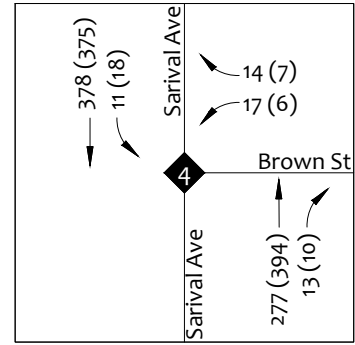
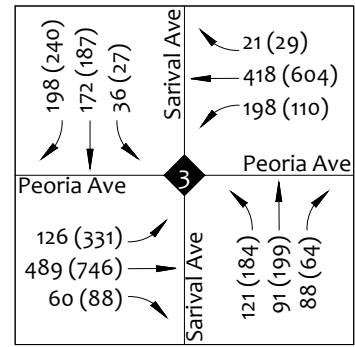
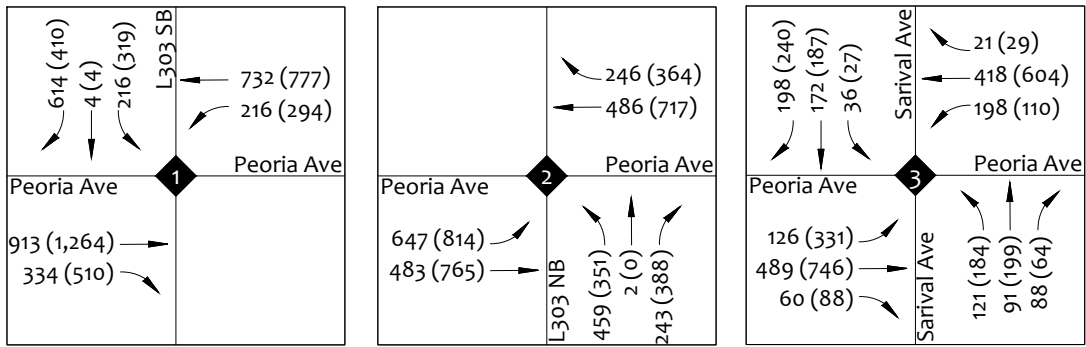


FIGURE 9 | SURROUNDING AREA DEVELOPMENT TRAFFIC VOLUMES



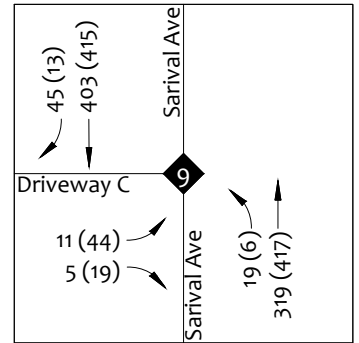
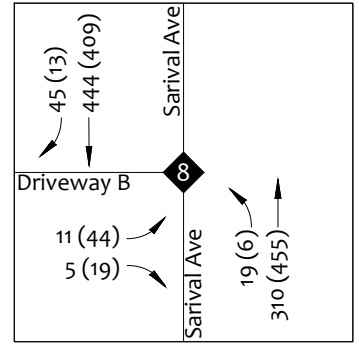
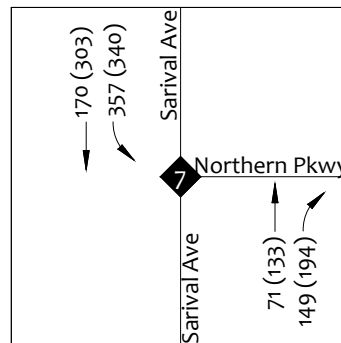
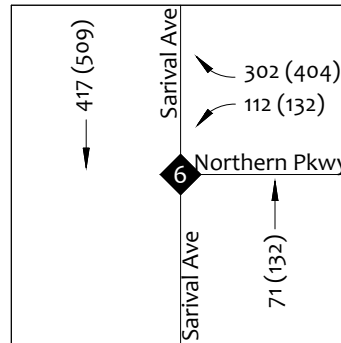
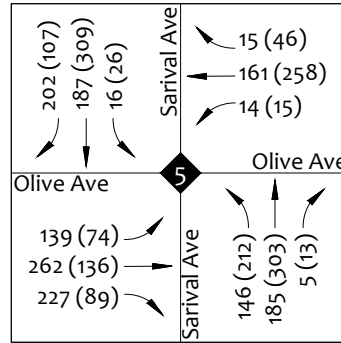
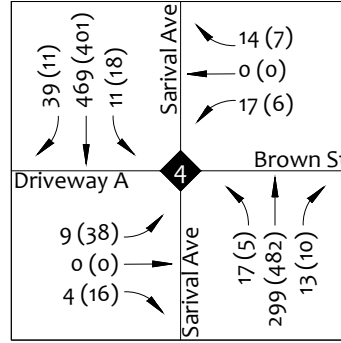
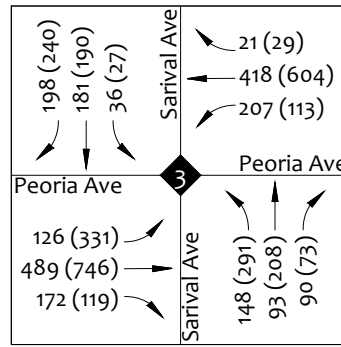
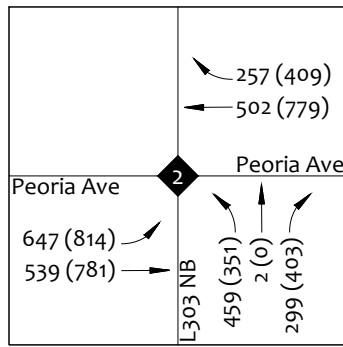
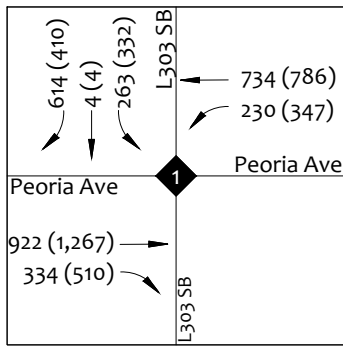
LEGEND

AM (PM) Peak Hour Traffic Volumes

Intersection

<ADT> Average Daily Traffic

FIGURE 10 | YEAR 2030 BACKGROUND TRAFFIC VOLUMES



LEGEND

AM (PM) Peak Hour Traffic Volumes

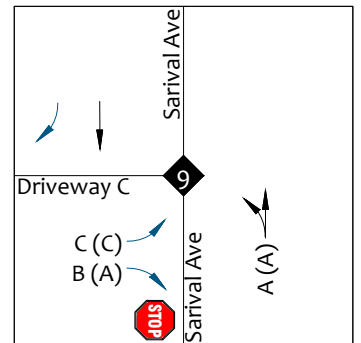
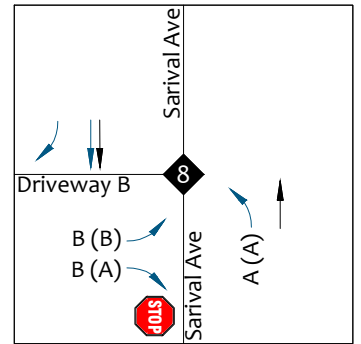
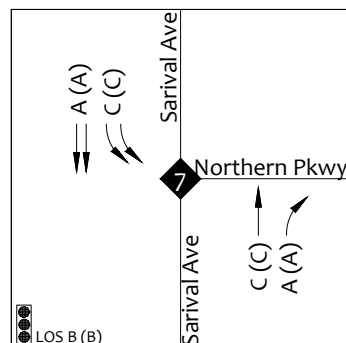
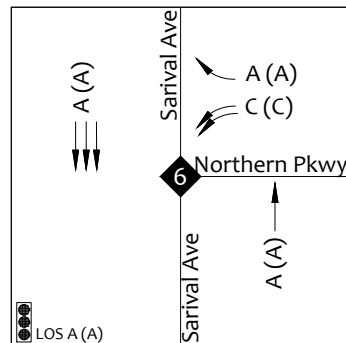
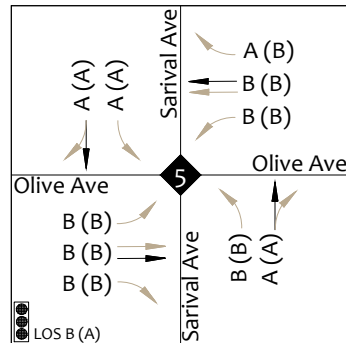
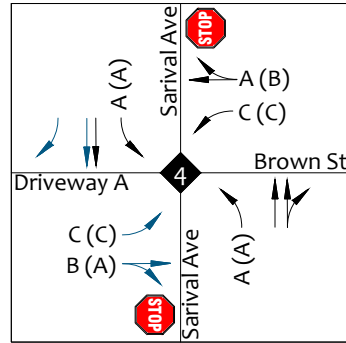
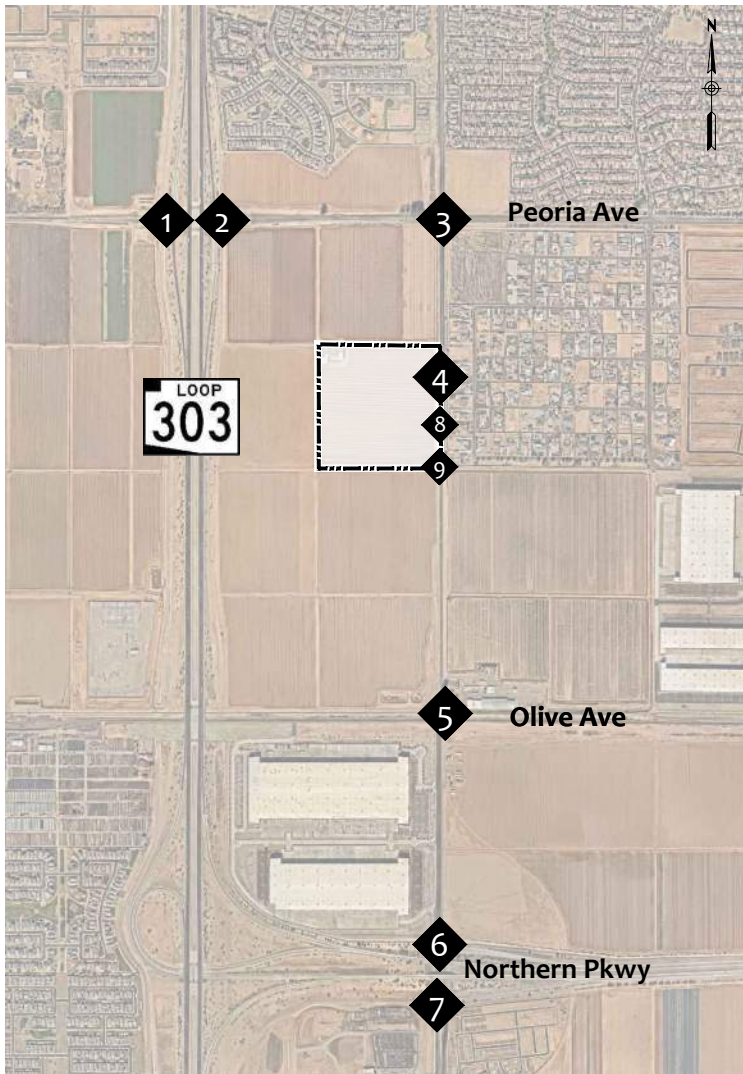
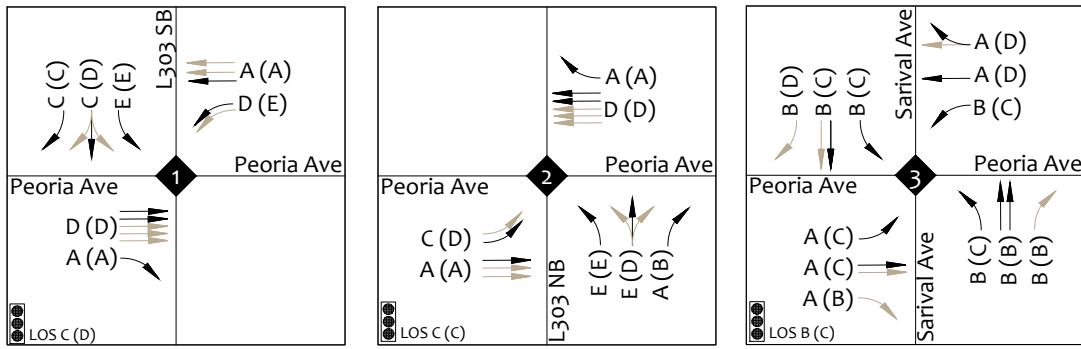


Intersection

<ADT>

Average Daily Traffic

FIGURE 11 | YEAR 2030 BUILD TRAFFIC VOLUMES



LEGEND

AM (PM) Peak Hour Capacity Analysis



Intersection



Lane Configuration



Network Improvements by Others



Project Improvements

FIGURE 12 | YEAR 2030 BUILD CAPACITY ANALYSIS

6. FUTURE CONDITIONS (YEAR 2035 – 5 YEARS AFTER THE OPENING YEAR)

This section analyzes the effects the proposed development will have on the surrounding roadway network during the year 2035, 5 years after the opening year.

6.1. YEAR 2035 BACKGROUND TRAFFIC VOLUMES

Similar to the year 2030 background traffic volumes described in detail in [Section 5.1](#), a 3.5% annual growth rate was applied to the existing traffic volumes through the year 2035 and site traffic generated by the surrounding area developments were added to the background traffic volumes.

The year 2035 background traffic volumes, which includes the annual growth rate and site trips generated by the surrounding development, are shown in [Figure 13](#).

6.2. YEAR 2035 BUILD TRAFFIC VOLUMES

To determine year 2035 build traffic volumes, the site traffic volumes ([Figure 7](#)) were added to the year 2035 background traffic volumes ([Figure 13](#)). This represents the 2035 build traffic volumes with the proposed development. The year 2035 build traffic volumes are shown in [Figure 14](#).

6.3. YEAR 2035 ROADWAY IMPROVEMENTS

The roadway network improvements listed in [Section 5.3](#) were also assumed in the year 2035 capacity analysis.

6.4. YEAR 2035 CAPACITY ANALYSIS

The year 2035 build and no build capacity analyses were completed for the study intersections during the AM and PM peak hour using the methodology described in [Section 3.6](#) and [5.4](#).

The results of the year 2035 capacity analysis reveal that all movements operate at a LOS D or better, or at the same level of service as the year 2035 no build conditions.

A comparison of the year 2035 build and no build AM and PM peak hour LOS and delay results are shown in [Table 7](#) and [Table 8](#). The proposed lane configurations, traffic control, and 2035 build LOS results are shown in [Figure 15](#). Detailed capacity analysis sheets for the year 2035 no build and build conditions can be found in [Appendix I](#) and [Appendix J](#), respectively.

Table 7 - Year 2035 Peak Hour LOS and Delay (1 of 2)

Intersection	Year 2035 No Build				Year 2035 Build			
	AM PEAK		PM PEAK		AM PEAK		PM PEAK	
	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
Peoria Ave/Loop 303 SB Ramp (1) - Signalized								
Intersection	C	31.8	D	44.3	C	34.1	D	47.0
EB Thru	D	46.0	E	74.3	D	43.6	E	79.9
EB Right	A	6.7	B	19.3	A	6.1	B	19.2
WB Dual Left	D	37.5	E	55.6	D	38.8	E	58.2
WB Thru	A	2.3	A	3.3	A	2.1	A	3.1
SB Left	E	61.9	E	71.4	E	75.9	E	73.2
SB Shared Left-Thru-Right	E	55.2	D	47	E	57.9	D	52.5
SB Right	D	35.4	C	21.8	D	46.4	C	22.5
Peoria Ave/Loop 303 NB Ramp (2) - Signalized								
Intersection	D	36.0	C	33.0	D	36.6	C	34.2
EB Dual Left	D	40.8	D	48.5	D	45.9	D	50.8
EB Thru	A	0.4	A	0.6	A	0.6	A	0.6
WB Thru	D	52.8	D	52.2	D	49.8	D	52.1
WB Right	A	9.1	A	8.7	A	8.1	B	12.7
NB Left	E	72.5	E	76.1	E	75.8	E	77.3
NB Shared Left-Thru-Right	E	76.7	C	29.5	E	78.2	C	30.8
NB Right	A	8.7	C	20.3	A	8.5	C	21.8
Sarival Ave/Peoria Ave (3) - Signalized								
Intersection	B	10.6	C	28.7	B	13.2	C	33.9
EB Left	A	9.3	C	28.1	B	11.0	D	35.5
EB Thru	A	6.5	C	22.2	A	7.7	C	26.4
EB Right	A	5.6	B	17.3	A	7.4	C	20.4
WB Left	B	12.9	C	20.5	B	17.3	C	23.3
WB Thru	A	6.4	D	38.6	A	7.5	D	52.6
WB Shared Thru-Right	A	6.4	D	38.3	A	7.5	D	52.2
NB Left	B	19.1	C	21.4	C	25.7	C	24.7
NB Thru	B	13.7	C	21.9	B	17.3	C	20.8
NB Right	B	14.6	C	21.5	B	18.4	C	20.5
SB Left	B	14.9	C	22.9	B	18.8	C	24.4
SB Thru	B	14.2	C	26.5	B	18.0	C	28.3
SB Right	B	17.0	D	49.5	C	20.9	D	51.9
Sarival Ave/Brown St (4) - Unsignalized								
EB Left					C	24.6	C	24.9
EB Shared Thru-Right					B	10.9	B	10.1
WB Left	B	14.7	B	17.1	C	18.8	C	22.5
WB Thru/Thru-Right	A	9.5	A	10.0	A	9.5	B	10.3
NB Left					A	9.0	A	8.9
SB Left	A	8.1	A	8.6	A	8.1	A	8.8

Table 8 - Year 2035 Peak Hour LOS and Delay (2 of 2)

Intersection	Year 2030 No Build				Year 2030 Build			
	AM PEAK		PM PEAK		AM PEAK		PM PEAK	
	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
Sarival Ave/Olive Ave (5) - Signalized								
Intersection	B	12.5	B	11.7	B	12.9	B	12.1
EB Left	B	16.5	C	20.3	B	17.6	C	21.3
EB Thru	B	13.1	B	15.1	B	13.8	B	16.0
EB Right	B	16.1	B	15.9	B	16.8	B	16.8
WB Left	B	14.9	B	16.3	B	15.6	B	17.2
WB Thru	B	12.6	B	16.1	B	13.2	B	16.9
WB Right	B	11.8	B	15.0	B	12.5	B	16.0
NB Left	B	16.5	B	14.1	B	17.4	B	15.2
NB Shared Thru-Right	A	6.6	A	6.2	A	7.0	A	6.2
SB Left	A	7.4	A	7.8	A	8.1	A	7.9
SB Shared Thru-Right	A	9.0	A	6.8	A	9.4	A	7.0
Sarival Ave/Northern Pkwy WB Ramp (6) - Signalized								
Intersection	A	9.1	A	9.5	A	9.1	A	9.1
WB Dual Left	C	22.2	C	22.4	C	23.5	C	24.6
WB Right	A	6.4	A	6.9	A	6.3	A	7.0
NB Thru	A	6.6	A	7.7	A	0.2	A	0.3
SB Thru	A	7.4	A	8.5	A	8.4	A	8.7
Sarival Ave/Northern Pkwy EB Ramp (7) - Signalized								
Intersection	A	8.2	A	8.5	B	19.8	B	17.8
NB Thru	C	22.7	C	25.7	C	24.5	C	26.6
NB Right	A	5.8	A	5.6	A	5.9	A	5.6
SB Dual Left	B	10.5	B	10.9	C	31.8	C	32
SB Thru	A	0.0	A	0.1	A	6.8	A	7.2
Sarival Ave/Driveway B (8) - Unsignalized								
NB Left					A	8.9	A	8.9
EB Right					C	16.6	C	17.4
EB Left					B	10.7	B	10.1
Sarival Ave/Driveway C (9) - Unsignalized								
NB Shared Left-Thru-Right					A	8.8	A	8.8
EB Right					C	15.4	C	16.3
EB Left					B	12.3	B	11.9

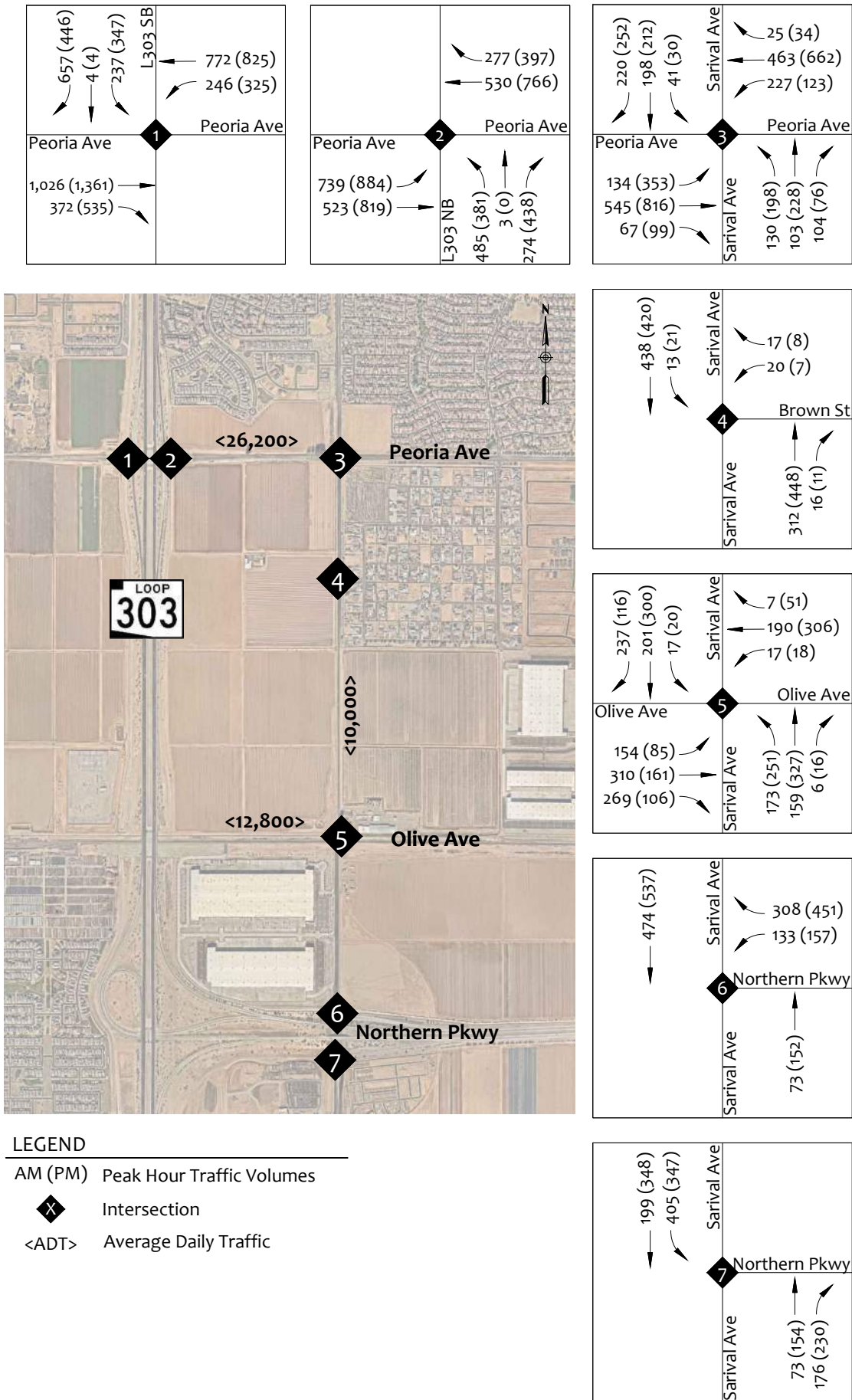
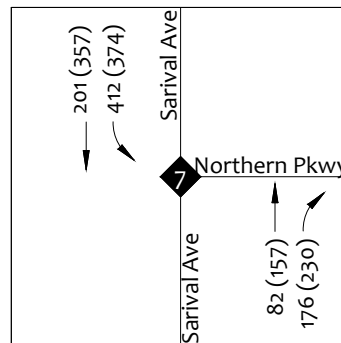
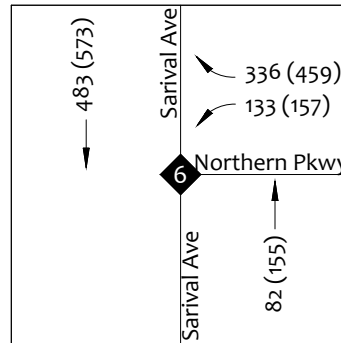
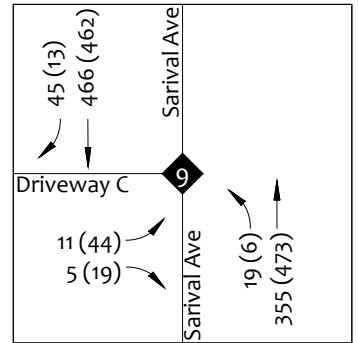
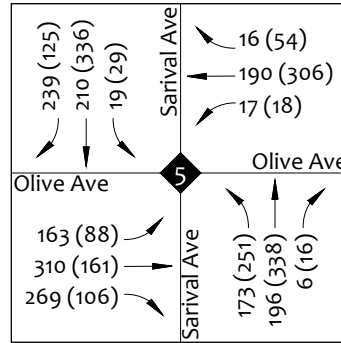
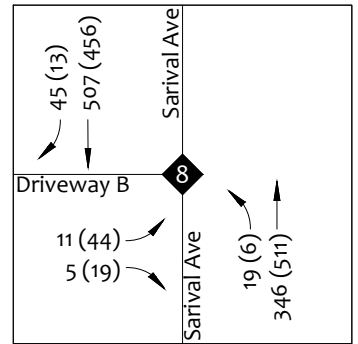
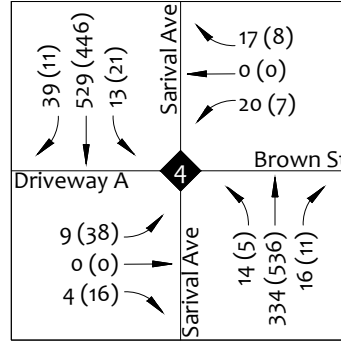
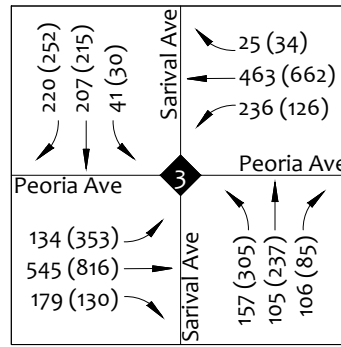
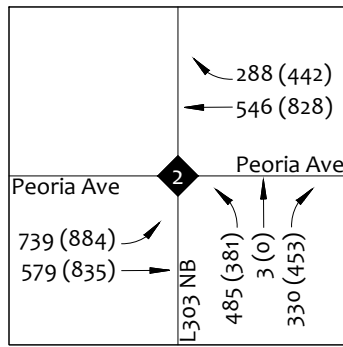
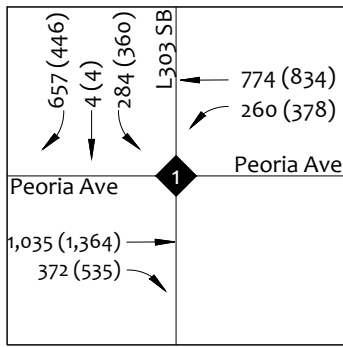


FIGURE 13 | YEAR 2035 BACKGROUND TRAFFIC VOLUMES



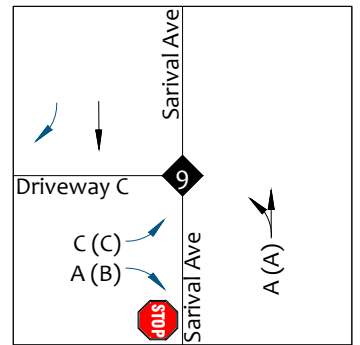
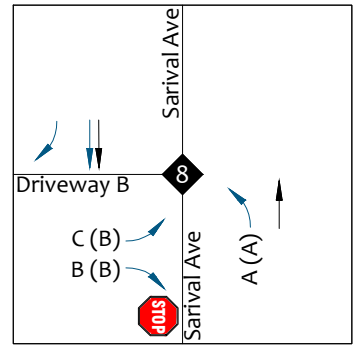
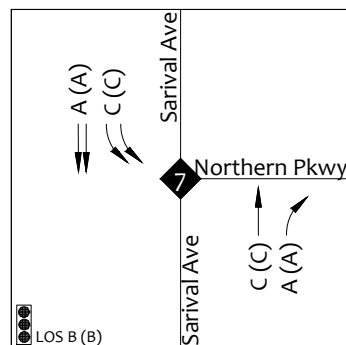
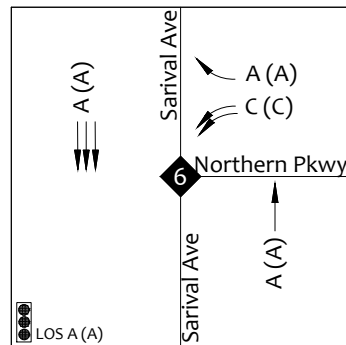
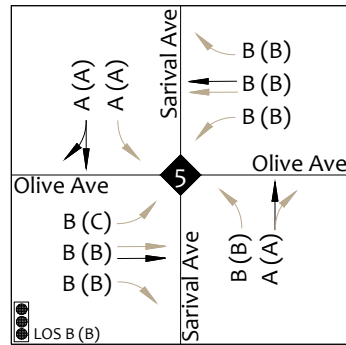
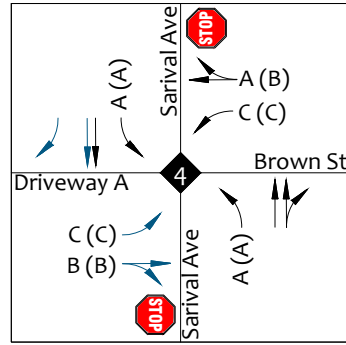
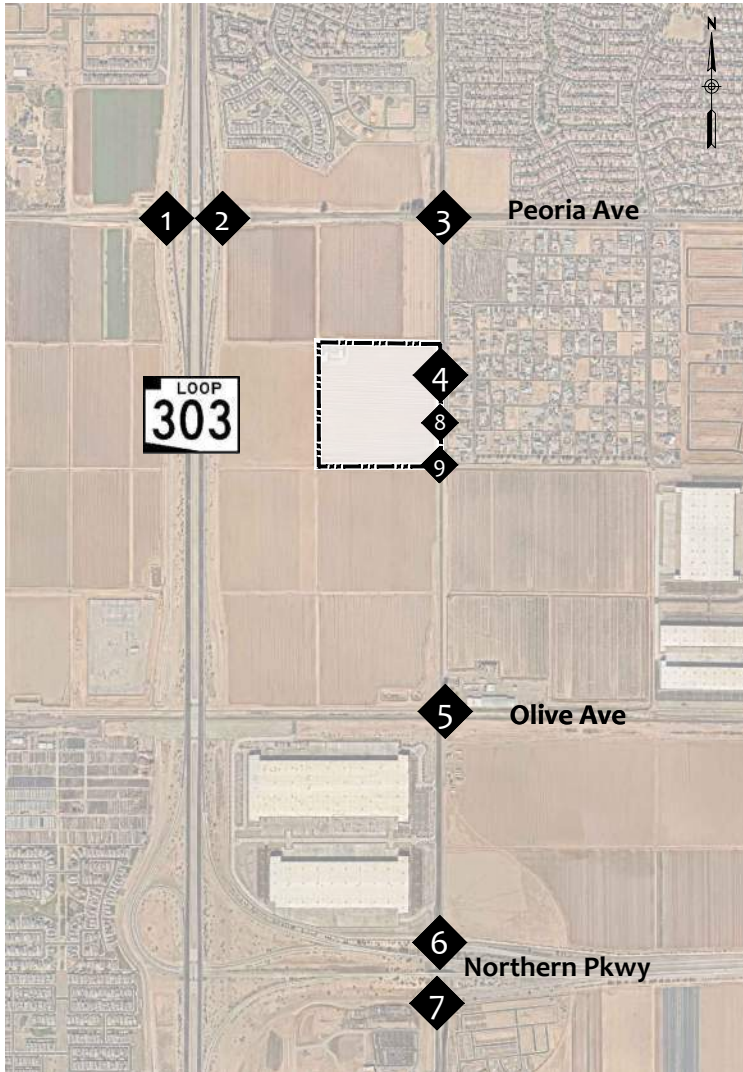
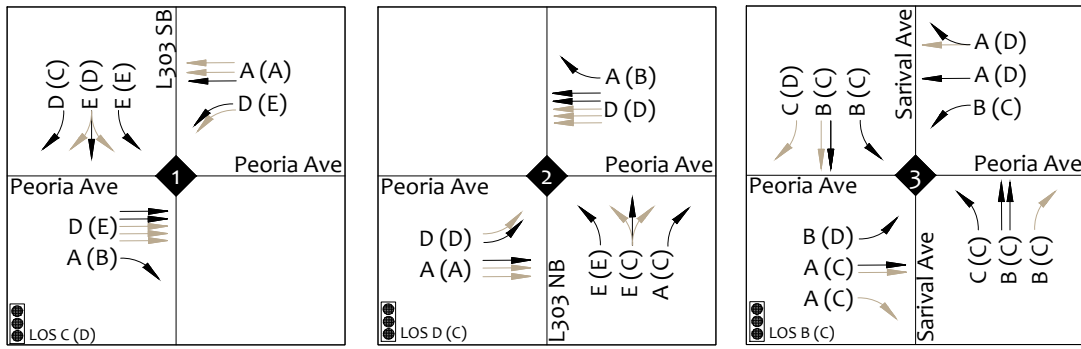
LEGEND

AM (PM) Peak Hour Traffic Volumes

⬠ Intersection

<ADT> Average Daily Traffic

FIGURE 14 | YEAR 2035 BUILD TRAFFIC VOLUMES



LEGEND

AM (PM) Peak Hour Capacity Analysis



Intersection



Lane Configuration



Network Improvements by Others



Project Improvements

FIGURE 15 | YEAR 2035 BUILD CAPACITY ANALYSIS

7. QUEUE ANALYSIS

A queueing analysis was performed using the 95th percentile queue lengths, reported by Synchro 12, for the year 2035 build capacity analysis. The storage lane lengths are based on the average peak hour volumes. All results are rounded up to the nearest 25-foot interval.

Left turns will be facilitated by the existing and planned two-way left-turn lane along Sarival Avenue. The minimum turn lane storage requirements are 160 feet per the City of Surprise and MCDOT, and 150 feet per the City of Glendale.

Table 9 – Year 2035 Queuing Analysis

Intersection	Traffic Control	Movement	Volumes (vph)		Queue Storage (ft)		
			AM	PM	95th %tile	Existing	Recommended
Peoria Ave/Loop 303 SB Ramp (1)	Signal	WBL - Dual	260	378	165	300	300
		SBL	284	360	406	400	400
Peoria Ave/Loop 303 NB Ramp (2)	Signal	WBR	288	442	116	265	265
		NBR	330	453	141	410	410
Sarival Ave/Peoria Ave (3)	Signal	EBR	179	130	22	-	160' or Lane Drop
		WBL	236	126	116	160	160
		NBL	157	305	197	170	250
		NBR	106	85	17	-	150
Sarival Ave/Brown St/Driveway A (4)	Stop	NBL	17	5	1	TWLTL	TWLTL
		SBL	13	21	1	TWLTL	TWLTL
		SBR	39	11	0	-	150
Sarival Ave/Olive Ave (5)	Signal	EBL	163	88	108	-	150
		WBR	16	54	17	-	150
		SBL	19	29	15	-	150
Sarival Ave/Northern Pkwy WB Ramp (6)	Signal	WBR	336	459	72	280	280
Sarival Ave/Northern Pkwy EB Ramp (7)	Signal	SBL - Dual	412	374	161	280	280
Sarival Ave/Driveway B (8)	Stop	NBL	19	6	1	-	TWLTL
		SBR	45	13	0	-	150
Sarival Ave/Driveway C (9)	Stop	NBL	19	6	1	-	TWLTL
		SBR	45	13	0	-	150

8. RECOMMENDATIONS

The proposed Sarival Logistics development is comprised of three (3) industrial buildings totaling 675,500 square feet and is located west of Sarival Avenue, approximately 1,300 feet south of Peoria Avenue. The site is located within Maricopa County unincorporated area and adjacent to City of Glendale city limits. The opening year is anticipated in 2030.

The recommendations with the buildout of the proposed Sarival Logistics include:

Half-Street Improvements Adjacent to the Project

- The developer will be responsible for the half street improvements adjacent to the project frontage along Sarival Avenue.

Sarival Avenue and Driveway A (4)

- Construct full access stop-controlled west leg of the existing Sarival Avenue and Brown Street intersection.
- Construct a 150-foot southbound right-turn lane.

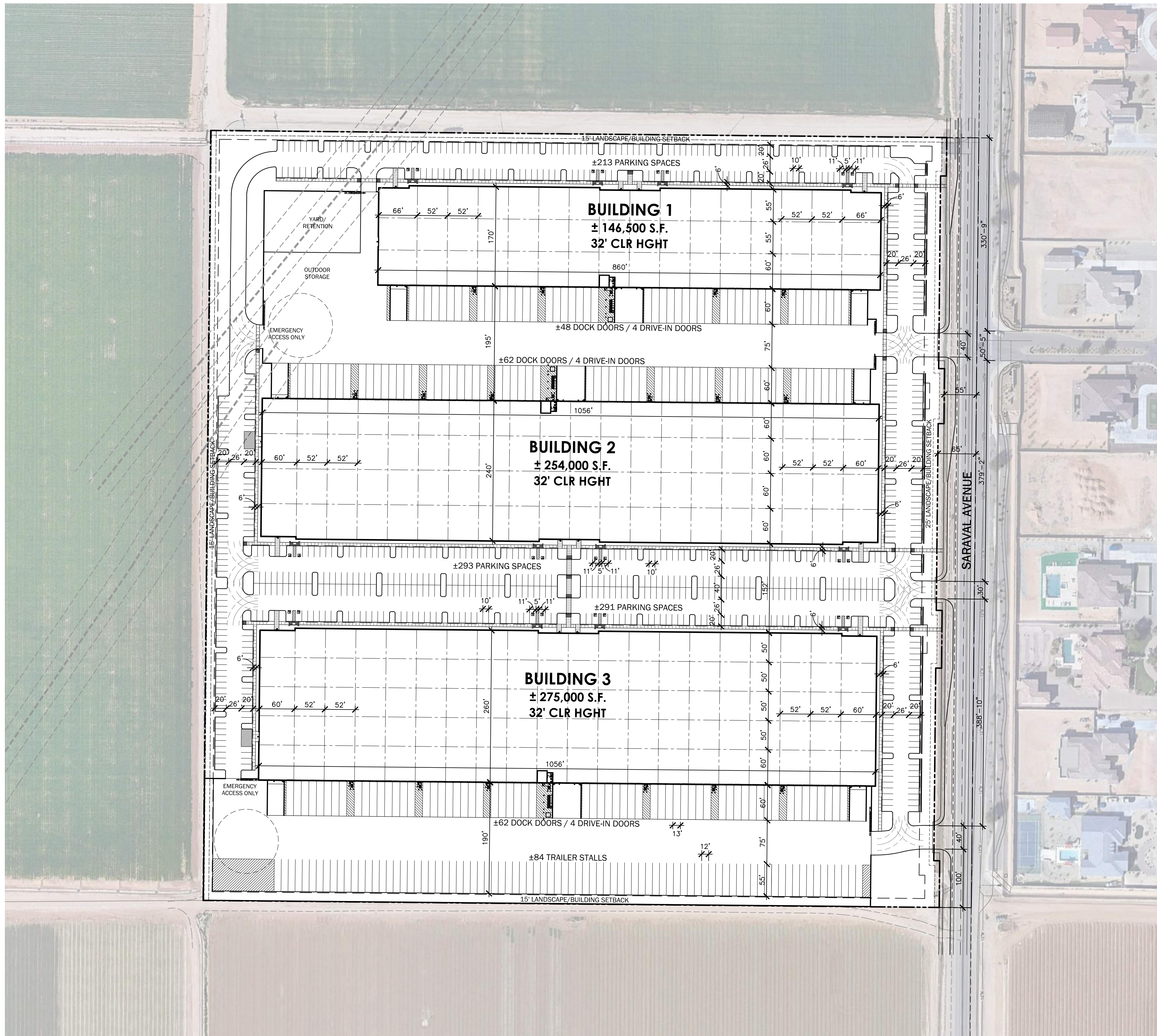
Sarival Avenue and Driveway B (8)

- Construct full access stop-controlled driveway with a 150-foot southbound right-turn lane.

Sarival Avenue and Driveway C (9)

- Construct full access stop-controlled driveway with a 150-foot southbound right-turn lane.

Appendix A – Proposed Site Plan



PROJECT INFORMATION

PROJECT NAME	SARIVAL LOGISTICS
PROJECT ADDRESS	SOUTH OF PEORIA AVENUE, WEST OF SARAVAL AVENUE GLENDALE, AZ
OWNER	DANIEL/BETTY JEAN JARRELL TRUST 10156 N. SARIVAL AVE WADDELL, AZ 85355
ARCHITECT	DLR GROUP 6225 N 24TH STREET, SUITE 250 PHOENIX, AZ 85016 PHONE: 480-206-7727 CONTACT: TIM THIELKE
ASSESSOR'S PARCEL NUMBER	501-04-002C
EXISTING ZONING:	RU-43
PROPOSED ZONING:	PAD / M-1
PROPOSED USE:	OFFICE/INDUSTRIAL/WAREHOUSE/DISTRIBUTION
ALLOWED BUILDING HEIGHT:	56'
PROPOSED BUILDING HEIGHT:	48'
STORIES:	1-STORY
CONSTRUCTION TYPE:	V-B
MINIMUM LOT WIDTH:	N/A
FRONT/STREET:	25' MIN
SIDE:	15' MIN
REAR:	15' MIN
LANDSCAPE SETBACKS:	
FRONT/STREET:	25' MIN
SIDE:	15' MIN
REAR:	15' MIN
GROSS SITE AREA:	± 1,735,984 S.F. (± 39.85 ACRES)
NET SITE AREA:	± 1,653,636 S.F. (± 37.96 ACRES)
PROPOSED BUILDING AREA:	
BUILDING 1	± 146,500 S.F.
BUILDING 2	± 254,000 S.F.
BUILDING 3	± 275,000 S.F.
TOTAL	± 675,500 S.F.
LOT COVERAGE:	± 40.85% (50% MAXIMUM ALLOWED) (675,500 SF / 1,653,636 SF = .4085)
PARKING REQUIRED (Warehouse):	One space per 2,000 SF of warehouse and/or 5,000 SF of yard related area + one space per 350 SF of office area (City of Glendale Warehouse Parking Requirements)
BUILDING 1	
OFFICE	± 20,000 S.F. @ 1/350 S.F. = 58 SPACES
WAREHOUSE	± 126,500 S.F. @ 1/2,000 S.F. = 63 SPACES
SUB-TOTAL	122 SPACES
BUILDING 2	
OFFICE	± 30,000 S.F. @ 1/350 S.F. = 86 SPACES
WAREHOUSE	± 224,000 S.F. @ 1/2,000 S.F. = 112 SPACES
SUB-TOTAL	198 SPACES
BUILDING 3	
OFFICE	± 30,000 S.F. @ 1/350 S.F. = 86 SPACES
WAREHOUSE	± 245,000 S.F. @ 1/2,000 S.F. = 123 SPACES
SUB-TOTAL	209 SPACES
TOTAL PARKING REQUIRED:	529 SPACES
PARKING REQUIRED (Spec Building):	One space per 500 SF of warehouse area + one space per 350 SF of office area (City of Glendale Manufacturing Parking Requirements)
BUILDING 1	
OFFICE	± 20,000 S.F. @ 1/350 S.F. = 58 SPACES
WAREHOUSE	± 126,500 S.F. @ 1/500 S.F. = 253 SPACES
SUB-TOTAL	311 SPACES
BUILDING 2	
OFFICE	± 30,000 S.F. @ 1/350 S.F. = 86 SPACES
WAREHOUSE	± 224,000 S.F. @ 1/500 S.F. = 448 SPACES
SUB-TOTAL	534 SPACES
BUILDING 3	
OFFICE	± 30,000 S.F. @ 1/350 S.F. = 86 SPACES
WAREHOUSE	± 245,000 S.F. @ 1/500 S.F. = 490 SPACES
SUB-TOTAL	576 SPACES
TOTAL PARKING PROVIDED:	1,421 SPACES
PARKING PROVIDED:	
BUILDING 1	213 SPACES
BUILDING 2	293 SPACES
BUILDING 3	291 SPACES
TOTAL	797 SPACES
PARKING RATIO:	± 1.18 SPACES PER 1,000 S.F.
ADA PARKING REQUIRED:	± 22 SPACES
ADA PARKING PROVIDED:	± 24 SPACES
BICYCLE PARKING REQUIRED (1/10 SPACES FIRST 50, 1/20 REMAINING):	± xx SPACES
BICYCLE PARKING PROVIDED:	± xx SPACES
COMMON OPEN SPACE REQUIRED:	10% (±165,344 S.F.)
COMMON OPEN SPACE PROVIDED:	±10.6% (±175,000 S.F. / 1,653,636 S.F. = .106)

CONCEPTUAL SITE PLAN - 06
 SCALE: 1" = 80'
 0' 40' 80' 160' 320'



NOT FOR CONSTRUCTION

Sarival Logistics

CONCEPTUAL DESIGN (06/18)
02.17.2025 (Revisions)

CONCEPTUAL SITE PLAN

A1.01

Glendale, Arizona

Appendix B – Traffic Count Data

All Traffic Data Services, LLC
 12200 W 52nd Ave
 Wheat Ridge, CO 80033
www.alltrafficdata.net

Site Code: 8
 Station ID: 8
 W Peoria Ave W/O N Sarival Ave

Start Time	26-Feb-25 Wed	EB	WB	Total						
12:00 AM		24	20	44						
01:00		18	20	38						
02:00		23	27	50						
03:00		29	55	84						
04:00		88	117	205						
05:00		256	187	443						
06:00		221	405	626						
07:00		321	330	651						
08:00		285	289	574						
09:00		273	197	470						
10:00		244	211	455						
11:00		277	295	572						
12:00 PM		308	293	601						
01:00		308	304	612						
02:00		370	366	736						
03:00		378	376	754						
04:00		441	379	820						
05:00		462	354	816						
06:00		287	336	623						
07:00		226	202	428						
08:00		187	166	353						
09:00		119	106	225						
10:00		110	78	188						
11:00		50	62	112						
Total		5305	5175	10480						
Percent		50.6%	49.4%							
AM Peak	-	07:00	06:00	-	-	-	-	-	-	07:00
Vol.	-	321	405	-	-	-	-	-	-	651
PM Peak	-	17:00	16:00	-	-	-	-	-	-	16:00
Vol.	-	462	379	-	-	-	-	-	-	820
Grand Total		5305	5175							10480
Percent		50.6%	49.4%							
ADT		ADT 10,480	AADT 10,480							

All Traffic Data Services, LLC
 12200 W 52nd Ave
 Wheat Ridge, CO 80033
www.alltrafficdata.net

Site Code: 9
 Station ID: 9
 N Sarival Ave S/O W Brown St

Start Time	26-Feb-25 Wed	NB	SB							Total
12:00 AM		33	8							41
01:00		17	6							23
02:00		18	7							25
03:00		16	14							30
04:00		16	23							39
05:00		24	74							98
06:00		77	215							292
07:00		141	277							418
08:00		115	167							282
09:00		86	113							199
10:00		114	117							231
11:00		188	175							363
12:00 PM		161	182							343
01:00		131	164							295
02:00		220	221							441
03:00		280	207							487
04:00		263	210							473
05:00		235	187							422
06:00		161	139							300
07:00		150	101							251
08:00		107	92							199
09:00		78	39							117
10:00		57	32							89
11:00		30	22							52
Total		2718	2792							5510
Percent		49.3%	50.7%							
AM Peak	-	11:00	07:00	-	-	-	-	-	-	07:00
Vol.	-	188	277	-	-	-	-	-	-	418
PM Peak	-	15:00	14:00	-	-	-	-	-	-	15:00
Vol.	-	280	221	-	-	-	-	-	-	487
Grand Total		2718	2792							5510
Percent		49.3%	50.7%							
ADT		ADT 5,510	AADT 5,510							

All Traffic Data Services, LLC
 12200 W 52nd Ave
 Wheat Ridge, CO 80033
www.alltrafficdata.net

Site Code: 10
 Station ID: 10
 W Olive Ave W/O N Sarival Ave

Start Time	26-Feb-25 Wed	EB	WB	Total						
12:00 AM		8	22	30						
01:00		9	13	22						
02:00		9	14	23						
03:00		15	17	32						
04:00		73	23	96						
05:00		197	54	251						
06:00		362	242	604						
07:00		483	394	877						
08:00		411	257	668						
09:00		219	146	365						
10:00		208	197	405						
11:00		244	179	423						
12:00 PM		217	215	432						
01:00		213	236	449						
02:00		258	393	651						
03:00		442	440	882						
04:00		261	454	715						
05:00		245	446	691						
06:00		194	318	512						
07:00		136	215	351						
08:00		81	228	309						
09:00		42	124	166						
10:00		35	74	109						
11:00		20	35	55						
Total		4382	4736	9118						
Percent		48.1%	51.9%							
AM Peak	-	07:00	07:00	-	-	-	-	-	-	07:00
Vol.	-	483	394	-	-	-	-	-	-	877
PM Peak	-	15:00	16:00	-	-	-	-	-	-	15:00
Vol.	-	442	454	-	-	-	-	-	-	882
Grand Total		4382	4736							9118
Percent		48.1%	51.9%							
ADT		ADT 9,118	AADT 9,118							



(303) 216-2439
www.alltrafficdata.net

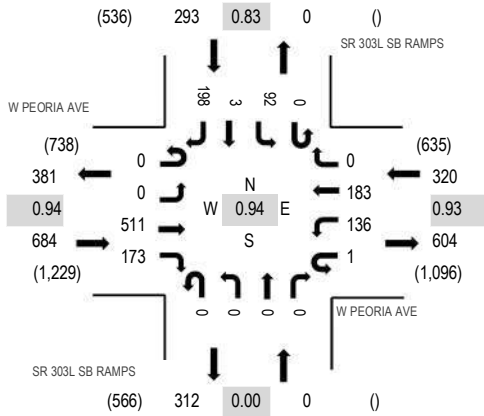
Location: 1 SR 303L SB RAMPS & W PEORIA AVE AM

Date: Wednesday, February 26, 2025

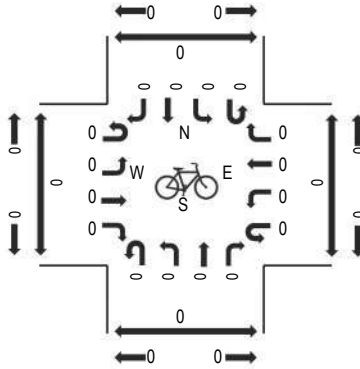
Peak Hour: 07:15 AM - 08:15 AM

Peak 15-Minutes: 07:30 AM - 07:45 AM

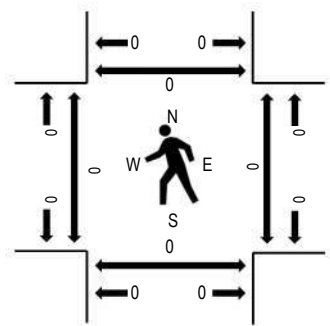
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	W PEORIA AVE Eastbound				W PEORIA AVE Westbound				SR 303L SB RAMPS Northbound				SR 303L SB RAMPS Southbound				Total	Rolling Hour	Pedestrian Crossings				
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North	
7:00 AM	0	0	104	44	0	32	51	0	0	0	0	0	0	0	20	1	24	276	1,256	0	0	0	0
7:15 AM	0	0	130	52	0	35	30	0	0	0	0	0	0	19	0	47	313	1,297	0	0	0	0	
7:30 AM	0	0	128	45	0	30	53	0	0	0	0	0	0	21	1	68	346	1,272	0	0	0	0	
7:45 AM	0	0	127	29	1	37	44	0	0	0	0	0	0	32	2	49	321	1,182	0	0	0	0	
8:00 AM	0	0	126	47	0	34	56	0	0	0	0	0	0	20	0	34	317	1,144	0	0	0	0	
8:15 AM	0	0	99	38	0	27	51	0	0	0	0	0	0	27	0	46	288		0	0	0	0	
8:30 AM	0	0	101	33	0	27	44	0	0	0	0	0	0	10	1	40	256		0	0	0	0	
8:45 AM	0	0	103	23	0	27	56	0	0	0	0	0	0	28	1	45	283		0	0	0	0	
Count Total	0	0	918	311	1	249	385	0	0	0	0	0	0	177	6	353	2,400		0	0	0	0	
Peak Hour	0	0	511	173	1	136	183	0	0	0	0	0	0	92	3	198	1,297		0	0	0	0	



(303) 216-2439
www.alltrafficdata.net

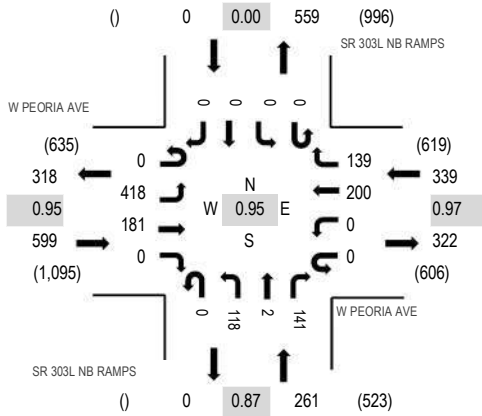
Location: 2 SR 303L NB RAMPS & W PEORIA AVE

Date: Wednesday, February 26, 2025

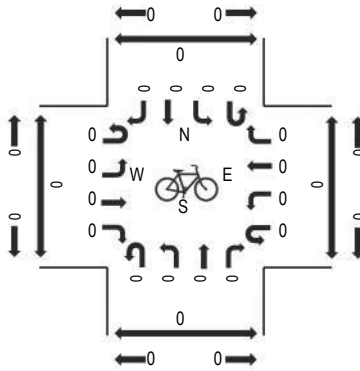
Peak Hour: 07:15 AM - 08:15 AM

Peak 15-Minutes: 07:30 AM - 07:45 AM

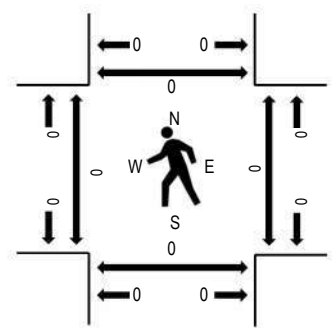
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	W PEORIA AVE Eastbound				W PEORIA AVE Westbound				SR 303L NB RAMPS Northbound				SR 303L NB RAMPS Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	79	44	0	0	0	47	26	0	39	0	34	0	0	0	0	269	1,172	0	0	0	0
7:15 AM	0	108	41	0	0	0	45	42	0	20	0	28	0	0	0	0	284	1,199	0	0	0	0
7:30 AM	0	104	46	0	0	0	48	39	0	37	2	41	0	0	0	0	317	1,182	0	0	0	0
7:45 AM	0	102	55	0	0	0	51	35	0	27	0	32	0	0	0	0	302	1,095	0	0	0	0
8:00 AM	0	104	39	0	0	0	56	23	0	34	0	40	0	0	0	0	296	1,065	0	0	0	0
8:15 AM	0	93	39	0	0	0	45	26	0	31	1	32	0	0	0	0	267		0	0	0	0
8:30 AM	0	73	33	0	0	0	43	21	0	29	0	31	0	0	0	0	230		0	0	0	0
8:45 AM	0	91	44	0	0	0	45	27	0	38	0	27	0	0	0	0	272		0	0	0	0
Count Total	0	754	341	0	0	0	380	239	0	255	3	265	0	0	0	0	2,237		0	0	0	0
Peak Hour	0	418	181	0	0	0	200	139	0	118	2	141	0	0	0	0	1,199		0	0	0	0



(303) 216-2439
www.alltrafficdata.net

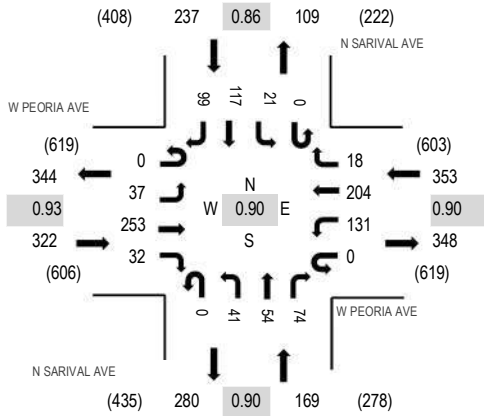
Location: 3 N SARIVAL AVE & W PEORIA AVE AM

Date: Wednesday, February 26, 2025

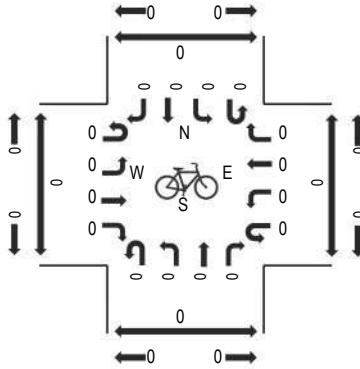
Peak Hour: 07:15 AM - 08:15 AM

Peak 15-Minutes: 07:30 AM - 07:45 AM

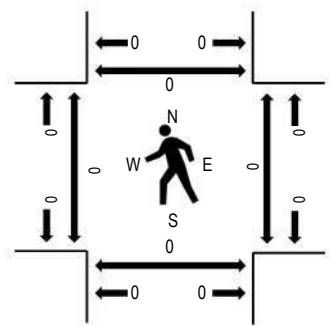
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	W PEORIA AVE Eastbound				W PEORIA AVE Westbound				N SARIVAL AVE Northbound				N SARIVAL AVE Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	11	64	6	0	15	50	2	0	2	11	8	0	5	25	13	212	1,041	0	0	0	0
7:15 AM	0	9	52	7	0	22	52	4	0	6	8	13	0	5	28	24	230	1,081	0	0	0	0
7:30 AM	0	4	70	11	0	37	53	7	0	16	17	17	0	7	33	29	301	1,066	0	0	0	0
7:45 AM	0	13	68	6	0	43	52	3	0	10	20	20	0	8	32	23	298	954	0	0	0	0
8:00 AM	0	11	63	8	0	29	47	4	0	9	9	24	0	1	24	23	252	854	0	0	0	0
8:15 AM	0	12	51	8	0	11	47	8	0	5	19	14	0	4	15	21	215		0	0	0	0
8:30 AM	0	11	43	8	0	6	45	2	0	3	8	11	0	5	29	18	189		0	0	0	0
8:45 AM	0	9	53	8	0	8	47	9	0	10	11	7	0	6	16	14	198		0	0	0	0
Count Total	0	80	464	62	0	171	393	39	0	61	103	114	0	41	202	165	1,895		0	0	0	0
Peak Hour	0	37	253	32	0	131	204	18	0	41	54	74	0	21	117	99	1,081		0	0	0	0



(303) 216-2439
www.alltrafficdata.net

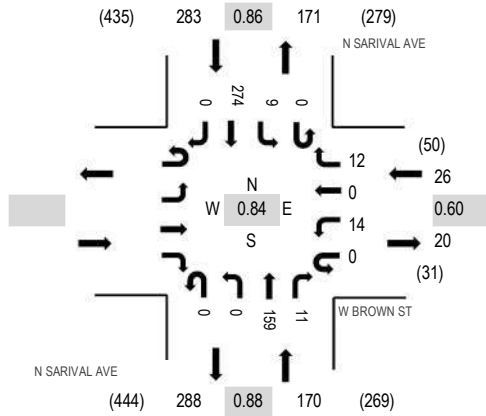
Location: 4 N SARIVAL AVE & W BROWN ST AM

Date: Wednesday, February 26, 2025

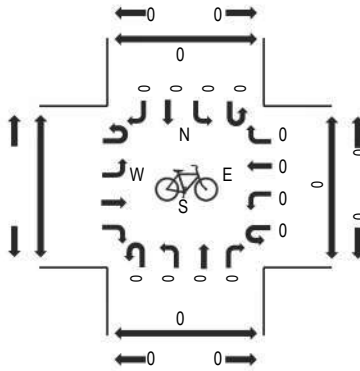
Peak Hour: 07:15 AM - 08:15 AM

Peak 15-Minutes: 07:30 AM - 07:45 AM

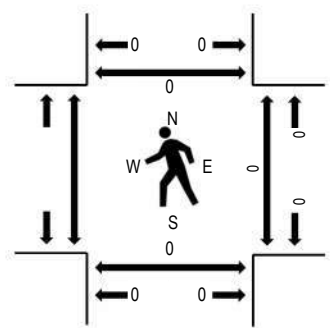
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	Eastbound				W BROWN ST Westbound			N SARIVAL AVE Northbound				N SARIVAL AVE Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru			Right	West	East	South
7:00 AM					0	3	0	5	0	0	16	4	0	1	46	0	75	443	0	0	0
7:15 AM					0	3	0	0	0	0	28	5	0	2	53	0	91	479	0	0	0
7:30 AM					0	8	0	4	0	0	46	3	0	2	80	0	143	459	0	0	0
7:45 AM					0	1	0	5	0	0	46	1	0	0	81	0	134	381	0	0	0
8:00 AM					0	2	0	3	0	0	39	2	0	5	60	0	111	311	0	0	0
8:15 AM					0	1	0	2	0	0	34	2	0	1	31	0	71		0	0	0
8:30 AM					0	1	0	1	0	0	20	1	0	1	41	0	65		0	0	0
8:45 AM					0	3	0	8	0	0	22	0	0	1	30	0	64		0	0	0
Count Total					0	22	0	28	0	0	251	18	0	13	422	0	754		0	0	0
Peak Hour					0	14	0	12	0	0	159	11	0	9	274	0	479		0	0	0



(303) 216-2439
www.alltrafficdata.net

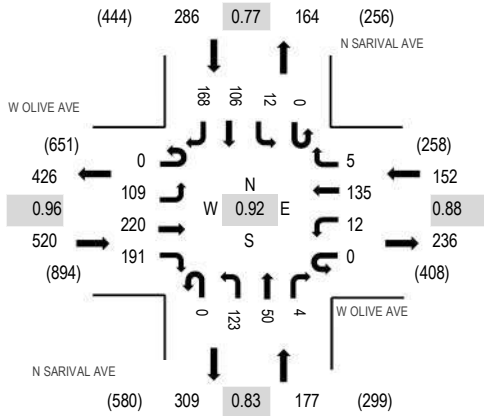
Location: 5 N SARIVAL AVE & W OLIVE AVE AM

Date: Wednesday, February 26, 2025

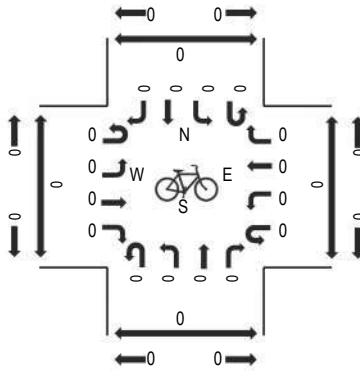
Peak Hour: 07:15 AM - 08:15 AM

Peak 15-Minutes: 07:45 AM - 08:00 AM

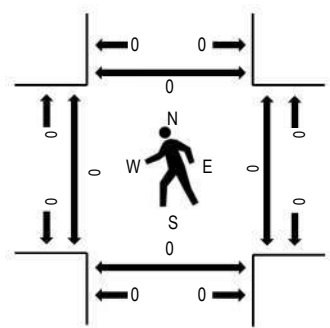
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	W OLIVE AVE Eastbound				W OLIVE AVE Westbound				N SARIVAL AVE Northbound				N SARIVAL AVE Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	10	40	46	0	1	27	0	0	25	9	1	0	3	28	20	210	1,076	0	0	0	0
7:15 AM	0	16	51	59	0	4	30	2	0	29	9	2	0	4	22	26	254	1,135	0	0	0	0
7:30 AM	0	29	68	39	0	3	28	1	0	34	19	1	0	3	31	47	303	1,091	0	0	0	0
7:45 AM	0	34	53	38	0	5	35	1	0	39	11	0	0	2	37	54	309	958	0	0	0	0
8:00 AM	0	30	48	55	0	0	42	1	0	21	11	1	0	3	16	41	269	819	0	0	0	0
8:15 AM	0	24	48	47	0	3	19	2	0	25	9	1	0	2	20	10	210		0	0	0	0
8:30 AM	0	11	39	38	0	2	15	4	0	15	3	1	0	4	30	8	170		0	0	0	0
8:45 AM	0	7	29	35	0	2	30	1	0	19	12	2	0	2	19	12	170		0	0	0	0
Count Total	0	161	376	357	0	20	226	12	0	207	83	9	0	23	203	218	1,895		0	0	0	0
Peak Hour	0	109	220	191	0	12	135	5	0	123	50	4	0	12	106	168	1,135		0	0	0	0



(303) 216-2439
www.alltrafficdata.net

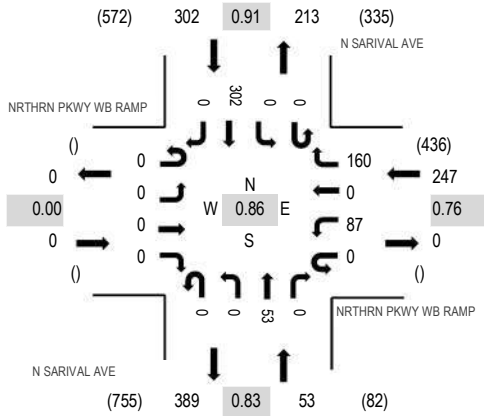
Location: 6 N SARIVAL AVE & NRTHRN PKWY WB RAMP AM

Date: Wednesday, February 26, 2025

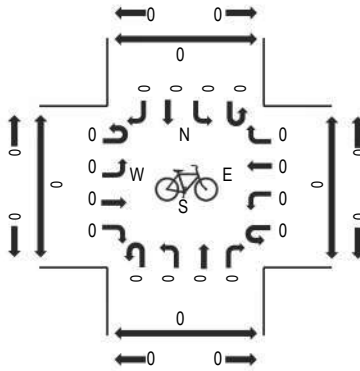
Peak Hour: 07:00 AM - 08:00 AM

Peak 15-Minutes: 07:45 AM - 08:00 AM

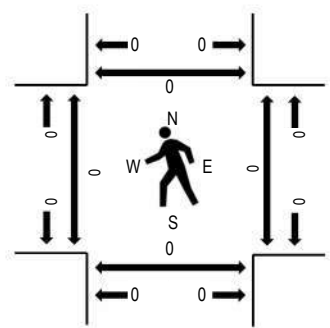
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	NRTHRN PKWY WB RAMP Eastbound				NRTHRN PKWY WB RAMP Westbound				N SARIVAL AVE Northbound				N SARIVAL AVE Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
	7:00 AM	0	0	0	0	0	18	0	31	0	0	10	0	0	0	76			0	135	602	0
7:15 AM	0	0	0	0	0	21	0	30	0	0	12	0	0	0	83	0	146	601	0	0	0	0
7:30 AM	0	0	0	0	0	18	0	47	0	0	15	0	0	0	67	0	147	577	0	0	0	0
7:45 AM	0	0	0	0	0	30	0	52	0	0	16	0	0	0	76	0	174	537	0	0	0	0
8:00 AM	0	0	0	0	0	25	0	27	0	0	9	0	0	0	73	0	134	488	0	0	0	0
8:15 AM	0	0	0	0	0	19	0	30	0	0	6	0	0	0	67	0	122		0	0	0	0
8:30 AM	0	0	0	0	0	18	0	16	0	0	3	0	0	0	70	0	107		0	0	0	0
8:45 AM	0	0	0	0	0	34	0	20	0	0	11	0	0	0	60	0	125		0	0	0	0
Count Total	0	0	0	0	0	183	0	253	0	0	82	0	0	0	572	0	1,090		0	0	0	0
Peak Hour	0	0	0	0	0	87	0	160	0	0	53	0	0	0	302	0	602		0	0	0	0



(303) 216-2439
www.alltrafficdata.net

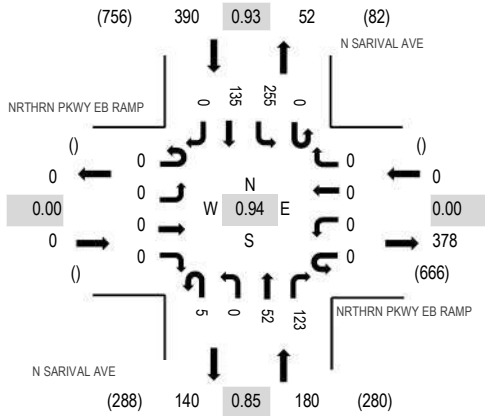
Location: 7 N SARIVAL AVE & NRTHRN PKWY EB RAMP AM

Date: Wednesday, February 26, 2025

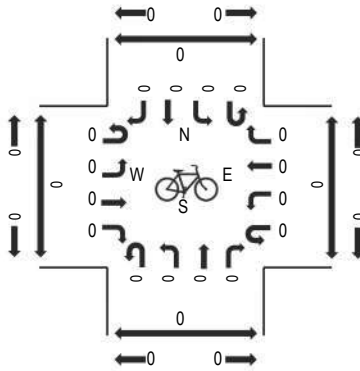
Peak Hour: 07:00 AM - 08:00 AM

Peak 15-Minutes: 07:45 AM - 08:00 AM

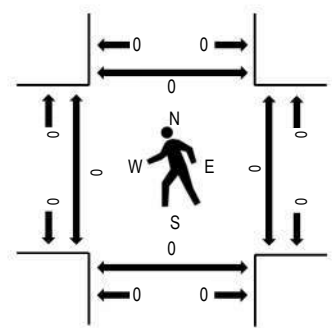
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	NRTHRN PKWY EB RAMP Eastbound				NRTHRN PKWY EB RAMP Westbound				N SARIVAL AVE Northbound				N SARIVAL AVE Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	0	0	0	0	0	0	0	5	0	9	27	0	69	26	0	136	570	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	12	28	0	72	31	0	143	568	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	15	38	0	57	30	0	140	532	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	16	30	0	57	48	0	151	498	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	9	29	0	64	32	0	134	466	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	6	12	0	56	33	0	107		0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	3	14	0	57	32	0	106		0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	12	15	0	41	51	0	119		0	0	0	0
Count Total	0	0	0	0	0	0	0	0	5	0	82	193	0	473	283	0	1,036		0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	5	0	52	123	0	255	135	0	570		0	0	0	0



(303) 216-2439
www.alltrafficdata.net

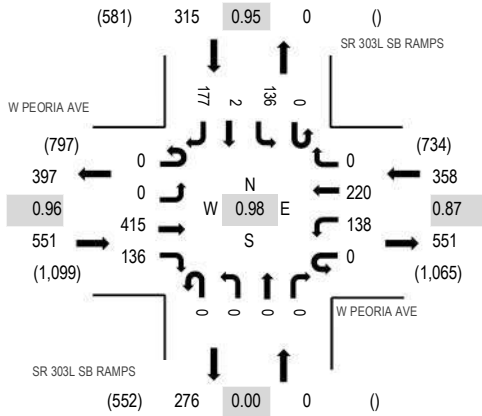
Location: 1 SR 303L SB RAMPS & W PEORIA AVE PM

Date: Wednesday, February 26, 2025

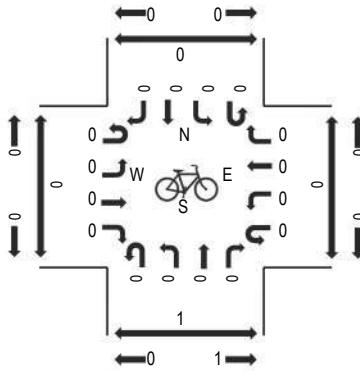
Peak Hour: 04:45 PM - 05:45 PM

Peak 15-Minutes: 05:15 PM - 05:30 PM

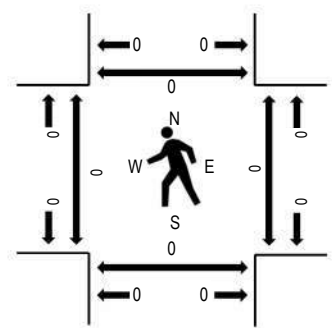
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	W PEORIA AVE Eastbound				W PEORIA AVE Westbound				SR 303L SB RAMPS Northbound				SR 303L SB RAMPS Southbound				Total	Rolling Hour	Pedestrian Crossings				
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North	
4:00 PM	0	0	99	30	0	32	67	0	0	0	0	0	0	0	26	1	51	306	1,205	0	0	0	0
4:15 PM	0	0	129	37	0	34	52	0	0	0	0	0	0	0	26	1	38	317	1,208	0	0	0	0
4:30 PM	0	0	82	32	0	46	61	0	0	0	0	0	0	0	26	0	41	288	1,202	0	0	0	0
4:45 PM	0	0	111	23	0	26	51	0	0	0	0	0	0	0	38	0	45	294	1,224	0	0	0	0
5:00 PM	0	0	117	22	0	35	55	0	0	0	0	0	0	0	36	2	42	309	1,209	0	0	0	0
5:15 PM	0	0	94	39	0	36	63	0	0	0	0	0	0	0	32	0	47	311		0	0	0	0
5:30 PM	0	0	93	52	0	41	51	0	0	0	0	0	0	0	30	0	43	310		0	0	0	0
5:45 PM	0	0	107	32	1	30	53	0	0	0	0	0	0	0	18	1	37	279		0	0	0	0
Count Total	0	0	832	267	1	280	453	0	0	0	0	0	0	0	232	5	344	2,414		0	0	0	0
Peak Hour	0	0	415	136	0	138	220	0	0	0	0	0	0	0	136	2	177	1,224		0	0	0	0

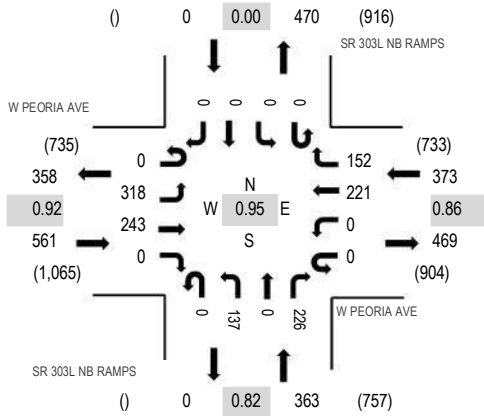
Location: 2 SR 303L NB RAMPS & W PEORIA AVE PM

Date: Wednesday, February 26, 2025

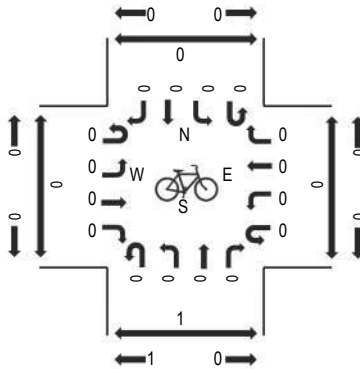
Peak Hour: 04:15 PM - 05:15 PM

Peak 15-Minutes: 04:15 PM - 04:30 PM

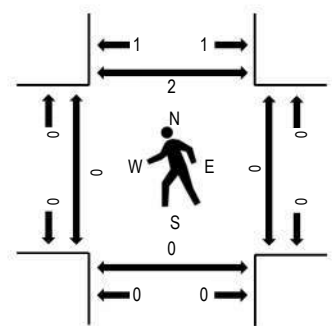
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	W PEORIA AVE Eastbound				W PEORIA AVE Westbound				SR 303L NB RAMPS Northbound				SR 303L NB RAMPS Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	82	47	0	0	0	58	33	0	42	0	50	0	0	0	0	312	1,284	0	0	0	0
4:15 PM	0	85	67	0	0	0	55	47	0	33	0	55	0	0	0	0	342	1,297	0	0	0	1
4:30 PM	0	62	48	0	0	0	74	37	0	31	0	60	0	0	0	0	312	1,286	0	0	0	0
4:45 PM	0	89	57	0	0	0	44	36	0	34	0	58	0	0	0	0	318	1,282	0	0	0	1
5:00 PM	0	82	71	0	0	0	48	32	0	39	0	53	0	0	0	0	325	1,271	0	0	0	0
5:15 PM	0	65	62	0	0	0	53	31	0	49	1	70	0	0	0	0	331		0	0	0	1
5:30 PM	0	74	50	0	0	0	54	41	0	35	0	54	0	0	0	0	308		0	0	0	0
5:45 PM	0	83	41	0	0	0	54	36	0	32	0	61	0	0	0	0	307		0	0	0	0
Count Total	0	622	443	0	0	0	440	293	0	295	1	461	0	0	0	0	2,555		0	0	0	3
Peak Hour	0	318	243	0	0	0	221	152	0	137	0	226	0	0	0	0	1,297		0	0	0	2



(303) 216-2439
www.alltrafficdata.net

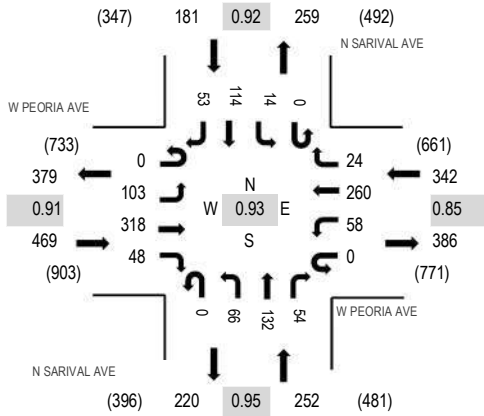
Location: 3 N SARIVAL AVE & W PEORIA AVE PM

Date: Wednesday, February 26, 2025

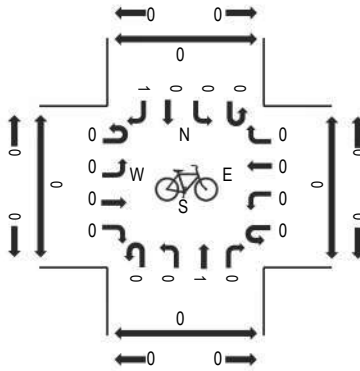
Peak Hour: 04:15 PM - 05:15 PM

Peak 15-Minutes: 04:15 PM - 04:30 PM

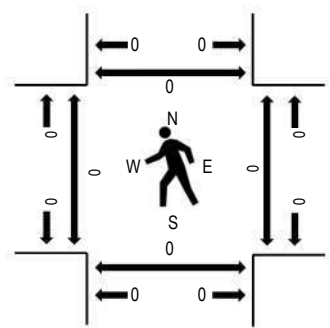
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	W PEORIA AVE Eastbound				W PEORIA AVE Westbound				N SARIVAL AVE Northbound				N SARIVAL AVE Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	24	62	10	0	9	56	15	0	11	35	13	0	6	24	20	285	1,211	0	0	0	0
4:15 PM	0	31	75	17	0	16	82	3	0	18	29	18	0	4	25	15	333	1,244	0	0	0	0
4:30 PM	0	25	73	9	0	11	66	7	0	18	31	17	0	2	30	16	305	1,219	0	0	0	0
4:45 PM	0	24	77	14	0	17	48	7	0	18	34	7	0	2	29	11	288	1,207	0	0	0	0
5:00 PM	0	23	93	8	0	14	64	7	0	12	38	12	0	6	30	11	318	1,181	0	0	0	0
5:15 PM	0	10	110	12	0	23	56	8	0	15	29	9	0	5	18	13	308		0	0	0	0
5:30 PM	0	11	88	5	0	11	65	8	0	20	39	6	0	3	25	12	293		0	0	0	0
5:45 PM	0	27	68	7	0	10	52	6	0	19	21	12	0	3	22	15	262		0	0	0	0
Count Total	0	175	646	82	0	111	489	61	0	131	256	94	0	31	203	113	2,392		0	0	0	0
Peak Hour	0	103	318	48	0	58	260	24	0	66	132	54	0	14	114	53	1,244		0	0	0	0



(303) 216-2439
www.alltrafficdata.net

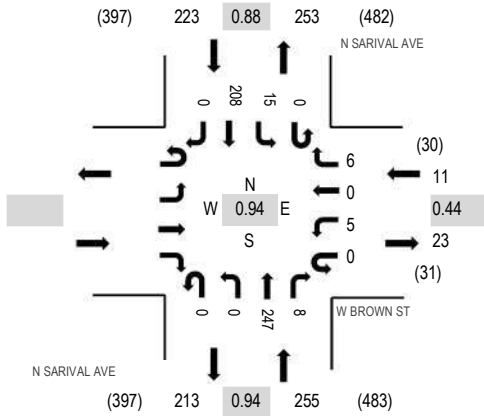
Location: 4 N SARIVAL AVE & W BROWN ST PM

Date: Wednesday, February 26, 2025

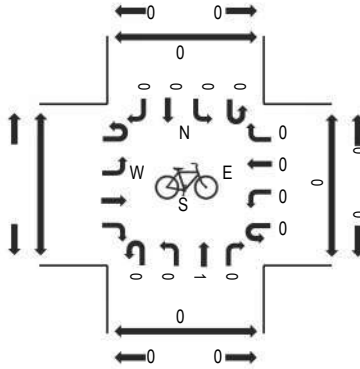
Peak Hour: 04:15 PM - 05:15 PM

Peak 15-Minutes: 04:15 PM - 04:30 PM

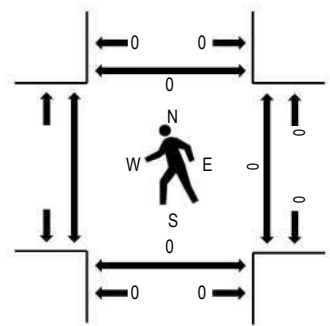
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	W BROWN ST				N SARIVAL AVE				N SARIVAL AVE				Total	Rolling Hour	Pedestrian Crossings						
	Eastbound		Westbound		Northbound		Southbound		Eastbound		Southbound				West	East	South	North			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right									
4:00 PM					0	5	0	1	0	0	60	2	0	2	40	0	110	482	0	0	0
4:15 PM					0	3	0	0	0	0	65	3	0	3	56	0	130	489	0	0	0
4:30 PM					0	0	0	3	0	0	62	2	0	3	44	0	114	464	0	0	0
4:45 PM					0	2	0	0	0	0	61	2	0	6	57	0	128	463	0	0	0
5:00 PM					0	0	0	3	0	0	59	1	0	3	51	0	117	428	0	0	0
5:15 PM					0	2	0	0	0	0	52	0	0	0	51	0	105		0	0	0
5:30 PM					0	4	0	5	0	0	61	2	0	0	41	0	113		0	0	0
5:45 PM					0	2	0	0	0	0	50	1	0	1	39	0	93		0	0	0
Count Total					0	18	0	12	0	0	470	13	0	18	379	0	910		0	0	0
Peak Hour					0	5	0	6	0	0	247	8	0	15	208	0	489		0	0	0



(303) 216-2439
www.alltrafficdata.net

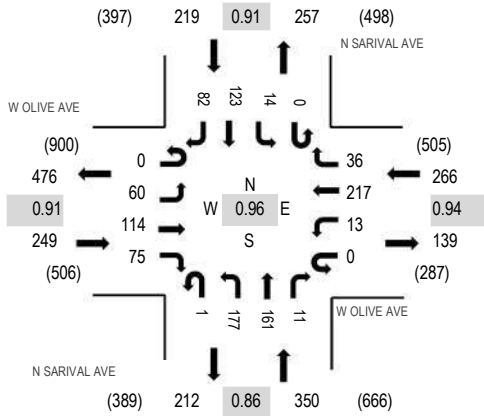
Location: 5 N SARIVAL AVE & W OLIVE AVE PM

Date: Wednesday, February 26, 2025

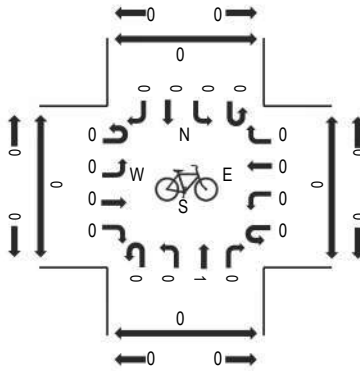
Peak Hour: 04:15 PM - 05:15 PM

Peak 15-Minutes: 04:30 PM - 04:45 PM

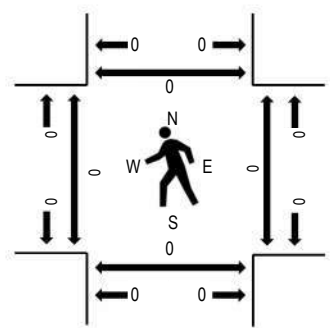
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	W OLIVE AVE Eastbound				W OLIVE AVE Westbound				N SARIVAL AVE Northbound			N SARIVAL AVE Southbound				Total	Rolling Hour	Pedestrian Crossings				
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru			Right	West	East	South	North
4:00 PM	0	16	38	18	0	2	49	6	0	46	44	0	0	9	22	15	265	1,077	0	0	0	0
4:15 PM	0	19	25	16	0	3	51	8	0	35	40	4	0	7	36	17	261	1,084	0	0	0	0
4:30 PM	0	16	28	21	0	3	57	11	1	52	43	6	0	2	25	17	282	1,063	0	0	0	0
4:45 PM	0	10	33	21	0	4	49	13	0	41	37	1	0	2	33	25	269	1,036	0	0	0	0
5:00 PM	0	15	28	17	0	3	60	4	0	49	41	0	0	3	29	23	272	997	0	0	0	0
5:15 PM	0	14	34	21	0	4	49	4	0	29	38	2	0	2	23	20	240		0	0	0	0
5:30 PM	0	14	24	17	0	0	58	5	0	44	43	6	0	3	21	20	255		0	0	0	0
5:45 PM	0	13	28	20	0	3	53	6	0	24	38	2	0	0	26	17	230		0	0	0	0
Count Total	0	117	238	151	0	22	426	57	1	320	324	21	0	28	215	154	2,074		0	0	0	0
Peak Hour	0	60	114	75	0	13	217	36	1	177	161	11	0	14	123	82	1,084		0	0	0	0

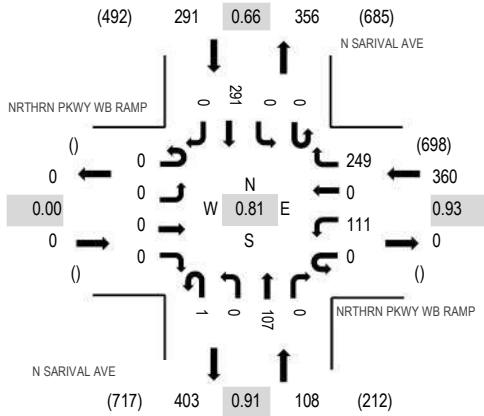
Location: 6 N SARIVAL AVE & NRTHRN PKWY WB RAMP PM

Date: Wednesday, February 26, 2025

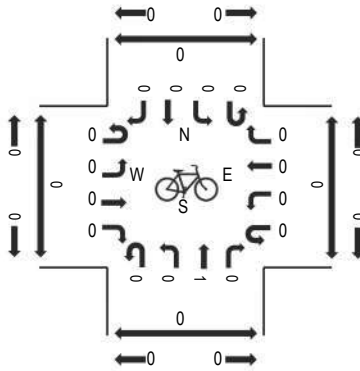
Peak Hour: 04:15 PM - 05:15 PM

Peak 15-Minutes: 04:30 PM - 04:45 PM

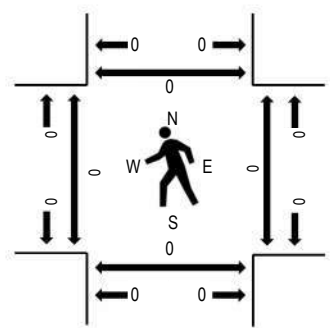
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	NRTHRN PKWY WB RAMP Eastbound				NRTHRN PKWY WB RAMP Westbound				N SARIVAL AVE Northbound				N SARIVAL AVE Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
	4:00 PM	0	0	0	0	0	27	0	66	0	0	32	0	0	0	43			0	168	756	0
4:15 PM	0	0	0	0	0	30	0	54	1	0	31	0	0	0	54	0	170	759	0	0	0	0
4:30 PM	0	0	0	0	0	32	0	66	0	0	26	0	0	0	111	0	235	735	0	0	0	0
4:45 PM	0	0	0	0	0	25	0	63	0	0	26	0	0	0	69	0	183	689	0	0	0	0
5:00 PM	0	0	0	0	0	24	0	66	0	0	24	0	0	0	57	0	171	646	0	0	0	0
5:15 PM	0	0	0	0	0	24	0	54	0	0	23	0	0	0	45	0	146		0	0	0	0
5:30 PM	0	0	0	0	0	35	0	68	1	0	24	0	1	0	60	0	189		0	0	0	0
5:45 PM	0	0	0	0	0	27	0	37	0	0	24	0	0	0	52	0	140		0	0	0	0
Count Total	0	0	0	0	0	224	0	474	2	0	210	0	1	0	491	0	1,402		0	0	0	0
Peak Hour	0	0	0	0	0	111	0	249	1	0	107	0	0	0	291	0	759		0	0	0	0

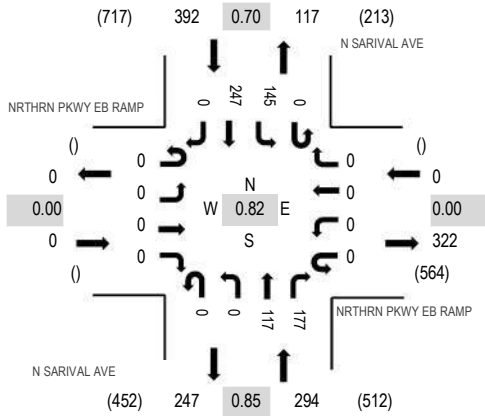
Location: 7 N SARIVAL AVE & NRTHRN PKWY EB RAMP PM

Date: Wednesday, February 26, 2025

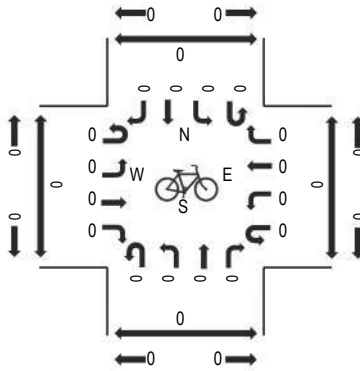
Peak Hour: 04:00 PM - 05:00 PM

Peak 15-Minutes: 04:30 PM - 04:45 PM

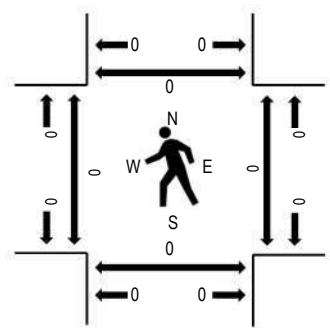
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	NRTHRN PKWY EB RAMP Eastbound				NRTHRN PKWY EB RAMP Westbound				N SARIVAL AVE Northbound				N SARIVAL AVE Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	0	0	0	0	0	0	0	0	0	32	51	0	22	48	0	153	686	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	32	54	0	24	61	0	171	675	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	26	40	0	65	78	0	209	627	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	27	32	0	34	60	0	153	573	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	24	37	0	33	48	0	142	543	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	23	31	0	25	44	0	123		0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	25	34	0	34	62	0	155		0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	24	20	0	28	51	0	123		0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	213	299	0	265	452	0	1,229		0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	117	177	0	145	247	0	686		0	0	0	0

Appendix C – Existing Capacity Analysis

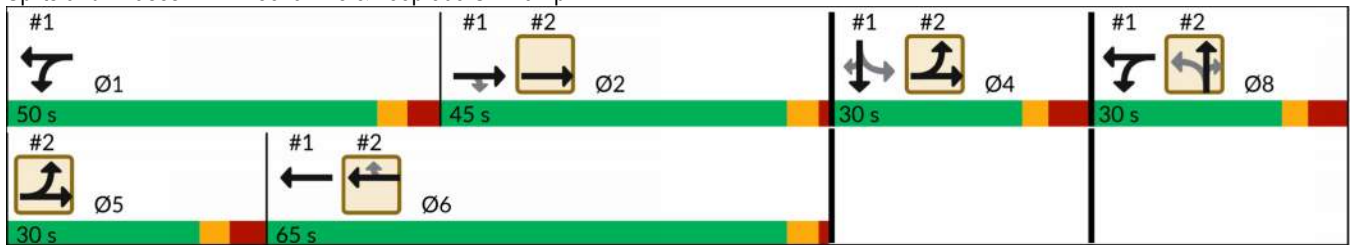


Lane Group	EBT	EBR	WBL	WBT	SBL	SBT	SBR	Ø1	Ø5	Ø6	Ø8
Lane Configurations	↑↑	↑	↓	↑	↓	↑	↓				
Traffic Volume (vph)	511	173	137	183	92	3	198				
Future Volume (vph)	511	173	137	183	92	3	198				
Turn Type	NA	Perm	Prot	NA	Perm	NA	Perm				
Protected Phases	2		18	16 8		4		1	5	6	8
Permitted Phases		2			4		4				
Detector Phase	2	2	18	16 8	4	4	4				
Switch Phase											
Minimum Initial (s)	15.0	15.0			12.0	12.0	12.0	8.0	8.0	15.0	12.0
Minimum Split (s)	45.0	45.0			30.0	30.0	30.0	50.0	30.0	65.0	30.0
Total Split (s)	45.0	45.0			30.0	30.0	30.0	50.0	30.0	65.0	30.0
Total Split (%)	29.0%	29.0%			19.4%	19.4%	19.4%	32%	19%	42%	19%
Yellow Time (s)	3.6	3.6			3.0	3.0	3.0	3.6	3.6	3.6	3.0
All-Red Time (s)	1.2	1.2			4.5	4.5	4.5	3.6	4.1	1.2	4.5
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0				
Total Lost Time (s)	4.8	4.8			7.5	7.5	7.5				
Lead/Lag	Lag	Lag						Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes						Yes	Yes	Yes	
Recall Mode	Min	Min			None	None	None	None	None	Min	None
Act Effct Green (s)	26.4	26.4	30.3	43.1	19.7	19.7	19.7				
Actuated g/C Ratio	0.28	0.28	0.32	0.45	0.21	0.21	0.21				
v/c Ratio	0.58	0.35	0.29	0.26	0.30	0.01	0.46				
Control Delay (s/veh)	33.4	6.0	27.3	6.7	36.2	33.0	8.0				
Queue Delay	0.1	0.0	0.0	0.0	0.5	0.0	0.0				
Total Delay (s/veh)	33.5	6.0	27.3	6.7	36.7	33.0	8.0				
LOS	C	A	C	A	D	C	A				
Approach Delay (s/veh)	26.3			15.5		17.3					
Approach LOS	C			B		B					

Intersection Summary

Cycle Length: 155	
Actuated Cycle Length: 96	
Natural Cycle: 155	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.65	
Intersection Signal Delay (s/veh): 21.5	Intersection LOS: C
Intersection Capacity Utilization 58.7%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 1: Peoria Ave & Loop 303 SB Ramp





Lane Group	EBT	EBR	WBL	WBT	SBL	SBT	SBR
Lane Group Flow (vph)	568	204	161	215	108	4	233
v/c Ratio	0.58	0.35	0.29	0.26	0.30	0.01	0.46
Control Delay (s/veh)	33.4	6.0	27.3	6.7	36.2	33.0	8.0
Queue Delay	0.1	0.0	0.0	0.0	0.5	0.0	0.0
Total Delay (s/veh)	33.5	6.0	27.3	6.7	36.7	33.0	8.0
Queue Length 50th (ft)	155	0	67	10	55	2	0
Queue Length 95th (ft)	236	44	113	56	108	10	52
Internal Link Dist (ft)	672			342		1245	
Turn Bay Length (ft)		250	300		400		400
Base Capacity (vph)	1495	786	1185	1841	418	440	552
Starvation Cap Reductn	0	0	0	104	0	0	0
Spillback Cap Reductn	226	0	0	0	108	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.26	0.14	0.12	0.35	0.01	0.42

Intersection Summary

HCM 7th Edition methodology does not support clustered intersections.

2: Loop 303 NB Ramps & Peoria Ave

03/25/2025

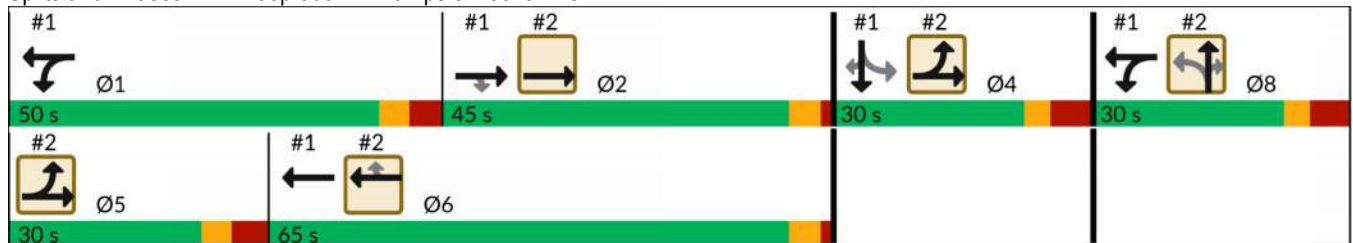


Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	Ø1	Ø2	Ø4	Ø5
Lane Configurations											
Traffic Volume (vph)	418	181	200	139	118	2	141				
Future Volume (vph)	418	181	200	139	118	2	141				
Turn Type	Prot	NA	NA	Perm	Perm	NA	Perm				
Protected Phases	4 5	2 4 5	6			8		1	2	4	5
Permitted Phases				6	8		8				
Detector Phase	4 5	2 4 5	6	6	8	8	8				
Switch Phase											
Minimum Initial (s)			15.0	15.0	12.0	12.0	12.0	8.0	15.0	12.0	8.0
Minimum Split (s)			65.0	65.0	30.0	30.0	30.0	50.0	45.0	30.0	30.0
Total Split (s)			65.0	65.0	30.0	30.0	30.0	50.0	45.0	30.0	30.0
Total Split (%)			41.9%	41.9%	19.4%	19.4%	19.4%	32%	29%	19%	19%
Yellow Time (s)			3.6	3.6	3.0	3.0	3.0	3.6	3.6	3.0	3.6
All-Red Time (s)			1.2	1.2	4.5	4.5	4.5	3.6	1.2	4.5	4.1
Lost Time Adjust (s)			0.0	0.0	0.0	0.0	0.0				
Total Lost Time (s)			4.8	4.8	7.5	7.5	7.5				
Lead/Lag			Lag	Lag				Lead	Lag		Lead
Lead-Lag Optimize?			Yes	Yes				Yes	Yes		Yes
Recall Mode			Min	Min	None	None	None	None	Min	None	None
Act Effct Green (s)	38.6	68.9	15.2	15.2	14.6	14.6	14.6				
Actuated g/C Ratio	0.40	0.72	0.16	0.16	0.15	0.15	0.15				
v/c Ratio	0.65	0.16	0.42	0.42	0.52	0.01	0.43				
Control Delay (s/veh)	36.6	0.4	40.9	10.3	45.9	36.0	9.4				
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0	0.0				
Total Delay (s/veh)	36.6	0.5	40.9	10.3	45.9	36.0	9.4				
LOS	D	A	D	B	D	D	A				
Approach Delay (s/veh)		25.2	28.3			26.1					
Approach LOS		C	C			C					

Intersection Summary

Cycle Length: 155
 Actuated Cycle Length: 96
 Natural Cycle: 155
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.65
 Intersection Signal Delay (s/veh): 26.3
 Intersection LOS: C
 Intersection Capacity Utilization 58.7%
 ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 2: Loop 303 NB Ramps & Peoria Ave





Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	464	213	235	164	139	3	166
v/c Ratio	0.65	0.16	0.42	0.42	0.52	0.01	0.43
Control Delay (s/veh)	36.6	0.4	40.9	10.3	45.9	36.0	9.4
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	36.6	0.5	40.9	10.3	45.9	36.0	9.4
Queue Length 50th (ft)	304	1	68	0	80	2	0
Queue Length 95th (ft)	442	1	113	50	138	9	45
Internal Link Dist (ft)		342	321			840	
Turn Bay Length (ft)	300			265	410		410
Base Capacity (vph)	837	1397	2240	1062	418	440	504
Starvation Cap Reductn	0	533	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.25	0.10	0.15	0.33	0.01	0.33

Intersection Summary

HCM 7th Edition methodology does not support clustered intersections.

Intersection

Intersection Delay, s/veh 19.8
 Intersection LOS C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↘		↙	↘	↙	↙	↕		↙	↘	
Traffic Vol, veh/h	37	253	32	131	204	18	41	54	74	21	117	99
Future Vol, veh/h	37	253	32	131	204	18	41	54	74	21	117	99
Peak Hour Factor	0.80	0.85	0.80	0.85	0.85	0.80	0.80	0.80	0.80	0.80	0.85	0.85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	46	298	40	154	240	23	51	68	93	26	138	116
Number of Lanes	1	1	0	1	1	1	1	2	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	2	2	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	3	2	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	2	3	2
HCM Control Delay, s/veh	6.3	17.4	13.2	19.4
HCM LOS	D	C	B	C

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	100%	20%	0%	89%	0%	100%	0%	0%	54%
Vol Right, %	0%	0%	80%	0%	11%	0%	0%	100%	0%	46%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	41	36	92	37	285	131	204	18	21	216
LT Vol	41	0	0	37	0	131	0	0	21	0
Through Vol	0	36	18	0	253	0	204	0	0	117
RT Vol	0	0	74	0	32	0	0	18	0	99
Lane Flow Rate	51	45	115	46	338	154	240	23	26	254
Geometry Grp	6	6	6	6	6	6	6	6	6	6
Degree of Util (X)	0.13	0.108	0.257	0.106	0.721	0.36	0.527	0.045	0.064	0.554
Departure Headway (Hd)	9.123	8.608	8.03	8.389	7.8	8.409	7.898	7.182	8.785	7.962
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	395	418	448	430	466	430	458	502	409	455
Service Time	6.841	6.327	5.748	6.089	5.5	6.11	5.599	4.884	6.501	5.662
HCM Lane V/C Ratio	0.129	0.108	0.257	0.107	0.725	0.358	0.524	0.046	0.064	0.558
HCM Control Delay, s/veh	13.2	12.4	13.5	12.1	28.2	15.8	19.1	10.2	12.1	20.1
HCM Lane LOS	B	B	B	B	D	C	C	B	B	C
HCM 95th-tile Q	0.4	0.4	1	0.4	5.7	1.6	3	0.1	0.2	3.3

Intersection						
Int Delay, s/veh	0.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙	↗	↕		↙	↗
Traffic Vol, veh/h	14	12	159	11	9	274
Future Vol, veh/h	14	12	159	11	9	274
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	100	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	80	80	85	80	80	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	15	187	14	11	322

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	539	100	0	0	201	0
Stage 1	194	-	-	-	-	-
Stage 2	345	-	-	-	-	-
Critical Hdwy	6.63	6.93	-	-	4.13	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219	-
Pot Cap-1 Maneuver	488	936	-	-	1370	-
Stage 1	820	-	-	-	-	-
Stage 2	716	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	484	936	-	-	1370	-
Mov Cap-2 Maneuver	484	-	-	-	-	-
Stage 1	820	-	-	-	-	-
Stage 2	710	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	10.96	0	0.26
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	484	936	1370
HCM Lane V/C Ratio	-	-	0.036	0.016	0.008
HCM Ctrl Dly (s/v)	-	-	12.7	8.9	7.6
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	0

Intersection												
Intersection Delay, s/veh	44.1											
Intersection LOS	E											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	109	220	191	12	135	5	123	50	4	12	106	168
Future Vol, veh/h	109	220	191	12	135	5	123	50	4	12	106	168
Peak Hour Factor	0.85	0.85	0.85	0.80	0.85	0.80	0.85	0.80	0.80	0.80	0.85	0.85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	128	259	225	15	159	6	145	63	5	15	125	198
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			1		
HCM Control Delay, s/veh	75.2			14.6			16.6			20.6		
HCM LOS	F			B			C			C		
Lane	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Left, %	69%	21%	8%	4%								
Vol Thru, %	28%	42%	89%	37%								
Vol Right, %	2%	37%	3%	59%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	177	520	152	286								
LT Vol	123	109	12	12								
Through Vol	50	220	135	106								
RT Vol	4	191	5	168								
Lane Flow Rate	212	612	180	337								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.438	1.048	0.361	0.624								
Departure Headway (Hd)	7.695	6.166	7.457	6.874								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	471	587	486	530								
Service Time	5.695	4.208	5.457	4.874								
HCM Lane V/C Ratio	0.45	1.043	0.37	0.636								
HCM Control Delay, s/veh	16.6	75.2	14.6	20.6								
HCM Lane LOS	C	F	B	C								
HCM 95th-tile Q	2.2	16.9	1.6	4.2								

6: Sarival Ave & Northern Pkwy WB Ramps

03/25/2025

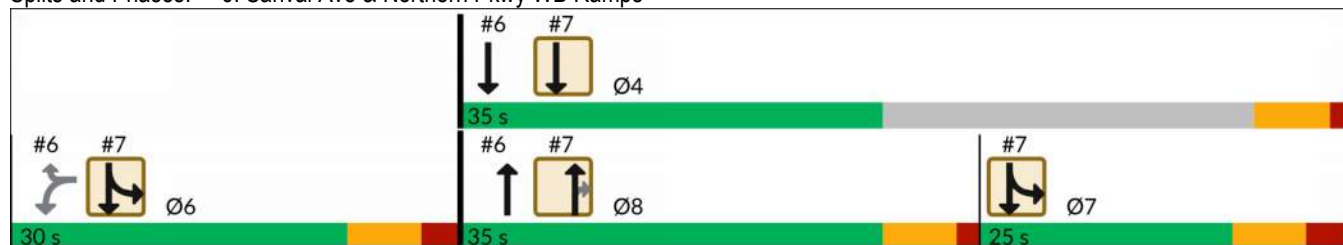


Lane Group	WBL	WBR	NBT	SBT	Ø7
Lane Configurations	↙↘	↗	↑	↑↑↑	
Traffic Volume (vph)	94	156	52	299	
Future Volume (vph)	94	156	52	299	
Turn Type	Perm	Perm	NA	NA	
Protected Phases			8	4	7
Permitted Phases	6	6			
Detector Phase	6	6	8	4	
Switch Phase					
Minimum Initial (s)	20.0	20.0	20.0	20.0	5.0
Minimum Split (s)	30.0	30.0	35.0	35.0	13.1
Total Split (s)	30.0	30.0	35.0	35.0	25.0
Total Split (%)	33.3%	33.3%	38.9%	38.9%	28%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.4	2.4	1.5	1.5	3.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	7.4	7.4	6.5	6.5	
Lead/Lag			Lead		Lag
Lead-Lag Optimize?			Yes		Yes
Recall Mode	None	None	Min	Min	None
Act Effect Green (s)	20.0	20.0	20.0	38.6	
Actuated g/C Ratio	0.28	0.28	0.28	0.53	
v/c Ratio	0.12	0.32	0.13	0.13	
Control Delay (s/veh)	20.6	5.5	6.4	8.6	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	20.6	5.5	6.4	8.6	
LOS	C	A	A	A	
Approach Delay (s/veh)	11.2		6.4	8.6	
Approach LOS	B		A	A	

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 72.5
 Natural Cycle: 80
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.32
 Intersection Signal Delay (s/veh): 9.5
 Intersection LOS: A
 Intersection Capacity Utilization 44.9%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 6: Sarival Ave & Northern Pkwy WB Ramps



6: Sarival Ave & Northern Pkwy WB Ramps

03/25/2025



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	111	184	65	352
v/c Ratio	0.12	0.32	0.13	0.13
Control Delay (s/veh)	20.6	5.5	6.4	8.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	20.6	5.5	6.4	8.6
Queue Length 50th (ft)	19	0	4	26
Queue Length 95th (ft)	36	38	8	37
Internal Link Dist (ft)	493		420	2330
Turn Bay Length (ft)	420	420		
Base Capacity (vph)	1071	620	733	3756
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.10	0.30	0.09	0.09

Intersection Summary

HCM 7th Edition methodology does not support clustered intersections.

7: Sarival Ave & Northern Pkwy EB Ramps

03/25/2025

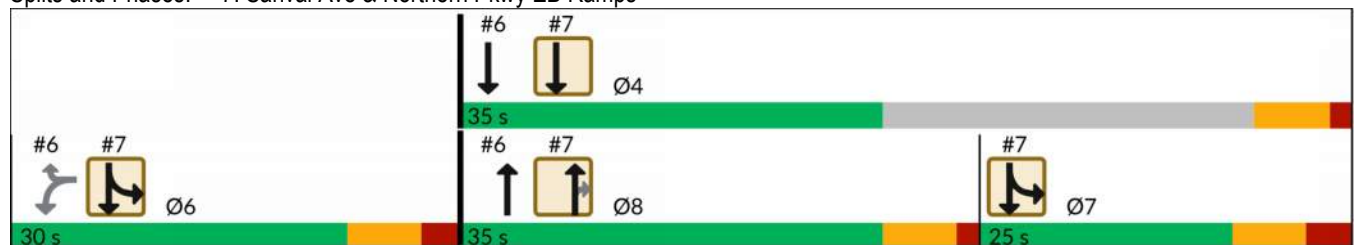


Lane Group	NBT	NBR	SBL	SBT	Ø4	Ø6	Ø7
Lane Configurations	↑	↗	↖	↓			
Traffic Volume (vph)	52	125	250	141			
Future Volume (vph)	52	125	250	141			
Turn Type	NA	Perm	Prot	NA			
Protected Phases	8		6 7	4 6 7	4	6	7
Permitted Phases		8					
Detector Phase	8	8	6 7	4 6 7			
Switch Phase							
Minimum Initial (s)	20.0	20.0			20.0	20.0	5.0
Minimum Split (s)	35.0	35.0			35.0	30.0	13.1
Total Split (s)	35.0	35.0			35.0	30.0	25.0
Total Split (%)	38.9%	38.9%			39%	33%	28%
Yellow Time (s)	5.0	5.0			5.0	5.0	5.0
All-Red Time (s)	1.5	1.5			1.5	2.4	3.1
Lost Time Adjust (s)	0.0	0.0					
Total Lost Time (s)	6.5	6.5					
Lead/Lag	Lead	Lead					Lag
Lead-Lag Optimize?	Yes	Yes					Yes
Recall Mode	Min	Min			Min	None	None
Act Effct Green (s)	20.0	20.0	38.6	72.5			
Actuated g/C Ratio	0.28	0.28	0.53	1.00			
v/c Ratio	0.13	0.27	0.16	0.05			
Control Delay (s/veh)	21.2	5.7	10.6	0.0			
Queue Delay	0.0	0.0	0.0	0.0			
Total Delay (s/veh)	21.2	5.7	10.6	0.0			
LOS	C	A	B	A			
Approach Delay (s/veh)	10.4			6.8			
Approach LOS	B			A			

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 72.5
 Natural Cycle: 80
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.32
 Intersection Signal Delay (s/veh): 7.9
 Intersection LOS: A
 Intersection Capacity Utilization 44.9%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 7: Sarival Ave & Northern Pkwy EB Ramps



7: Sarival Ave & Northern Pkwy EB Ramps

03/25/2025



Lane Group	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	65	147	294	166
v/c Ratio	0.13	0.27	0.16	0.05
Control Delay (s/veh)	21.2	5.7	10.6	0.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	21.2	5.7	10.6	0.0
Queue Length 50th (ft)	22	0	42	0
Queue Length 95th (ft)	46	35	61	0
Internal Link Dist (ft)	1002			420
Turn Bay Length (ft)		285	430	
Base Capacity (vph)	733	712	1887	3348
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.09	0.21	0.16	0.05
Intersection Summary				

HCM 7th Edition methodology does not support clustered intersections.

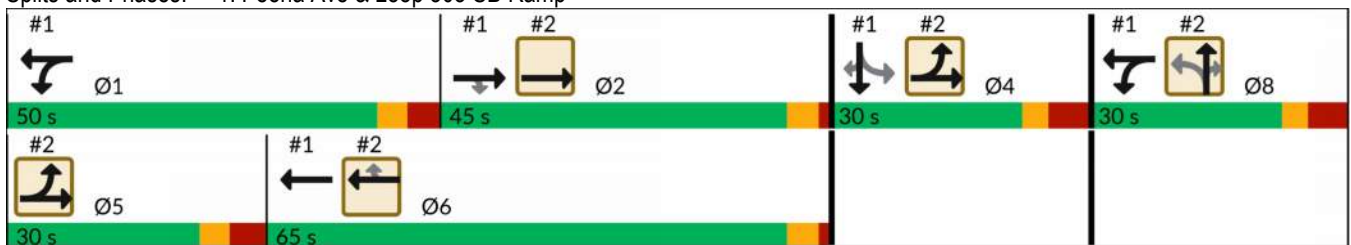


Lane Group	EBT	EBR	WBL	WBT	SBL	SBT	SBR	Ø1	Ø5	Ø6	Ø8
Lane Configurations	↑↑	↑	↵	↑	↵	↑	↵				
Traffic Volume (vph)	439	114	141	219	126	3	166				
Future Volume (vph)	439	114	141	219	126	3	166				
Turn Type	NA	Perm	Prot	NA	Perm	NA	Perm				
Protected Phases	2		18	16 8		4		1	5	6	8
Permitted Phases		2			4		4				
Detector Phase	2	2	18	16 8	4	4	4				
Switch Phase											
Minimum Initial (s)	15.0	15.0			12.0	12.0	12.0	8.0	8.0	15.0	12.0
Minimum Split (s)	45.0	45.0			30.0	30.0	30.0	50.0	30.0	65.0	30.0
Total Split (s)	45.0	45.0			30.0	30.0	30.0	50.0	30.0	65.0	30.0
Total Split (%)	29.0%	29.0%			19.4%	19.4%	19.4%	32%	19%	42%	19%
Yellow Time (s)	3.6	3.6			3.0	3.0	3.0	3.6	3.6	3.6	3.0
All-Red Time (s)	1.2	1.2			4.5	4.5	4.5	3.6	4.1	1.2	4.5
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0				
Total Lost Time (s)	4.8	4.8			7.5	7.5	7.5				
Lead/Lag	Lag	Lag						Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes						Yes	Yes	Yes	
Recall Mode	Max	Max			None	None	None	None	None	Max	None
Act Effct Green (s)	66.9	66.9	33.1	91.3	21.1	21.1	21.1				
Actuated g/C Ratio	0.48	0.48	0.24	0.65	0.15	0.15	0.15				
v/c Ratio	0.29	0.16	0.40	0.21	0.56	0.01	0.48				
Control Delay (s/veh)	23.5	0.9	51.1	1.9	66.0	55.3	11.6				
Queue Delay	0.0	0.0	0.0	0.1	73.8	0.0	0.0				
Total Delay (s/veh)	23.5	0.9	51.1	2.0	139.8	55.3	11.6				
LOS	C	A	D	A	F	E	B				
Approach Delay (s/veh)	18.7			21.2		66.8					
Approach LOS	B			C		E					

Intersection Summary

Cycle Length: 155
 Actuated Cycle Length: 140.8
 Natural Cycle: 155
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.80
 Intersection Signal Delay (s/veh): 31.4
 Intersection LOS: C
 Intersection Capacity Utilization 56.6%
 ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 1: Peoria Ave & Loop 303 SB Ramp





Lane Group	EBT	EBR	WBL	WBT	SBL	SBT	SBR
Lane Group Flow (vph)	488	134	166	258	148	4	195
v/c Ratio	0.29	0.16	0.40	0.21	0.56	0.01	0.48
Control Delay (s/veh)	23.5	0.9	51.1	1.9	66.0	55.3	11.6
Queue Delay	0.0	0.0	0.0	0.1	73.8	0.0	0.0
Total Delay (s/veh)	23.5	0.9	51.1	2.0	139.8	55.3	11.6
Queue Length 50th (ft)	144	0	101	10	126	3	0
Queue Length 95th (ft)	194	2	154	13	206	14	60
Internal Link Dist (ft)	672			342		1245	
Turn Bay Length (ft)	250		300		400		400
Base Capacity (vph)	1682	851	833	1363	284	299	418
Starvation Cap Reductn	0	0	0	364	0	0	0
Spillback Cap Reductn	154	0	0	0	170	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.16	0.20	0.26	1.30	0.01	0.47
Intersection Summary							

HCM 7th Edition methodology does not support clustered intersections.

2: Loop 303 NB Ramps & Peoria Ave

03/25/2025

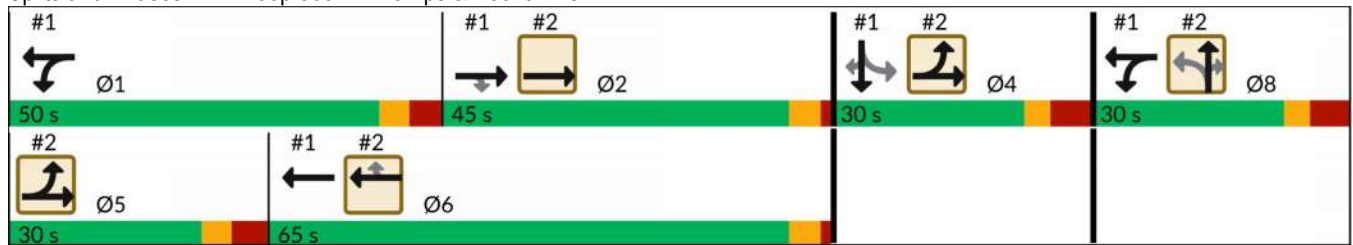


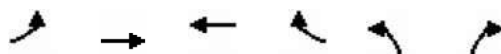
Lane Group	EBL	EBT	WBT	WBR	NBL	NBR	Ø1	Ø2	Ø4	Ø5
Lane Configurations										
Traffic Volume (vph)	318	243	221	152	137	226				
Future Volume (vph)	318	243	221	152	137	226				
Turn Type	Prot	NA	NA	Perm	Perm	Perm				
Protected Phases	4 5	2 4 5	6				1	2	4	5
Permitted Phases				6	8	8				
Detector Phase	4 5	2 4 5	6	6	8	8				
Switch Phase										
Minimum Initial (s)			15.0	15.0	12.0	12.0	8.0	15.0	12.0	8.0
Minimum Split (s)			65.0	65.0	30.0	30.0	50.0	45.0	30.0	30.0
Total Split (s)			65.0	65.0	30.0	30.0	50.0	45.0	30.0	30.0
Total Split (%)			41.9%	41.9%	19.4%	19.4%	32%	29%	19%	19%
Yellow Time (s)			3.6	3.6	3.0	3.0	3.6	3.6	3.0	3.6
All-Red Time (s)			1.2	1.2	4.5	4.5	3.6	1.2	4.5	4.1
Lost Time Adjust (s)			0.0	0.0	0.0	0.0				
Total Lost Time (s)			4.8	4.8	7.5	7.5				
Lead/Lag			Lag	Lag			Lead	Lag		Lead
Lead-Lag Optimize?			Yes	Yes			Yes	Yes		Yes
Recall Mode			Max	Max	None	None	None	Max	None	None
Act Effct Green (s)	35.2	109.7	60.6	60.6	17.5	17.5				
Actuated g/C Ratio	0.25	0.78	0.43	0.43	0.12	0.12				
v/c Ratio	0.80	0.20	0.17	0.23	0.73	0.34				
Control Delay (s/veh)	69.6	0.5	26.7	4.6	79.8	1.2				
Queue Delay	0.0	0.2	0.0	0.0	0.0	0.0				
Total Delay (s/veh)	69.6	0.7	26.7	4.6	79.8	1.2				
LOS	E	A	C	A	E	A				
Approach Delay (s/veh)		38.8	17.7							
Approach LOS		D	B							

Intersection Summary

Cycle Length: 155	
Actuated Cycle Length: 140.8	
Natural Cycle: 155	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.80	
Intersection Signal Delay (s/veh): 30.4	Intersection LOS: C
Intersection Capacity Utilization 56.6%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 2: Loop 303 NB Ramps & Peoria Ave





Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	353	286	260	179	161	266
v/c Ratio	0.80	0.20	0.17	0.23	0.73	0.34
Control Delay (s/veh)	69.6	0.5	26.7	4.6	79.8	1.2
Queue Delay	0.0	0.2	0.0	0.0	0.0	0.0
Total Delay (s/veh)	69.6	0.7	26.7	4.6	79.8	1.2
Queue Length 50th (ft)	342	2	76	0	144	0
Queue Length 95th (ft)	475	3	117	40	224	0
Internal Link Dist (ft)		342	321			
Turn Bay Length (ft)	300			265	410	410
Base Capacity (vph)	569	1487	1522	783	284	813
Starvation Cap Reductn	0	611	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.33	0.17	0.23	0.57	0.33
Intersection Summary						

HCM 7th Edition methodology does not support clustered intersections.

Intersection

Intersection Delay, s/veh 31.2
 Intersection LOS D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↘		↙	↘	↙	↙	↕		↙	↘	
Traffic Vol, veh/h	103	318	48	58	260	24	66	132	54	14	114	53
Future Vol, veh/h	103	318	48	58	260	24	66	132	54	14	114	53
Peak Hour Factor	0.85	0.90	0.80	0.80	0.85	0.80	0.80	0.85	0.80	0.80	0.85	0.80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	121	353	60	73	306	30	83	155	68	18	134	66
Number of Lanes	1	1	0	1	1	1	1	2	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	2	2	3
Conflicting Approach Left SB		NB	EB	WB
Conflicting Lanes Left	2	3	2	3
Conflicting Approach Right NB		SB	WB	EB
Conflicting Lanes Right	3	2	3	2
HCM Control Delay, s/veh	7.8	27.4	15.2	20.2
HCM LOS	E	D	C	C

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	100%	45%	0%	87%	0%	100%	0%	0%	68%
Vol Right, %	0%	0%	55%	0%	13%	0%	0%	100%	0%	32%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	66	88	98	103	366	58	260	24	14	167
LT Vol	66	0	0	103	0	58	0	0	14	0
Through Vol	0	88	44	0	318	0	260	0	0	114
RT Vol	0	0	54	0	48	0	0	24	0	53
Lane Flow Rate	83	104	119	121	413	73	306	30	18	200
Geometry Grp	6	6	6	6	6	6	6	6	6	6
Degree of Util (X)	0.221	0.263	0.29	0.295	0.937	0.185	0.736	0.066	0.048	0.505
Departure Headway (Hd)	9.657	9.14	8.742	8.761	8.157	9.176	8.662	7.942	9.818	9.074
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	371	392	410	410	446	391	416	450	364	397
Service Time	7.425	6.909	6.51	6.518	5.913	6.938	6.423	5.703	7.587	6.842
HCM Lane V/C Ratio	0.224	0.265	0.29	0.295	0.926	0.187	0.736	0.067	0.049	0.504
HCM Control Delay, s/veh	15.2	15.2	15.1	15.2	57.3	14	32.1	11.3	13.1	20.8
HCM Lane LOS	C	C	C	C	F	B	D	B	B	C
HCM 95th-tile Q	0.8	1	1.2	1.2	10.8	0.7	5.9	0.2	0.2	2.8

Intersection						
Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↵	↶	↶↷		↵	↶
Traffic Vol, veh/h	5	6	247	8	15	208
Future Vol, veh/h	5	6	247	8	15	208
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	100	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	80	80	85	80	80	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	8	291	10	19	245

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	578	150	0	0	301	0
Stage 1	296	-	-	-	-	-
Stage 2	282	-	-	-	-	-
Critical Hdwy	6.63	6.93	-	-	4.13	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219	-
Pot Cap-1 Maneuver	462	870	-	-	1259	-
Stage 1	730	-	-	-	-	-
Stage 2	765	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	455	870	-	-	1259	-
Mov Cap-2 Maneuver	455	-	-	-	-	-
Stage 1	730	-	-	-	-	-
Stage 2	753	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	10.92	0	0.56
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	455	870	1259	-
HCM Lane V/C Ratio	-	-	0.014	0.009	0.015	-
HCM Ctrl Dly (s/v)	-	-	13	9.2	7.9	-
HCM Lane LOS	-	-	B	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0	0	-

Intersection	
Intersection Delay, s/veh	23.9
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	60	114	75	13	217	36	178	161	11	14	123	82
Future Vol, veh/h	60	114	75	13	217	36	178	161	11	14	123	82
Peak Hour Factor	0.80	0.85	0.85	0.80	0.85	0.80	0.85	0.85	0.80	0.80	0.85	0.85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	75	134	88	16	255	45	209	189	14	18	145	96
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	20.1	21.6	32.3	17.6
HCM LOS	C	C	D	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	51%	24%	5%	6%
Vol Thru, %	46%	46%	82%	56%
Vol Right, %	3%	30%	14%	37%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	350	249	266	219
LT Vol	178	60	13	14
Through Vol	161	114	217	123
RT Vol	11	75	36	82
Lane Flow Rate	413	297	317	259
Geometry Grp	1	1	1	1
Degree of Util (X)	0.798	0.59	0.627	0.513
Departure Headway (Hd)	6.967	7.14	7.136	7.14
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	520	503	503	502
Service Time	5.031	5.212	5.209	5.217
HCM Lane V/C Ratio	0.794	0.59	0.63	0.516
HCM Control Delay, s/veh	32.3	20.1	21.6	17.6
HCM Lane LOS	D	C	C	C
HCM 95th-tile Q	7.5	3.8	4.3	2.9

6: Sarival Ave & Northern Pkwy WB Ramps

03/25/2025

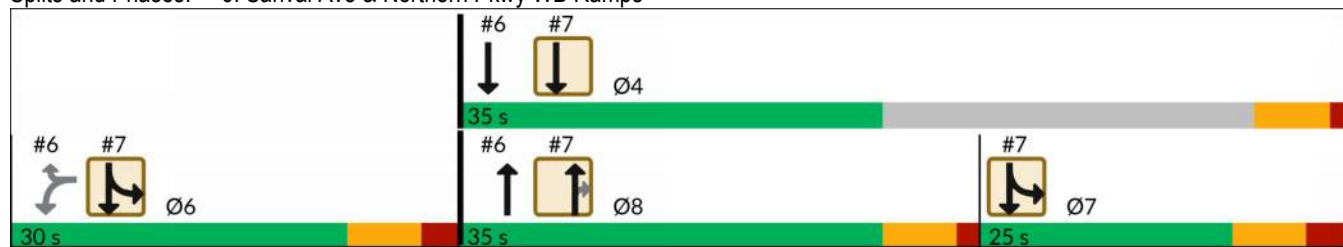


Lane Group	WBL	WBR	NBT	SBT	Ø7
Lane Configurations	↙↘	↗	↑	↑↑↑	
Traffic Volume (vph)	111	249	108	291	
Future Volume (vph)	111	249	108	291	
Turn Type	Perm	Perm	NA	NA	
Protected Phases			8	4	7
Permitted Phases	6	6			
Detector Phase	6	6	8	4	
Switch Phase					
Minimum Initial (s)	20.0	20.0	20.0	20.0	5.0
Minimum Split (s)	30.0	30.0	35.0	35.0	13.1
Total Split (s)	30.0	30.0	35.0	35.0	25.0
Total Split (%)	33.3%	33.3%	38.9%	38.9%	28%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.4	2.4	1.5	1.5	3.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	7.4	7.4	6.5	6.5	
Lead/Lag			Lead		Lag
Lead-Lag Optimize?			Yes		Yes
Recall Mode	None	None	Min	Min	None
Act Effect Green (s)	20.5	20.5	20.0	37.3	
Actuated g/C Ratio	0.29	0.29	0.28	0.52	
v/c Ratio	0.13	0.44	0.24	0.13	
Control Delay (s/veh)	19.8	5.2	6.9	9.1	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	19.8	5.2	6.9	9.1	
LOS	B	A	A	A	
Approach Delay (s/veh)	9.7		6.9	9.1	
Approach LOS	A		A	A	

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 71.7
 Natural Cycle: 80
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.44
 Intersection Signal Delay (s/veh): 9.1
 Intersection LOS: A
 Intersection Capacity Utilization 44.9%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 6: Sarival Ave & Northern Pkwy WB Ramps





Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	131	293	127	342
v/c Ratio	0.13	0.44	0.24	0.13
Control Delay (s/veh)	19.8	5.2	6.9	9.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	19.8	5.2	6.9	9.1
Queue Length 50th (ft)	22	0	8	26
Queue Length 95th (ft)	40	43	13	39
Internal Link Dist (ft)	493		420	2330
Turn Bay Length (ft)	420	420		
Base Capacity (vph)	1083	700	741	3797
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.12	0.42	0.17	0.09
Intersection Summary				

HCM 7th Edition methodology does not support clustered intersections.

7: Sarival Ave & Northern Pkwy EB Ramps

03/25/2025

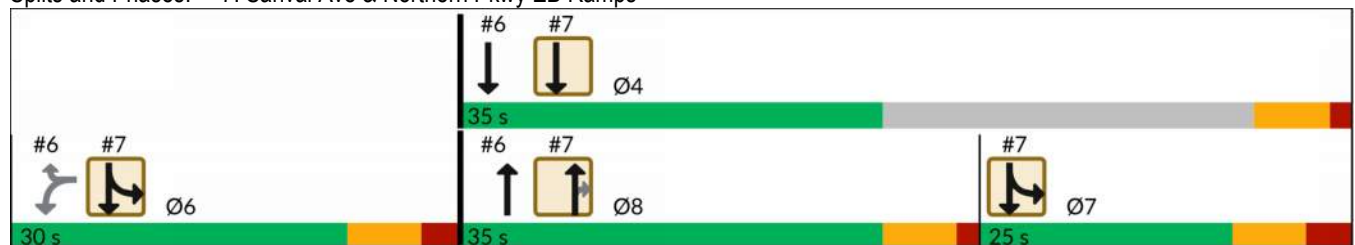


Lane Group	NBT	NBR	SBL	SBT	Ø4	Ø6	Ø7
Lane Configurations	↑	↗	↖	↑↑			
Traffic Volume (vph)	109	163	156	247			
Future Volume (vph)	109	163	156	247			
Turn Type	NA	Perm	Prot	NA			
Protected Phases	8		6 7	4 6 7	4	6	7
Permitted Phases		8					
Detector Phase	8	8	6 7	4 6 7			
Switch Phase							
Minimum Initial (s)	20.0	20.0			20.0	20.0	5.0
Minimum Split (s)	35.0	35.0			35.0	30.0	13.1
Total Split (s)	35.0	35.0			35.0	30.0	25.0
Total Split (%)	38.9%	38.9%			39%	33%	28%
Yellow Time (s)	5.0	5.0			5.0	5.0	5.0
All-Red Time (s)	1.5	1.5			1.5	2.4	3.1
Lost Time Adjust (s)	0.0	0.0					
Total Lost Time (s)	6.5	6.5					
Lead/Lag	Lead	Lead					Lag
Lead-Lag Optimize?	Yes	Yes					Yes
Recall Mode	Min	Min			Min	None	None
Act Effct Green (s)	20.0	20.0	37.8	71.7			
Actuated g/C Ratio	0.28	0.28	0.53	1.00			
v/c Ratio	0.25	0.33	0.10	0.08			
Control Delay (s/veh)	22.3	5.5	9.9	0.0			
Queue Delay	0.0	0.0	0.0	0.0			
Total Delay (s/veh)	22.3	5.5	9.9	0.0			
LOS	C	A	A	A			
Approach Delay (s/veh)	12.2			3.9			
Approach LOS	B			A			

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 71.7
 Natural Cycle: 80
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.44
 Intersection Signal Delay (s/veh): 7.2
 Intersection LOS: A
 Intersection Capacity Utilization 44.9%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 7: Sarival Ave & Northern Pkwy EB Ramps



7: Sarival Ave & Northern Pkwy EB Ramps

03/25/2025



Lane Group	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	128	192	184	291
v/c Ratio	0.25	0.33	0.10	0.08
Control Delay (s/veh)	22.3	5.5	9.9	0.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	22.3	5.5	9.9	0.0
Queue Length 50th (ft)	43	0	24	0
Queue Length 95th (ft)	86	39	41	0
Internal Link Dist (ft)	1002			420
Turn Bay Length (ft)		285	430	
Base Capacity (vph)	741	745	1887	3382
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.17	0.26	0.10	0.09
Intersection Summary				

HCM 7th Edition methodology does not support clustered intersections.

Appendix D – Trip Generation

Appendix E – MAG Socioeconomic Projections

Maricopa Association of Governments
Table 4: Population by Regional Analysis Zone (RAZ) by MPA
July 1, 2020, 2022 and Projections July 1, 2030 to July 1, 2060

RAZ	County	Total Population					
		2020	2022	2030	2040	2050	2060
Gilbert MPA							
311	Maricopa	69,411	69,642	71,276	73,517	79,515	79,903
312	Maricopa	33,899	34,719	37,361	37,735	38,700	38,794
318	Maricopa	47,594	50,126	54,807	55,829	56,183	56,195
319	Maricopa	78,161	81,684	88,273	90,087	93,671	93,976
329	Maricopa	43,314	45,035	49,913	54,426	55,868	56,256
	Total	272,379	281,206	301,630	311,594	323,937	325,124
Glendale MPA							
222	Maricopa	47,229	47,901	48,910	49,860	50,144	50,408
240	Maricopa	43,470	43,950	46,828	47,339	47,488	47,627
254	Maricopa	14,461	15,963	25,521	28,608	29,298	29,460
255	Maricopa	19,612	21,628	26,112	27,621	27,967	28,157
257	Maricopa	52,362	55,426	67,618	81,939	87,370	88,010
258	Maricopa	105,065	106,175	108,565	109,980	110,903	111,284
	Total	282,199	291,043	323,554	345,347	353,170	354,946
Goodyear MPA							
265	Maricopa	37,748	41,993	48,211	51,222	52,679	53,412
280	Maricopa	46,160	49,944	76,288	87,075	90,433	92,968
302	Maricopa	15,502	16,790	34,171	50,615	58,251	61,535
323	Maricopa	350	361	6,307	20,913	39,666	68,609
373	Maricopa	142	142	142	142	142	142
	Total	99,902	109,230	165,119	209,967	241,171	276,666
Guadalupe MPA							
307	Maricopa	5,326	5,333	5,424	5,625	5,665	5,670
	Total	5,326	5,333	5,424	5,625	5,665	5,670
Litchfield Park MPA							
266	Maricopa	13,280	13,443	14,181	14,279	14,286	14,320
	Total	13,280	13,443	14,181	14,279	14,286	14,320
Maricopa MPA							
399	Pinal	58,794	64,928	91,824	106,902	117,432	127,948
400	Pinal	1,990	2,410	3,759	4,638	5,349	6,530
403	Pinal	908	923	1,479	6,984	14,931	21,217
404	Pinal	3,149	3,285	3,476	3,652	3,677	4,155
	Total	64,841	71,546	100,538	122,176	141,389	159,850

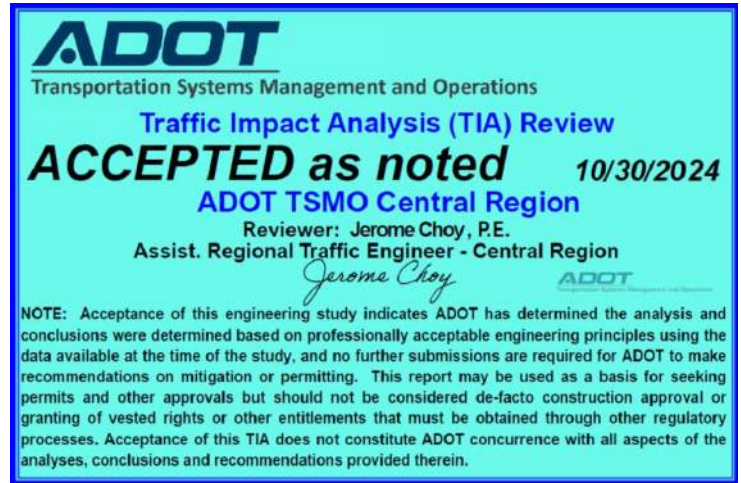
Notes: These projections include both the Maricopa County and Pinal County portions for Apache Junction, Queen Creek, and the Gila River Indian Community. Peoria and Wickenburg include only the Maricopa County portion. Unincorporated Pinal County only includes portions in the MAG planning area.

Source: Maricopa Association of Governments (MAG) Socioeconomic Projections of Population and Employment by Municipal Planning Area (MPA) and Regional Analysis Zone (RAZ), June 2023

For explanation of variables and complete notation on this series, please refer to the Notes and Caveats in Appendix A.

For data on jurisdictions outside of the MAG planning area, please contact Central Arizona Governments.

Appendix F – Surrounding Area Development TIAs



Peoria & Sarival

SWC Peoria Avenue and Sarival Avenue

Traffic Impact Analysis

Glendale, Arizona

August 2024

First Submittal: May 2024

PREPARED FOR:

CVL Consultants, Inc.



Denise Baker

Notes:

1. ADOT does not support the intersection designs or traffic signal location at Peoria Ave/ 165th Ave as they do not meet our design guidelines. However, we understand this is within the jurisdiction of the City of Glendale and will therefore accept the TIA noting the concern.
2. We recommend providing three lane approaches for NB 165th Ave at Peoria Ave to increase flexibility of the intersection and allow maximizing the green time to EB/ WB Peoria Ave

Project No. 24-032

Contact: Denise Baker, PhD, PE, RSP₁; dbaker@y2keng.com

This study assumes full buildout in 2026 for the sake of analysis. Several adjacent developments in the surrounding area are planned to be constructed in the near future; as part of their construction, half-street or full roadway improvements are anticipated to be constructed on the surrounding roadway network. The site plan is depicted in **Figure 5** while a detailed site plan is provided in **Appendix D**.

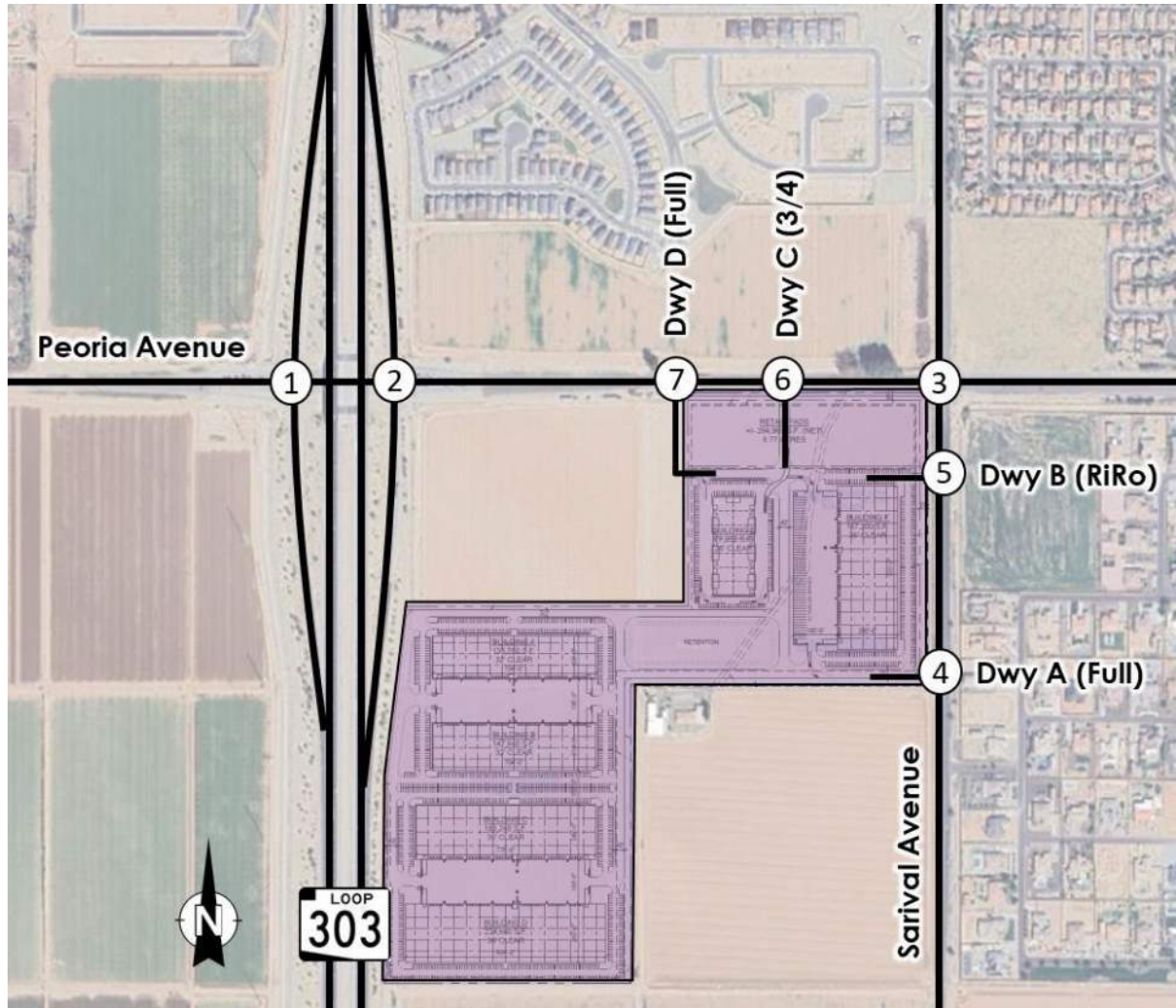


Figure 5: Site Plan

TRIP GENERATION

The trip generation for the project was estimated using the Institute of Transportation Engineers' (ITE) Trip Generation Manual, 11th Edition. ITE's Trip Generation Manual contains data collected by various transportation professionals for a wide range of different land uses. The data summarized in the manual includes average rates and equations that have been established correlating the relationship between an independent variable that describes the development size and the generated trips for each categorized land use.

ITE Land Use Code (LUC) 150, *Warehousing*, and ITE LUC 821, *Shopping Plaza (40-150k) No Supermarket*, were applied for this study. The estimated trips of the site at full build-out are summarized in **Table 6**.

Table 6: Trip Generation of Site at Build-Out

DESCRIPTION OF LAND USE					VEHICLE GENERATED TRIPS						
ID	Land Use	ITE LUC	Size		Daily Total	AM Peak Hour		PM Peak Hour			
						Enter	Exit	Total	Enter	Exit	Total
1	Warehousing	150	956.93	KSF	1,550	107	31	138	40	101	141
2	Shopping Plaza (40-150k) No Supermarket	821	58.98	KSF	3,982	63	39	102	150	156	306
Total					5,532	170	70	240	190	257	447

The project is anticipated to generate a total of 5,532 daily trips (entering and exiting), 240 trips during the AM peak hour, and 447 trips during the PM peak hour. The greatest hourly entering volume occurs during the PM peak hour, when 190 entering trips are anticipated.

TRIP DISTRIBUTION AND ASSIGNMENT

The generated trips for the proposed development were distributed and assigned to the surrounding street system based on existing traffic patterns, volumes, surrounding roadway network, and proximity to nearby residential areas.

The industrial and retail distributions are shown in **Figure 6** and **Figure 7**, respectively. The trips were assigned to the study intersections based on the trip generation and distribution, as shown in **Figure 8** and **Figure 9**.

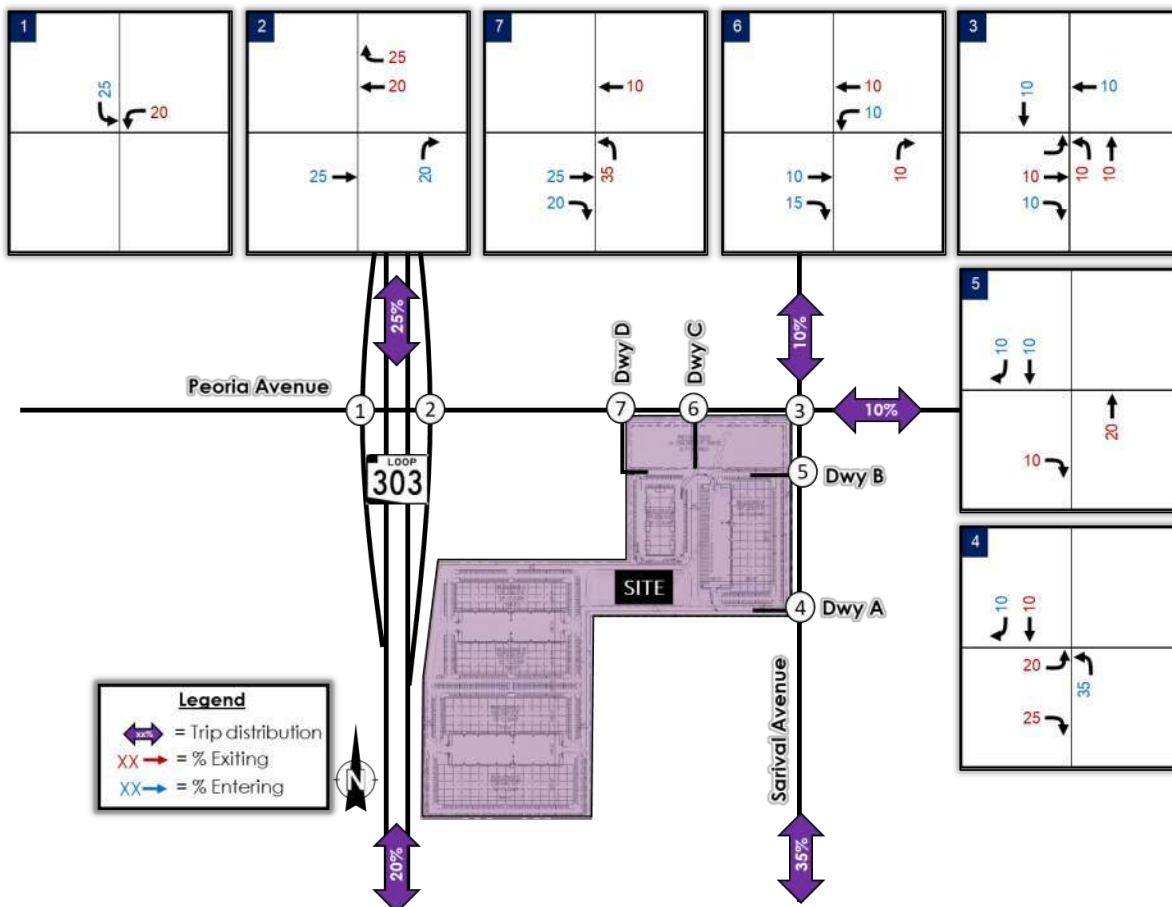
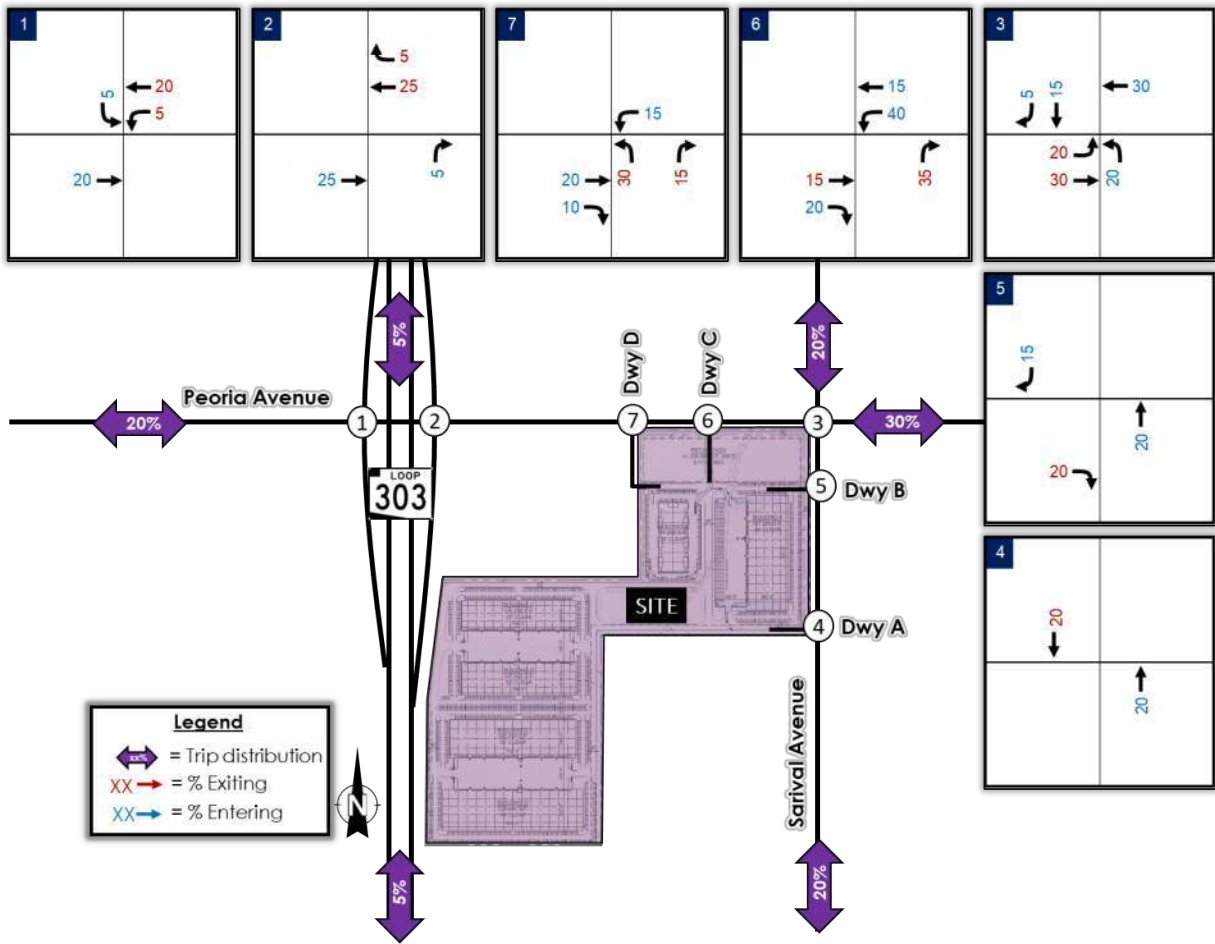


Figure 6: Industrial Trip Distribution



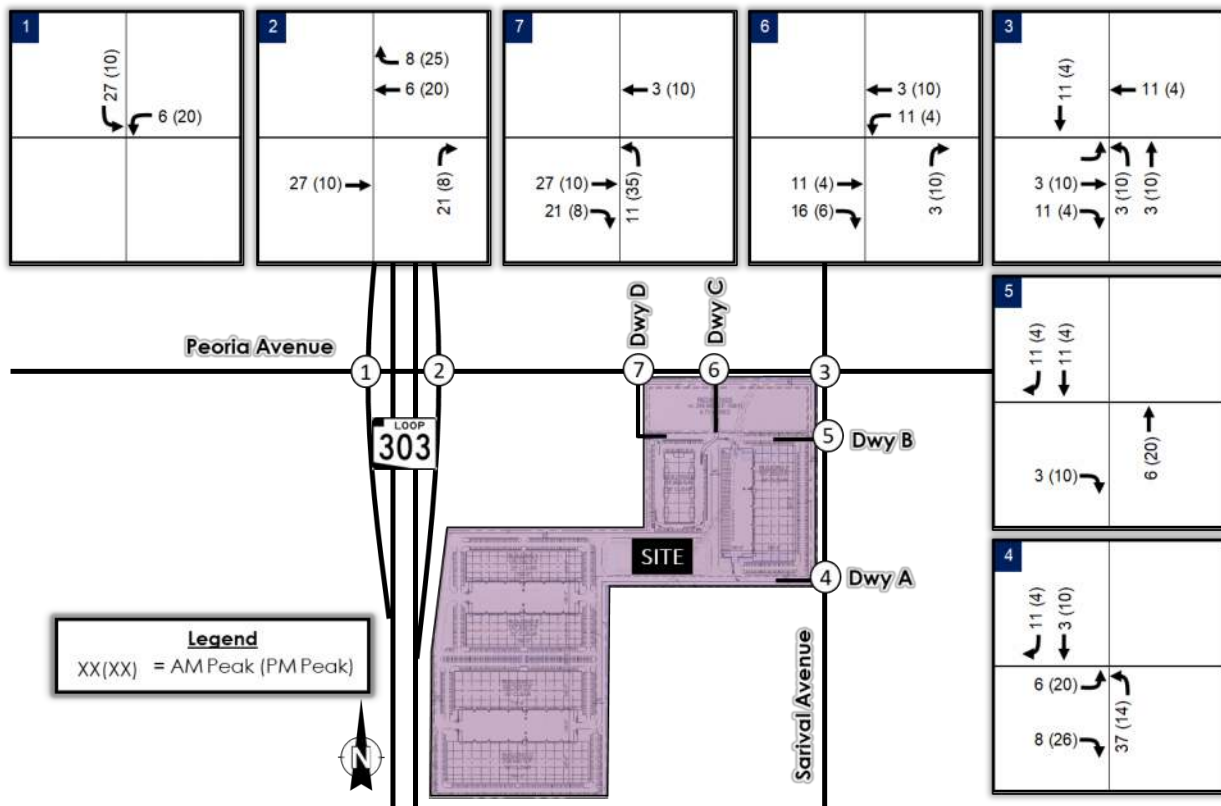


Figure 8: Industrial Trip Assignment

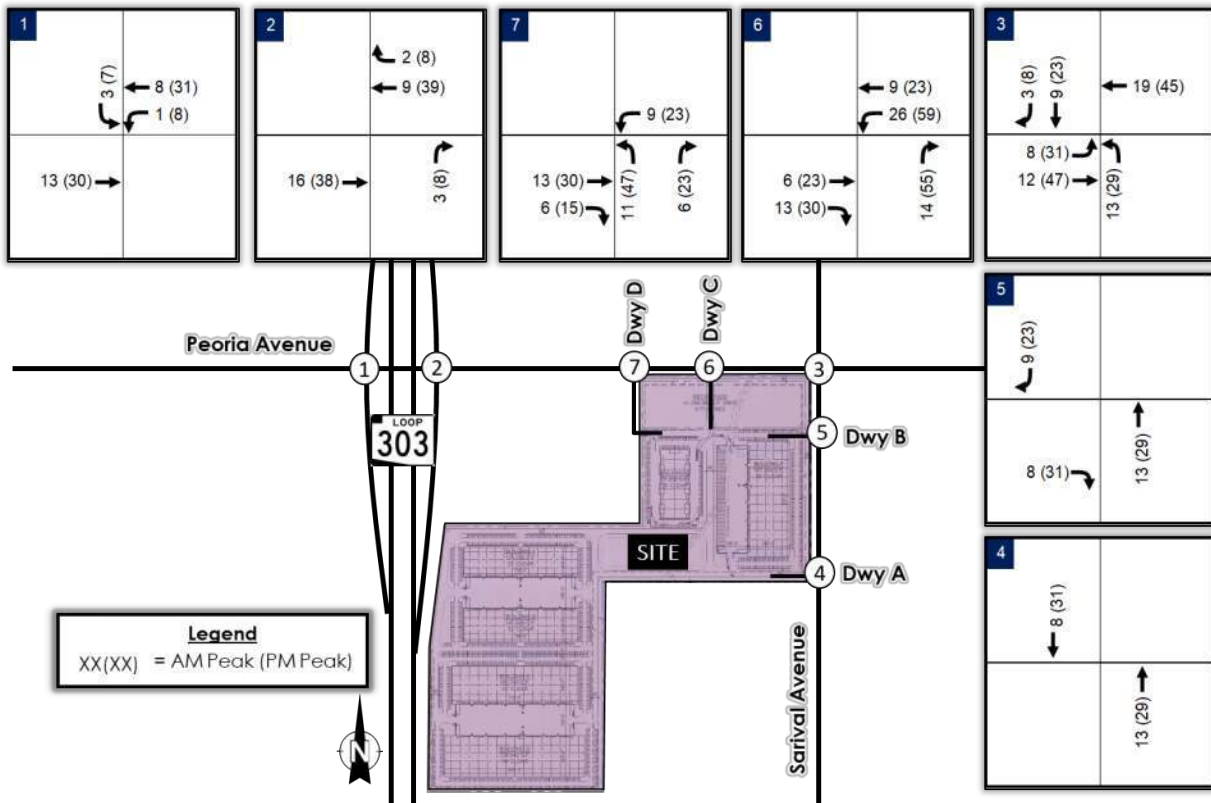


Figure 9: Retail Trip Assignment

FUTURE TRAFFIC

ANNUAL GROWTH RATE

The City of Glendale is experiencing rapid growth, particularly in the vicinity of the site. This study incorporates the projected traffic volumes for numerous nearby sites as part of background traffic. Due to the intensity of the adjacent development traffic, a 1.5% growth rate was included in this analysis to account for any growth beyond what is accounted for in the adjacent development analysis.

ADJACENT DEVELOPMENT TRAFFIC

A total of twelve (12) sites were included in this analysis to establish more-realistic background traffic volumes. A schematic of the 12 future development sites is shown in **Figure 10**.

Traffic Impact Analysis reports (TIAs) were obtained for eight (8) sites planned to begin construction in the near future. Key excerpts are provided in **Appendix E**. These include:

1. Cactus 303/Thompson Thrift
2. Home Depot
3. Sycamore Farms (overall)
4. Sterling Grove
5. LIV Surprise – This TIA assignment included an assumed distribution and assignment for the *Grove Surprise* development located immediately west of the site.
6. Parkway 303 West
7. Sycamore Farms Parcels 5 and 6 (Sycamore Garcia)
8. Carioca Gas Station

Approximately four (4) sites did not have a formal TIA submitted. The trips were estimated based on information provided in the Glendale Zoning Map and Maricopa County Parcel Assessor Map, as well as information provided by the City of Surprise as part of a separate project in September 2023. A trip generation was prepared for each parcel, assumptions were made regarding driveways and access management, and an assumed distribution and assignment was created for each parcel. These include:

9. Lowes Home Improvement Center
10. Sycamore Farms Apartments
11. NEC Sarival & Peoria Ave
12. Walmart Supercenter – 181,300 square feet

Figures depicting the assignment traffic volumes at the study intersections are provided in **Appendix E**. Relevant trip generation tables and distributions are also included.

All developments are assumed to be constructed by project buildout in order to create an apples-to-apples assessment of traffic impacts without and with the Peoria and Sarival site. The combined adjacent development site traffic for 2026 is provided in **Figure 11**.



Figure 10: Location of Surrounding Developments

for the retail and industrial buildings, a proportional share calculation was evaluated to determine an appropriate contribution amount.

To determine appropriate contribution amounts, peak hour site traffic at the intersections of Peoria Avenue/Sarival Avenue and 165th Drive (Driveway D)/Peoria Avenue have been evaluated as a proportion of the total peak hour traffic. The results of those calculations are shown in **Table 8**.

Table 8: Traffic Signal Contributions

	2031 AM + PM Total Traffic	2031 AM + PM Site Traffic	% Site / Total Traffic	Proposed Contribution
Peoria & Sarival	5,577	331	5.93%	6%
Driveway D & Peoria	4,553	308	6.76%	7%

The site is anticipated to contribute 6% of the traffic at the intersection of Peoria Avenue/Sarival Avenue and 7% of the traffic at Driveway D/Peoria Avenue. Based on feedback from the City of Glendale, the site will be expected to contribute 25% towards the cost of the Peoria Avenue/Sarival Avenue signal.

FUTURE ROADWAY IMPROVEMENTS

Due to the numerous surrounding developments planned for construction in the near future, several roadway improvements are anticipated in the project vicinity. As this study evaluates the future years of 2026 and 2031, and all adjacent developments are assumed to be complete by 2026 to provide an apples-to-apples comparison of traffic impacts without and with the site, the improvements were assumed to be complete by 2026. The following improvements are anticipated:

- Loop 303 SB Ramp/Peoria Avenue
 - By Others:
 - Provide a second westbound left-turn lane
 - Provide three additional eastbound through lanes (one of which will become a left-turn lane at the NB Ramp)
 - Restripe the SB through lane to be a shared through/right-turn lane to serve the high right-turn volumes
- Loop 303 NB Ramp/Peoria Avenue
 - By Others:
 - Provide a second eastbound left-turn lane
 - Provide three additional westbound through lanes (one of which will become a left-turn lane at the SB Ramp)
 - Restripe the NB through lane to be a shared left-turn/through lane to serve the high left-turn volumes
- Peoria Avenue/Sarival Avenue
 - By Others:
 - Provide a designated northbound and southbound right-turn lane
 - Restripe the existing westbound dropped right-turn lane to a shared through/right-turn lane
 - Signalize the intersection by 2026. Per City of Glendale, the Peoria and Sarival site may provide a 25% contribution towards the cost
 - By Peoria and Sarival Site:
 - Provide a second eastbound through lane

- Provide a dropped eastbound right-turn lane (to maintain connectivity with the roadway east of Sarival Avenue)
- Driveway A/Sarival Avenue
 - By Peoria and Sarival Site:
 - Provide a second southbound through lane along project frontage
 - Provide a designated southbound right-turn lane
 - Improve the eastbound approach with separate left- and right-turn lanes, and install a stop sign
- Driveway B/Sarival Avenue
 - By Others:
 - Provide a designated northbound right-turn lane
 - Provide separate left- and right-turn lanes on the westbound approach, as well as a stop sign
 - By Peoria and Sarival Site:
 - Provide a second southbound through lane along project frontage
 - Provide a designated southbound right-turn lane
 - Improve the eastbound approach with a right-turn lane, and install a stop sign
- Driveway C/Sarival Avenue
 - By Others:
 - Construct a second and third westbound through lane
 - By Peoria and Sarival Site:
 - Provide a second and third eastbound through lane along project frontage
 - Provide a designated westbound left-turn lane within the future raised median
 - Provide a designated eastbound right-turn lane
 - Improve the northbound approach with a right-turn lane, and install a stop sign
- Driveway D (165th Drive)/Peoria Avenue
 - By Others:
 - Improve the eastbound and westbound approaches with a second and third through lane, a designated left-turn lane in the future raised median, and a designated right-turn lane
 - Improve the northbound and southbound approaches with a left-turn lane
 - Monitor traffic volumes as growth continues and signalize the intersections when warrants are met, preliminarily anticipated to be met in 2026 with background traffic volumes. The Peoria and Sarival site may provide a proportional contribution towards the cost

The assumed cross sections and lane configurations at the study intersections in both 2026 and 2031 are depicted in **Figure 16**. These include the results of the TSWA, the assumed improvements by others in the area, and the known improvements by the Peoria and Sarival site.

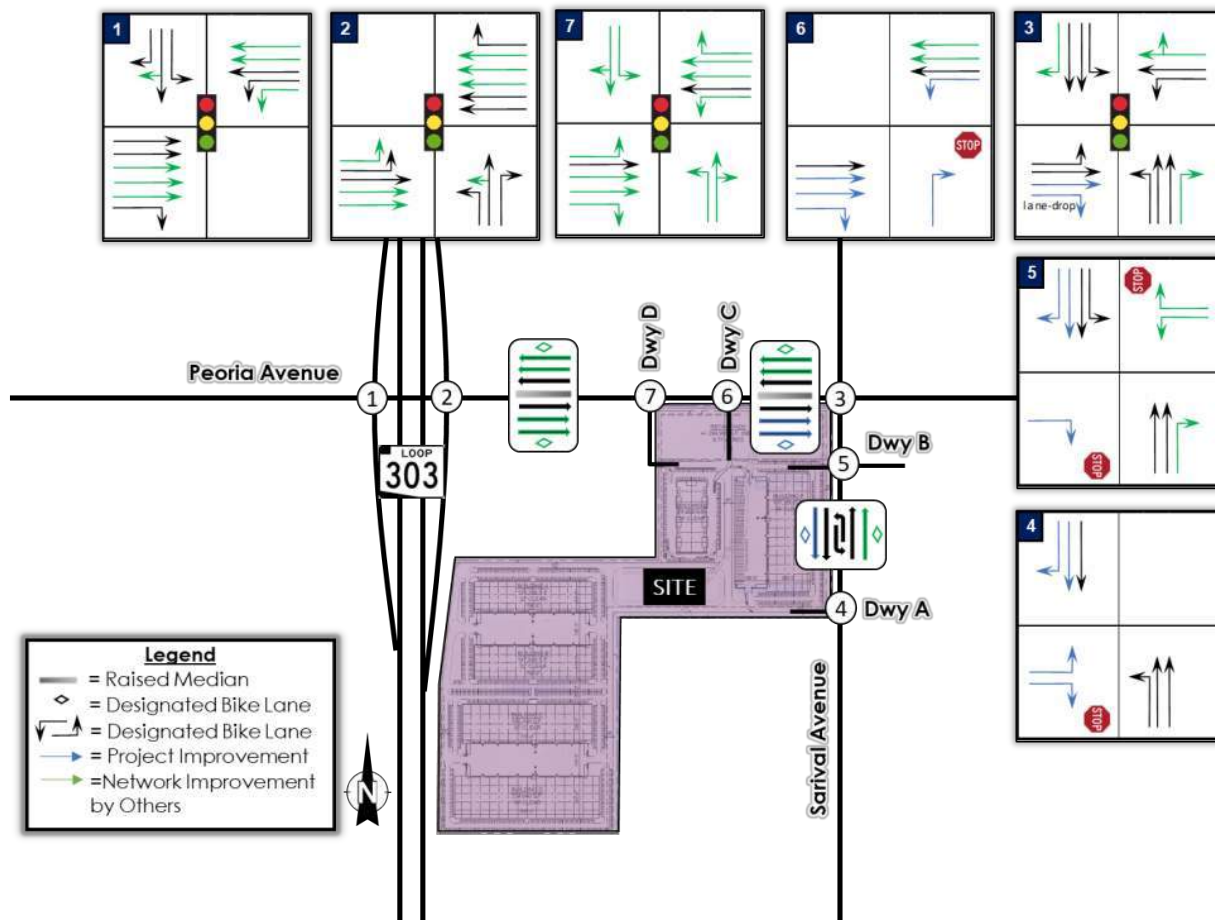


Figure 16: Assumed Lane Configuration for Analysis

FUTURE TRAFFIC ANALYSES

Level-of-service (LOS) analyses were prepared for the AM and PM peak hours for the study intersections utilizing Synchro 11 software. Conditions were analyzed for the 2026 opening year and 2031 horizon year without and with traffic from the proposed *Peoria and Sarival* development. The level of service criteria, as stated in the *Highway Capacity Manual*, is provided in **Table 4**.

2026 OPENING YEAR

The 2026 opening year was evaluated under background traffic conditions and with site traffic, which is assumed to include full-buildout of the *Peoria and Sarival* development. The assumed lane configuration utilized for analysis is shown in **Figure 16** above.

The 2026 LOS analysis is summarized in **Table 9** and Synchro reports are included in **Appendix G**.

As shown in **Table 9**, all movements at the study intersections are projected to operate at acceptable LOS (LOS D or better) under 2026 background and 2026 total conditions.

on the east side of Sarival Avenue) is anticipated to extend 125 feet. Considering the close proximity of the two movements, there is the potential for left-turn overlap and potential collisions. Consideration should be given to restricting southbound left-turn movements at Driveway B.

The eastbound left-turn queue at Peoria Avenue/Sarival Avenue is anticipated to extend 300 feet. The westbound left-turn queue at Driveway C/Peoria Avenue is anticipated to extend 75 feet, although a 160-foot turn lane will need to be constructed to satisfy Surprise requirements (per City of Surprise input). It is advised to construct the 300-foot eastbound left-turn lane at Peoria Avenue/Sarival Avenue with back-to-back tapers to maximize the available space.

Per City of Surprise feedback, Peoria Avenue will facilitate three lanes in each direction at full buildout. However, the roadway only provides a five-lane cross section east of Sarival Avenue. In order to maintain proper connectivity in the eastbound direction on Peoria Avenue, the outside eastbound through lane along project frontage may need to become a dropped right-turn lane at the intersection of Peoria Avenue/Sarival Avenue.

MITIGATION AND RECOMMENDATIONS

All movements at the study intersections are projected to operate with sufficient LOS without and with the proposed Peoria and Sarival site.

However, there is potential for left-turn overlap between the Driveway B intersection and the signalized Peoria Avenue/Sarival Avenue intersection. This site anticipated limiting Driveway B to right-in/right-out movements due to the close proximity (approximately 400 feet center-to-center). However, the future Carioca gas station on the east side of Sarival Avenue anticipated constructing two full-access driveways on Sarival Avenue (one aligning with Driveway B). Considering the northbound left-turn queues at Peoria Avenue/Sarival Avenue, and the southbound left-turn queues at Driveway B (Carioca Driveway), it is recommended to restrict the gas station driveway to right-in/right-out movements. Left-turning traffic may use the other full-access driveway on the south side of the gas station parcel without incurring adverse consequences to the roadway network.

Based on traffic signal warrant analysis calculations, the intersection of Peoria Avenue/Sarival Avenue currently meets traffic signal warrants with existing volumes. Signal warrants are anticipated to be satisfied with 2026 background volumes at Driveway B (165th Drive)/Peoria Avenue.

The recommended lane configurations are consistent with the modeled lane configurations for level of service analysis. The recommended lane configuration are shown again in **Figure 17** for reference.

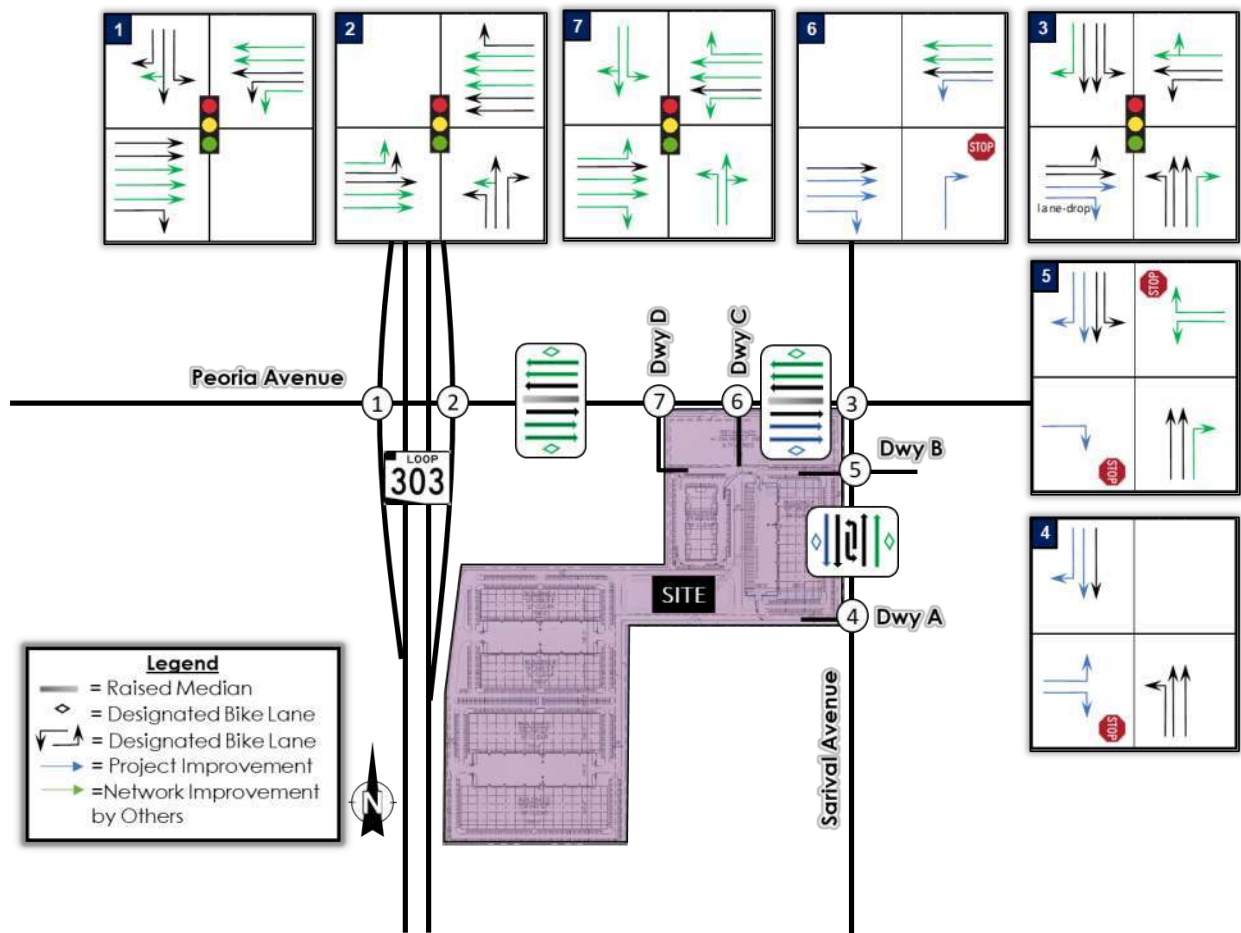


Figure 17: Recommended Lane Configuration

PRINCIPAL FINDINGS

TRIP GENERATION

- The project is anticipated to generate a total of 5,532 daily trips (entering and exiting), 240 trips during the AM peak hour, and 447 trips during the PM peak hour. The greatest hourly entering volume occurs during the PM peak hour, when 190 entering trips are anticipated

SITE ACCESS

- One full-access driveway (Driveway A) and one right-in/right-out access (Driveway B) are proposed on Sarival Avenue approximately 1,240 feet and 400 feet south of Peoria Avenue, respectively. In the future, Driveway A is anticipated to become a shared access with the parcel south of the site once the southern parcel is developed (no construction timeline is known at this time). Driveway B is anticipated to align with a future Carioca Gas Station driveway on the east side of Sarival Avenue.
- One three-quarter access (Driveway C) is proposed on Peoria Avenue approximately 640 feet west of Sarival Avenue. A full-access driveway is anticipated to be constructed at the 165th Drive alignment as part of adjacent developments, notably from the parcel immediately west of the site owned by Walmart. The alignment is expected to be east of ADOT ROW (approximately 0.21 miles east of Sarival Avenue) and will be operated by City of Surprise and City of Glendale.

TRAFFIC SIGNAL WARRANT ANALYSIS

- Traffic signal warrants #1 and #2 were evaluated at Peoria Avenue/Sarival Avenue and Driveway D (165th Drive)/Peoria Avenue.
- Signal warrants are met with existing 2024 traffic volumes at Peoria Avenue/Sarival Avenue.
- Signal warrants are anticipated to be met in the 2026 background traffic conditions at Driveway D (165th Drive)/Peoria Avenue based on background traffic without the site.
- Based on input from the City of Glendale, a proportional share towards the cost of installing the traffic signals may be necessary from the site. Calculations indicate the site contributes 6% towards the traffic at Peoria Avenue/Sarival Avenue and 7% towards the traffic at Driveway D (165th Drive)/Peoria Avenue. A contribution amount of a similar value may be appropriate.
- As the site is on the southwest corner of Peoria Avenue/Sarival Avenue, the City of Glendale has stated they would expect the site to contribute 25% towards the cost of the signal at Peoria Avenue/Sarival Avenue.

ROADWAY IMPROVEMENTS

- A total of twelve (12) adjacent developments were included in analysis as part of background traffic volumes. Overall, the surrounding roadway network is anticipated to be improved as part of the developments constructing half-street improvements.
- Both Peoria Avenue and Sarival Avenue are anticipated to provide three lanes in each direction with the improvements.

LEVEL OF SERVICE ANALYSIS

- The study intersections were analyzed under existing traffic conditions as well as the 2026 opening year and 2031 horizon year.
- In 2024 existing condition, all movements at the existing study intersections operate at or above LOS D.
- Under 2026 and 2031 background and total conditions, all movements are projected to continue operating at sufficient LOS.

TURN LANE ANALYSIS

- The City of Glendale requires a dedicated right-turn lane at all site access points. A center two-way left-turn lane currently exists on Sarival Avenue to facilitate access for Driveway A, and a left-turn lane will need to be cut into the future raised median on Peoria Avenue to facilitate access for Driveways C and D.

RECOMMENDATIONS

- Construct dedicated right-turn lanes at the site access points. Driveways C and D (165th Drive) on Peoria Avenue will require 160 feet of storage and a 100-foot taper to meet City of Surprise guidelines. Driveways A and B on Sarival Avenue will require 150 feet of storage and a 100-foot taper to meet City of Glendale guidelines. The center two-way left-turn lane on Sarival Avenue is anticipated to adequately facilitate access at Driveway A, and a westbound left-turn lane will need to be constructed at Driveway C with 160 feet of storage.
- Consideration should be given to making the Carioca Gas Station driveway that aligns with Driveway B into a right-in/right-out only access point. Due to the northbound left-turn queues anticipated at Peoria Avenue/Sarival Avenue and the southbound left-turn queues anticipated at the driveway, there is potential for left-turn overlap due to the close proximity. The Carioca Gas Station proposes another full-access driveway on Sarival Avenue at the south side of the parcel, which would be expected to adequately handle the left-turning traffic.



Liv Surprise

Traffic Impact Analysis
2nd Submittal

Northeast Corner of Cotton Lane
and Peoria Avenue
in Surprise, Arizona

February 2022
Project No. 21-1010

Prepared For:
Liv Communities
1600 S. Beacon Blvd., Suite 260
Grand Haven, Michigan 49417

For Submittal to:
City of Surprise
City of Glendale
MCDOT
ADOT

Prepared By:



10605 North Hayden Road Suite 140
Scottsdale, Arizona 85260
480-659-4250



**LIV SURPRISE
TRAFFIC IMPACT ANALYSIS
2ND SUBMITTAL**

**Northeast Corner of Cotton Lane and
Peoria Avenue in Surprise, Arizona**

Prepared for:

Liv Communities
1600 South Beacon Boulevard, Suite 260
Grand Haven, Michigan 49417

For Submittal to:

City of Surprise

Prepared by:



CivTech Inc.

10605 North Hayden Road, Suite 140
Scottsdale, Arizona 85260

Office: 480-659-4250
Fax: 480-659-0566
info@civtech.com



Expires 30 JUN 22

February 2022
CivTech Project No. 21-1010

INTRODUCTION

Liv Communities proposes a two-part residential development, with Liv Surprise, a multifamily residential development, and an adjacent undefined multifamily residential development, on approximately 19.69 net acres and located on the northeast corner of Cotton Lane and Peoria Avenue in the City of Surprise, Arizona. The existing land is currently utilized for agricultural and equestrian purposes. The proposed Liv Surprise development will provide approximately 252 dwelling units (DUs) of apartments, while the adjacent development is anticipated to provide approximately 63 DUs of multifamily residential. This study includes the adjacent multifamily in the analysis; although without a site plan available. Three (3) site access points are proposed: One (1) main driveway on Peoria Avenue providing $\frac{3}{4}$ access (right-in, right-out, and left-in, with no left-out), one (1) right-in/right-out driveway on Cotton Lane (to the adjacent future development), and one (1) exit only driveway on a new north-south road on the east side of the project, approximately $\frac{1}{4}$ -mile east of Cotton Lane. The vicinity of the site is provided in **Figure 1**.

CivTech, Inc. has been retained by Liv Communities to perform the traffic impact analysis (TIA) for the proposed development. The purpose of this assessment is to address the traffic and transportation impacts of the proposed development on the surrounding streets and intersections.

STUDY REQUIREMENTS

The project is located in the City of Surprise. Peoria Avenue in the project vicinity is a Maricopa County Department of Transportation (MCDOT) facility. Immediately south of Peoria is the City of Glendale. State Route 303L (SR-303L), an Arizona Department of Transportation (ADOT) facility, is in the study area.

This study analyzes the traffic impact due to the proposed complex on the surrounding street network. The study has been prepared in conformance with the *City of Surprise Engineering Development Standards, Chapter 4 Traffic Engineering Standards*, the *Traffic Impact Study Manual* prepared by the Maricopa County Department of Transportation (MCDOT) in May 2017, and ADOT's *Traffic Engineering Guidelines and Processes* (TGP 240) on traffic studies. The City of Glendale does not have explicit guidelines for the preparation of a Traffic Impact Study (TIS) and follows the MCDOT requirements. The specific objectives of the study are:

- To determine whether the planned street system in the vicinity of the site is adequate to accommodate the increased traffic that results from the proposed development.
- To recommend additional street improvements or traffic control devices, where necessary, to mitigate the additional site-generated traffic.

STUDY AREA

The study area has been defined as including the following intersections:

- Cotton Lane and Peoria Avenue
- Loop 303 and Peoria Avenue TI (Northbound)
- Loop 303 and Peoria Avenue TI (Southbound)

PROPOSED DEVELOPMENT

PROPOSED PROJECT

Liv Surprise proposes approximately 315 dwelling units (DUs) of multifamily residential, with 63 of the DUs as build-to-rent (BTR) townhomes and 252 of the DUs as apartments.

SITE LOCATION

The proposed Liv Surprise project would span three (3) parcels, on approximately 19.69-acres of land, located on the northeast corner of Cotton Lane and Peoria Avenue in the City of Surprise, Arizona.

SITE ACCESS

There are a total of three (3) proposed access points.

- Access A – is anticipated to be a right-in/right-out access located on Cotton Lane was assumed to be approximately 560-feet north of Peoria. This access point will be limited to use by only the adjacent multifamily residential.
- Access B – is anticipated to be the main entrance with $\frac{3}{4}$ access (right-in, right-out, and left-in, with no left-out) located on Peoria Avenue approximately 660-feet east of Cotton Lane. This access point will be limited to use by only the Liv Surprise development.
- Access C – is anticipated to be an exit only access located on a future north-south collector roadway approximately 450-feet north of Peoria Avenue. This access point will be limited to use by only the Liv Surprise development.

The proposed development site plans are provided in **Figure 4**.

TRIP GENERATION

The potential trip generation for the proposed development was estimated utilizing the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 10th Edition* and *Trip Generation Handbook, 3^d Edition*. The ITE *Trip Generation Manual* contains data collected by various transportation professionals for a wide range of different land uses. The data are summarized in the report and average rates and equations have been established that correlate the relationship between an independent variable that describes the development size and generated trips for each categorized land use. The report provides information for daily and peak hour trips. ITE’s land use code (LUC) 220, Multifamily Housing (Low-Rise) was used for the 63 dwelling units (DUs) of adjacent multifamily residential and the LUC 221 Multifamily Housing (Mid-Rise) was used for the 252 DUs of apartments.

The anticipated trip generation is summarized in **Table 5**. Detailed trip generation calculations are provided in **Appendix E**.

Table 5 – Trip Generation Calculations

Land Use	ITE Code	Land Use Name	Quantity Units	AM Distribution		PM Distribution	
				In	Out	In	Out
Multifamily	220	Multifamily Housing (Low-Rise)	63 DUs	23%	77%	63%	37%
Apartments	221	Multifamily Housing (Mid-Rise)	252 DUs	26%	74%	61%	39%

Land Use	ADT		AM Peak Hour			PM Peak Hour				
	Avg. Rate	Total	Avg. Rate	In	Out	Total	Avg. Rate	In	Out	Total
Multifamily	6.88	436	0.49	7	24	31	0.62	25	14	39
Apartments	5.44	1,372	0.34	22	63	85	0.43	66	42	108
Total		1,808		29	87	116		91	56	147

The proposed development is anticipated to generate 1,808 weekday daily trips, with 116 trips during the AM peak hour (29 in/87 out), and 147 external trips during the PM peak hour (91 in/56 out).

VEHICLE TRIP DISTRIBUTION AND ASSIGNMENT

A single trip distribution pattern was assumed for the proposed development. It is expected that the proposed development will generate trips based on future employment/population within a 5-mile radius of the site. Future total employment within a 5-mile radius of the site, as projected by the 2030 socio-economic data compiled by the Maricopa Association of Governments (MAG), was used as a basis to estimate trip distribution. The resulting trip distribution percentages for the study area are shown in **Table 6**. The trip distribution calculations are included in **Appendix F**.

Table 6 – Site Trip Distribution

Direction (To/From)	Percentage
North on Cotton Lane (north of Peoria Avenue)	14%
South on Cotton Lane (south of Peoria Avenue)	7%
East on Peoria Avenue (east of Cotton Lane)	20%
West on Peoria Avenue (west of Cotton Lane)	2%
North on Loop 303 (north of Cactus Road)	30%
South on Loop 303 (south of Olive Avenue)	27%
Total	100%

Figure 5 illustrates the trip distribution percentages noted in **Table 6** on the roadway network within the study area. The percentages presented in **Figure 5** were applied to the site trips generated to determine the AM and PM peak hour site traffic at the intersections within the study area. **Figure 6** presents the resulting site generated traffic for the proposed development.

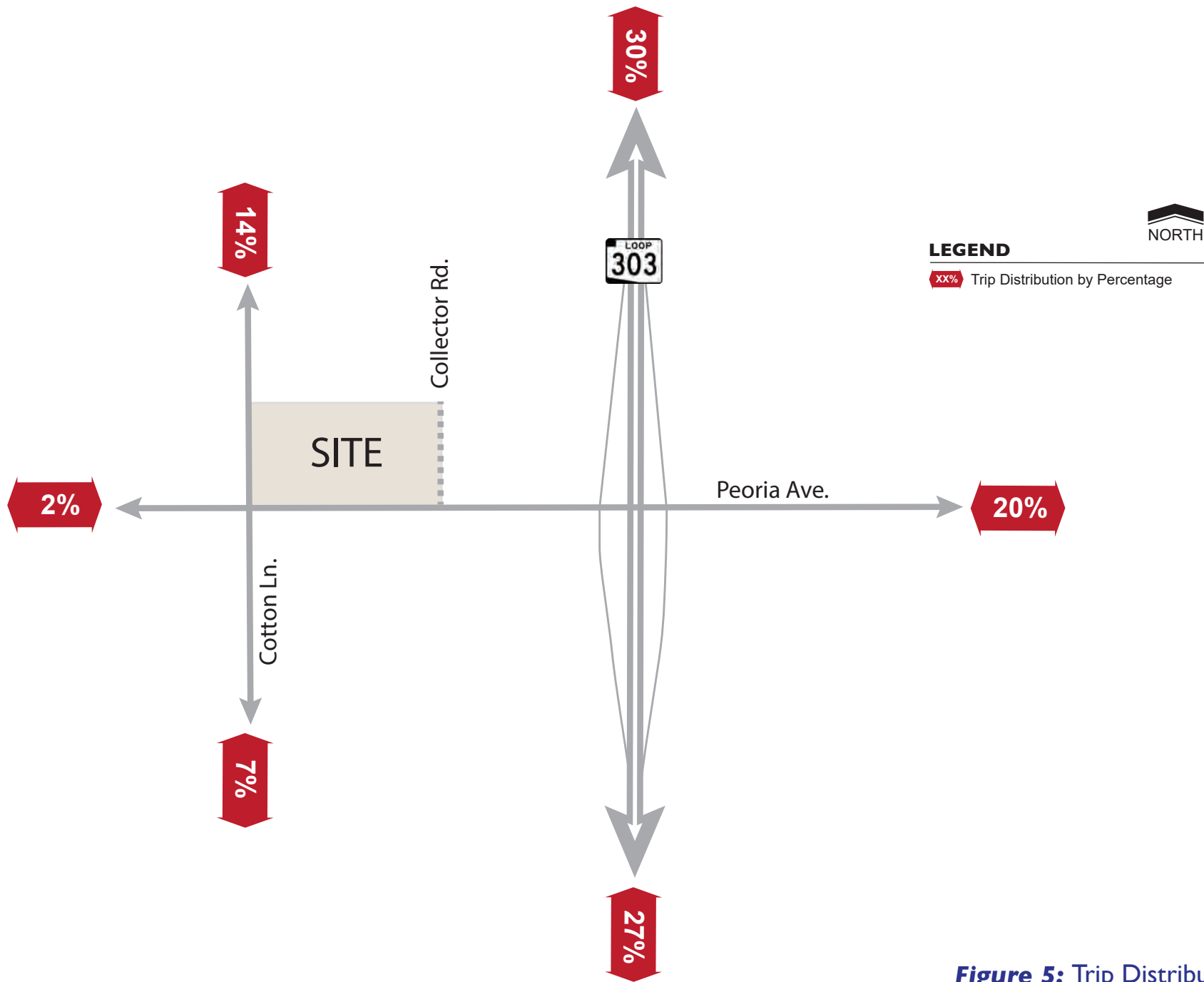
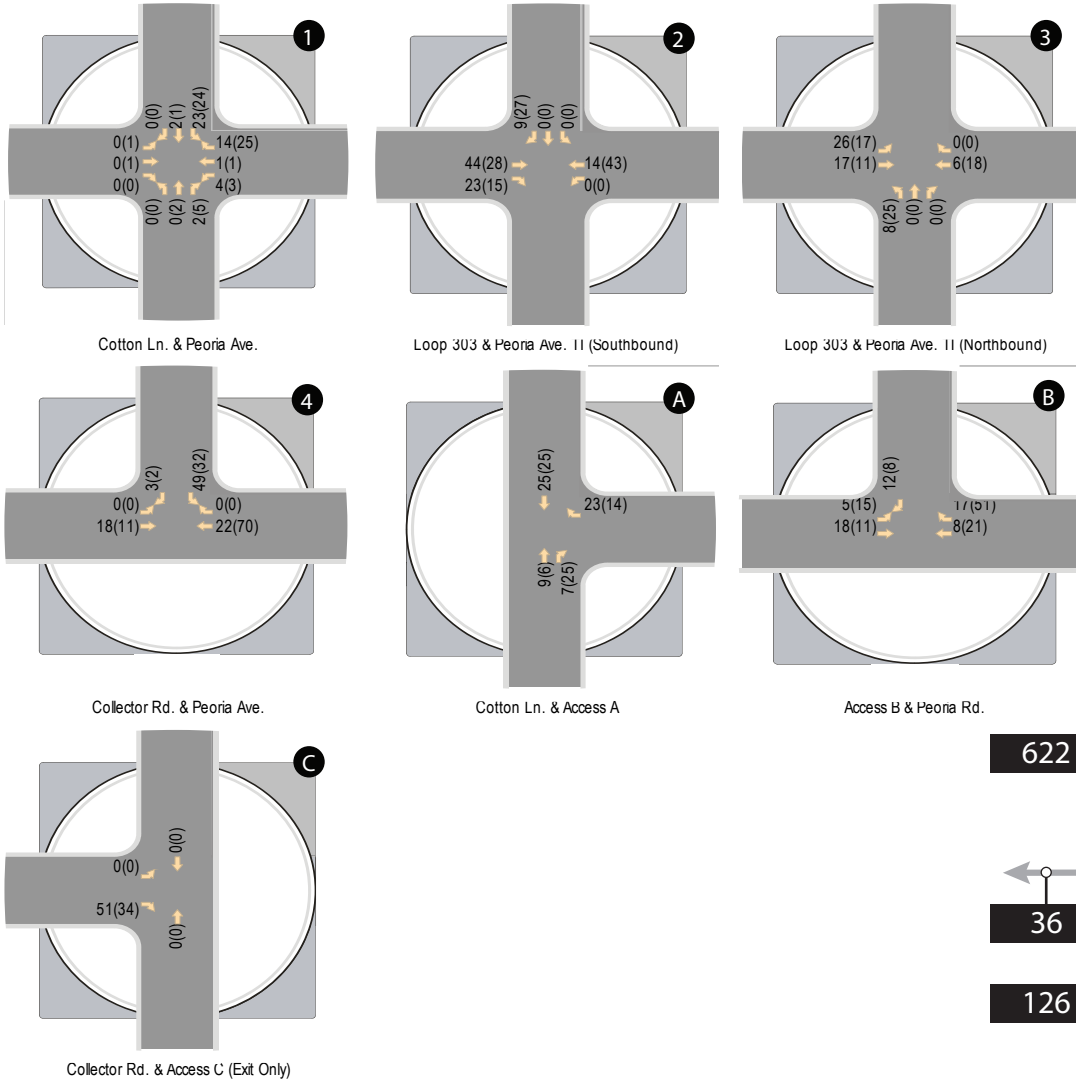


Figure 5: Trip Distribution



Legend

XX(XX) - AM (PM) Peak Hour Traffic Volumes

X,XXX - ADTs Bi-Directional

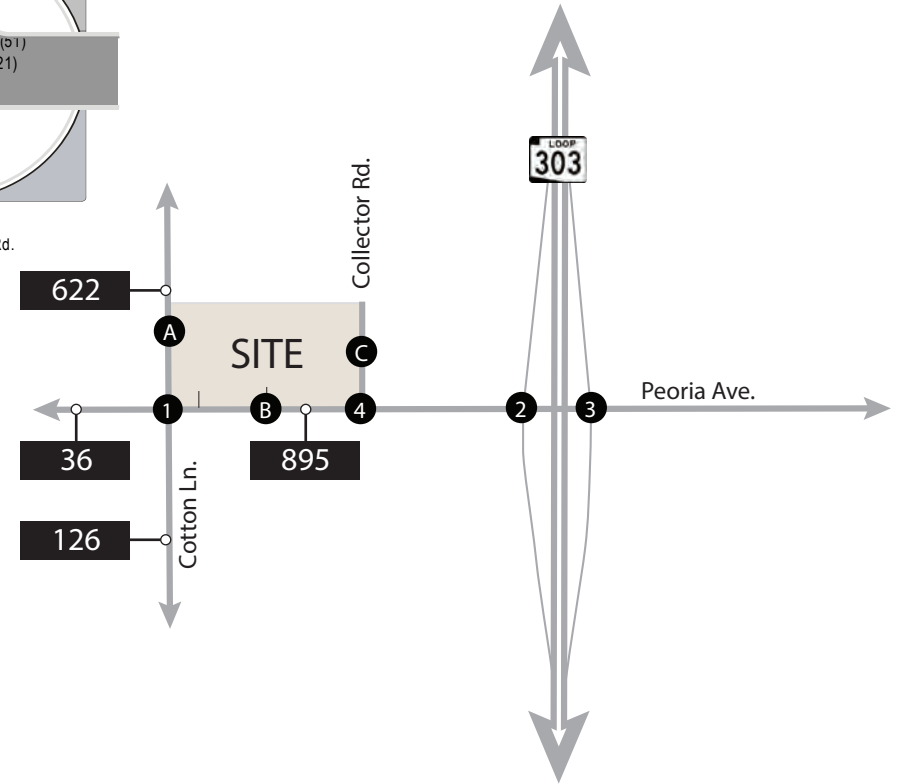


Figure 6: Site Generated Traffic Volumes



TRAFFIC IMPACT ANALYSIS

PARKWAY 303 WEST

OLIVE AVENUE/COTTON LANE

REVISED 19 JULY 2022

23 JUNE 2021



PREPARED FOR

SUBURBAN LAND RESERVE, INC.

51 W SOUTH TEMPLE

SALT LAKE CITY, UTAH 84111

SOUTHWEST TRAFFIC ENGINEERING, LLC
3838 NORTH CENTRAL AVENUE, SUITE 1810
PHOENIX, AZ 85012
T 602.266.SWTE (7983) F 602.266.1115



**PARKWAY 303 WEST
OLIVE AVENUE/COTTON LANE
REVISED TRAFFIC IMPACT ANALYSIS**

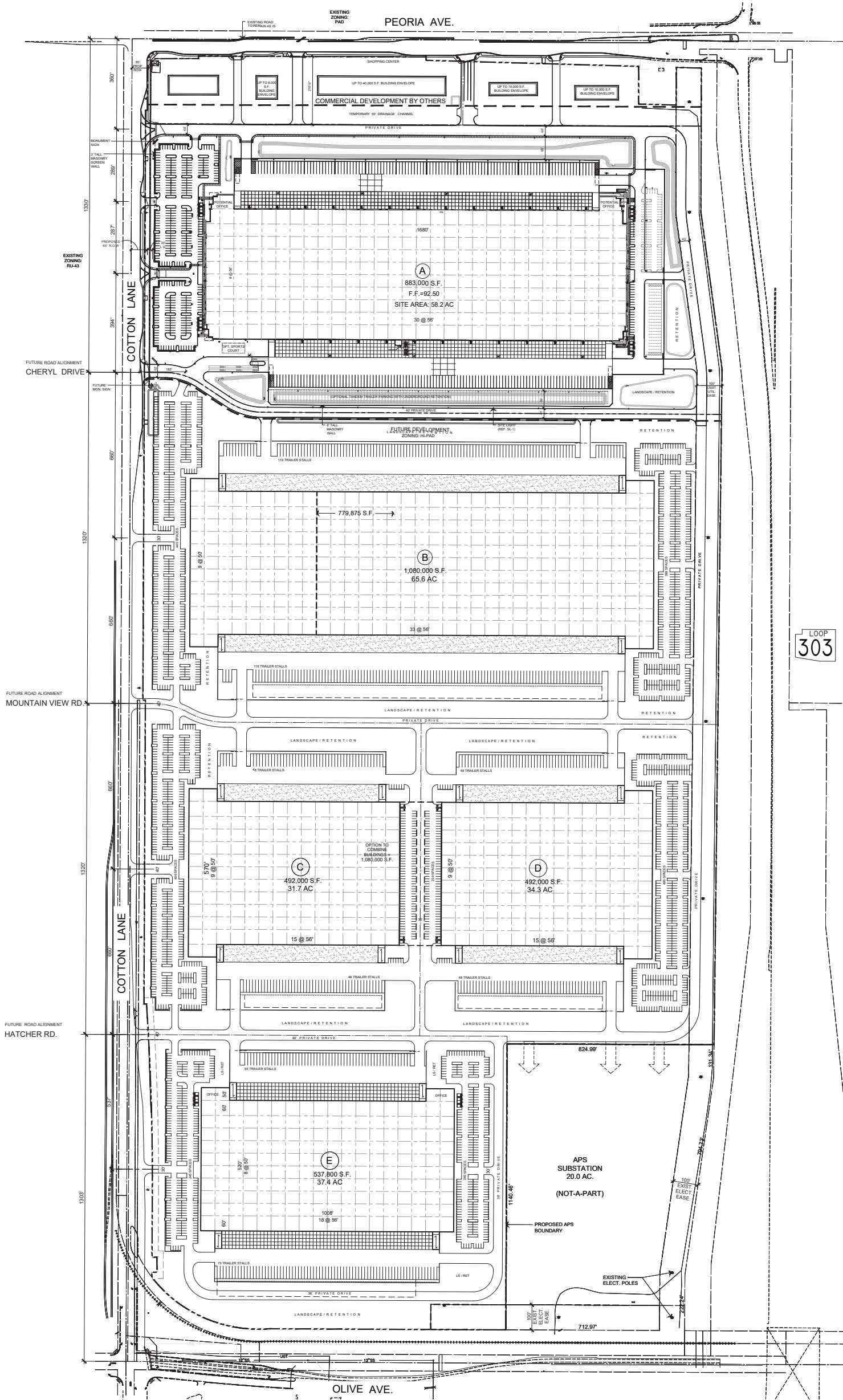
Project Description

Suburban Land Reserve, Inc. is proposing a new industrial development on the northeast corner of Olive Avenue/Cotton Lane in Glendale, Arizona. The vicinity of the project is shown in **Figure 1**. The site will be located as shown in **Figure 2**. The proposed development will consist of 3,484,800 square feet of industrial park space and 84,000 square feet of shopping center space. The development will be served by thirteen proposed access points.

The purpose of this traffic impact analysis is to:

- Evaluate the current and future operational characteristics of the adjacent roadway network surrounding the project site.
- Estimate the traffic generation associated with the project and assign that traffic to the existing roadway system.
- Analyze future traffic operations at seven existing intersections and thirteen proposed driveways serving the project area.
- Determine the need for auxiliary (left and right turn) lanes at the driveways that will serve the project site.
- Conduct traffic signal warrant analyses at the intersections of Peoria Avenue/Cotton Lane, Cheryl Drive/Cotton Lane, Mountain View Road/Cotton Lane, Hatcher Road/Cotton Lane, Northern Avenue/Cotton Lane, and 169th Avenue/Peoria Avenue.
- Perform a crash analysis to identify any specific crash trends within the study area.

The author of this report is a registered Professional Engineer (Civil) in the State of Arizona having specific expertise and experience in the preparation of traffic impact analyses.



CONCEPTUAL MASTER SITE PLAN
OPTION 'A'

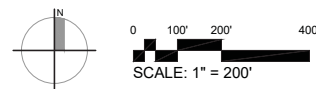
PARKWAY 303 WEST
SWC Loop 303 & Peoria Ave.
Glendale, Arizona

PRELIMINARY
NOT FOR
CONSTRUCTION



Butler Design Group, Inc
architects & planners

07.18.22
21018_ST24





Weekday 24-hour intersection approach counts were also collected at Peoria Avenue/Cotton Lane and Northern Avenue/Cotton Lane. Weekday 24-hour bi-directional traffic volume counts were taken on Cotton Lane between Peoria Avenue and Olive (at the Mountain View Road alignment) and on Peoria Avenue between Cotton Lane and Loop 303.

All traffic counts were collected at the end of March 2021 while school was in session. The results of the traffic counts are shown in **Figure 4**. Complete traffic count data can be found in the Appendix A.

The Maricopa Association of Governments (MAG) has been collecting and analyzing traffic volume data within Maricopa County as it relates to the impacts of COVID-19. The basis of their analysis assumes that the average weekday traffic volumes in the first week of March 2020 were ‘normal’ traffic conditions, defined as 100%.

MAG data shows ‘normal’ traffic has returned to freeways and principal arterials within Maricopa County. As such, no specific COVID 19 adjustments were applied to the traffic data collected for this analysis.

Access

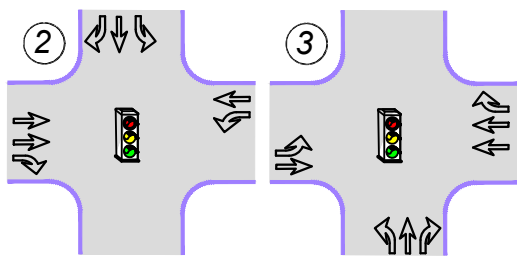
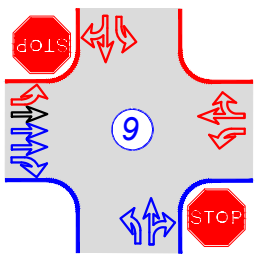
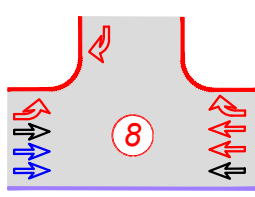
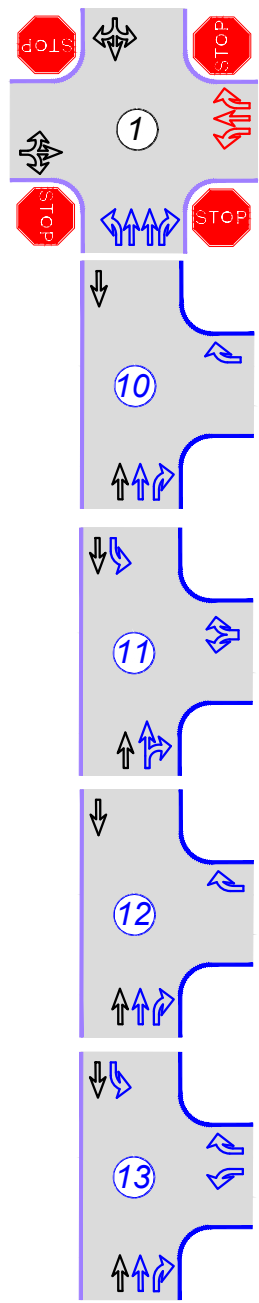
The adjacent Liv Surprise development is located on the northeast corner of Cotton Lane/Peoria Avenue. This project is expected to widen the north side of Peoria Avenue in between Cotton Lane and 169th Avenue. Two driveways on Peoria Avenue are proposed to serve the project, 170th Avenue and 169th Avenue, which will be located approximately 375 feet and 660 feet east of Cotton Lane.

The project is expected to be completed in two separate phases. Phase 1 will include the construction of Building A and was assumed to be completed by 2022. Five access points are proposed as part of Phase 1, one will be located on the south side of Peoria Avenue (169th Avenue) and four will be located on the east side of Cotton Lane (Del Sol Waddell, Camden Avenue, Cochise Drive, and Cheryl Drive).

169th Avenue is proposed as a full access driveway that will be located approximately 1,320 feet east of Cotton Lane.

Del Sol Waddell, Camden Avenue, Cochise Drive, and Cheryl Drive are proposed approximately 360 feet, 650 feet, 935 feet, and 1,330 feet south of Peoria Avenue. Del Sol Waddell and Cochise Drive are expected to offer right-in/right-out access only while Camden Avenue and Cheryl Drive are proposed as full access driveways.

Phase 2 will include the remainder of the site and will be served by eight additional access points. Three access points on the south side of Peoria Avenue (170th Lane, 170th Avenue, and 168th Lane) and five access points on the east side of Cotton Lane (Brown Street, Mountain View Road, Vogel Avenue, Hatcher Road, and Mission Lane).



LEGEND:



= Traffic Signal



= Stop Sign

— = Existing Road

⇒ = Existing Movement

— = New Access

⇒ = New Movement

— = Liv Surprise Proposed Access

⇒ = Liv Surprise Proposed Movement

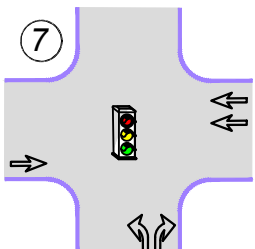
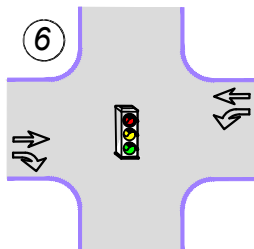
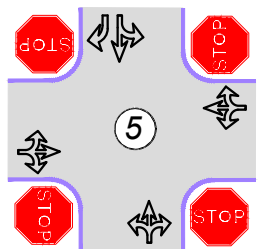
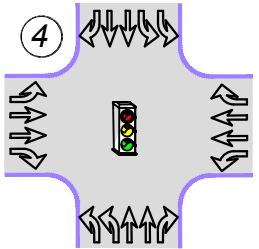
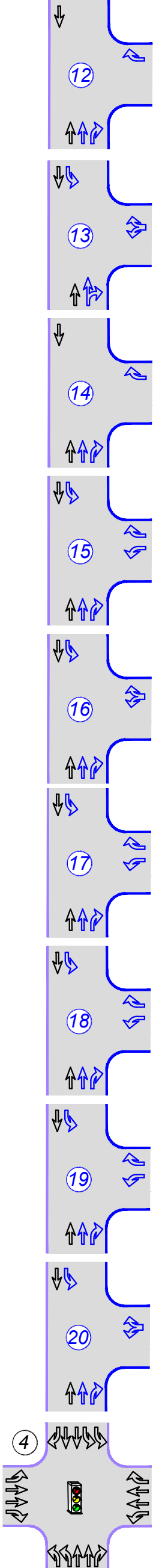
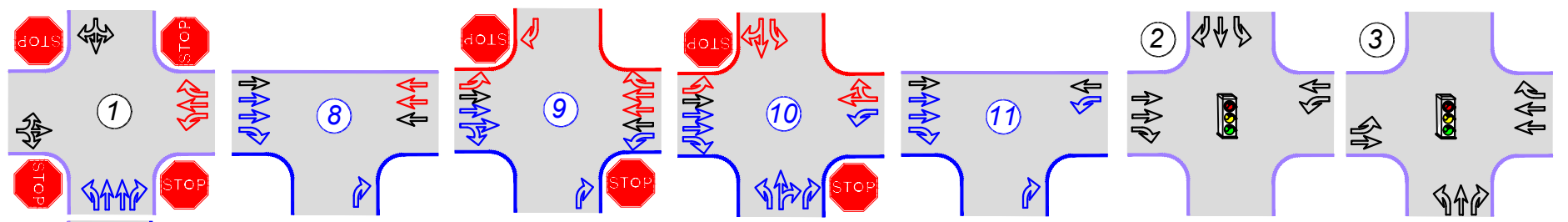










Figure 6: Baseline Access Configuration and Traffic Control (2022 With Project)



LEGEND:

-  = Traffic Signal
-  = Stop Sign
-  = Existing Road
-  = Existing Movement
-  = New Access
-  = New Movement
-  = Liv Surprise Proposed Access
-  = Liv Surprise Proposed Movement

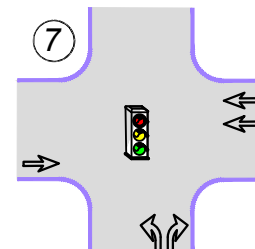
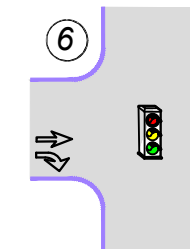
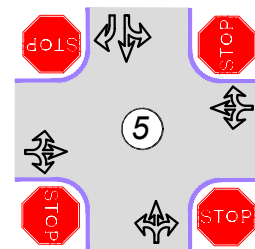
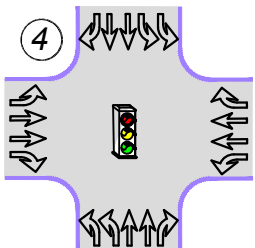


Figure7: Baseline Access Configuration and Traffic Control (2027, 2032, and 2037 With Project)



For the purposes of this analysis, it was assumed that the development would be constructed in two phases. Phase 1 of the project would include the construction of 883,000 square feet of industrial space by the opening year of 2022. Phase 2 would include the remainder of the site, including the retail center portion of the development, which was assumed to be completed by the 2027 horizon year. **Tables 1 and 2** show the results of the weekday trip generations for Phase 1 and Phase 2 of the project. The complete trip generation calculations can be found in Appendix B.

Table 1 – Site Generated Trips (Phase 1)

Time Period	Industrial Park (LUC 130)
Average Daily, Inbound (vtpd)	754
Average Daily, Outbound (vtpd)	754
Total Daily	1,508
AM Peak Hour, Inbound (vtph)	286
AM Peak Hour, Outbound (vtph)	67
Total AM Peak	353
PM Peak Hour, Inbound (vtph)	74
PM Peak Hour, Outbound (vtph)	279
Total PM Peak	353

vtpd - vehicle trips per day, vtph - vehicle trips per hour

Table 2 – Site Generated Trips (Phases 1 and 2)

Time Period	Shopping Center (LUC 820)	Industrial Park (LUC 130)	Total
Average Daily, Inbound (vtpd)	1,586	2,976	4,562
Average Daily, Outbound (vtpd)	1,586	2,975	4,561
Total Daily	3,172	5,951	9,123
AM Peak Hour, Inbound (vtph)	49	1,129	1,178
AM Peak Hour, Outbound (vtph)	30	265	295
Total AM Peak	79	1,394	1,473
PM Peak Hour, Inbound (vtph)	154	293	447
PM Peak Hour, Outbound (vtph)	167	1,101	1,268
Total PM Peak	321	1,394	1,715

vtpd - vehicle trips per day, vtph - vehicle trips per hour

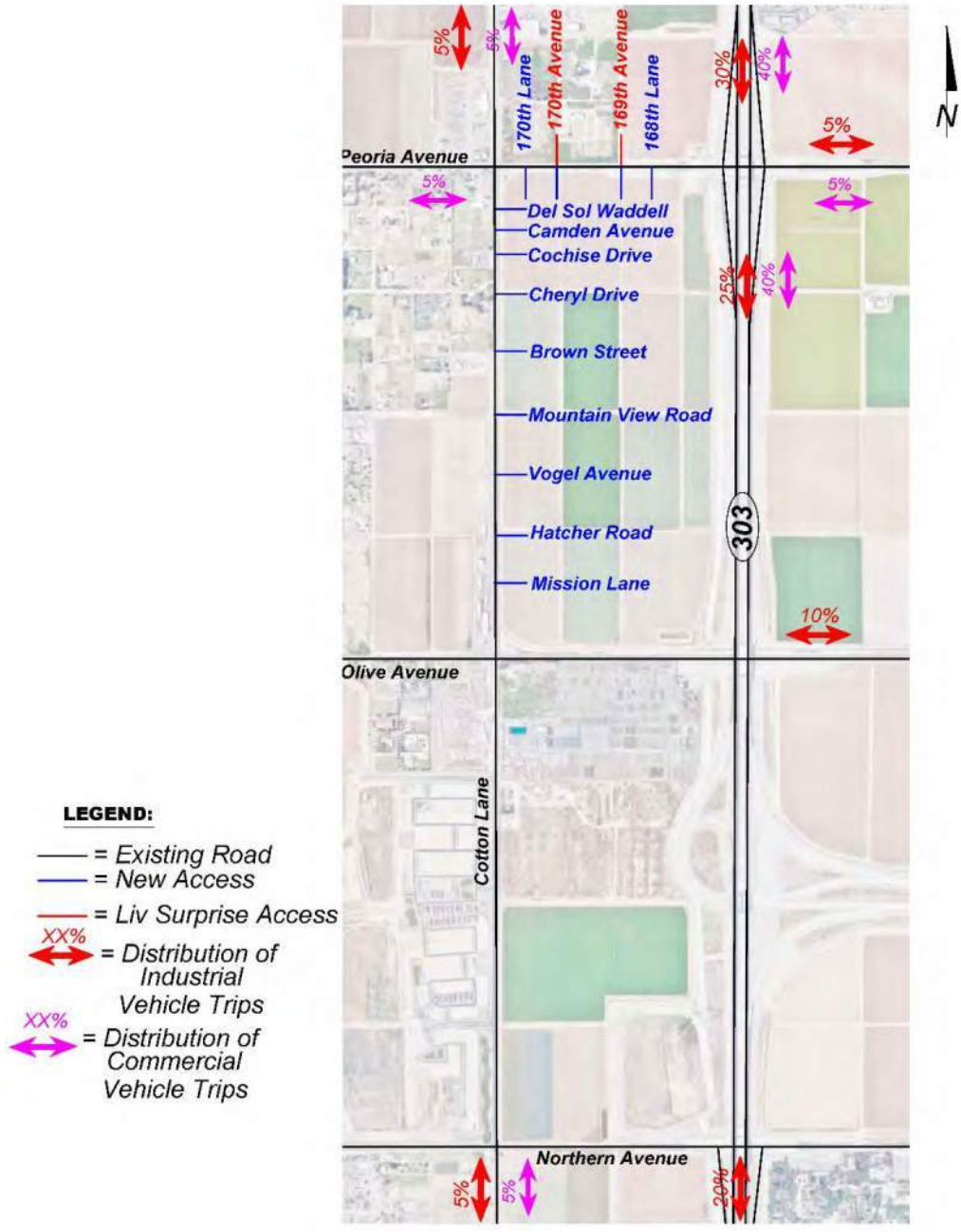
Trip Distribution & Assignment

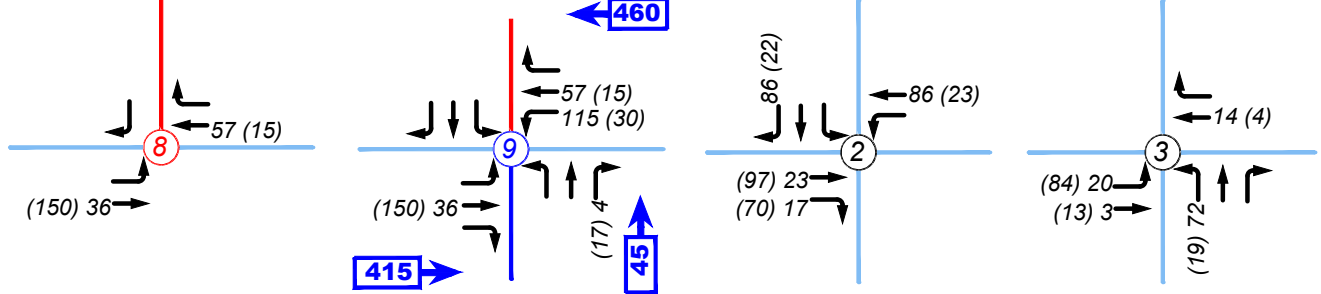
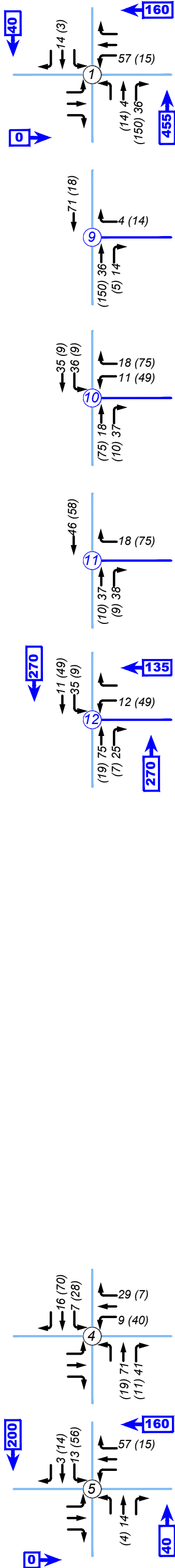
Trip distribution for the project was based on existing traffic volume patterns near the proposed site. **Figure 8** shows the weekday trip distribution for the project as a percentage of net new primary trips.

Figures 9 and 10 show the assignment of the new site generated trips to the project intersections within the study area for the years 2022, 2027, 2032, and 2037.



Figure 8 – Weekday Peak Hour Trip Distribution





LEGEND:
 XX = Weekday AM Peak Hour
 (XX) = Weekday PM Peak Hour
 Vehicles Per Hour
 — = Existing Road
 — = New Access
 ##### = Vehicles Per Day
 — = Liv Surprise Proposed Access

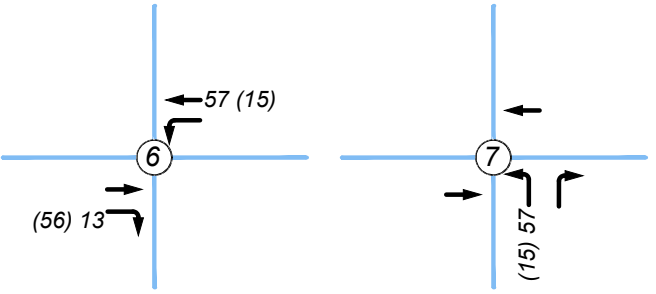


Figure 9: 2022 Weekday Peak Hour Trip Assignment

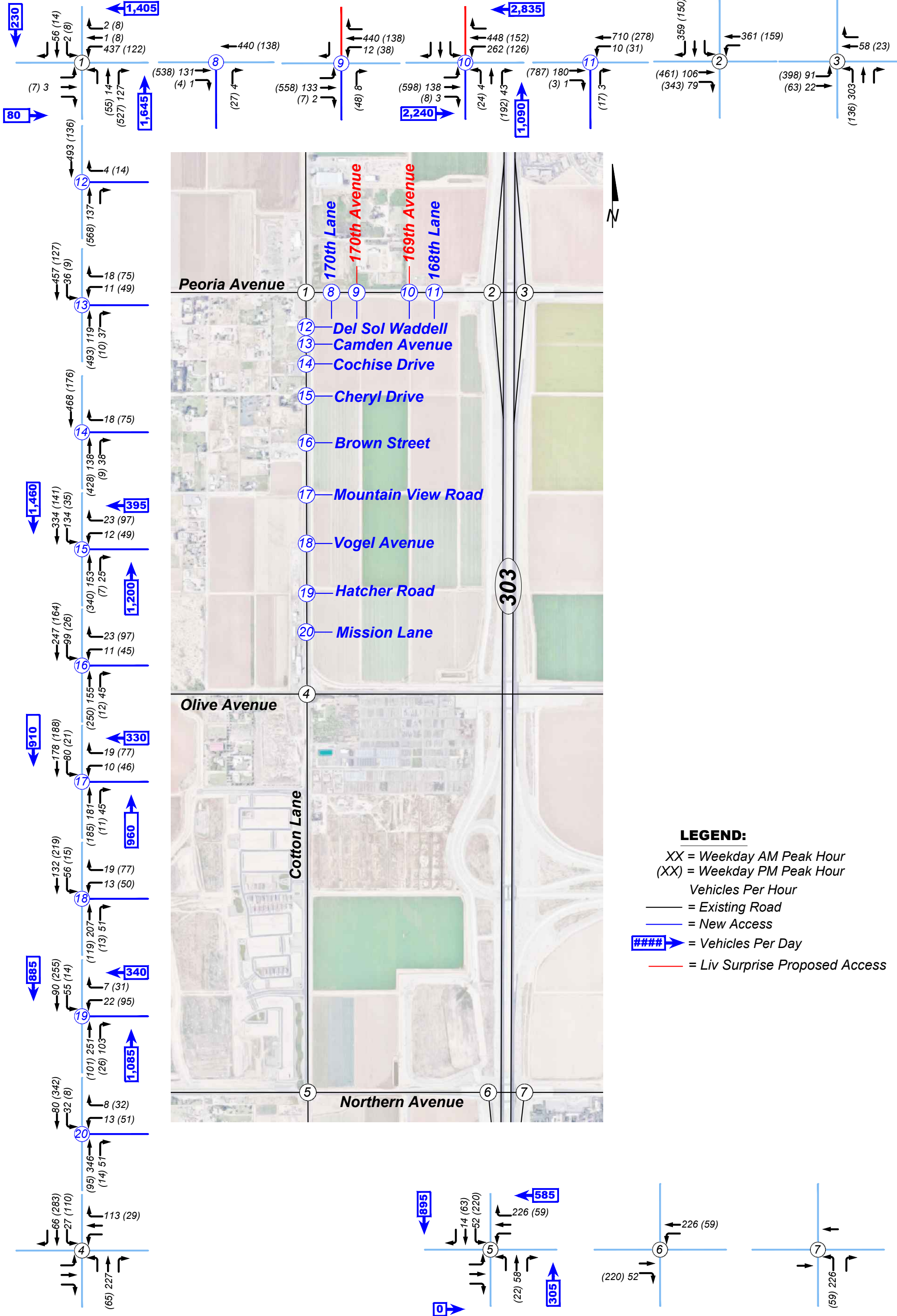


Figure 10: 2027, 2032, and 2037 Weekday Peak Hour Trip Assignment



Mitigation

Delays are expected at the intersections of Loop 303 Northbound Ramps/Peoria Avenue and Loop 303 Northbound Ramp/Northern Avenue during the weekday peak hours in 2027, 2032, and 2037 without and/or with traffic from the project and with adjacent developments. The intersection of Loop 303 Southbound Ramp/Peoria Avenue is expected to experience delays during the weekday peak hours in 2037 with traffic from the project. These delays are due to the limited capacity provided at these intersections not adequately serving the growing traffic volumes in the area.

Excess pavement is provided at these intersections in anticipation of the widening of Peoria Avenue and Northern Avenue. As development occurs adjacent to these intersections, half street improvements are expected to be completed, and the intersections of Loop 303 Northbound Ramps/Peoria Avenue, Loop 303 Southbound Ramps/Peoria Avenue, and Loop 303 Northbound Ramps/Northern Avenue are expected to be restriped to provide additional travel lanes.

Restriping the intersection of Loop 303 Northbound Ramps/Northern Avenue to provide two westbound through lanes and dual northbound left turn lanes is expected to alleviate the delays at the intersection.

The delays at the intersection of Loop 303 Northbound Ramps/Peoria Avenue can be alleviated with the striping of two eastbound and two westbound through lanes and dual eastbound left turn lanes.

At the intersection of Loop 303 Southbound Ramps/Peoria Avenue, the striping of two eastbound and two westbound through lanes, in addition to an exclusive left turn lane, shared through/right turn lane, and an exclusive right turn lane for the southbound approach to the intersection, is expected to alleviate the delays.

Several movements at the intersections of Peoria Avenue/Cotton Lane and Northern Avenue/Cotton Lane are expected to experience inadequate delays during the weekday peak hours in 2022, 2027, 2032, and 2037 without and with the project and with adjacent developments. These delays are due to the ALL-WAY STOP control of the intersections becoming inefficient with the growing traffic volumes in the area, as each vehicle is required to stop and proceed through the intersection one at a time.

The installation of a traffic signal in conjunction with the installation of dual westbound left turn lanes and dual northbound right turn lanes with right turn overlap signal phasing is expected to alleviate the delays at Peoria Avenue/Cotton Lane.

The installation of a traffic signal, dual southbound left turn lanes and exclusive left turn lanes for the remaining approaches to the intersection, and an exclusive westbound right turn lane with right turn overlap signal phasing is expected to alleviate the delays at Northern Avenue/Cotton Lane.



Westbound left turning vehicles at Hatcher Road/Cotton Lane are anticipated to experience inadequate delays during the weekday peak hours in 2027, 2032, and 2037 with traffic from the project and with adjacent developments. The intersections of Camden Avenue/Cotton Lane and Cheryl Drive/Cotton Lane are also expected to experience delays for the minor approaches during the weekday PM peak hour in 2037 with traffic from the project and adjacent developments. Un-signalized, minor approaches to intersections with major streets such as Cotton Lane, tend to operate at a LOS E or F during the weekday peak hours. In the future, when Cotton Lane is widened to a five-lane roadway, these delays are expected to be alleviated.

Vehicles turning to and from the minor approach of 169th Avenue/Peoria Avenue are also expected to experience inadequate delays in 2027, 2032, and 2037 without and with traffic from the project, with adjacent developments. These delays are due to the relatively large through traffic volumes expected on Peoria Avenue not providing adequate gaps for vehicles turning to/from the minor approaches. The installation of the warranted traffic signal at 169th Avenue/Peoria Avenue and the widening of Peoria Avenue to its ultimate width is anticipated to alleviate the delays at this intersection.

Tables 28 and 29 shows the corresponding levels of service with the proposed mitigation measures described above using 2037 peak hour traffic volumes without and with traffic from the project. Complete capacity calculations can be found in Appendix C.



Conclusion

When fully completed, the proposed project is predicted to generate an additional 12,436 vehicle trips per day (vtpd) on weekdays to the adjacent street system from the new project site. Fifty percent of these new trips (6,218 vehicle trips) will be into the project and fifty percent will be out of the project.

The westbound left turn lane at 169th Avenue/Peoria Avenue should be constructed to provide 250 feet of storage with a minimum taper of 100 feet. As part of this design, the intersection of 168th Avenue/Peoria Avenue should be converted into a right-in/right-out only driveway due to the potential overlap from the westbound left turn lane at 169th Avenue/Peoria Avenue.

The proposed northbound right turn lanes on Cotton Lane, and the remaining proposed eastbound right turn lanes and westbound left turn lanes on Peoria Avenue should be constructed to provide 160 feet of storage with a minimum taper of 100 feet per MCDOT and City of Surprise guidelines.

The warranted traffic signal should be installed at the intersection of Peoria Avenue/Cotton Lane. This intersection is expected to be widened in the future when development occurs adjacent to the intersection and Peoria Avenue and Cotton Lane are widened to five lane cross sections. Dual westbound left turn lanes and dual northbound right turn lanes should be constructed at this intersection with northbound right turn overlap signal phasing.

In order to determine the percentage that the project will need to contribute to the cost of the warranted traffic signal at Peoria Avenue/Cotton Lane, 2037 traffic volumes without the project and with adjacent developments were compared to 2037 traffic volumes with the project. In 2037 without traffic from the project and with adjacent developments, there is expected to be 26,550 total daily trips at the intersection of Peoria Avenue/Cotton Lane. The project is anticipated to add 3,280 daily vehicles, an increase of 12.4%, to this intersection. Based on this, the project should be responsible for no more than 12.4% of the total cost of a future traffic signal at Peoria Avenue/Cotton Lane.

The intersection of Northern Avenue/Cotton Lane should be monitored, and a traffic signal should be installed along with necessary geometric improvements to the intersection when warranted. These improvements include the installation of exclusive left turn lanes at each approach and an exclusive westbound right turn lane with right turn overlap signal phasing.

With economic conditions driving the development of the commercial portion of the site, the intersection of 169th Avenue/Peoria Avenue should be monitored, and a traffic signal should be installed when warrants are met. In order to determine the percentage that the project will need to contribute to the cost of the future traffic signal at this intersection, 2037 traffic volumes without the project and with adjacent developments were compared to 2037 traffic volumes with the project. In 2037 without traffic from the project and with adjacent developments, there is expected to be 20,450 total daily trips at the intersection of 169th Avenue/Peoria Avenue. The project is anticipated to add 6,165 daily vehicles, an increase of 30.1%, to this intersection. Based on this, the project should be responsible for no more than 30.1% of the total cost of a future traffic signal at Peoria Avenue/Cotton Lane.



The intersection of Loop 303 Northbound Ramps/Peoria Avenue should be re-stripped to offer dual eastbound left turn lanes, two eastbound through lanes, and two westbound through lanes. Loop 303 Southbound Ramps/Peoria Avenue should also be restriped to provide an exclusive southbound left turn lane, a shared southbound through/right turn lane, an exclusive southbound right turn lane, two eastbound through lanes, and two westbound through lanes.

The intersections of Loop 303 Northbound Ramp/Northern Avenue and Loop 303 Southbound Ramp/Northern Avenue should be striped to provide two westbound through lanes. Loop 303 Northbound Ramp/Northern Avenue should also be striped to provide dual northbound left turn lanes.

Proposed lane configurations and traffic control are shown in **Figure 24**.

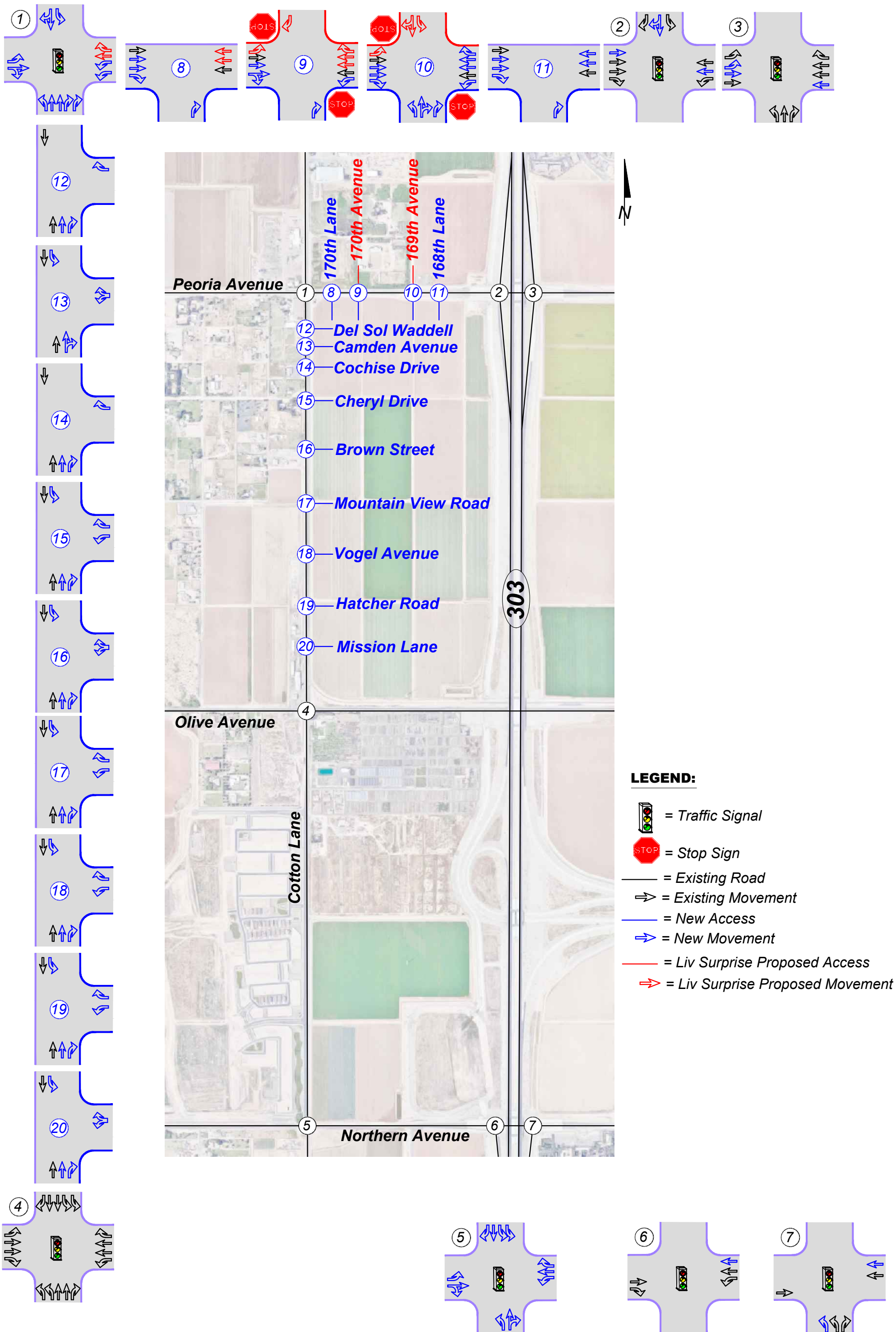
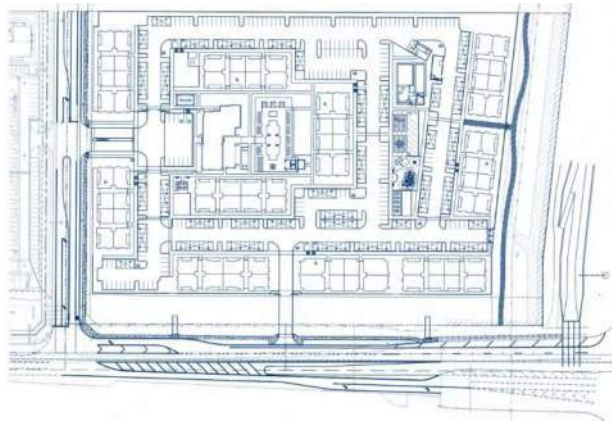


Figure 24: Proposed Lane Configuration and Traffic Control



Sycamore Garcia

Traffic Impact Analysis – Category I



SURPRISE APPROVAL

THIS REPORT HAS BEEN REVIEWED FOR COMPLIANCE WITH CITY REQUIREMENTS PRIOR TO ISSUANCE OF PERMITS. THE CITY NEITHER ACCEPTS NOR ASSUMES ANY LIABILITY FOR ERRORS OR OMISSIONS. THIS COMPLIANCE APPROVAL SHALL NOT PREVENT THE CITY ENGINEER FROM REQUIRING CORRECTIONS OF ERRORS OR OMISSIONS IN REPORTS FOUND TO BE IN VIOLATION OF LAWS OR ORDINANCES.

CITY OF SURPRISE ENGINEER _____

DATE _____



Prepared for:



IDM Companies
6720 N Scottsdale Rd, Suite 200
Scottsdale, AZ 85253

Prepared by:



Lokahi, LLC
10555 N 114th Street, Suite 105
Scottsdale, AZ 85259

Project Number: 22.5384
July 26, 2023



1. INTRODUCTION AND EXECUTIVE SUMMARY

1.1. PURPOSE OF REPORT AND STUDY OBJECTIVES

Lōkahi, LLC (Lōkahi) was retained by IDM Companies to complete a Traffic Impact Analysis (TIA) – Category I for the proposed Sycamore Garcia development, located on the northwest corner of Peoria Avenue and State Route 303 Loop (SR 303L), in Surprise, Arizona. The proposed development will be comprised of 240 multifamily units. For the purposes of this analysis, it was assumed that the proposed development will be constructed and fully occupied in a single phase during the opening year of 2025.

The objective of this TIA is to analyze the traffic related impacts of the proposed development to the adjacent roadway network. See **Figure 1** for the vicinity map.

This Traffic Impact Analysis includes:

- Level of service analysis of existing conditions for the weekday AM and PM peak hours
- Trip generation for the proposed development
- Level of service analysis for the opening year (2025) weekday AM and PM peak hours
- Turn lane analysis
- Queue analysis
- Signal warrant analysis

The following are the existing intersections included in this study:

- Peoria Avenue and Cotton Lane (1)
- Peoria Avenue and SR 303L SB Ramps (2)
- Peoria Avenue and SR 303L NB Ramps (3)

1.2. EXECUTIVE SUMMARY

This report presents the analyses and results of a Traffic Impact Analysis – Category I prepared for the proposed Sycamore Garcia development, located on the northwest corner of Peoria Avenue and SR 303L, in Surprise, Arizona. The proposed development will be comprised of 240 multifamily units. For the purposes of this analysis, it was assumed that the proposed development will be constructed and fully occupied in a single phase during the opening year of 2025.

Existing Capacity Analysis

The existing capacity analysis evaluates the existing study intersections as they were at the time of traffic data collection. Data was collected during May of 2022. Improvements to the study intersection which occurred after data collection are not considered to be existing for the purposes of the existing capacity analysis and therefore were not evaluated.





The AM and PM peak hour existing conditions capacity analyses were completed for the existing study intersections. The results of the existing capacity analysis reveal that all intersections and lane groups operate at an existing level of service (LOS) D or better, with the exception of the westbound shared left-through-right PM peak hour which operates at a LOS E at the Peoria Avenue and Cotton Lane intersection. **This movement will be mitigated with the ultimate improvements that are currently under construction and anticipated to be completed at the intersection by the year 2025.**

Trip Generation

The trip generation was calculated utilizing the Institute of Transportation Engineers (ITE) publication entitled *Trip Generation, 11th Edition*. The Sycamore Garcia development is anticipated to generate a total of 1,614 weekday trips, with 97 trips occurring during the AM peak hour and 124 trips occurring during the PM peak hour.

Trip Generation – Proposed Development

Land Use	ITE LUC	Qty	Unit	Weekday	AM Peak Hour		PM Peak Hour			
				Total	Total	In	Out	Total	In	Out
Multifamily Housing (Low-Rise)	220	240	Dwelling Units	1,614	97	23	74	124	78	46

Future Conditions

Future capacity analyses were completed with and without the build-out of the proposed Sycamore Garcia development for the opening year. The year 2025 background traffic volumes include the trips generated by the future surrounding developments, in addition to a 3.0% annual growth rate based on Maricopa Associations of Governments (MAG) socioeconomic projections.

Refer to **Section 6.3** and **6.4** for the year 2025 no build and build AM and PM peak hour LOS and delay results and suggested mitigations/analysis of future operations. All movements operate with a level of service (LOS) D or better in the 2025 build capacity analysis.

Traffic Signal Analysis

A traffic signal analysis was performed for the intersection of Peoria Avenue and 169th Avenue. Warrant 3 is satisfied with the year 2025 projected background traffic volumes without the build-out of the proposed development. Warrants 1, 2, and 3 are satisfied with the year 2025 projected total traffic volumes with the build-out of the proposed development.

A traffic signal is recommended at the intersection of Peoria Avenue and 169th Avenue to provide full access movements to the intersection while mitigating minor street delay and is analyzed in the no build and build capacity analyses.





Recommendations

The recommendations with the build-out of the proposed Sycamore Garcia development include:

Half Street Improvements Adjacent to Project

- The developer will be responsible for the half-street improvements adjacent to the proposed development along Peoria Avenue.

Peoria Avenue and 169th Avenue (4)

- Modification of the westbound approach to provide two (2) additional westbound through lanes and one (1) dedicated right turn lane, with a recommended minimum storage length of 160 feet.

169th Avenue and Driveway A (5)

- Build-out of a full access stop-controlled driveway. This driveway will include a southbound left turn lane with a recommended minimum storage length of 50 feet.

An emergency exit, allowing right-out only movements, is proposed along Peoria Avenue.



2. PROPOSED DEVELOPMENT

The proposed development is located on the northwest corner of Peoria Avenue and State Route 303 Loop (SR 303L), in Surprise, Arizona. See **Figure 1** for a vicinity map.

The proposed development will be comprised of 240 multifamily units, located within 3-story buildings. For the purposes of this analysis, it was assumed that the proposed development will be constructed and fully occupied in a single phase during the opening year of 2025.

There is one (1) proposed driveway evaluated in this study which provides direct access to the site, along the proposed 169th Avenue alignment.

169th Avenue and Peoria Avenue (4) is a proposed full access, signal-controlled intersection. 169th Avenue is a proposed collector roadway which will intersect with Peoria Avenue, approximately 0.25 miles and 0.20 miles east and west of Cotton Lane and SR 303L SB Off Ramp, respectively.

169th Avenue and Driveway A (5) is located approximately 455 feet north of Peoria Avenue. This driveway will provide full access and will align with the planned driveway for the proposed development located on the west side of 169th Avenue. The intersection will be two-way stop-controlled, with stop control on the eastbound and westbound approaches.

Peoria Avenue and Driveway is located approximately 435 feet and 680 east and west of 169th Avenue and SR 303L SB Off Ramp, respectively. This driveway will be an emergency exit, allowing right-out only movements.

See **Figure 2** and **Appendix A** for the proposed site plan.

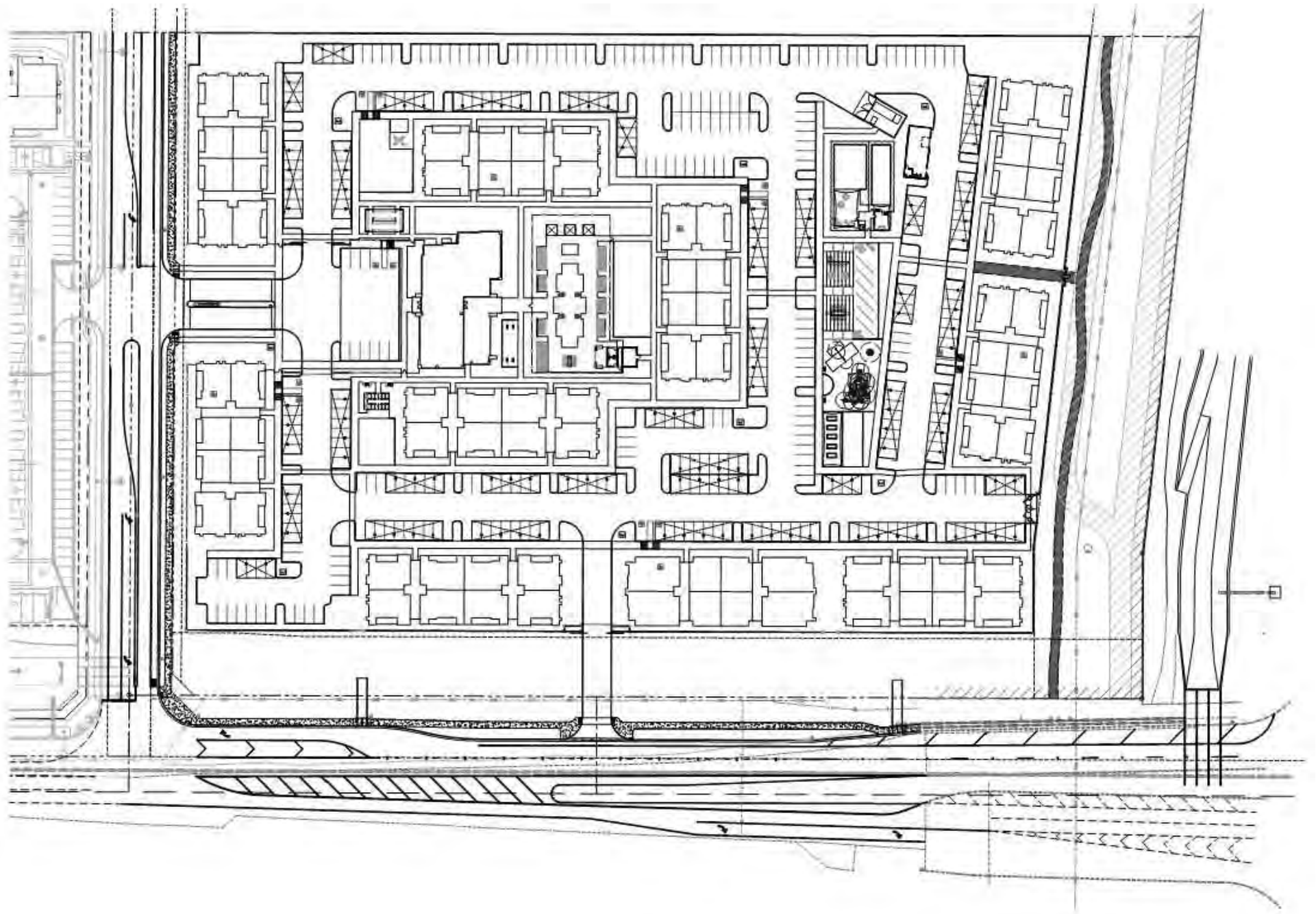


FIGURE 2 | SITE PLAN



5. PROJECTED TRAFFIC

5.1. TRIP GENERATION

The trip generation for the proposed development was calculated utilizing the Institute of Transportation Engineers (ITE) publication entitled *Trip Generation, 11th Edition*. The ITE rates are based on studies that measured the trip generation characteristics for various types of land uses. The rates are expressed in terms of trips per unit of land use type. This publication is considered to be the standard for the transportation engineering profession.

The proposed Sycamore Garcia is a multifamily development with 240 units located within 3-story buildings. ITE Land Use Code 220 Multifamily Housing (Low-Rise) was utilized to calculate the anticipated trip generation. The low-rise multifamily housing land use includes apartments that have two or three floors (levels). The total trip generation for the proposed development is shown in **Table 2**. Detailed trip generation calculations can be found in **Appendix F**.

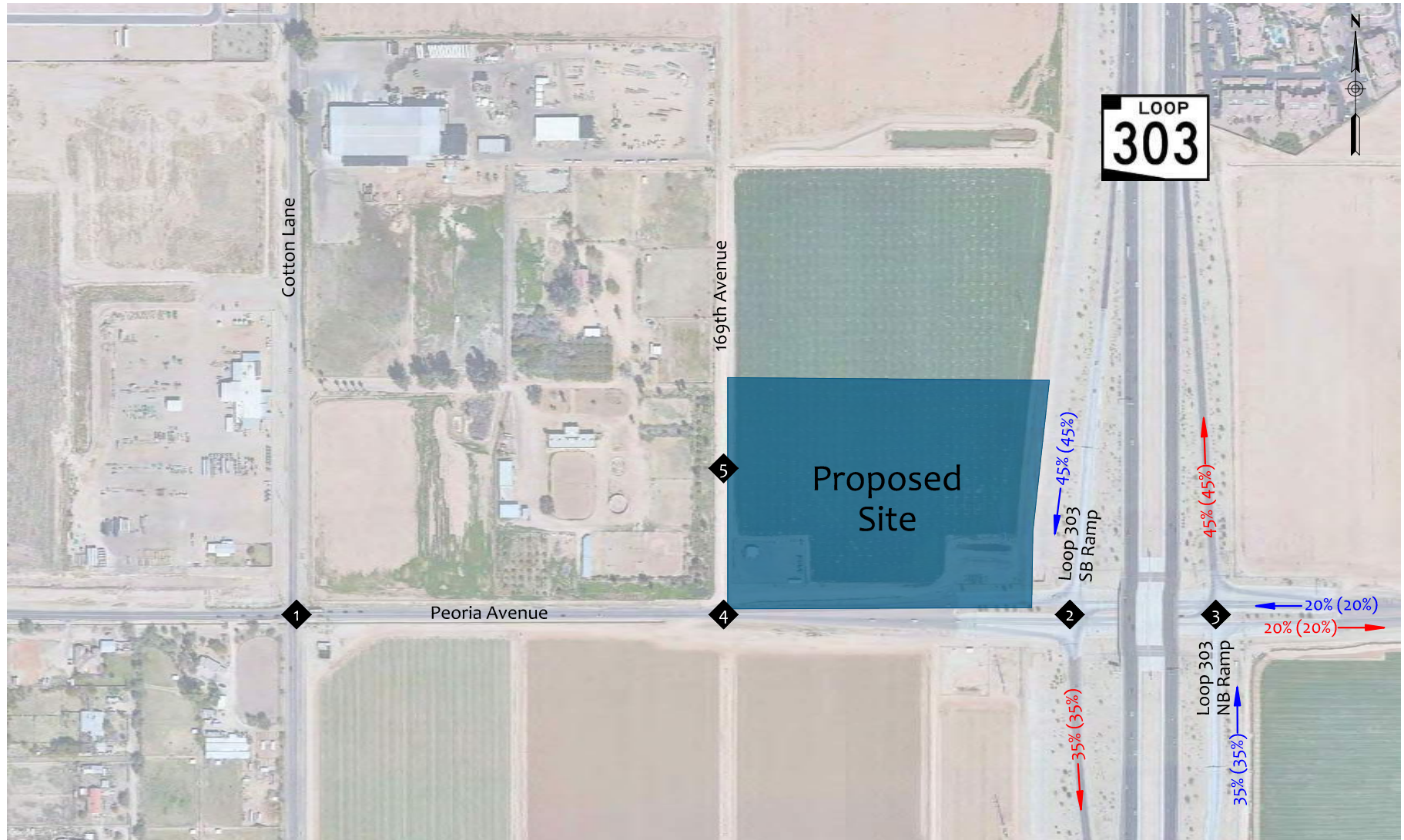
Table 2 – Trip Generation – Proposed Development

Land Use	ITE LUC	Qty	Unit	Weekday	AM Peak Hour			PM Peak Hour		
				Total	Total	In	Out	Total	In	Out
Multifamily Housing (Low-Rise)	220	240	Dwelling Units	1,614	97	23	74	124	78	46

5.2. TRIP DISTRIBUTION AND ASSIGNMENT

The trip distribution procedure determines the general pattern of travel for vehicles entering and exiting the proposed development. The trip distribution for the proposed Sycamore Garcia development is based on the distribution of the existing traffic along the surrounding roadway network, permitted movements at the proposed site driveways, and probable routes. The trip distribution is shown in **Figure 6**.

The trip assignment was generally based on proximity of the driveways, permitted turn movements, as well as ease and probability of use. The site generated traffic volumes are shown in **Figure 7**.



Legend

- AM(PM) Inbound Trip Distribution Percentages
- AM(PM) Outbound Trip Distribution Percentages

FIGURE 6 | TRIP DISTRIBUTION



Legend

- AM(PM) Peak Hour Traffic Volumes
- ◆ Intersection
- <ADT> Average Daily Traffic

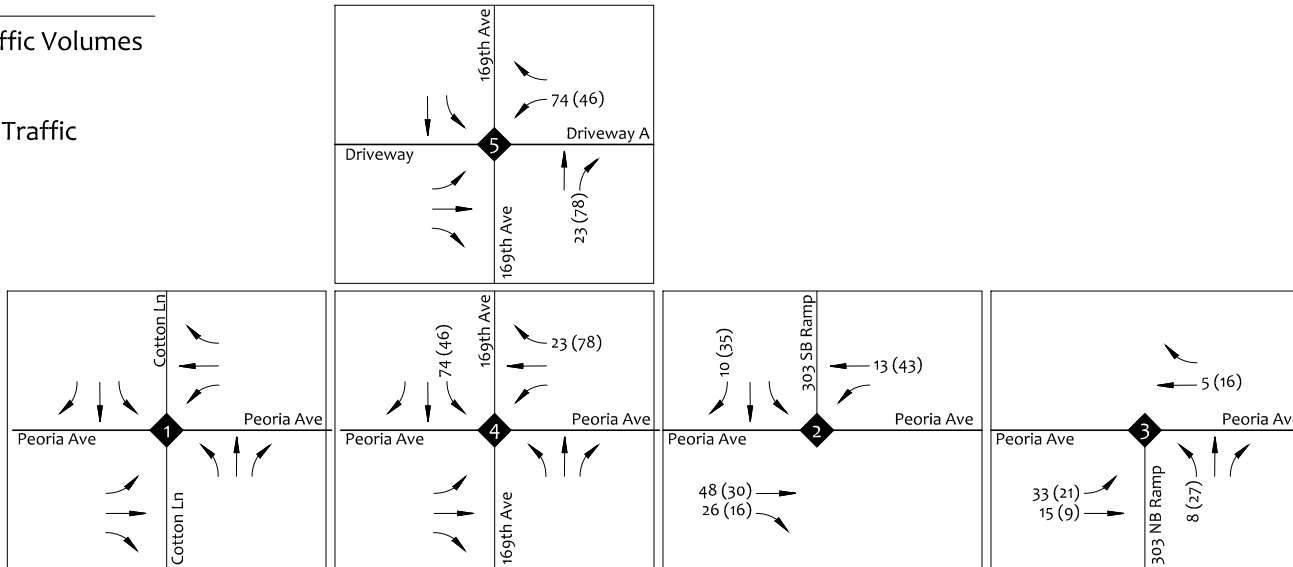



FIGURE 7 | SITE TRAFFIC VOLUMES



REVISED TRAFFIC IMPACT ANALYSIS

SARIVAL CARIOCA
SARIVAL AVENUE/PEORIA AVENUE

REVISED 15 MAY 2023
15 FEBRUARY 2022

 Alan Heathcoat P.E.
Principal Engineer
Glendale Transportation
03/28/2024 9:25:21 AM

APPROVED


Andrew R. Smigielski

PREPARED FOR
CARIOCA COMPANY
2601 W DUNLAP AVENUE, SUITE 10
PHOENIX, ARIZONA 85021

SOUTHWEST TRAFFIC ENGINEERING, LLC
3838 NORTH CENTRAL AVENUE, SUITE 1810
PHOENIX, AZ 85012
T 602.266.SWTE (7983) F 602.266.1115



**SARIVAL CARIOCA
SARIVAL AVENUE/PEORIA AVENUE
REVISED TRAFFIC IMPACT ANALYSIS**

Executive Summary

The purpose of this traffic study is to evaluate the current and future transportation system within the project study area surrounding the site without and with the proposed Sarival Carioca project.

Existing Traffic Data

The existing intersection of Sarival Avenue/Peoria Avenue currently operates at an adequate level of service (LOS) during the weekday AM and PM peak hours.

Future Traffic Data Without the Project

The existing intersection of Sarival Avenue/Peoria Avenue is anticipated to continue operating at an adequate LOS in 2023 and 2026 during the weekday AM and PM peak hours without traffic from the project.

Future Traffic Data With Project

The shared eastbound through/right turn movement at the intersection of Sarival Avenue/Peoria Avenue is expected to operate at an inadequate LOS in 2026 with traffic from the project during the weekday AM peak hour. The delay is due to the limited capacity provided at the intersection and ALL-WAY STOP control becoming inefficient with the growing traffic volumes in the area, as each vehicle is required to stop and proceed through the intersection one at a time.

The remaining study intersections are anticipated to operate at an acceptable LOS during the weekday AM and PM peak hours in 2023 and 2026 without and with traffic from the project.

Turn Lane Analysis

An eastbound right turn lane is proposed at the intersection of West Access/Peoria Avenue.

The existing two-way center left turn lane on Sarival Avenue is expected to serve southbound left turning movements at North Access/Sarival Avenue and South Access/Sarival Avenue. Northbound right turn lanes are also proposed at North Access and South Access and required at Sarival Avenue/Peoria Avenue per City of Glendale direction.

The proposed eastbound right turn lane at West Access is expected to serve a queue of 25 feet of storage.

The proposed northbound right turn lane at North Access and South Access are expected to be free flow movements with minimal, if any, queue length.



The required northbound right turn lane at the intersection of Sarival Avenue/Peoria Avenue is anticipated to need a queue of 25 feet of storage.

No queue overlap is anticipated to occur between the project driveways and adjacent intersections.

Crash Analysis

There were seven (7) reported crashes (1 with injury) within the three-year study period at the intersection of Sarival Avenue/Peoria Avenue. The most common crash type was angle (57%) and single vehicle (29%) crashes. These types of crashes may be due to the intersection being in a undeveloped, relatively low volume traffic area, with vehicles not completing a full stop at the intersection prior to entering the intersection.

Traffic Signal Warrant Analysis

The intersection of Sarival Avenue/Peoria Avenue is expected to meet traffic signal warrants #1 and #2 in 2023 and 2026 with traffic from the project.

Mitigation

The shared eastbound through/right turn movement at the intersection of Sarival Avenue/Peoria Avenue is expected to operate at an inadequate LOS in 2026 with traffic from the project during the weekday AM peak hour. The delay is due to the limited capacity provided at the intersection and ALL-WAY STOP control becoming inefficient with the growing traffic volumes in the area, as each vehicle is required to stop and proceed through the intersection one at a time. This intersection is expected to be widened and signalized once the northwest and southwest corners of Sarival Avenue/Peoria Avenue are developed by future adjacent projects. Upon the construction of the future developments all approaches to the intersection of Sarival Avenue/Peoria Avenue are expected to be provided an exclusive left turn lane, two through lanes, and a dedicated right turn lane. These improvements are expected to alleviate the delay at the intersection.

Recommendations

The proposed eastbound right turn lane at West Access and northbound right turn lane at Sarival Avenue/Peoria Avenue, North Access, and South Access should be constructed with a minimum 160 feet of storage with 100 feet of taper to meet City of Surprise and City of Glendale minimum requirements.

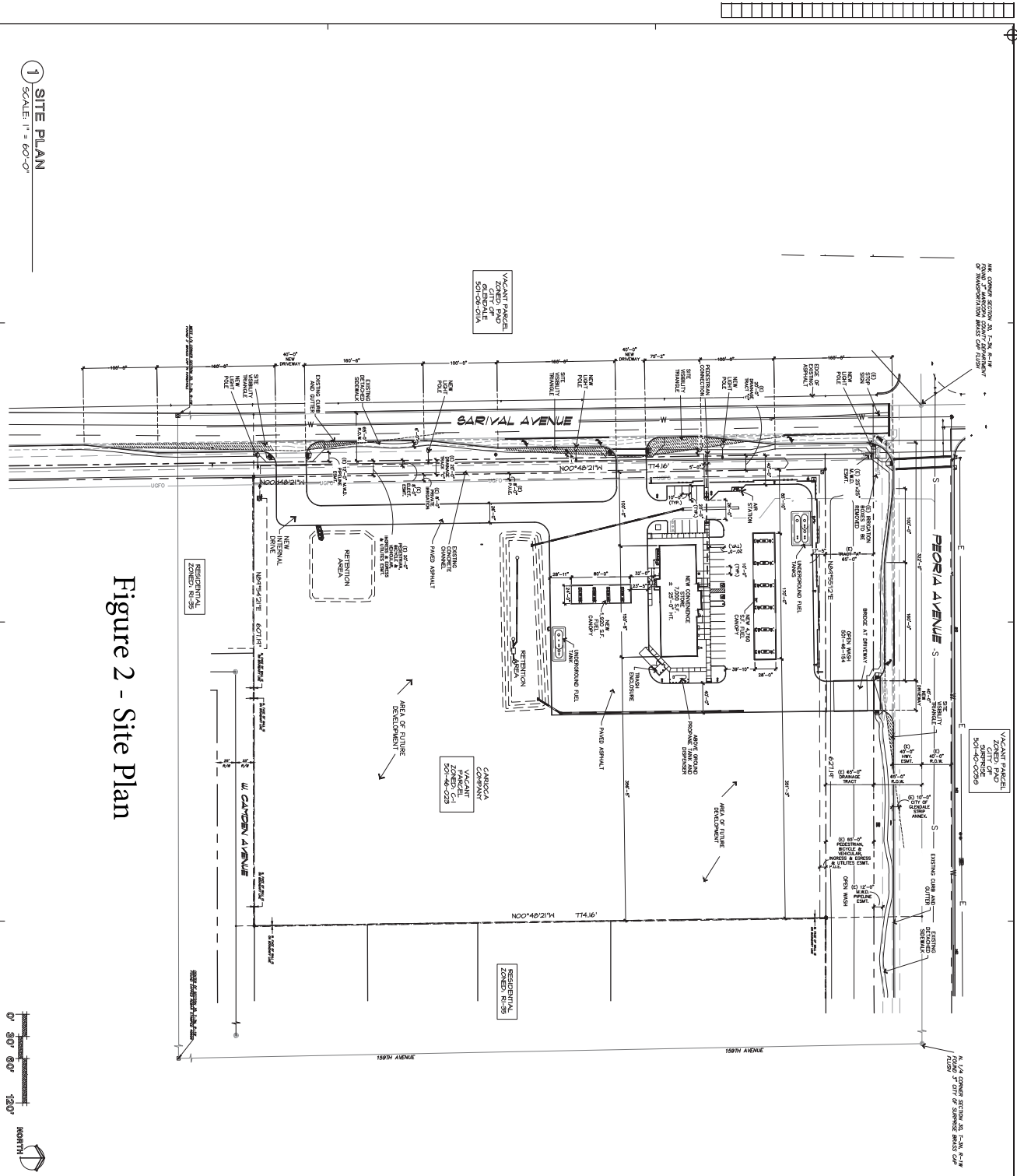
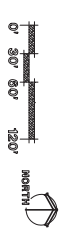


Figure 2 - Site Plan

1 SITE PLAN
SCALE: 1" = 60'-0"



PROJECT DATA

- PROJECT NAME: CARIOCA - PEORIA AND SARIVAL
- PROJECT ADDRESS: SEC. PEORIA AVE AND SARIVAL AVE, MARICOPA COUNTY, ARIZONA
- ZONING: C-1
- PARCEL NUMBER: 501-46-023
- OCCUPANCY: M
- CONVENIENCE STORE: M
- FIRE SPRINKLERS: YES
- ASPH: LOT SIZE: 12 ACRES
- BUILDING AREA: 7,000 SQ. FT.
- CONVENIENCE STORE: 1,200 SQ. FT.
- NET CANOPY (NORTH): 1,950 SQ. FT.
- BUILDING TOTAL: 13,890 SQ. FT.
- LOT COVERAGE: 13,890 SQ. FT. / 401,021 SF. = 3%
- GENERAL BUSINESS: 1,200 G.F.A.

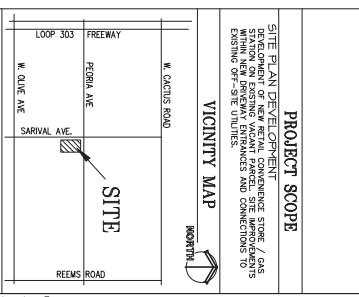
LEGAL DESCRIPTION

PARCEL A, THREE (3) ACRES
CITY PARENT CASE # PH03-134

PROJECT SCOPE

SITE PLAN DEVELOPMENT
STATION AND ELEVATION FOR NEW METAL CONDUIT WORK SHALL BE WITHIN NEW PRESENT EXISTENCES AND CONNECTIONS TO EXISTING OF THE UTILITIES.

VICINITY MAP



esencia

1745 E. Mohan Drive, Suite 200
Tempe, Arizona 85283
1.480.755.0939

Project Number	21063
Drawn By	ES
Checked By	ES
Project Name	21063
Date	5-9-2023
Sheet No.	SITE PLAN
Project No.	A-10



Existing Traffic Data

In order to form a basis for analysis of the project impacts, a weekday AM and PM peak hour turning movement count was conducted at the intersection of Sarival Avenue/Peoria Avenue. The weekday turning movement count was conducted from 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM. In addition, a weekday 24-hour intersection approach count was taken at the intersection of Sarival Avenue/Peoria Avenue.

All traffic data was collected in early December 2021 while school was in session. The existing traffic volumes are shown in **Figure 4**. Complete traffic count data can be found in the Appendix.

Access

Per City of Glendale direction, a northbound right turn lane is required at the intersection of Sarival Avenue/Peoria Avenue.

The Sarival Carioca project will be served by four proposed access points. East Access and West Access will be located on Peoria Avenue, while North Access and South Access is expected to be constructed on Sarival Avenue.

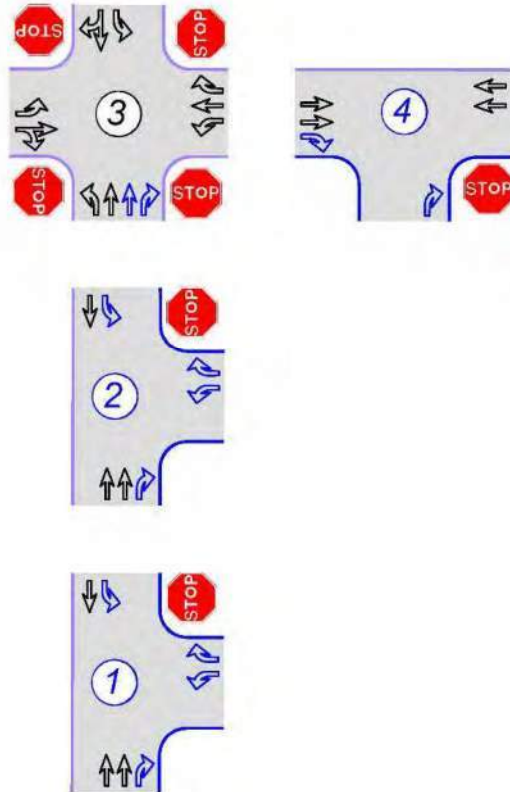
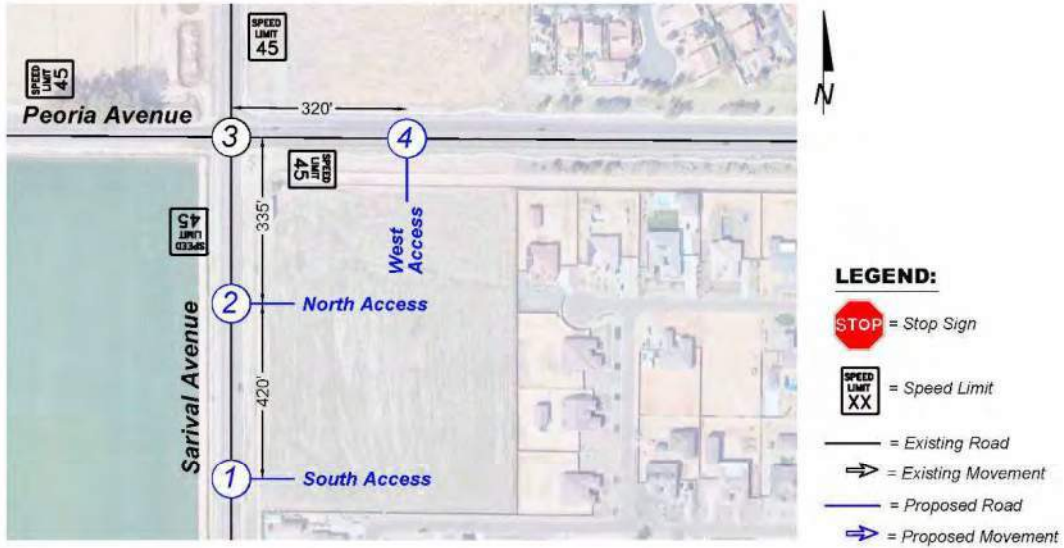
West Access is a right in/right out only access point proposed on the south side of Peoria Avenue approximately 320 feet east of Sarival Avenue. Eastbound vehicles approaching the intersection will be offered two through lanes and a dedicated right turn lane, while westbound traffic will be given two through lanes. Northbound vehicles leaving the site will be STOP controlled and make use of a dedicated right turn lane.

North Access and South Access will be located on the east side of Sarival Avenue approximately 335 feet and 795 feet south of Peoria Avenue, respectfully. The access points are expected to provide full access to vehicles traveling to/from the Sarival Carioca site. Westbound vehicles leaving the site will be STOP controlled and offered an exclusive left turn lane and dedicated right turn lane. Northbound traffic approaching the intersection will be given two through lanes and a dedicated right turn lane, while southbound vehicles will make use of a two-way center left turn lane and one through lane.

Figure 5 shows the locations, geometry and spacing for the proposed driveways serving the project site that will serve as a baseline of analysis in the report.



Figure 5 – Baseline Access Point and Intersection Configuration Assumptions





Trip Generation

Nationally agreed upon methodology contained in the Institute of Transportation Engineers (ITE) publication *Trip Generation Handbook, 11th Edition, 2017* defines the various types and rates of trip generation expected at developments. The components of trip generation considered in this study are pass-by and primary trips.

Primary trips are trips where the primary purpose of the trip is to visit a specific location. Pass-By trips are intermediate stops on the way from an origin to a primary trip destination without a route diversion. For example, when a person leaves work (origin), they typically head home (destination). Traveling from work to home would be an example of a primary trip. Sometimes drivers stop on their route home for gasoline or food. The stops on a driver’s route home are an example of a pass-by trip.

A key item of note regarding Pass-By trips is that they are already traveling on the adjacent roadway network and do not add a new trip to the overall through traffic stream. However, pass-by vehicles must still be accounted for at the project access points as they turn into/out of the site.

The amount of pass-by and primary trips generated by a project site are both based on the overall trip generation outlined in the ITE publication *Trip Generation, 11th Edition, 2021*. The Sarival Carioca trip generation was estimated for a twenty (20) fueling position gas station with convenience store based on ITE Land Use Code 945 (LUC 945), Convenience Store/Gas Station – GFA (5.5-10k). The result is the expected weekday trip generation for the project as shown in **Table 1**. The complete trip generation calculations can be found in the Appendix.

Table 1 – Unadjusted Project Site Generated Trips

Time Period	20 Fueling Position Convenience Store/Gas Station - GFA (5.5-10k) (LUC 945)
Average Daily, Inbound (vtpd)	3,458
Average Daily, Outbound (vtpd)	3,458
Total Daily	6,916
AM Peak Hour, Inbound (vtph)	316
AM Peak Hour, Outbound (vtph)	316
Total AM Peak	632
PM Peak Hour, Inbound (vtph)	269
PM Peak Hour, Outbound (vtph)	269
Total PM Peak	538

vtpd - vehicle trips per day, vtph - vehicle trips per hour

Taking the analysis a step further, **Table 2** shows the pass-by trips expected for a gas station lane use based on unadjusted external trips (**Table 1**) and data from the ITE *Trip Generation Handbook*.



Table 2 – Project Site Generated Pass-By Trips Gas Station

Time Period	Gas Station	Pass-By Percentage*	Pass-By Trips
Average Daily, Inbound (vtpd)	3,458	59%	2,041
Average Daily, Outbound (vtpd)	3,458	59%	2,041
Total Daily	6,916	59%	4,082
AM Peak Hour, Inbound (vtph)	316	62%	196
AM Peak Hour, Outbound (vtph)	316	62%	196
Total AM Peak	632	62%	392
PM Peak Hour, Inbound (vtph)	269	56%	151
PM Peak Hour, Outbound (vtph)	269	56%	151
Total PM Peak	538	56%	302

vtpd - vehicle trips per day, vtph - vehicle trips per hour

* Based on ITE Data

As shown in **Table 2**, ITE estimates that 392 weekday AM peak hour trips and 302 weekday PM peak hour trips will be from pass-by vehicles at the proposed Sarival Carioca project site.

Based on ITE methodology, primary trips for each phase of the project are calculated as the remaining overall trips after pass-by trips have been accounted for. More simply, primary trips equal unadjusted trips (**Table 1**) minus the pass-by trips (**Table 2**), as shown in **Table 3**.

Table 3 – Total Project Site Generated Primary Trips

Time Period	Unadjusted Trips	Pass-By Trips*	Primary Trips
Average Daily, Inbound (vtpd)	3,458	-2,041	1,417
Average Daily, Outbound (vtpd)	3,458	-2,041	1,417
Total Daily	6,916	-4,082	2,834
AM Peak Hour, Inbound (vtph)	316	-196	120
AM Peak Hour, Outbound (vtph)	316	-196	120
Total AM Peak	632	-392	240
PM Peak Hour, Inbound (vtph)	269	-151	118
PM Peak Hour, Outbound (vtph)	269	-151	118
Total PM Peak	538	-302	236

vtpd - vehicle trips per day, vtph - vehicle trips per hour

* Based on ITE Data



Trip Distribution & Assignment

Trip distribution for the project was based on existing traffic volume patterns near the proposed site. **Figure 6** shows the weekday trip distribution for the project as a percentage of net new primary trips.

The assignment of the site generated primary trips to the project intersections within the study area is shown in **Figure 7**. **Figure 8** shows the assignment of the expected pass-by trips in the weekday AM and PM peak hours of the project. It should be noted that pass-by trips are positive at the turning movements used to access the site while being negative to the through traffic stream.

Figure 9 is the total trip assignment for the proposed project, including primary trips and pass-by trips.

Existing Traffic Operations

Analysis of current intersection operations was conducted for the Weekday AM and PM peak hours using the nationally accepted methodology set forth in the *Highway Capacity Manual*, Transportation Research Board, 2016 (HCM 6). The computer software Synchro 10 was utilized to calculate the levels of service for individual movements and approaches.

LOS is a qualitative measure of the traffic operations at an intersection or on a roadway segment. Level of service is ranked from LOS A, which signifies little or no congestion and is the highest rank, to LOS F, which signifies congestion and jam conditions. LOS D is typically considered adequate operation at signalized and un-signalized intersections in developed areas.

At un-signalized intersections, level of service is predicted/calculated for those movements, which must either stop for or yield to oncoming traffic and is based on average control delay for the particular movement. Control delay is the portion of total delay attributed to traffic control measures such as stop signs and traffic signals. The criteria for level of service at un-signalized intersections are shown in **Table 4**.

Table 4 – Level of Service Criteria – Un-signalized Intersections

Level-of-Service	Delay
A	< 10 seconds/vehicle
B	> 10 and < 15 seconds/vehicle
C	> 15 and < 25 seconds/vehicle
D	> 25 and < 35 seconds/vehicle
E	> 35 and < 50 seconds/vehicle
F	> 50 seconds/vehicle



Figure 6 – Weekday Peak Hour Trip Distribution

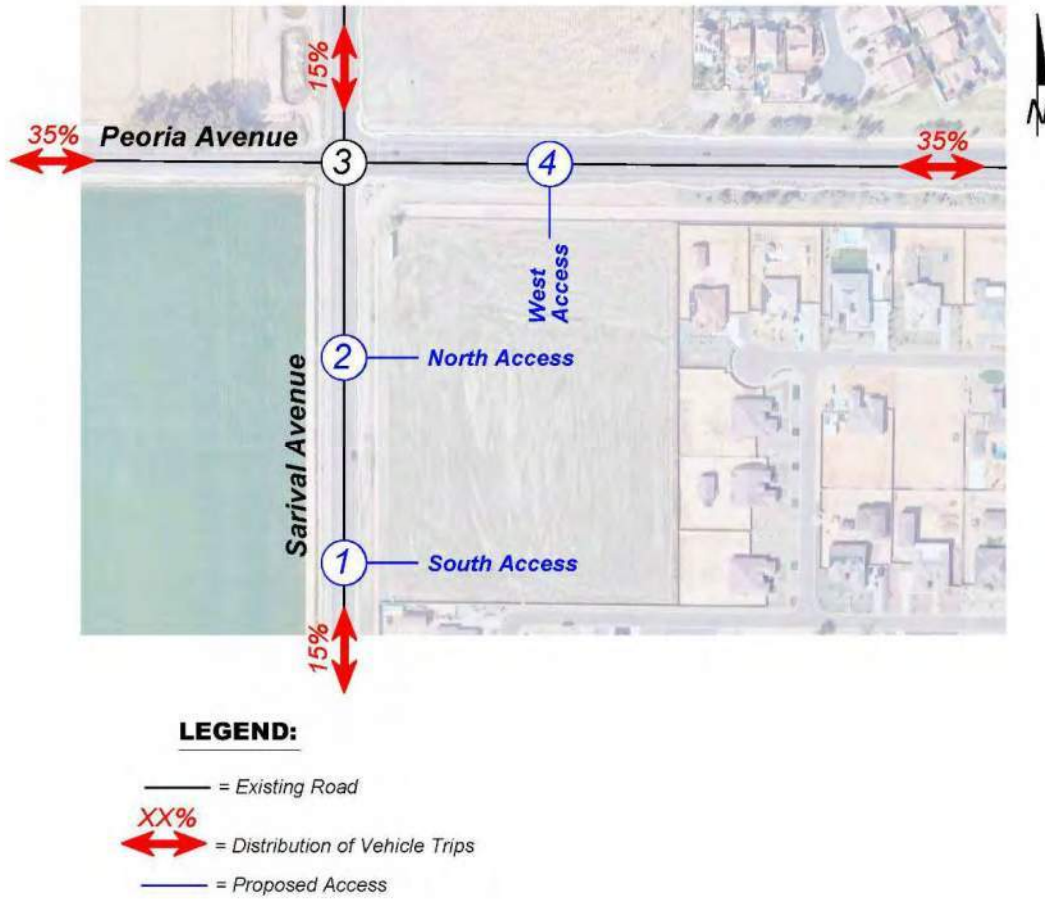




Figure 7 – Weekday Peak Hour Primary Trip Assignment

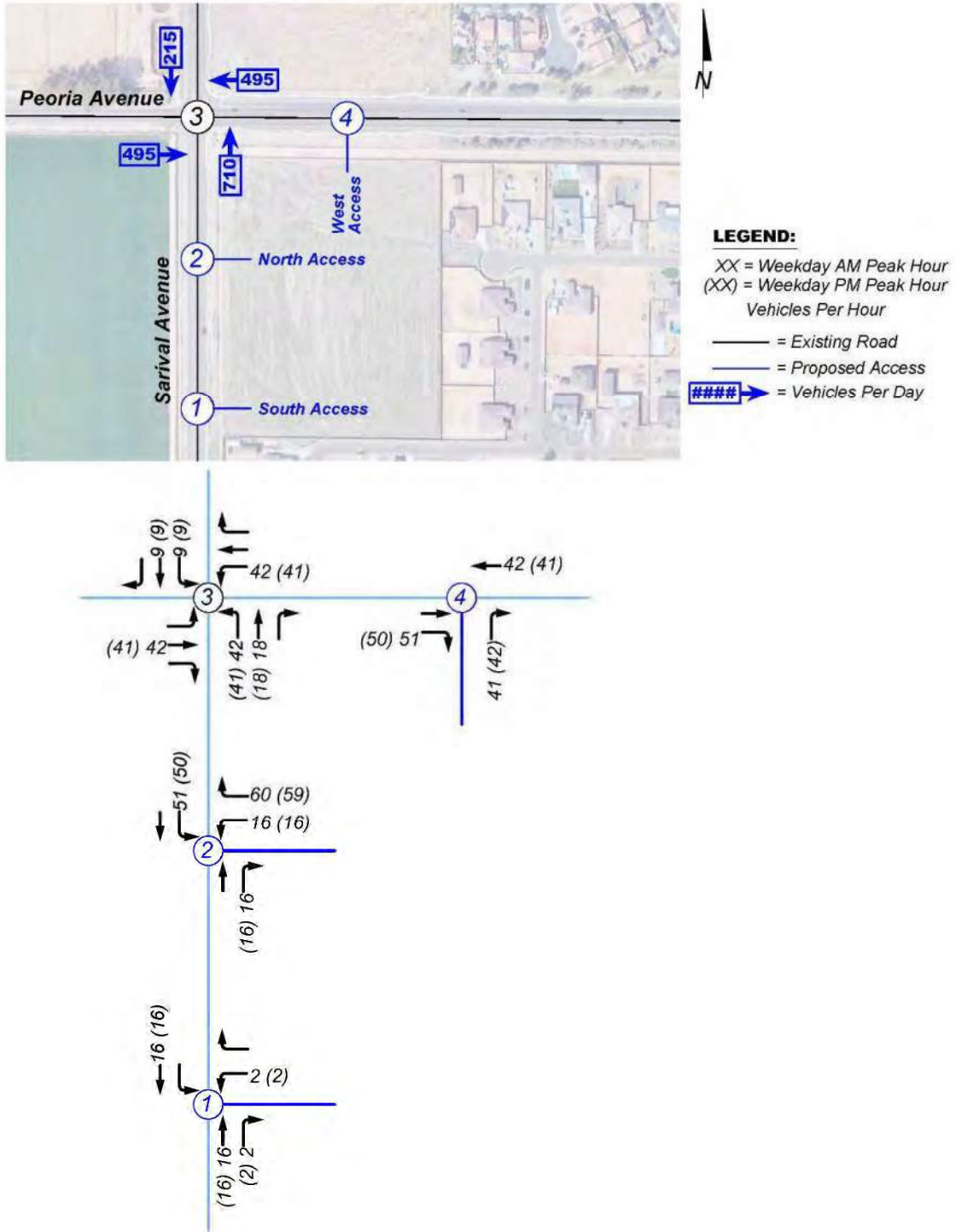




Figure 8 – Weekday Peak Hour Pass-By Trip Assignment

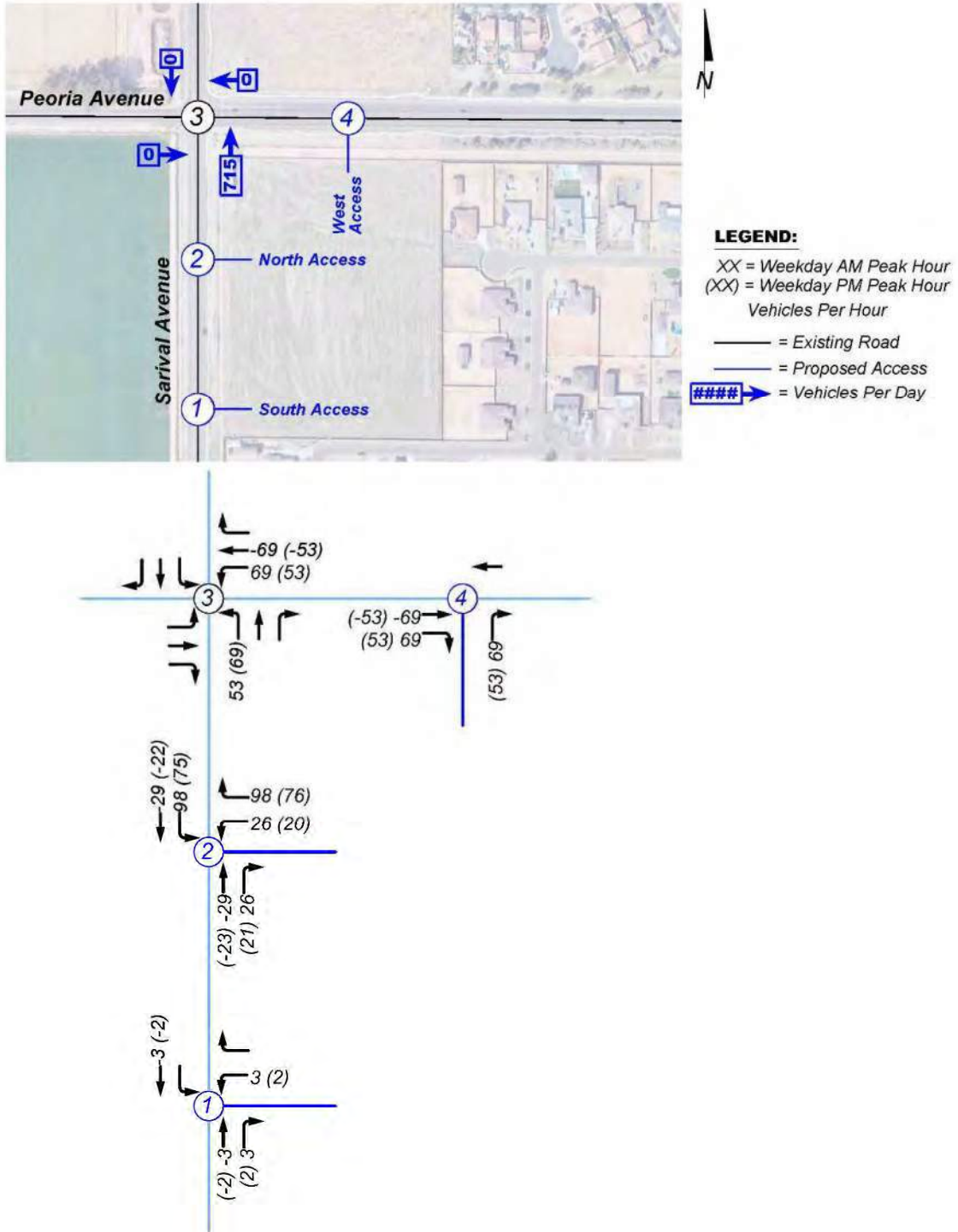




Figure 9 – Weekday Peak Hour Total Trip Assignment

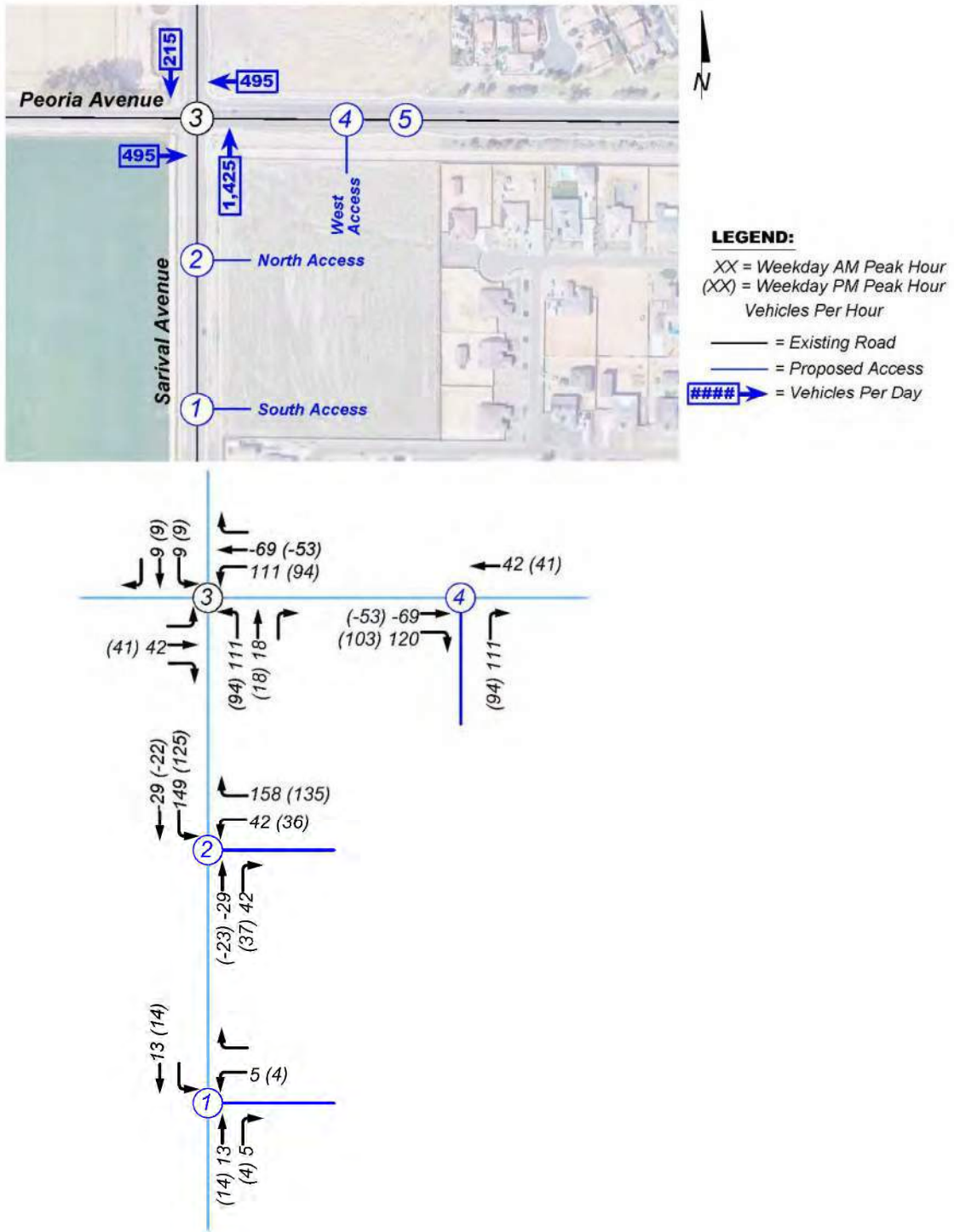
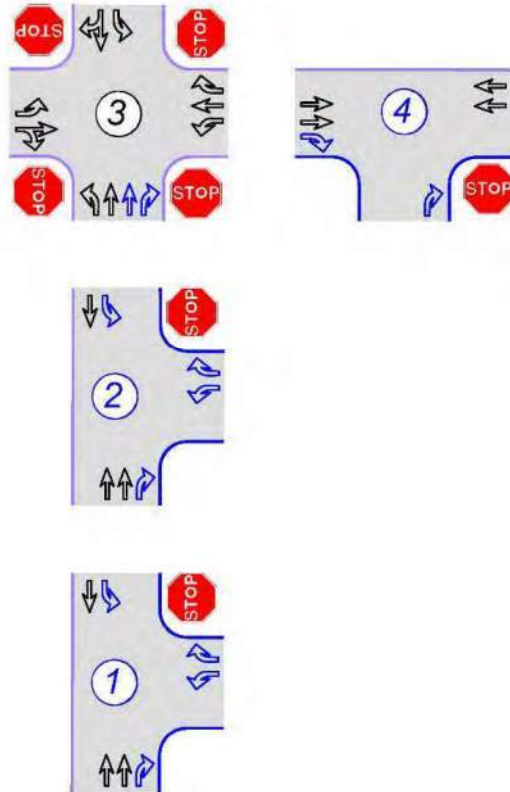


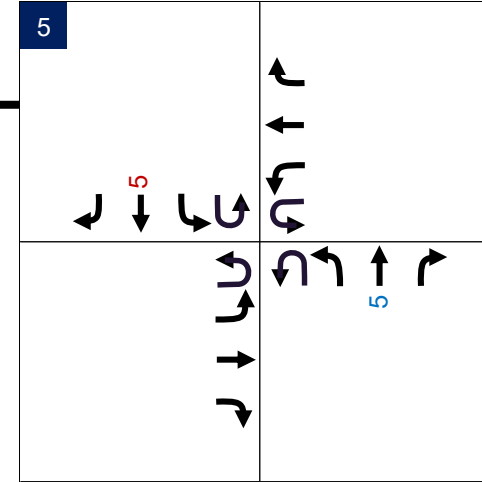
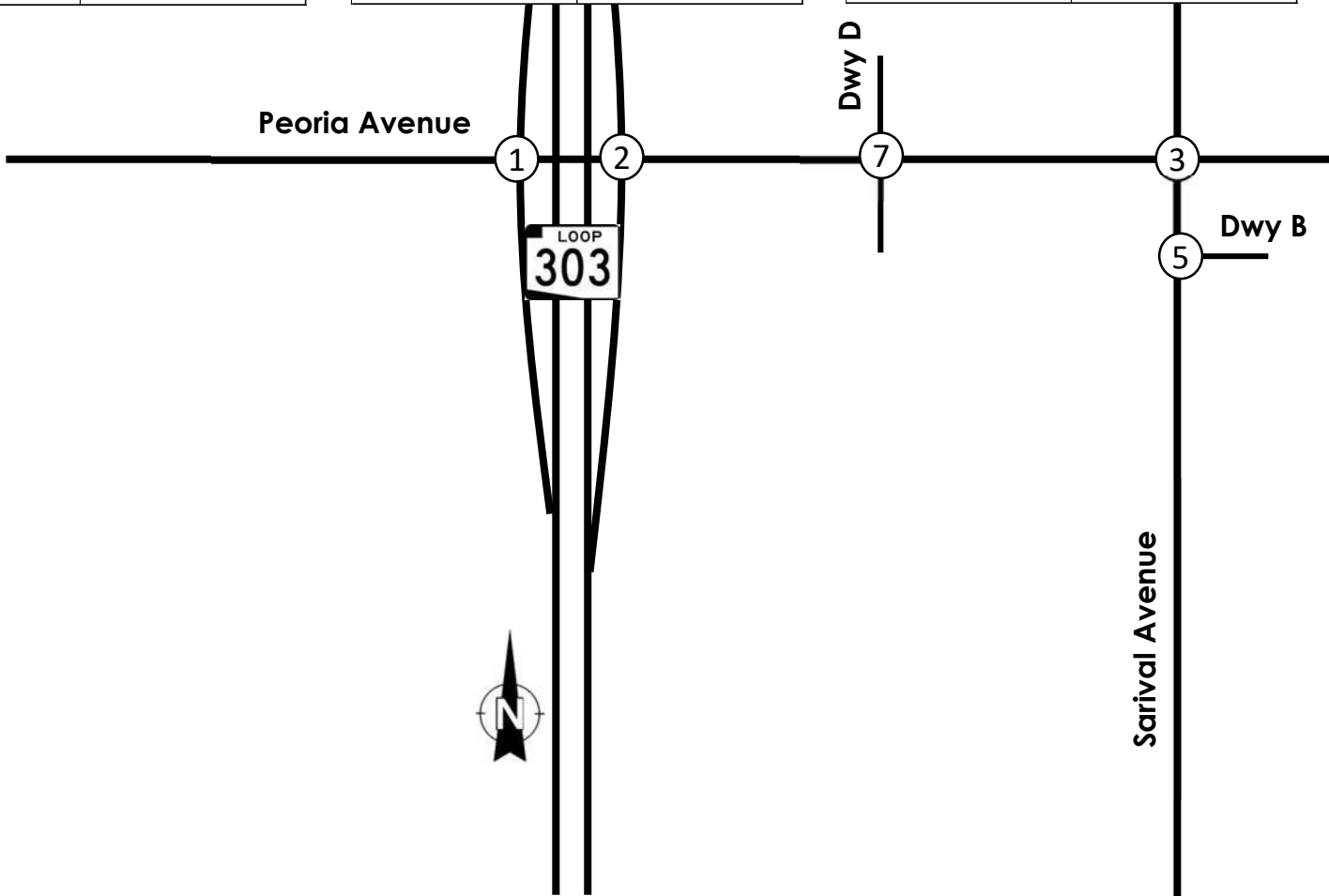
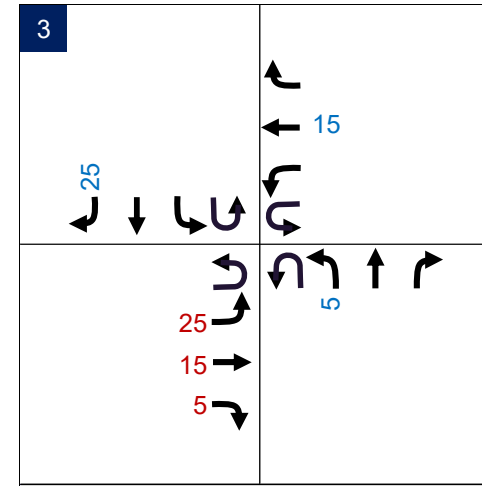
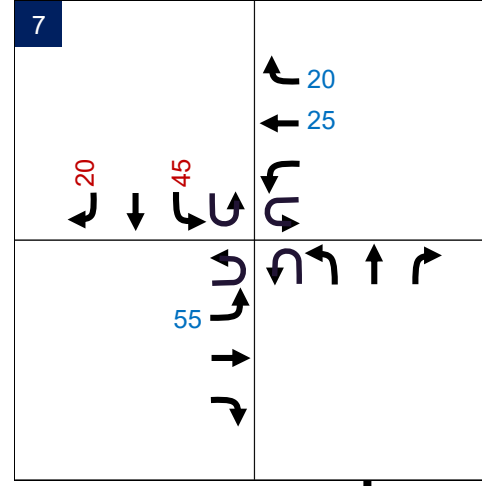
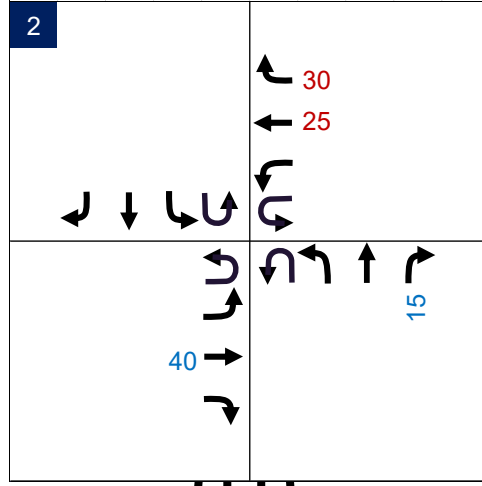
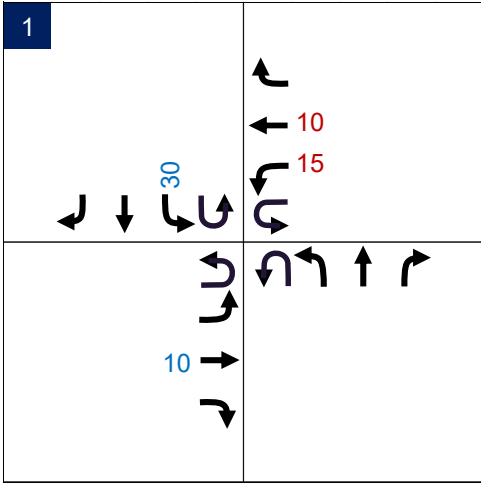


Figure 14 – Proposed Lane Configurations and Traffic Control

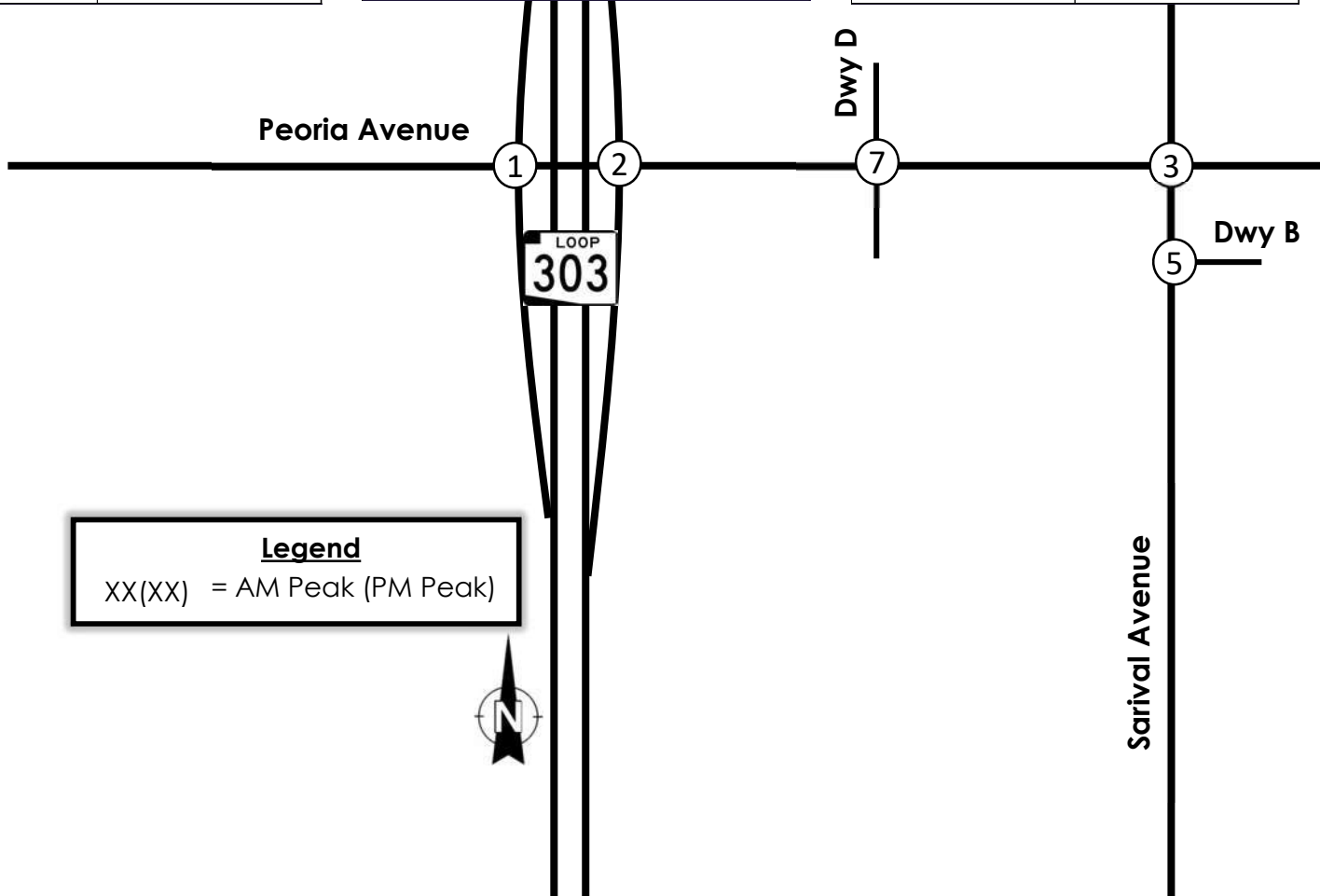
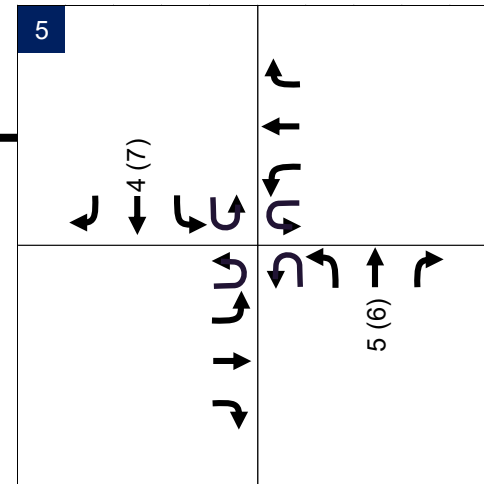
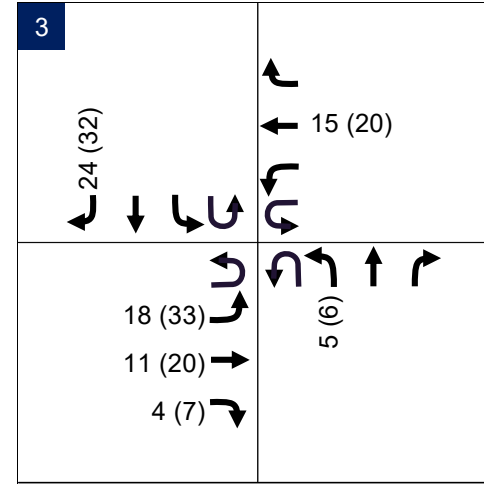
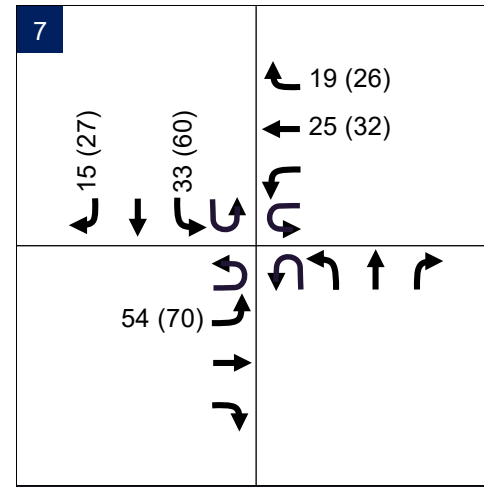
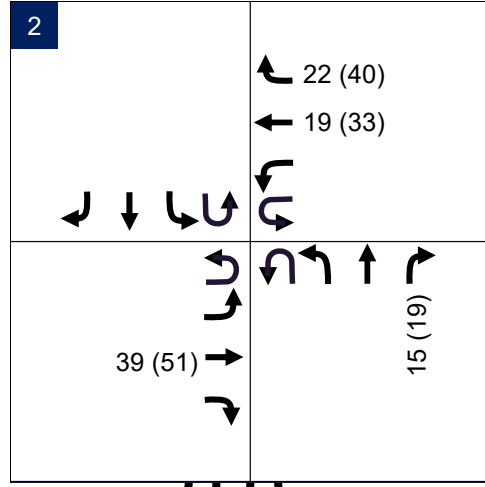
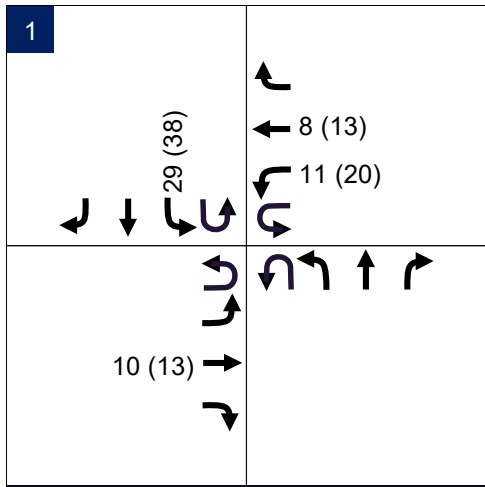


DESCRIPTION OF LAND USE					VEHICLE GENERATED TRIPS						
ID	Land Use	ITE LUC	Size		Daily	AM Peak Hour		PM Peak Hour			
					Total	Enter	Exit	Total	Enter	Exit	Total
9	Lowes Home Improvement Center	862	114	KSF	3,504	98	74	172	128	133	261
10	Sycamore Farms Apartments - Low Rise	220	128	DU	896	15	48	63	48	28	76
11	NEC Sarival and Peoria Ave - Mixed use, no grocery	821	113	KSF	7,630	121	74	195	287	299	586
12	Assumed Walmart SEC Peoria and Loop 303	813	181.3	KSF	9,159	189	148	337	385	400	785

#9 Lowe's Home Improvement Distribution



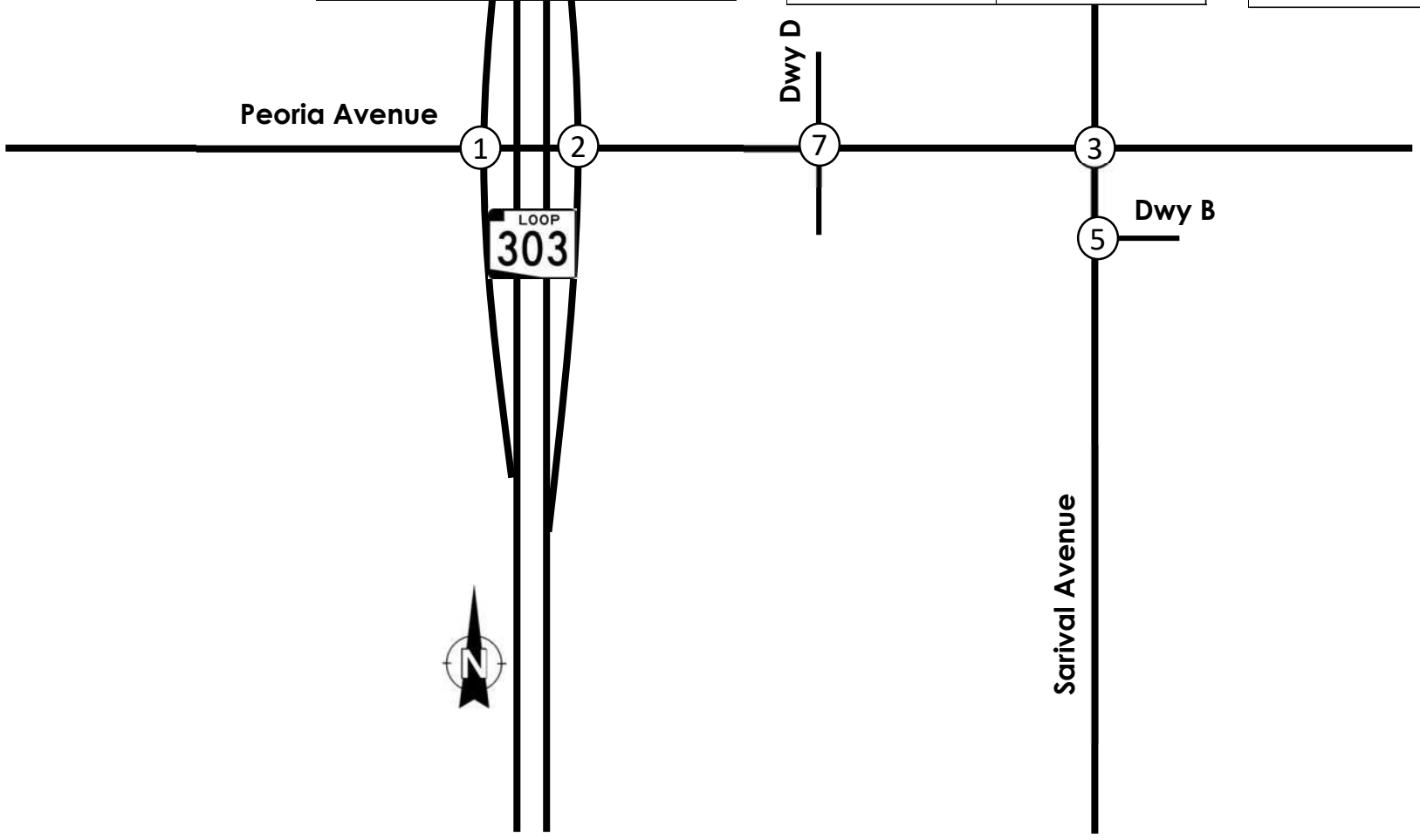
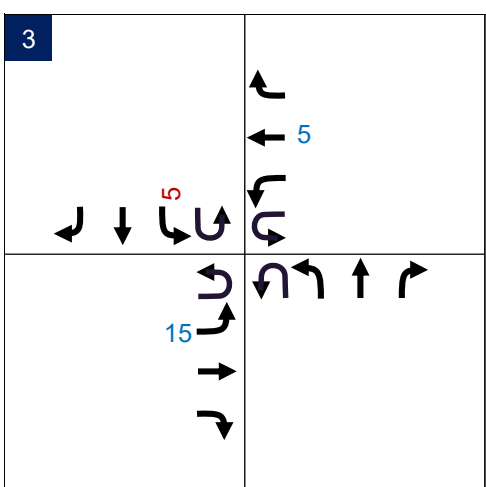
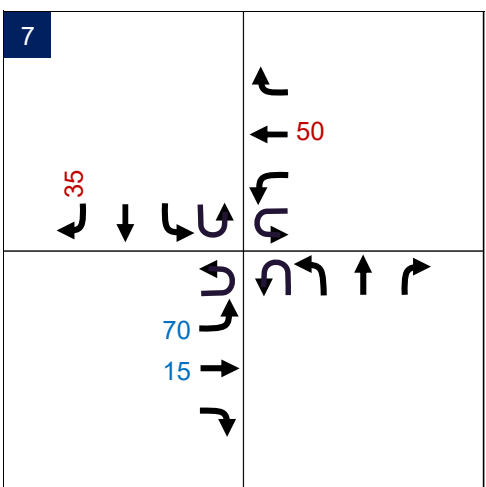
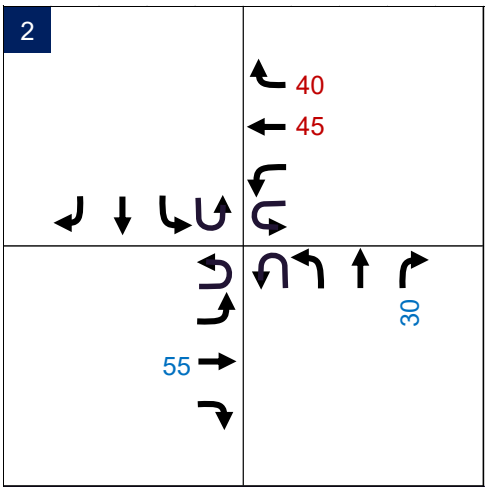
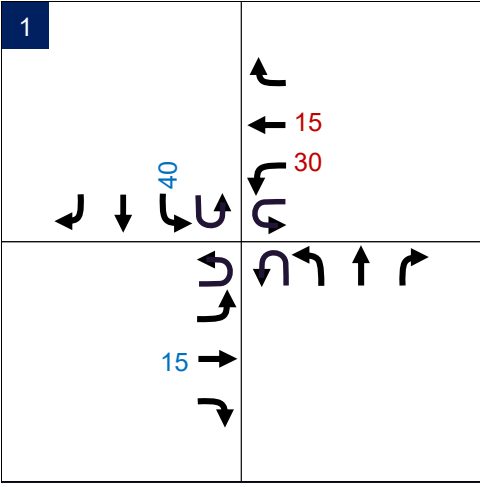
#9 Lowe's Home Improvement Assignment



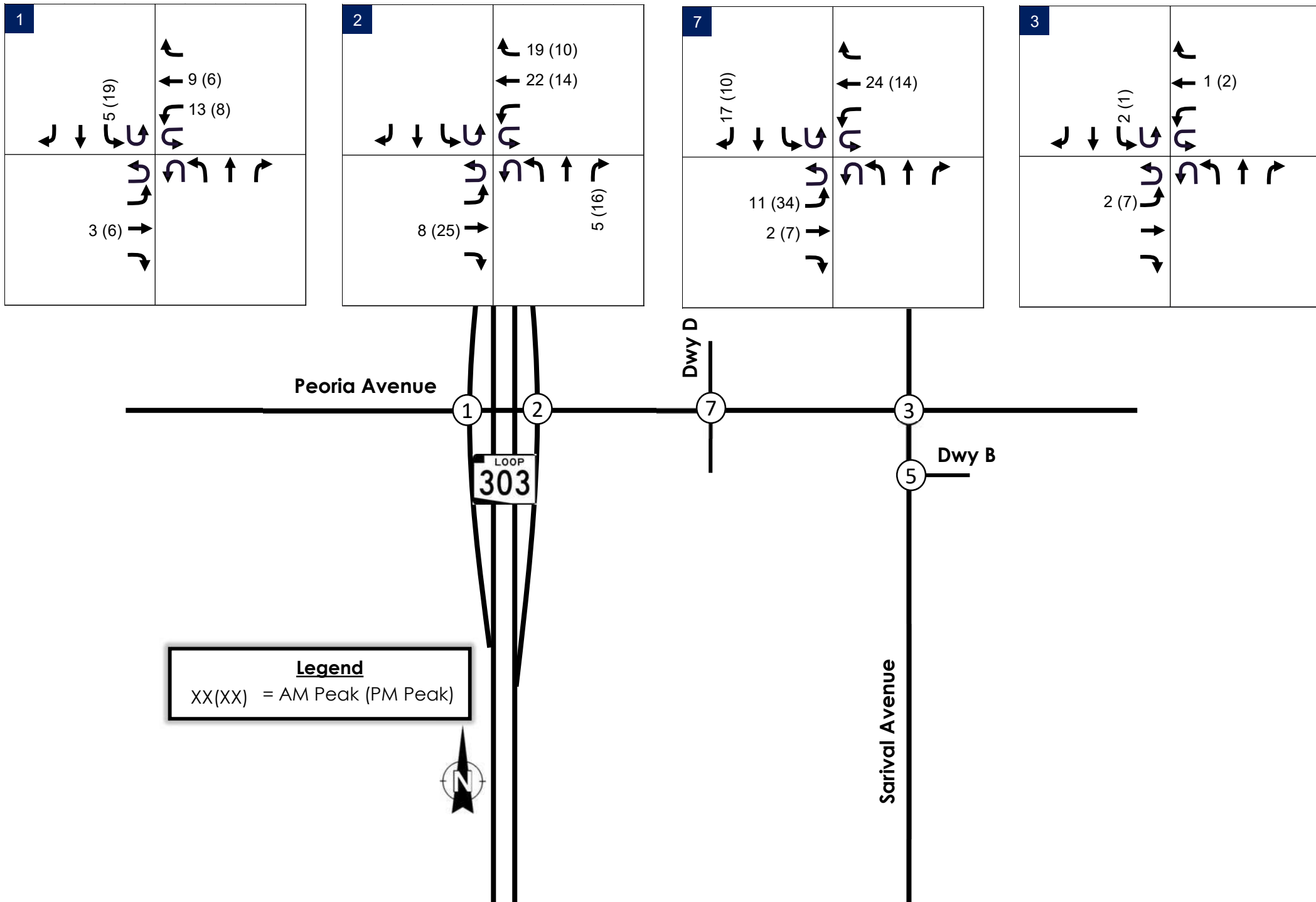
Legend
XX(XX) = AM Peak (PM Peak)



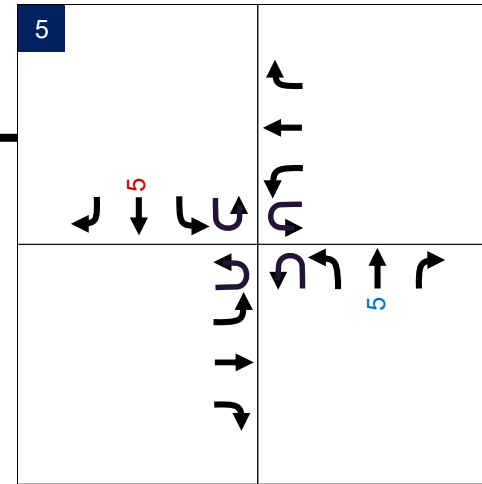
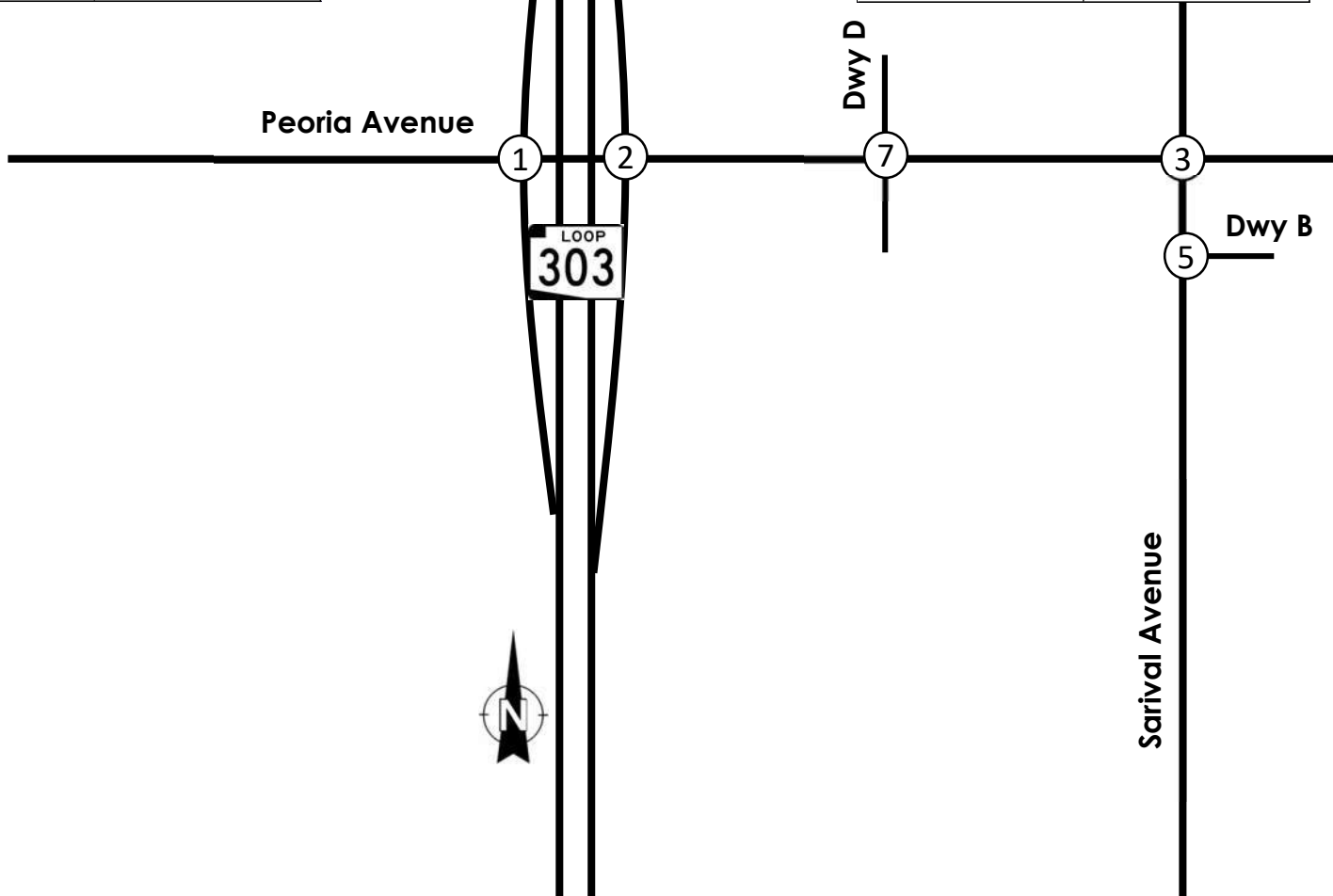
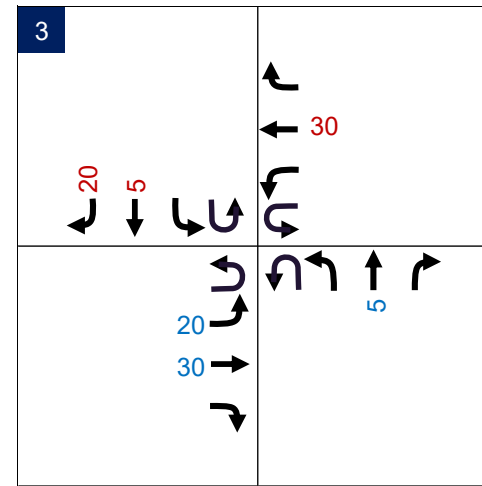
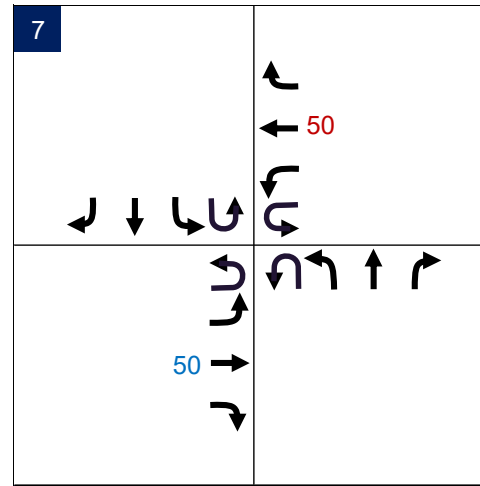
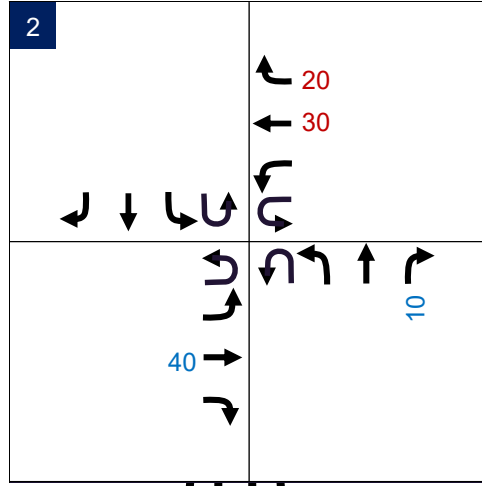
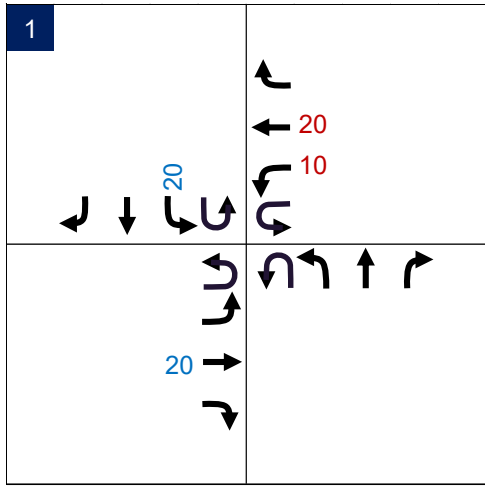
#10 Sycamore Farms Apartments Distribution



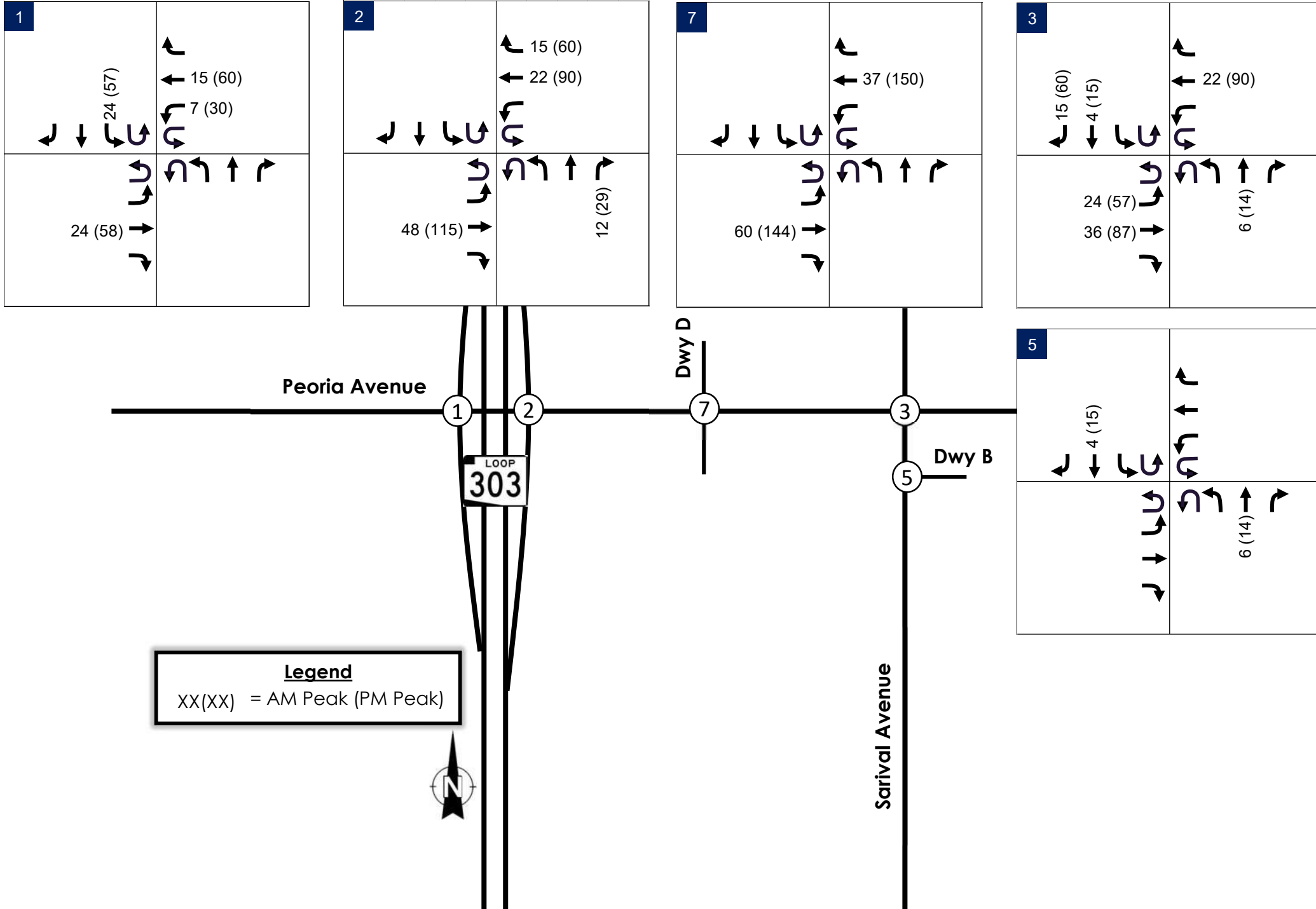
#10 Sycamore Farms Apartments Assignment



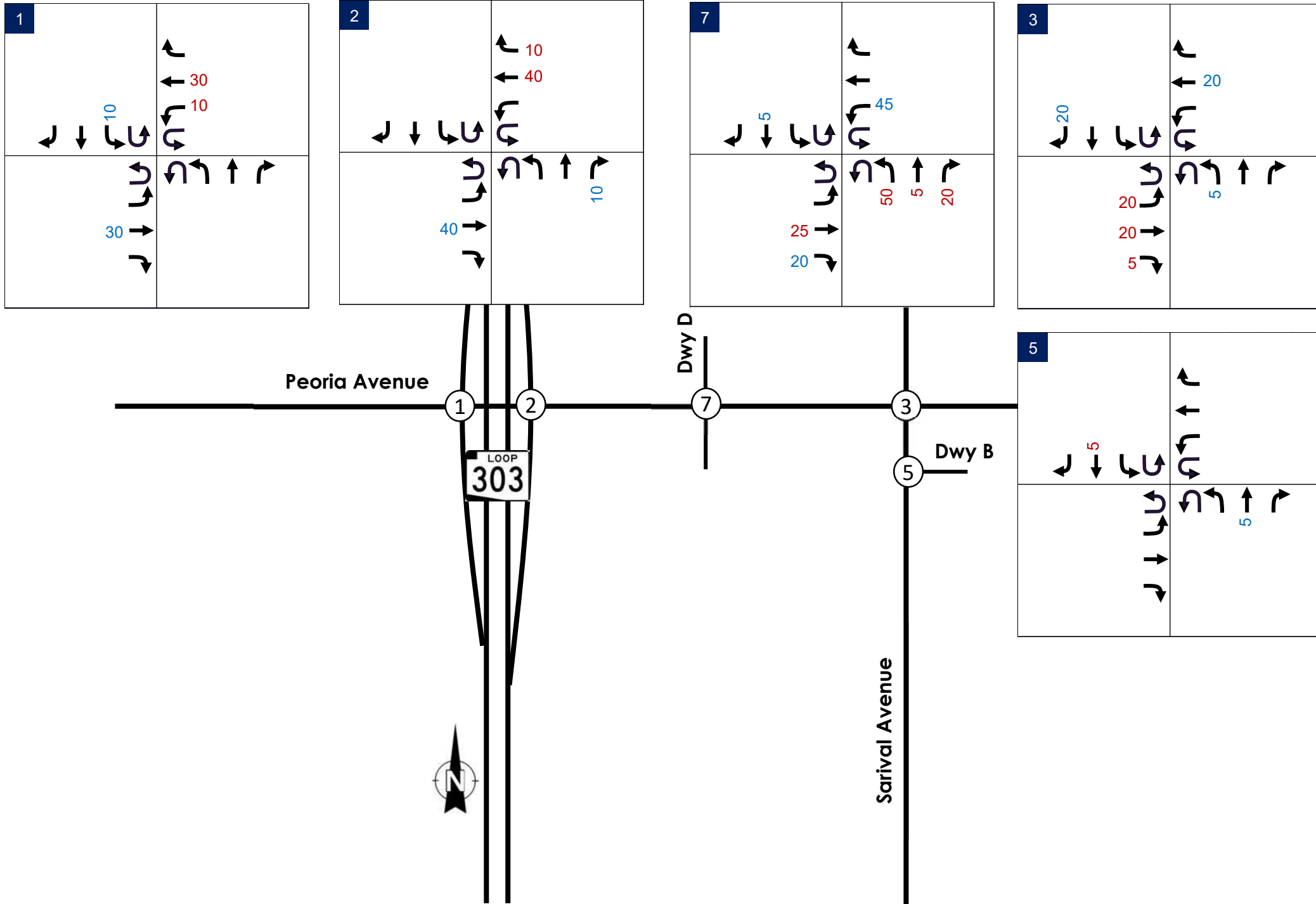
#11 NEC Sarival and Peoria Distribution



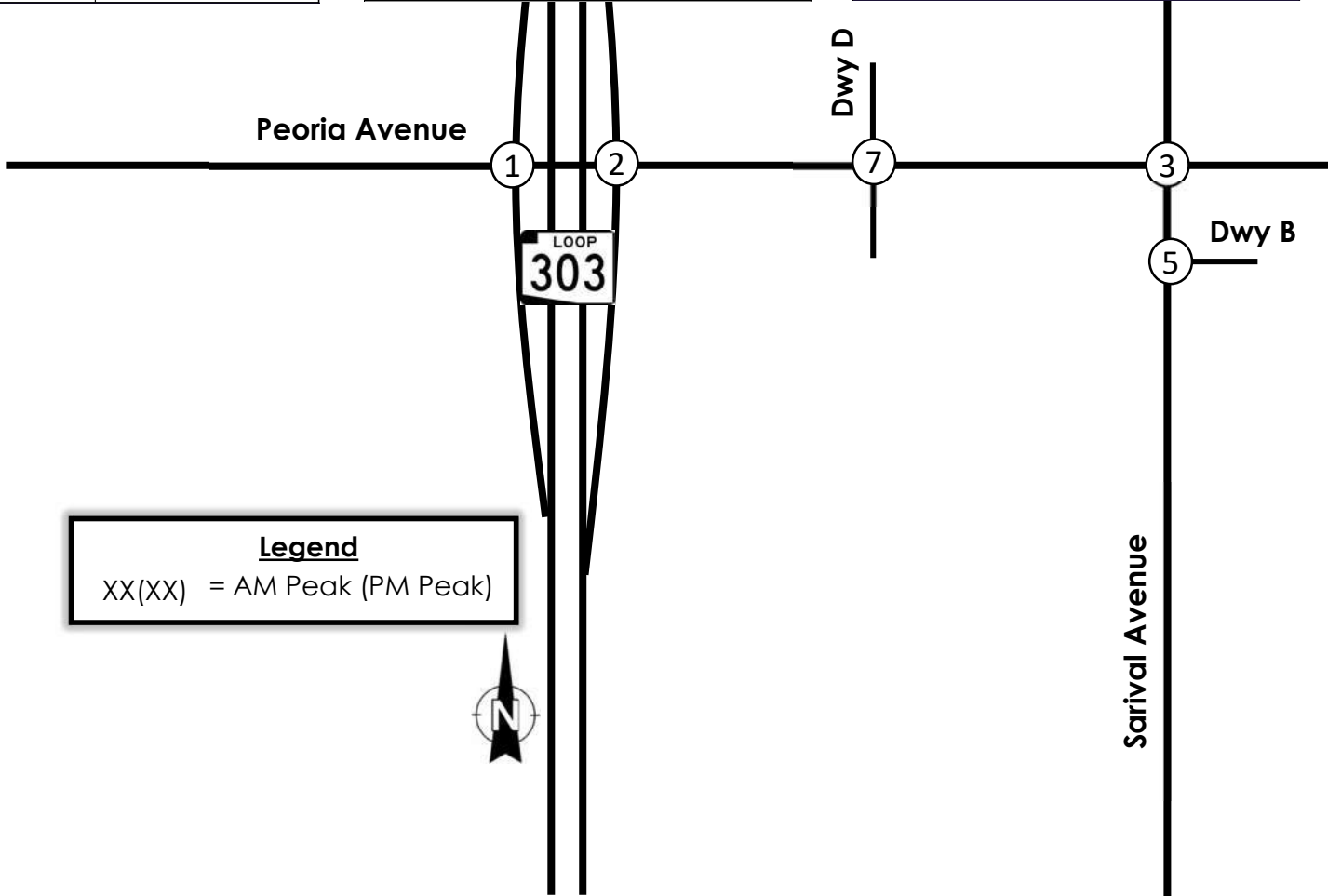
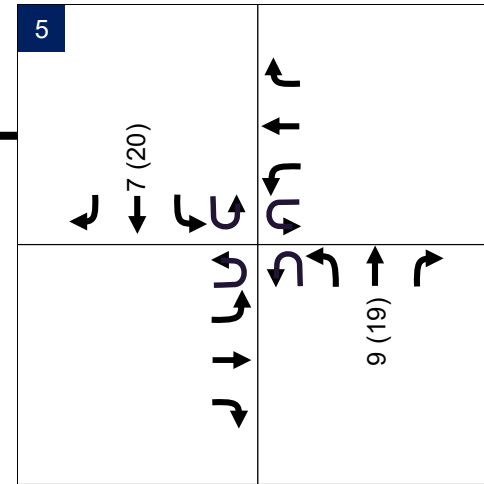
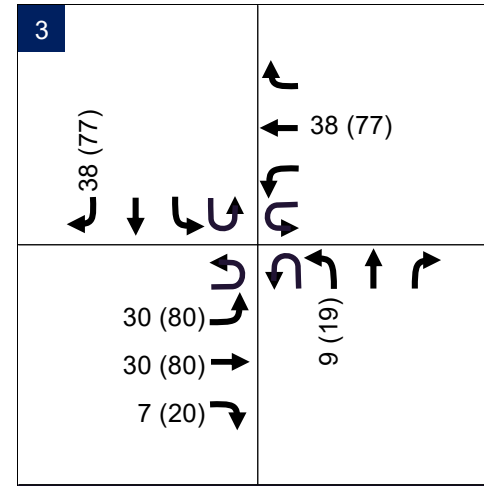
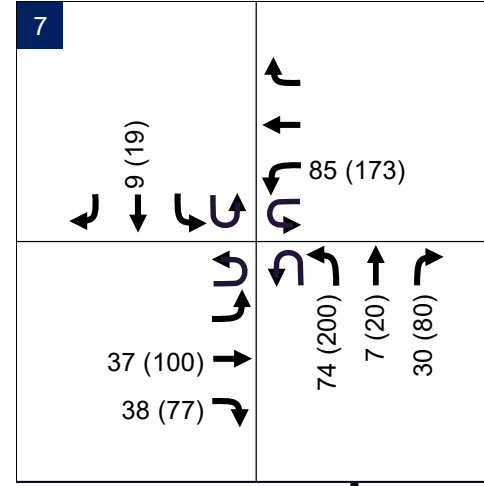
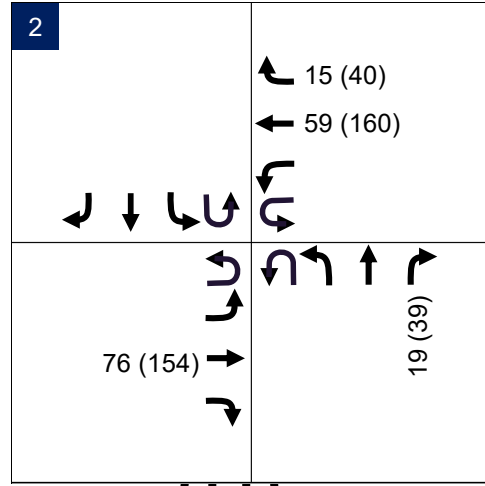
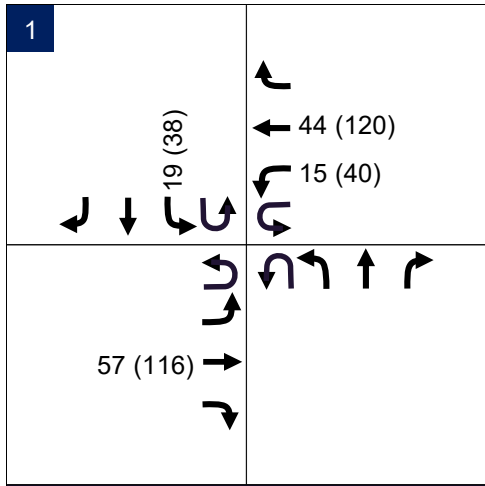
#11 NEC Sarival and Peoria Assignment



#12 Walmart Distribution



#12 Walmart Assignment



Legend
 XX(XX) = AM Peak (PM Peak)



Appendix G – Year 2030 No Build Capacity Analysis

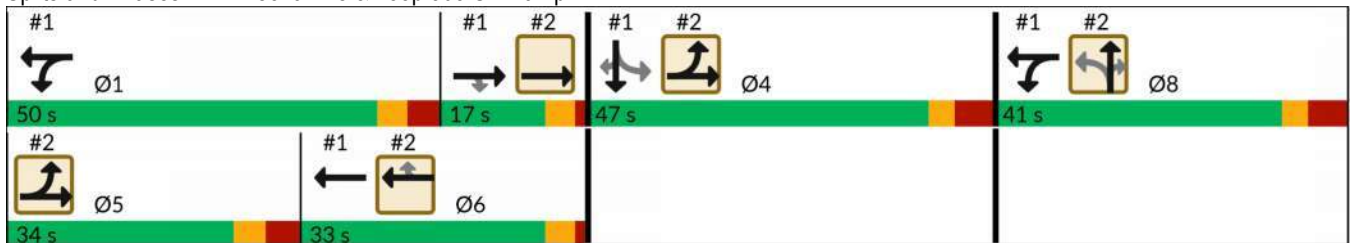


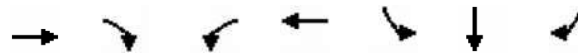
Lane Group	EBT	EBR	WBL	WBT	SBL	SBT	SBR	Ø1	Ø5	Ø6	Ø8
Lane Configurations	↑↑↑↑	↑	↔	↑↑↑	↔	↔	↑				
Traffic Volume (vph)	913	334	216	732	216	4	614				
Future Volume (vph)	913	334	216	732	216	4	614				
Turn Type	NA	Perm	Prot	NA	Perm	NA	Perm				
Protected Phases	2		18	16 8		4		1	5	6	8
Permitted Phases		2			4		4				
Detector Phase	2	2	18	16 8	4	4	4				
Switch Phase											
Minimum Initial (s)	15.0	15.0			12.0	12.0	12.0	8.0	8.0	15.0	12.0
Minimum Split (s)	45.0	45.0			30.0	30.0	30.0	50.0	30.0	65.0	30.0
Total Split (s)	17.0	17.0			47.0	47.0	47.0	50.0	34.0	33.0	41.0
Total Split (%)	11.0%	11.0%			30.3%	30.3%	30.3%	32%	22%	21%	26%
Yellow Time (s)	3.6	3.6			3.0	3.0	3.0	3.6	3.6	3.6	3.0
All-Red Time (s)	1.2	1.2			4.5	4.5	4.5	3.6	4.1	1.2	4.5
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0				
Total Lost Time (s)	4.8	4.8			7.5	7.5	7.5				
Lead/Lag	Lag	Lag						Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes						Yes	Yes	Yes	
Recall Mode	Max	Max			None	None	None	None	None	Max	None
Act Effct Green (s)	40.2	40.2	46.5	72.7	33.8	33.8	33.8				
Actuated g/C Ratio	0.29	0.29	0.33	0.52	0.24	0.24	0.24				
v/c Ratio	0.47	0.52	0.22	0.31	0.57	0.70	0.68				
Control Delay (s/veh)	42.9	6.5	34.8	2.2	53.5	27.1	26.0				
Queue Delay	0.0	0.0	0.0	0.0	1.5	2.2	0.0				
Total Delay (s/veh)	42.9	6.5	34.8	2.2	55.0	29.3	26.0				
LOS	D	A	C	A	E	C	C				
Approach Delay (s/veh)	33.2			10.0		34.3					
Approach LOS	C			A		C					

Intersection Summary

Cycle Length: 155
 Actuated Cycle Length: 140.3
 Natural Cycle: 155
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.78
 Intersection Signal Delay (s/veh): 26.2
 Intersection LOS: C
 Intersection Capacity Utilization 65.4%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 1: Peoria Ave & Loop 303 SB Ramp





Lane Group	EBT	EBR	WBL	WBT	SBL	SBT	SBR
Lane Group Flow (vph)	1014	371	254	813	229	357	355
v/c Ratio	0.47	0.52	0.22	0.31	0.57	0.70	0.68
Control Delay (s/veh)	42.9	6.5	34.8	2.2	53.5	27.1	26.0
Queue Delay	0.0	0.0	0.0	0.0	1.5	2.2	0.0
Total Delay (s/veh)	42.9	6.5	34.8	2.2	55.0	29.3	26.0
Queue Length 50th (ft)	204	0	70	11	201	138	128
Queue Length 95th (ft)	237	81	92	12	286	207	262
Internal Link Dist (ft)	672			342		1245	
Turn Bay Length (ft)		250	300		400		400
Base Capacity (vph)	2163	718	1969	3281	479	568	581
Starvation Cap Reductn	0	0	0	551	0	0	0
Spillback Cap Reductn	99	0	0	0	117	106	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.52	0.13	0.30	0.63	0.77	0.61

Intersection Summary

HCM 7th Edition methodology does not support clustered intersections.

2: Loop 303 NB Ramps & Peoria Ave

03/26/2025

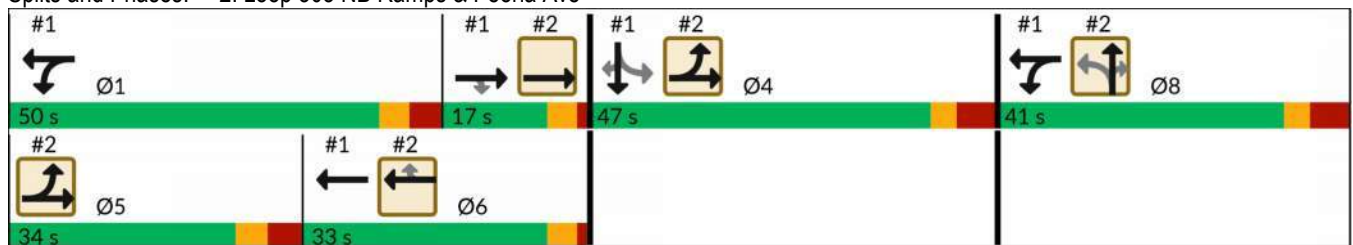


Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	Ø1	Ø2	Ø4	Ø5
Lane Configurations											
Traffic Volume (vph)	647	483	486	246	459	2	243				
Future Volume (vph)	647	483	486	246	459	2	243				
Turn Type	Prot	NA	NA	Perm	Perm	NA	Perm				
Protected Phases	4 5	2 4 5	6			8		1	2	4	5
Permitted Phases				6	8		8				
Detector Phase	4 5	2 4 5	6	6	8	8	8				
Switch Phase											
Minimum Initial (s)			15.0	15.0	12.0	12.0	12.0	8.0	15.0	12.0	8.0
Minimum Split (s)			65.0	65.0	30.0	30.0	30.0	50.0	45.0	30.0	30.0
Total Split (s)			33.0	33.0	41.0	41.0	41.0	50.0	17.0	47.0	34.0
Total Split (%)			21.3%	21.3%	26.5%	26.5%	26.5%	32%	11%	30%	22%
Yellow Time (s)			3.6	3.6	3.0	3.0	3.0	3.6	3.6	3.0	3.6
All-Red Time (s)			1.2	1.2	4.5	4.5	4.5	3.6	1.2	4.5	4.1
Lost Time Adjust (s)			0.0	0.0	0.0	0.0	0.0				
Total Lost Time (s)			4.8	4.8	7.5	7.5	7.5				
Lead/Lag			Lag	Lag				Lead	Lag		Lead
Lead-Lag Optimize?			Yes	Yes				Yes	Yes		Yes
Recall Mode			Max	Max	None	None	None	None	Max	None	None
Act Effct Green (s)	53.5	97.3	28.6	28.6	30.6	30.6	30.6				
Actuated g/C Ratio	0.38	0.69	0.20	0.20	0.22	0.22	0.22				
v/c Ratio	0.55	0.15	0.35	0.52	0.75	0.78	0.48				
Control Delay (s/veh)	34.5	0.4	50.6	9.2	66.7	68.6	8.8				
Queue Delay	0.1	0.0	0.0	0.0	0.0	0.0	0.0				
Total Delay (s/veh)	34.6	0.4	50.6	9.2	66.7	68.6	8.8				
LOS	C	A	D	A	E	E	A				
Approach Delay (s/veh)		20.0	36.2			49.3					
Approach LOS		B	D			D					

Intersection Summary

Cycle Length: 155
 Actuated Cycle Length: 140.3
 Natural Cycle: 155
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.78
 Intersection Signal Delay (s/veh): 32.8
 Intersection LOS: C
 Intersection Capacity Utilization 65.4%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 2: Loop 303 NB Ramps & Peoria Ave





Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	719	537	540	289	275	275	249
v/c Ratio	0.55	0.15	0.35	0.52	0.75	0.78	0.48
Control Delay (s/veh)	34.5	0.4	50.6	9.2	66.7	68.6	8.8
Queue Delay	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	34.6	0.4	50.6	9.2	66.7	68.6	8.8
Queue Length 50th (ft)	370	1	114	0	263	272	0
Queue Length 95th (ft)	398	1	146	62	#392	352	61
Internal Link Dist (ft)		342	321			840	
Turn Bay Length (ft)	300			265	410		410
Base Capacity (vph)	1637	3752	1537	552	406	389	553
Starvation Cap Reductn	199	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.14	0.35	0.52	0.68	0.71	0.45

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

HCM 7th Edition methodology does not support clustered intersections.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Group Flow (vph)	148	543	75	233	490	142	107	104	45	202	233	
v/c Ratio	0.36	0.33	0.10	0.60	0.30	0.43	0.11	0.20	0.13	0.20	0.38	
Control Delay (s/veh)	9.8	7.1	2.3	15.3	6.8	19.1	13.3	5.2	14.6	13.4	4.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	9.8	7.1	2.3	15.3	6.8	19.1	13.3	5.2	14.6	13.4	4.9	
Queue Length 50th (ft)	16	31	0	30	26	23	8	0	7	15	0	
Queue Length 95th (ft)	56	78	12	98	69	85	30	27	30	51	37	
Internal Link Dist (ft)	1913			1167			1608			257		
Turn Bay Length (ft)	155			160			170			150	160	250
Base Capacity (vph)	849	3411	1528	806	3384	857	2605	1192	937	2605	1226	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.17	0.16	0.05	0.29	0.14	0.17	0.04	0.09	0.05	0.08	0.19	

Intersection Summary

3: Sarival Ave & Peoria Ave

03/26/2025



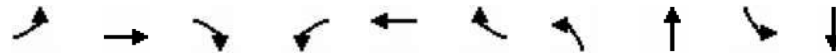
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑		↘	↑↑	↗	↘	↑↑	↗
Traffic Volume (veh/h)	126	489	60	198	418	21	121	91	88	36	172	198
Future Volume (veh/h)	126	489	60	198	418	21	121	91	88	36	172	198
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	148	543	75	233	464	26	142	107	104	45	202	233
Peak Hour Factor	0.85	0.90	0.80	0.85	0.90	0.80	0.85	0.85	0.85	0.80	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	567	1779	794	515	1713	96	399	956	426	473	956	426
Arrive On Green	0.50	0.50	0.50	0.50	0.50	0.50	0.27	0.27	0.27	0.27	0.27	0.27
Sat Flow, veh/h	906	3554	1585	805	3422	191	954	3554	1585	1171	3554	1585
Grp Volume(v), veh/h	148	543	75	233	240	250	142	107	104	45	202	233
Grp Sat Flow(s),veh/h/ln	906	1777	1585	805	1777	1836	954	1777	1585	1171	1777	1585
Q Serve(g_s), s	4.4	3.5	1.0	9.4	3.1	3.1	5.3	0.9	2.0	1.2	1.7	4.9
Cycle Q Clear(g_c), s	7.5	3.5	1.0	12.9	3.1	3.1	7.0	0.9	2.0	2.1	1.7	4.9
Prop In Lane	1.00		1.00	1.00		0.10	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	567	1779	794	515	890	919	399	956	426	473	956	426
V/C Ratio(X)	0.26	0.31	0.09	0.45	0.27	0.27	0.36	0.11	0.24	0.10	0.21	0.55
Avail Cap(c_a), veh/h	1353	4863	2169	1213	2431	2512	813	2499	1115	981	2499	1115
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	7.8	5.8	5.1	9.6	5.6	5.6	13.8	10.8	11.2	11.5	11.1	12.2
Incr Delay (d2), s/veh	0.2	0.1	0.1	0.6	0.2	0.2	0.5	0.1	0.3	0.1	0.1	1.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.6	0.2	1.0	0.6	0.6	0.9	0.2	0.5	0.2	0.5	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	8.0	5.8	5.2	10.2	5.8	5.8	14.3	10.8	11.5	11.6	11.2	13.3
LnGrp LOS	A	A	A	B	A	A	B	B	B	B	B	B
Approach Vol, veh/h	766			723			353			480		
Approach Delay, s/veh	6.2			7.2			12.4			12.3		
Approach LOS	A			A			B			B		
Timer - Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	15.0		24.1		15.0		24.1					
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5					
Max Green Setting (Gmax), s	27.5		53.5		27.5		53.5					
Max Q Clear Time (g_c+I1), s	9.0		9.5		6.9		14.9					
Green Ext Time (p_c), s	1.5		4.9		2.0		4.7					
Intersection Summary												
HCM 7th Control Delay, s/veh				8.7								
HCM 7th LOS				A								

Intersection						
Int Delay, s/veh	0.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↵	↶	↕		↵	↕
Traffic Vol, veh/h	17	14	277	13	11	378
Future Vol, veh/h	17	14	277	13	11	378
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	100	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	80	80	85	80	80	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	21	18	326	16	14	420

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	572	171	0	0	342	0
Stage 1	334	-	-	-	-	-
Stage 2	238	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	451	843	-	-	1214	-
Stage 1	697	-	-	-	-	-
Stage 2	780	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	446	843	-	-	1214	-
Mov Cap-2 Maneuver	446	-	-	-	-	-
Stage 1	697	-	-	-	-	-
Stage 2	771	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	11.62	0	0.25
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	446	843	1214	-
HCM Lane V/C Ratio	-	-	0.048	0.021	0.011	-
HCM Ctrl Dly (s/v)	-	-	13.5	9.4	8	-
HCM Lane LOS	-	-	B	A	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0.1	0	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	153	308	267	18	189	8	172	180	18	444
v/c Ratio	0.40	0.27	0.38	0.05	0.16	0.02	0.54	0.24	0.04	0.59
Control Delay (s/veh)	14.5	10.5	3.9	10.8	10.1	3.8	16.3	8.4	7.6	10.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	14.5	10.5	3.9	10.8	10.1	3.8	16.3	8.4	7.6	10.5
Queue Length 50th (ft)	20	20	0	2	12	0	21	19	2	41
Queue Length 95th (ft)	73	58	33	13	38	4	77	59	10	125
Internal Link Dist (ft)		826			672			2330		284
Turn Bay Length (ft)	160		160	160		160	160		160	
Base Capacity (vph)	1009	3030	1394	900	3030	1358	768	1802	1167	1671
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.10	0.19	0.02	0.06	0.01	0.22	0.10	0.02	0.27

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑	↗	↘	↗		↘	↗	
Traffic Volume (veh/h)	130	262	227	14	161	6	146	148	5	14	178	200
Future Volume (veh/h)	130	262	227	14	161	6	146	148	5	14	178	200
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	153	308	267	18	189	8	172	174	6	18	209	235
Peak Hour Factor	0.85	0.85	0.85	0.80	0.85	0.80	0.85	0.85	0.80	0.80	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	499	1047	467	388	1047	467	451	825	28	680	369	415
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.46	0.46	0.46	0.46	0.46	0.46
Sat Flow, veh/h	1186	3554	1585	838	3554	1585	946	1797	62	1204	804	904
Grp Volume(v), veh/h	153	308	267	18	189	8	172	0	180	18	0	444
Grp Sat Flow(s),veh/h/ln	1186	1777	1585	838	1777	1585	946	0	1859	1204	0	1708
Q Serve(g_s), s	4.0	2.4	5.2	0.6	1.4	0.1	5.9	0.0	2.1	0.3	0.0	6.9
Cycle Q Clear(g_c), s	5.5	2.4	5.2	3.1	1.4	0.1	12.9	0.0	2.1	2.5	0.0	6.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.03	1.00		0.53
Lane Grp Cap(c), veh/h	499	1047	467	388	1047	467	451	0	853	680	0	784
V/C Ratio(X)	0.31	0.29	0.57	0.05	0.18	0.02	0.38	0.00	0.21	0.03	0.00	0.57
Avail Cap(c_a), veh/h	1172	3063	1366	863	3063	1366	1298	0	2518	1758	0	2313
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.6	10.0	10.9	11.1	9.6	9.1	11.9	0.0	5.9	6.7	0.0	7.2
Incr Delay (d2), s/veh	0.3	0.2	1.1	0.0	0.1	0.0	0.5	0.0	0.1	0.0	0.0	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.6	1.3	0.1	0.4	0.0	0.9	0.0	0.4	0.0	0.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	12.0	10.1	12.0	11.2	9.7	9.1	12.5	0.0	6.0	6.7	0.0	7.9
LnGrp LOS	B	B	B	B	A	A	B		A	A		A
Approach Vol, veh/h		728			215			352				462
Approach Delay, s/veh		11.2			9.8			9.2				7.8
Approach LOS		B			A			A				A
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		21.3		15.3		21.3		15.3				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		49.5		31.5		49.5		31.5				
Max Q Clear Time (g_c+I1), s		14.9		7.5		8.9		5.1				
Green Ext Time (p_c), s		1.9		3.3		3.0		1.2				
Intersection Summary												
HCM 7th Control Delay, s/veh				9.7								
HCM 7th LOS				A								

6: Sarival Ave & Northern Pkwy WB Ramps

03/26/2025

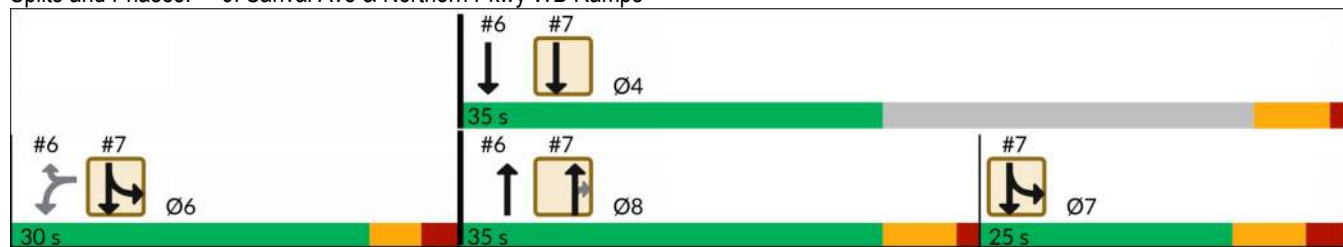


Lane Group	WBL	WBR	NBT	SBT	Ø7
Lane Configurations	↙↘	↗	↑	↑↑↑	
Traffic Volume (vph)	112	274	62	408	
Future Volume (vph)	112	274	62	408	
Turn Type	Perm	Perm	NA	NA	
Protected Phases			8	4	7
Permitted Phases	6	6			
Detector Phase	6	6	8	4	
Switch Phase					
Minimum Initial (s)	5.0	5.0	20.0	20.0	5.0
Minimum Split (s)	37.9	37.9	35.0	35.0	13.1
Total Split (s)	30.0	30.0	35.0	35.0	25.0
Total Split (%)	33.3%	33.3%	38.9%	38.9%	28%
Yellow Time (s)	3.5	3.5	5.0	5.0	5.0
All-Red Time (s)	2.4	2.4	1.5	1.5	3.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.9	5.9	6.5	6.5	
Lead/Lag			Lead		Lag
Lead-Lag Optimize?			Yes		Yes
Recall Mode	None	None	Min	Min	None
Act Effect Green (s)	14.3	14.3	20.3	40.4	
Actuated g/C Ratio	0.21	0.21	0.30	0.60	
v/c Ratio	0.18	0.55	0.14	0.15	
Control Delay (s/veh)	21.9	6.7	6.3	6.8	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	21.9	6.7	6.3	6.8	
LOS	C	A	A	A	
Approach Delay (s/veh)	11.1		6.3	6.8	
Approach LOS	B		A	A	

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 67.3
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.55
 Intersection Signal Delay (s/veh): 8.7
 Intersection LOS: A
 Intersection Capacity Utilization 44.0%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 6: Sarival Ave & Northern Pky WB Ramps



6: Sarival Ave & Northern Pkwy WB Ramps

03/26/2025



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	132	322	78	453
v/c Ratio	0.18	0.55	0.14	0.15
Control Delay (s/veh)	21.9	6.7	6.3	6.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	21.9	6.7	6.3	6.8
Queue Length 50th (ft)	22	0	5	25
Queue Length 95th (ft)	42	45	8	54
Internal Link Dist (ft)	493		420	2330
Turn Bay Length (ft)	420	420		
Base Capacity (vph)	1245	779	799	4094
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.11	0.41	0.10	0.11
Intersection Summary				

HCM 7th Edition methodology does not support clustered intersections.

7: Sarival Ave & Northern Pkwy EB Ramps

03/26/2025

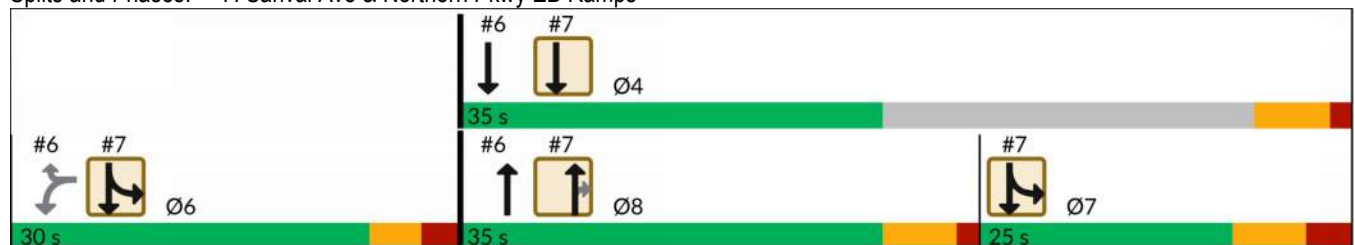


Lane Group	NBT	NBR	SBL	SBT	Ø4	Ø6	Ø7
Lane Configurations	↑	↗	↖	↑↑			
Traffic Volume (vph)	62	149	350	168			
Future Volume (vph)	62	149	350	168			
Turn Type	NA	Perm	Prot	NA			
Protected Phases	8		6 7	4 6 7	4	6	7
Permitted Phases		8					
Detector Phase	8	8	6 7	4 6 7			
Switch Phase							
Minimum Initial (s)	20.0	20.0			20.0	5.0	5.0
Minimum Split (s)	35.0	35.0			35.0	37.9	13.1
Total Split (s)	35.0	35.0			35.0	30.0	25.0
Total Split (%)	38.9%	38.9%			39%	33%	28%
Yellow Time (s)	5.0	5.0			5.0	3.5	5.0
All-Red Time (s)	1.5	1.5			1.5	2.4	3.1
Lost Time Adjust (s)	0.0	0.0					
Total Lost Time (s)	6.5	6.5					
Lead/Lag	Lead	Lead					Lag
Lead-Lag Optimize?	Yes	Yes					Yes
Recall Mode	Min	Min			Min	None	None
Act Effct Green (s)	20.3	20.3	34.5	67.3			
Actuated g/C Ratio	0.30	0.30	0.51	1.00			
v/c Ratio	0.14	0.29	0.22	0.06			
Control Delay (s/veh)	20.9	5.6	10.4	0.0			
Queue Delay	0.0	0.0	0.0	0.0			
Total Delay (s/veh)	20.9	5.6	10.4	0.0			
LOS	C	A	B	A			
Approach Delay (s/veh)	10.3			6.9			
Approach LOS	B			A			

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 67.3
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.55
 Intersection Signal Delay (s/veh): 7.9
 Intersection LOS: A
 Intersection Capacity Utilization 44.0%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 7: Sarival Ave & Northern Pkwy EB Ramps



7: Sarival Ave & Northern Pkwy EB Ramps

03/26/2025



Lane Group	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	78	175	389	198
v/c Ratio	0.14	0.29	0.22	0.06
Control Delay (s/veh)	20.9	5.6	10.4	0.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	20.9	5.6	10.4	0.0
Queue Length 50th (ft)	23	0	48	0
Queue Length 95th (ft)	57	39	90	0
Internal Link Dist (ft)	1002			420
Turn Bay Length (ft)		285	430	
Base Capacity (vph)	799	779	2203	3539
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.10	0.22	0.18	0.06
Intersection Summary				

HCM 7th Edition methodology does not support clustered intersections.

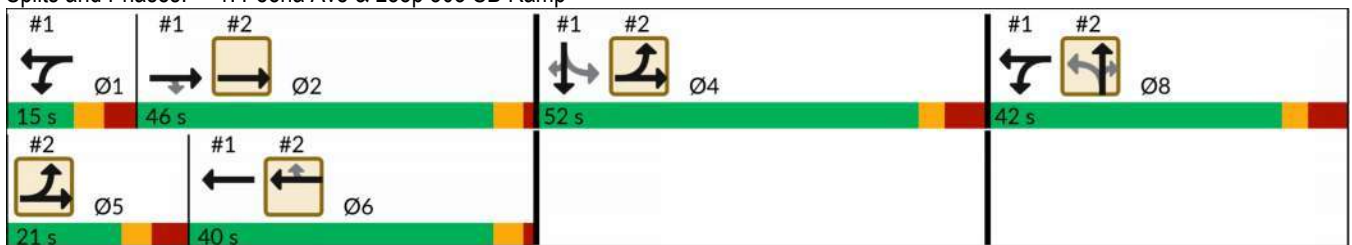


Lane Group	EBT	EBR	WBL	WBT	SBL	SBT	SBR	Ø1	Ø5	Ø6	Ø8
Lane Configurations	↑↑↑↑	↗	↖↗	↑↑↑	↘	↕	↗				
Traffic Volume (vph)	1264	510	294	777	319	4	410				
Future Volume (vph)	1264	510	294	777	319	4	410				
Turn Type	NA	Perm	Prot	NA	Perm	NA	Perm				
Protected Phases	2		18	16 8		4		1	5	6	8
Permitted Phases		2			4		4				
Detector Phase	2	2	18	16 8	4	4	4				
Switch Phase											
Minimum Initial (s)	15.0	15.0			12.0	12.0	12.0	8.0	8.0	15.0	12.0
Minimum Split (s)	45.0	45.0			30.0	30.0	30.0	50.0	30.0	65.0	30.0
Total Split (s)	46.0	46.0			52.0	52.0	52.0	15.0	21.0	40.0	42.0
Total Split (%)	29.7%	29.7%			33.5%	33.5%	33.5%	10%	14%	26%	27%
Yellow Time (s)	3.6	3.6			3.0	3.0	3.0	3.6	3.6	3.6	3.0
All-Red Time (s)	1.2	1.2			4.5	4.5	4.5	3.6	4.1	1.2	4.5
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0				
Total Lost Time (s)	4.8	4.8			7.5	7.5	7.5				
Lead/Lag	Lag	Lag						Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes						Yes	Yes	Yes	
Recall Mode	Max	Max			None	None	None	None	None	Max	None
Act Effct Green (s)	41.4	41.4	47.6	80.6	41.1	41.1	41.1				
Actuated g/C Ratio	0.28	0.28	0.32	0.54	0.27	0.27	0.27				
v/c Ratio	0.67	0.67	0.32	0.32	0.61	0.58	0.51				
Control Delay (s/veh)	50.9	7.7	55.5	3.2	54.0	37.2	26.2				
Queue Delay	3.3	0.0	0.0	0.1	4.5	3.0	0.0				
Total Delay (s/veh)	54.2	7.7	55.5	3.3	58.5	40.2	26.2				
LOS	D	A	E	A	E	D	C				
Approach Delay (s/veh)	40.8			18.3		42.1					
Approach LOS	D			B		D					

Intersection Summary

Cycle Length: 155
 Actuated Cycle Length: 149.7
 Natural Cycle: 155
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.79
 Intersection Signal Delay (s/veh): 34.2
 Intersection LOS: C
 Intersection Capacity Utilization 75.9%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 1: Peoria Ave & Loop 303 SB Ramp





Lane Group	EBT	EBR	WBL	WBT	SBL	SBT	SBR
Lane Group Flow (vph)	1404	567	346	863	283	272	260
v/c Ratio	0.67	0.67	0.32	0.32	0.61	0.58	0.51
Control Delay (s/veh)	50.9	7.7	55.5	3.2	54.0	37.2	26.2
Queue Delay	3.3	0.0	0.0	0.1	4.5	3.0	0.0
Total Delay (s/veh)	54.2	7.7	55.5	3.3	58.5	40.2	26.2
Queue Length 50th (ft)	318	0	134	19	260	179	114
Queue Length 95th (ft)	355	108	162	20	367	237	211
Internal Link Dist (ft)	672			342		1245	
Turn Bay Length (ft)		250	300		400		400
Base Capacity (vph)	2087	848	1091	2736	502	504	539
Starvation Cap Reductn	0	0	0	591	0	0	0
Spillback Cap Reductn	566	0	0	0	150	141	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.92	0.67	0.32	0.40	0.80	0.75	0.48

Intersection Summary

HCM 7th Edition methodology does not support clustered intersections.

2: Loop 303 NB Ramps & Peoria Ave

03/26/2025

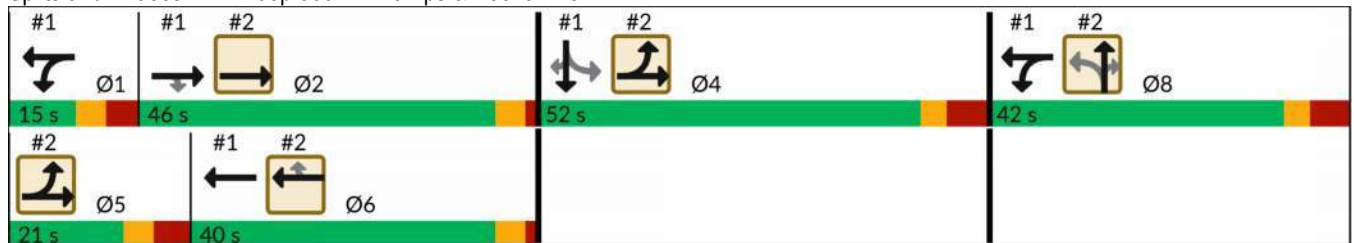


Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	Ø1	Ø2	Ø4	Ø5
Lane Configurations											
Traffic Volume (vph)	814	765	717	364	351	0	388				
Future Volume (vph)	814	765	717	364	351	0	388				
Turn Type	Prot	NA	NA	Perm	Perm	NA	Perm				
Protected Phases	4 5	2 4 5	6			8		1	2	4	5
Permitted Phases				6	8		8				
Detector Phase	4 5	2 4 5	6	6	8	8	8				
Switch Phase											
Minimum Initial (s)			15.0	15.0	12.0	12.0	12.0	8.0	15.0	12.0	8.0
Minimum Split (s)			65.0	65.0	30.0	30.0	30.0	50.0	45.0	30.0	30.0
Total Split (s)			40.0	40.0	42.0	42.0	42.0	15.0	46.0	52.0	21.0
Total Split (%)			25.8%	25.8%	27.1%	27.1%	27.1%	10%	30%	34%	14%
Yellow Time (s)			3.6	3.6	3.0	3.0	3.0	3.6	3.6	3.0	3.6
All-Red Time (s)			1.2	1.2	4.5	4.5	4.5	3.6	1.2	4.5	4.1
Lost Time Adjust (s)			0.0	0.0	0.0	0.0	0.0				
Total Lost Time (s)			4.8	4.8	7.5	7.5	7.5				
Lead/Lag			Lag	Lag				Lead	Lag		Lead
Lead-Lag Optimize?			Yes	Yes				Yes	Yes		Yes
Recall Mode			Max	Max	None	None	None	None	Max	None	None
Act Effct Green (s)	54.7	105.1	35.4	35.4	32.2	32.2	32.2				
Actuated g/C Ratio	0.37	0.70	0.24	0.24	0.22	0.22	0.22				
v/c Ratio	0.72	0.24	0.45	0.59	0.79	0.66	0.53				
Control Delay (s/veh)	40.2	0.4	50.6	8.2	72.4	38.8	14.3				
Queue Delay	1.8	0.1	0.0	0.0	0.0	0.0	0.0				
Total Delay (s/veh)	42.0	0.5	50.6	8.2	72.4	38.8	14.3				
LOS	D	A	D	A	E	D	B				
Approach Delay (s/veh)		21.9	36.4			42.6					
Approach LOS		C	D			D					

Intersection Summary

Cycle Length: 155
 Actuated Cycle Length: 149.7
 Natural Cycle: 155
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.79
 Intersection Signal Delay (s/veh): 31.0
 Intersection LOS: C
 Intersection Capacity Utilization 75.9%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 2: Loop 303 NB Ramps & Peoria Ave





Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	904	850	797	404	285	273	263
v/c Ratio	0.72	0.24	0.45	0.59	0.79	0.66	0.53
Control Delay (s/veh)	40.2	0.4	50.6	8.2	72.4	38.8	14.3
Queue Delay	1.8	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	42.0	0.5	50.6	8.2	72.4	38.8	14.3
Queue Length 50th (ft)	488	2	173	0	287	161	35
Queue Length 95th (ft)	560	2	204	95	#410	223	130
Internal Link Dist (ft)		342	321			840	
Turn Bay Length (ft)	300			265	410		410
Base Capacity (vph)	1336	3694	1783	682	389	439	519
Starvation Cap Reductn	266	1554	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.40	0.45	0.59	0.73	0.62	0.51

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

HCM 7th Edition methodology does not support clustered intersections.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Group Flow (vph)	368	829	104	129	707	216	234	80	34	220	282	
v/c Ratio	0.72	0.55	0.14	0.36	0.76	0.60	0.25	0.14	0.12	0.43	0.60	
Control Delay (s/veh)	22.8	18.7	2.7	12.9	31.5	29.2	24.7	0.5	20.7	32.4	10.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	22.8	18.7	2.7	12.9	31.5	29.2	24.7	0.5	20.7	32.4	10.1	
Queue Length 50th (ft)	97	149	0	24	154	80	43	0	11	50	0	
Queue Length 95th (ft)	215	236	17	52	244	136	82	0	29	81	52	
Internal Link Dist (ft)	1913				1167		1608		257			
Turn Bay Length (ft)	155			160			170		150	160		250
Base Capacity (vph)	586	1661	810	395	1103	363	1181	649	286	1043	665	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.63	0.50	0.13	0.33	0.64	0.60	0.20	0.12	0.12	0.21	0.42	

Intersection Summary

3: Sarival Ave & Peoria Ave

03/26/2025



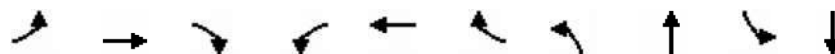
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	331	746	88	110	604	29	184	199	64	27	187	240
Future Volume (veh/h)	331	746	88	110	604	29	184	199	64	27	187	240
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	368	829	104	129	671	36	216	234	80	34	220	282
Peak Hour Factor	0.90	0.90	0.85	0.85	0.90	0.80	0.85	0.85	0.80	0.80	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	466	1239	553	326	837	45	441	1031	460	391	767	342
Arrive On Green	0.18	0.35	0.35	0.08	0.24	0.24	0.11	0.29	0.29	0.03	0.22	0.22
Sat Flow, veh/h	1781	3554	1585	1781	3430	184	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	368	829	104	129	347	360	216	234	80	34	220	282
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1837	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	10.2	14.2	3.3	3.8	13.2	13.2	6.4	3.6	2.7	1.0	3.7	12.2
Cycle Q Clear(g_c), s	10.2	14.2	3.3	3.8	13.2	13.2	6.4	3.6	2.7	1.0	3.7	12.2
Prop In Lane	1.00		1.00	1.00		0.10	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	466	1239	553	326	434	449	441	1031	460	391	767	342
V/C Ratio(X)	0.79	0.67	0.19	0.40	0.80	0.80	0.49	0.23	0.17	0.09	0.29	0.82
Avail Cap(c_a), veh/h	654	1669	745	422	557	576	441	1189	530	454	1050	468
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.9	19.8	16.3	18.3	25.5	25.5	17.4	19.3	19.0	20.6	23.5	26.8
Incr Delay (d2), s/veh	4.3	0.6	0.2	0.8	6.4	6.2	0.8	0.1	0.2	0.1	0.2	8.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	5.2	1.1	1.5	5.7	5.9	2.4	1.3	0.9	0.4	1.4	4.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	20.3	20.5	16.4	19.1	31.8	31.7	18.3	19.5	19.2	20.7	23.7	35.2
LnGrp LOS	C	C	B	B	C	C	B	B	B	C	C	D
Approach Vol, veh/h		1301			836			530			536	
Approach Delay, s/veh		20.1			29.8			18.9			29.6	
Approach LOS		C			C			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.0	25.3	9.9	29.5	12.3	20.0	17.4	22.0				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	24.0	9.3	33.7	7.8	21.2	20.5	22.5				
Max Q Clear Time (g_c+I1), s	3.0	5.6	5.8	16.2	8.4	14.2	12.2	15.2				
Green Ext Time (p_c), s	0.0	1.4	0.1	5.3	0.0	1.3	0.7	2.3				
Intersection Summary												
HCM 7th Control Delay, s/veh			24.0									
HCM 7th LOS			C									

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↵	↶	↕		↵	↕
Traffic Vol, veh/h	6	7	394	10	18	375
Future Vol, veh/h	6	7	394	10	18	375
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	100	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	80	80	85	80	80	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	9	464	13	23	417

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	723	238	0	0	476	0
Stage 1	470	-	-	-	-	-
Stage 2	253	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	361	763	-	-	1082	-
Stage 1	595	-	-	-	-	-
Stage 2	766	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	354	763	-	-	1082	-
Mov Cap-2 Maneuver	354	-	-	-	-	-
Stage 1	595	-	-	-	-	-
Stage 2	750	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	12.37	0	0.43
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	354	763	1082
HCM Lane V/C Ratio	-	-	0.021	0.011	0.021
HCM Ctrl Dly (s/v)	-	-	15.4	9.8	8.4
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	0.1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	89	160	105	19	304	54	249	360	21	436
v/c Ratio	0.32	0.17	0.21	0.06	0.32	0.12	0.61	0.41	0.04	0.51
Control Delay (s/veh)	17.1	13.0	5.3	13.9	13.6	6.0	14.7	7.8	5.5	8.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	17.1	13.0	5.3	13.9	13.6	6.0	14.7	7.8	5.5	8.3
Queue Length 50th (ft)	13	11	0	3	23	0	28	36	2	41
Queue Length 95th (ft)	50	39	26	16	67	17	92	93	9	109
Internal Link Dist (ft)		826			672			2330		284
Turn Bay Length (ft)	160		160	160		160	160		160	
Base Capacity (vph)	730	2446	1126	838	2446	1110	862	1846	1002	1784
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.07	0.09	0.02	0.12	0.05	0.29	0.20	0.02	0.24

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑↑	↗	↖	↑↑	↗	↖	↖		↖	↗	
Traffic Volume (veh/h)	71	136	89	15	258	43	212	292	13	17	273	98
Future Volume (veh/h)	71	136	89	15	258	43	212	292	13	17	273	98
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	89	160	105	19	304	54	249	344	16	21	321	115
Peak Hour Factor	0.80	0.85	0.85	0.80	0.85	0.80	0.85	0.85	0.80	0.80	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	362	852	380	416	852	380	542	929	43	607	688	247
Arrive On Green	0.24	0.24	0.24	0.24	0.24	0.24	0.52	0.52	0.52	0.52	0.52	0.52
Sat Flow, veh/h	1023	3554	1585	1114	3554	1585	953	1773	82	1022	1315	471
Grp Volume(v), veh/h	89	160	105	19	304	54	249	0	360	21	0	436
Grp Sat Flow(s),veh/h/ln	1023	1777	1585	1114	1777	1585	953	0	1856	1022	0	1786
Q Serve(g_s), s	3.0	1.4	2.1	0.5	2.7	1.0	8.5	0.0	4.4	0.5	0.0	5.9
Cycle Q Clear(g_c), s	5.7	1.4	2.1	1.9	2.7	1.0	14.3	0.0	4.4	4.8	0.0	5.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.04	1.00		0.26
Lane Grp Cap(c), veh/h	362	852	380	416	852	380	542	0	972	607	0	935
V/C Ratio(X)	0.25	0.19	0.28	0.05	0.36	0.14	0.46	0.00	0.37	0.03	0.00	0.47
Avail Cap(c_a), veh/h	749	2195	979	838	2195	979	1482	0	2804	1616	0	2699
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.4	11.5	11.8	12.3	12.0	11.4	10.2	0.0	5.4	6.8	0.0	5.7
Incr Delay (d2), s/veh	0.4	0.1	0.4	0.0	0.3	0.2	0.6	0.0	0.2	0.0	0.0	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.4	0.5	0.1	0.8	0.3	1.1	0.0	0.7	0.1	0.0	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	14.8	11.6	12.2	12.3	12.3	11.6	10.8	0.0	5.6	6.8	0.0	6.1
LnGrp LOS	B	B	B	B	B	B	B		A	A		A
Approach Vol, veh/h		354			377			609				457
Approach Delay, s/veh		12.6			12.2			7.7				6.1
Approach LOS		B			B			A				A
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		24.4		13.6		24.4		13.6				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		57.5		23.5		57.5		23.5				
Max Q Clear Time (g_c+I1), s		16.3		7.7		7.9		4.7				
Green Ext Time (p_c), s		3.6		1.4		2.9		1.8				
Intersection Summary												
HCM 7th Control Delay, s/veh				9.2								
HCM 7th LOS				A								

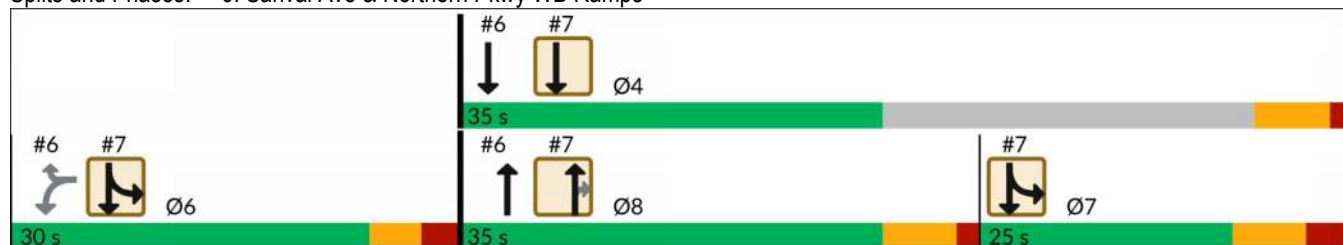


Lane Group	WBL	WBR	NBT	SBT	Ø7
Lane Configurations	↖↗	↗	↑	↑↑↑	
Traffic Volume (vph)	132	396	129	473	
Future Volume (vph)	132	396	129	473	
Turn Type	Perm	Perm	NA	NA	
Protected Phases			8	4	7
Permitted Phases	6	6			
Detector Phase	6	6	8	4	
Switch Phase					
Minimum Initial (s)	5.0	5.0	20.0	20.0	5.0
Minimum Split (s)	37.9	37.9	35.0	35.0	13.1
Total Split (s)	30.0	30.0	35.0	35.0	25.0
Total Split (%)	33.3%	33.3%	38.9%	38.9%	28%
Yellow Time (s)	3.5	3.5	5.0	5.0	5.0
All-Red Time (s)	2.4	2.4	1.5	1.5	3.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.9	5.9	6.5	6.5	
Lead/Lag			Lead		Lag
Lead-Lag Optimize?			Yes		Yes
Recall Mode	None	None	Min	Min	None
Act Effct Green (s)	17.1	17.1	20.4	40.8	
Actuated g/C Ratio	0.24	0.24	0.29	0.58	
v/c Ratio	0.19	0.61	0.28	0.18	
Control Delay (s/veh)	21.5	6.6	7.1	7.9	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	21.5	6.6	7.1	7.9	
LOS	C	A	A	A	
Approach Delay (s/veh)	10.5		7.1	7.9	
Approach LOS	B		A	A	

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 70.5
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.61
 Intersection Signal Delay (s/veh): 9.0
 Intersection LOS: A
 Intersection Capacity Utilization 51.5%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 6: Sarival Ave & Northern Pkwy WB Ramps





Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	155	440	152	526
v/c Ratio	0.19	0.61	0.28	0.18
Control Delay (s/veh)	21.5	6.6	7.1	7.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	21.5	6.6	7.1	7.9
Queue Length 50th (ft)	27	0	9	36
Queue Length 95th (ft)	49	65	14	63
Internal Link Dist (ft)	493		420	2330
Turn Bay Length (ft)	420	420		
Base Capacity (vph)	1191	836	765	3918
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.13	0.53	0.20	0.13
Intersection Summary				

HCM 7th Edition methodology does not support clustered intersections.

7: Sarival Ave & Northern Pkwy EB Ramps

03/26/2025

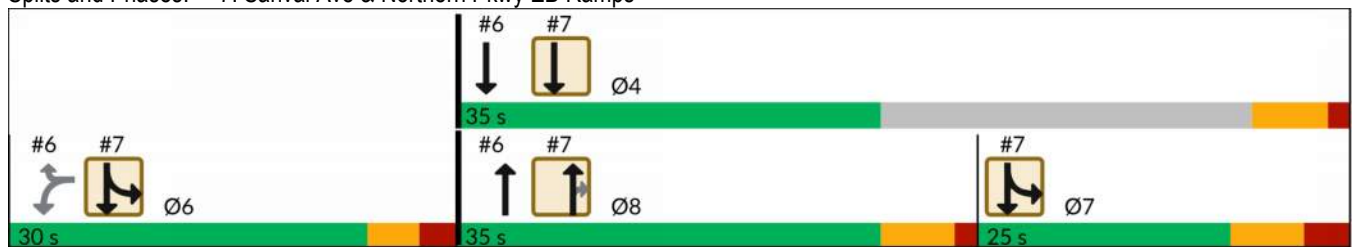


Lane Group	NBT	NBR	SBL	SBT	Ø4	Ø6	Ø7
Lane Configurations	↑	↗	↖	↑↑			
Traffic Volume (vph)	130	194	313	294			
Future Volume (vph)	130	194	313	294			
Turn Type	NA	Perm	Prot	NA			
Protected Phases	8		6 7	4 6 7	4	6	7
Permitted Phases		8					
Detector Phase	8	8	6 7	4 6 7			
Switch Phase							
Minimum Initial (s)	20.0	20.0			20.0	5.0	5.0
Minimum Split (s)	35.0	35.0			35.0	37.9	13.1
Total Split (s)	35.0	35.0			35.0	30.0	25.0
Total Split (%)	38.9%	38.9%			39%	33%	28%
Yellow Time (s)	5.0	5.0			5.0	3.5	5.0
All-Red Time (s)	1.5	1.5			1.5	2.4	3.1
Lost Time Adjust (s)	0.0	0.0					
Total Lost Time (s)	6.5	6.5					
Lead/Lag	Lead	Lead					Lag
Lead-Lag Optimize?	Yes	Yes					Yes
Recall Mode	Min	Min			Min	None	None
Act Effct Green (s)	20.4	20.4	37.5	70.5			
Actuated g/C Ratio	0.29	0.29	0.53	1.00			
v/c Ratio	0.28	0.37	0.19	0.10			
Control Delay (s/veh)	23.8	5.7	10.3	0.1			
Queue Delay	0.0	0.0	0.0	0.0			
Total Delay (s/veh)	23.8	5.7	10.3	0.1			
LOS	C	A	B	A			
Approach Delay (s/veh)	13.0			5.2			
Approach LOS	B			A			

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 70.5
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.61
 Intersection Signal Delay (s/veh): 7.9
 Intersection LOS: A
 Intersection Capacity Utilization 51.5%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 7: Sarival Ave & Northern Pkwy EB Ramps



7: Sarival Ave & Northern Pkwy EB Ramps

03/26/2025



Lane Group	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	153	228	348	346
v/c Ratio	0.28	0.37	0.19	0.10
Control Delay (s/veh)	23.8	5.7	10.3	0.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	23.8	5.7	10.3	0.1
Queue Length 50th (ft)	52	0	47	0
Queue Length 95th (ft)	109	44	80	0
Internal Link Dist (ft)	1002			420
Turn Bay Length (ft)		285	430	
Base Capacity (vph)	765	784	2148	3484
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.20	0.29	0.16	0.10
Intersection Summary				

HCM 7th Edition methodology does not support clustered intersections.

Appendix H – Year 2030 Build Capacity Analysis

1: Peoria Ave & Loop 303 SB Ramp

03/26/2025

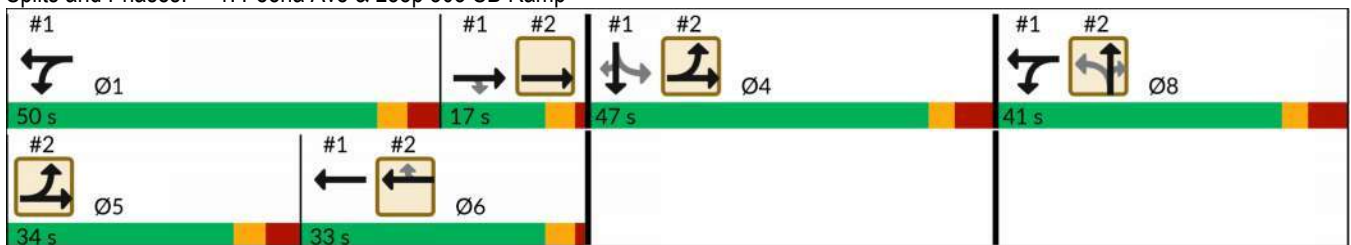


Lane Group	EBT	EBR	WBL	WBT	SBL	SBT	SBR	Ø1	Ø5	Ø6	Ø8
Lane Configurations	↑↑↑↑	↑	↔	↑↑↑	↔	↔	↑				
Traffic Volume (vph)	922	334	230	734	263	4	614				
Future Volume (vph)	922	334	230	734	263	4	614				
Turn Type	NA	Perm	Prot	NA	Perm	NA	Perm				
Protected Phases	2		18	16 8		4		1	5	6	8
Permitted Phases		2			4		4				
Detector Phase	2	2	18	16 8	4	4	4				
Switch Phase											
Minimum Initial (s)	15.0	15.0			12.0	12.0	12.0	8.0	8.0	15.0	12.0
Minimum Split (s)	45.0	45.0			30.0	30.0	30.0	50.0	30.0	65.0	30.0
Total Split (s)	17.0	17.0			47.0	47.0	47.0	50.0	34.0	33.0	41.0
Total Split (%)	11.0%	11.0%			30.3%	30.3%	30.3%	32%	22%	21%	26%
Yellow Time (s)	3.6	3.6			3.0	3.0	3.0	3.6	3.6	3.6	3.0
All-Red Time (s)	1.2	1.2			4.5	4.5	4.5	3.6	4.1	1.2	4.5
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0				
Total Lost Time (s)	4.8	4.8			7.5	7.5	7.5				
Lead/Lag	Lag	Lag						Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes						Yes	Yes	Yes	
Recall Mode	Max	Max			None	None	None	None	None	Max	None
Act Effct Green (s)	40.8	40.8	47.3	73.4	36.0	36.0	36.0				
Actuated g/C Ratio	0.28	0.28	0.33	0.51	0.25	0.25	0.25				
v/c Ratio	0.48	0.52	0.24	0.31	0.66	0.69	0.66				
Control Delay (s/veh)	44.1	6.5	36.3	2.3	57.7	27.9	26.0				
Queue Delay	0.0	0.0	0.0	0.0	2.6	1.8	0.0				
Total Delay (s/veh)	44.1	6.5	36.3	2.3	60.3	29.7	26.0				
LOS	D	A	D	A	E	C	C				
Approach Delay (s/veh)	34.1			10.8		36.9					
Approach LOS	C			B		D					

Intersection Summary

Cycle Length: 155
 Actuated Cycle Length: 143.8
 Natural Cycle: 155
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.83
 Intersection Signal Delay (s/veh): 27.6
 Intersection LOS: C
 Intersection Capacity Utilization 66.7%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 1: Peoria Ave & Loop 303 SB Ramp





Lane Group	EBT	EBR	WBL	WBT	SBL	SBT	SBR
Lane Group Flow (vph)	1024	371	271	816	278	363	355
v/c Ratio	0.48	0.52	0.24	0.31	0.66	0.69	0.66
Control Delay (s/veh)	44.1	6.5	36.3	2.3	57.7	27.9	26.0
Queue Delay	0.0	0.0	0.0	0.0	2.6	1.8	0.0
Total Delay (s/veh)	44.1	6.5	36.3	2.3	60.3	29.7	26.0
Queue Length 50th (ft)	207	0	76	12	251	147	130
Queue Length 95th (ft)	240	81	101	13	352	219	265
Internal Link Dist (ft)	672			342		1245	
Turn Bay Length (ft)		250	300		400		400
Base Capacity (vph)	2142	715	1962	3289	465	557	569
Starvation Cap Reductn	0	0	0	566	0	0	0
Spillback Cap Reductn	0	0	0	0	96	84	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.52	0.14	0.30	0.75	0.77	0.62

Intersection Summary

HCM 7th Edition methodology does not support clustered intersections.

2: Loop 303 NB Ramps & Peoria Ave

03/26/2025

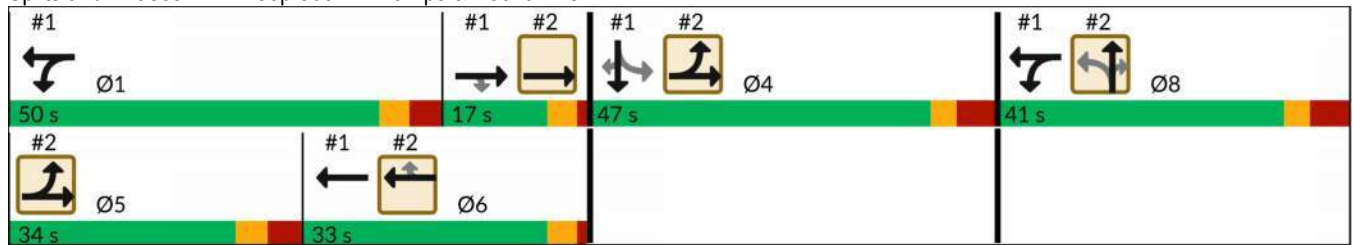


Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	Ø1	Ø2	Ø4	Ø5
Lane Configurations											
Traffic Volume (vph)	647	539	502	257	459	2	299				
Future Volume (vph)	647	539	502	257	459	2	299				
Turn Type	Prot	NA	NA	Perm	Perm	NA	Perm				
Protected Phases	4 5	2 4 5	6			8		1	2	4	5
Permitted Phases				6	8		8				
Detector Phase	4 5	2 4 5	6	6	8	8	8				
Switch Phase											
Minimum Initial (s)			15.0	15.0	12.0	12.0	12.0	8.0	15.0	12.0	8.0
Minimum Split (s)			65.0	65.0	30.0	30.0	30.0	50.0	45.0	30.0	30.0
Total Split (s)			33.0	33.0	41.0	41.0	41.0	50.0	17.0	47.0	34.0
Total Split (%)			21.3%	21.3%	26.5%	26.5%	26.5%	32%	11%	30%	22%
Yellow Time (s)			3.6	3.6	3.0	3.0	3.0	3.6	3.6	3.0	3.6
All-Red Time (s)			1.2	1.2	4.5	4.5	4.5	3.6	1.2	4.5	4.1
Lost Time Adjust (s)			0.0	0.0	0.0	0.0	0.0				
Total Lost Time (s)			4.8	4.8	7.5	7.5	7.5				
Lead/Lag			Lag	Lag				Lead	Lag		Lead
Lead-Lag Optimize?			Yes	Yes				Yes	Yes		Yes
Recall Mode			Max	Max	None	None	None	None	Max	None	None
Act Effct Green (s)	56.3	99.9	28.4	28.4	31.5	31.5	31.5				
Actuated g/C Ratio	0.39	0.69	0.20	0.20	0.22	0.22	0.22				
v/c Ratio	0.53	0.17	0.37	0.54	0.82	0.83	0.50				
Control Delay (s/veh)	32.3	0.4	52.3	9.4	72.9	73.0	8.7				
Queue Delay	0.1	0.0	0.0	0.0	0.0	0.0	0.0				
Total Delay (s/veh)	32.4	0.4	52.3	9.4	72.9	73.0	8.7				
LOS	C	A	D	A	E	E	A				
Approach Delay (s/veh)		17.9	37.2			52.9					
Approach LOS		B	D			D					

Intersection Summary

Cycle Length: 155
 Actuated Cycle Length: 143.8
 Natural Cycle: 155
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.83
 Intersection Signal Delay (s/veh): 33.3
 Intersection LOS: C
 Intersection Capacity Utilization 66.7%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 2: Loop 303 NB Ramps & Peoria Ave





Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	719	599	558	302	301	293	271
v/c Ratio	0.53	0.17	0.37	0.54	0.82	0.83	0.50
Control Delay (s/veh)	32.3	0.4	52.3	9.4	72.9	73.0	8.7
Queue Delay	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	32.4	0.4	52.3	9.4	72.9	73.0	8.7
Queue Length 50th (ft)	353	2	118	0	293	289	0
Queue Length 95th (ft)	366	2	152	63	#471	373	63
Internal Link Dist (ft)		342	321			840	
Turn Bay Length (ft)	300			265	410		410
Base Capacity (vph)	1589	3670	1492	555	395	377	560
Starvation Cap Reductn	201	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.16	0.37	0.54	0.76	0.78	0.48

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

HCM 7th Edition methodology does not support clustered intersections.

3: Sarival Ave & Peoria Ave

03/26/2025

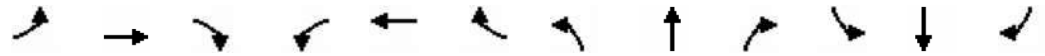


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Group Flow (vph)	148	543	202	244	490	174	109	106	45	213	233	
v/c Ratio	0.36	0.32	0.24	0.62	0.29	0.51	0.10	0.20	0.12	0.20	0.37	
Control Delay (s/veh)	10.4	7.7	2.1	16.7	7.3	22.0	14.2	5.3	15.6	14.3	4.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	10.4	7.7	2.1	16.7	7.3	22.0	14.2	5.3	15.6	14.3	4.8	
Queue Length 50th (ft)	18	34	0	35	30	31	8	0	7	18	0	
Queue Length 95th (ft)	63	90	21	117	78	113	33	28	33	58	38	
Internal Link Dist (ft)	1913			1167			1608			257		
Turn Bay Length (ft)	155			160			170			150	160	250
Base Capacity (vph)	830	3336	1504	788	3310	793	2438	1123	876	2438	1163	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.18	0.16	0.13	0.31	0.15	0.22	0.04	0.09	0.05	0.09	0.20	

Intersection Summary

3: Sarival Ave & Peoria Ave

03/26/2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↗↗	↗	↗	↗↗		↗	↗↗	↗	↗	↗↗	↗
Traffic Volume (veh/h)	126	489	172	207	418	21	148	93	90	36	181	198
Future Volume (veh/h)	126	489	172	207	418	21	148	93	90	36	181	198
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	148	543	202	244	464	26	174	109	106	45	213	233
Peak Hour Factor	0.85	0.90	0.85	0.85	0.90	0.80	0.85	0.85	0.85	0.80	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	556	1861	830	462	1792	100	380	1031	460	461	1031	460
Arrive On Green	0.52	0.52	0.52	0.52	0.52	0.52	0.29	0.29	0.29	0.29	0.29	0.29
Sat Flow, veh/h	906	3554	1585	715	3422	191	944	3554	1585	1166	3554	1585
Grp Volume(v), veh/h	148	543	202	244	240	250	174	109	106	45	213	233
Grp Sat Flow(s),veh/h/ln	906	1777	1585	715	1777	1836	944	1777	1585	1166	1777	1585
Q Serve(g_s), s	5.2	4.2	3.4	14.1	3.6	3.6	8.2	1.1	2.5	1.4	2.2	5.9
Cycle Q Clear(g_c), s	8.8	4.2	3.4	18.2	3.6	3.6	10.4	1.1	2.5	2.5	2.2	5.9
Prop In Lane	1.00		1.00	1.00		0.10	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	556	1861	830	462	931	962	380	1031	460	461	1031	460
V/C Ratio(X)	0.27	0.29	0.24	0.53	0.26	0.26	0.46	0.11	0.23	0.10	0.21	0.51
Avail Cap(c_a), veh/h	1085	3935	1755	880	1968	2033	644	2023	902	787	2023	902
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.8	6.5	6.3	11.6	6.3	6.3	16.9	12.6	13.1	13.5	13.0	14.3
Incr Delay (d2), s/veh	0.3	0.1	0.2	0.9	0.1	0.1	0.9	0.0	0.3	0.1	0.1	0.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.9	0.7	1.6	0.8	0.9	1.5	0.3	0.7	0.3	0.7	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	9.0	6.6	6.4	12.5	6.5	6.5	17.8	12.6	13.3	13.6	13.1	15.1
LnGrp LOS	A	A	A	B	A	A	B	B	B	B	B	B
Approach Vol, veh/h	893			734			389			491		
Approach Delay, s/veh	6.9			8.5			15.1			14.1		
Approach LOS	A			A			B			B		
Timer - Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	18.5		29.8		18.5		29.8					
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5					
Max Green Setting (Gmax), s	27.5		53.5		27.5		53.5					
Max Q Clear Time (g_c+I1), s	12.4		10.8		7.9		20.2					
Green Ext Time (p_c), s	1.6		5.4		2.0		5.1					
Intersection Summary												
HCM 7th Control Delay, s/veh				10.1								
HCM 7th LOS				B								

Intersection												
Int Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↵	↵		↵	↵		↵	↕		↵	↕	↵
Traffic Vol, veh/h	9	0	4	17	0	14	17	299	13	11	469	39
Future Vol, veh/h	9	0	4	17	0	14	17	299	13	11	469	39
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	150	-	-	150	-	150
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	92	80	80	92	80	80	85	80	80	90	80
Heavy Vehicles, %	34	34	34	2	2	2	6	2	2	2	2	6
Mvmt Flow	11	0	5	21	0	18	21	352	16	14	521	49

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	767	959	261	690	1000	184	570	0	0	368	0	0
Stage 1	549	549	-	402	402	-	-	-	-	-	-	-
Stage 2	218	411	-	288	597	-	-	-	-	-	-	-
Critical Hdwy	8.18	7.18	7.58	7.54	6.54	6.94	4.22	-	-	4.14	-	-
Critical Hdwy Stg 1	7.18	6.18	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	7.18	6.18	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.84	4.34	3.64	3.52	4.02	3.32	2.26	-	-	2.22	-	-
Pot Cap-1 Maneuver	240	207	650	331	242	827	972	-	-	1187	-	-
Stage 1	415	442	-	596	599	-	-	-	-	-	-	-
Stage 2	680	520	-	695	489	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	227	200	650	318	234	827	972	-	-	1187	-	-
Mov Cap-2 Maneuver	227	200	-	318	234	-	-	-	-	-	-	-
Stage 1	410	437	-	583	585	-	-	-	-	-	-	-
Stage 2	651	508	-	682	484	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	18.25		13.67		0.48		0.19	
HCM LOS	C		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	972	-	-	227	650	318	827	1187	-	-
HCM Lane V/C Ratio	0.022	-	-	0.049	0.008	0.067	0.021	0.012	-	-
HCM Ctrl Dly (s/v)	8.8	-	-	21.7	10.6	17.1	9.4	8.1	-	-
HCM Lane LOS	A	-	-	C	B	C	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0	0.2	0.1	0	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	164	308	267	18	189	19	172	224	20	458
v/c Ratio	0.42	0.26	0.38	0.05	0.16	0.04	0.56	0.30	0.04	0.61
Control Delay (s/veh)	15.2	10.8	3.9	11.1	10.4	6.1	17.3	9.0	7.8	11.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	15.2	10.8	3.9	11.1	10.4	6.1	17.3	9.0	7.8	11.0
Queue Length 50th (ft)	22	20	0	2	12	0	22	25	2	45
Queue Length 95th (ft)	81	60	34	14	40	9	81	75	11	137
Internal Link Dist (ft)		826			672			2330		284
Turn Bay Length (ft)	160		160	160		160	160		160	
Base Capacity (vph)	990	2974	1373	883	2974	1333	731	1789	1112	1659
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.10	0.19	0.02	0.06	0.01	0.24	0.13	0.02	0.28

Intersection Summary

5: Sarival Ave & Olive Ave

03/26/2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑	↗	↘	↗		↘	↗	
Traffic Volume (veh/h)	139	262	227	14	161	15	146	185	5	16	187	202
Future Volume (veh/h)	139	262	227	14	161	15	146	185	5	16	187	202
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	164	308	267	18	189	19	172	218	6	20	220	238
Peak Hour Factor	0.85	0.85	0.85	0.80	0.85	0.80	0.85	0.85	0.80	0.80	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	491	1060	473	382	1060	473	442	847	23	644	384	415
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.47	0.47	0.47	0.47	0.47	0.47
Sat Flow, veh/h	1174	3554	1585	838	3554	1585	934	1812	50	1157	822	889
Grp Volume(v), veh/h	164	308	267	18	189	19	172	0	224	20	0	458
Grp Sat Flow(s),veh/h/ln	1174	1777	1585	838	1777	1585	934	0	1861	1157	0	1710
Q Serve(g_s), s	4.6	2.6	5.5	0.6	1.5	0.3	6.3	0.0	2.8	0.4	0.0	7.5
Cycle Q Clear(g_c), s	6.1	2.6	5.5	3.2	1.5	0.3	13.8	0.0	2.8	3.2	0.0	7.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.03	1.00		0.52
Lane Grp Cap(c), veh/h	491	1060	473	382	1060	473	442	0	870	644	0	800
V/C Ratio(X)	0.33	0.29	0.56	0.05	0.18	0.04	0.39	0.00	0.26	0.03	0.00	0.57
Avail Cap(c_a), veh/h	1103	2912	1299	818	2912	1299	1208	0	2397	1593	0	2202
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.3	10.4	11.4	11.6	10.0	9.6	12.5	0.0	6.2	7.2	0.0	7.4
Incr Delay (d2), s/veh	0.4	0.2	1.1	0.1	0.1	0.0	0.6	0.0	0.2	0.0	0.0	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.7	1.4	0.1	0.4	0.1	1.0	0.0	0.6	0.1	0.0	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	12.7	10.5	12.4	11.6	10.1	9.6	13.0	0.0	6.4	7.2	0.0	8.1
LnGrp LOS	B	B	B	B	B	A	B		A	A		A
Approach Vol, veh/h		739			226			396				478
Approach Delay, s/veh		11.7			10.2			9.2				8.1
Approach LOS		B			B			A				A
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		22.5		16.0		22.5		16.0				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		49.5		31.5		49.5		31.5				
Max Q Clear Time (g_c+I1), s		15.8		8.1		9.5		5.2				
Green Ext Time (p_c), s		2.2		3.3		3.1		1.2				
Intersection Summary												
HCM 7th Control Delay, s/veh				10.0								
HCM 7th LOS				B								

6: Sarival Ave & Northern Pkwy WB Ramps

03/26/2025

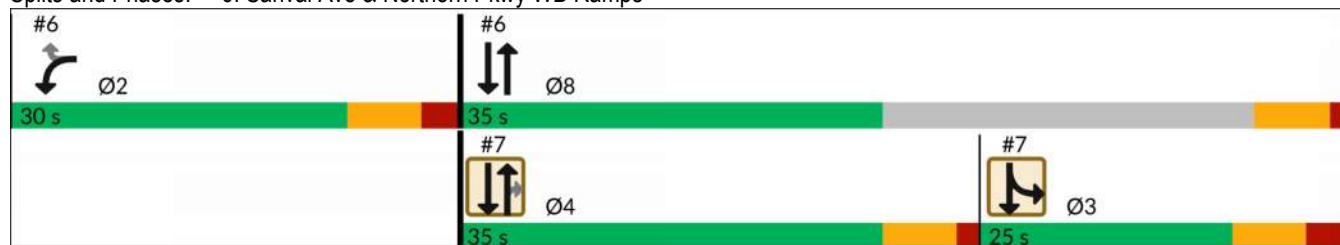


Lane Group	WBL	WBR	NBT	SBT	Ø3	Ø4
Lane Configurations	↙↘	↗	↑	↑↑↑		
Traffic Volume (vph)	112	302	71	417		
Future Volume (vph)	112	302	71	417		
Turn Type	Prot	Perm	NA	NA		
Protected Phases	2		8	8	3	4
Permitted Phases		2				
Detector Phase	2	2	8	8		
Switch Phase						
Minimum Initial (s)	20.0	20.0	20.0	20.0	5.0	20.0
Minimum Split (s)	30.0	30.0	35.0	35.0	25.0	35.0
Total Split (s)	30.0	30.0	35.0	35.0	25.0	35.0
Total Split (%)	33.3%	33.3%	38.9%	38.9%	28%	39%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.4	2.4	1.5	1.5	3.1	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		
Total Lost Time (s)	7.4	7.4	6.5	6.5		
Lead/Lag					Lag	Lead
Lead-Lag Optimize?					Yes	Yes
Recall Mode	None	None	Min	Min	None	Min
Act Effct Green (s)	20.0	20.0	43.1	43.1		
Actuated g/C Ratio	0.26	0.26	0.56	0.56		
v/c Ratio	0.15	0.51	0.08	0.16		
Control Delay (s/veh)	23.1	6.1	0.2	8.3		
Queue Delay	0.0	0.0	0.0	0.0		
Total Delay (s/veh)	23.1	6.1	0.2	8.3		
LOS	C	A	A	A		
Approach Delay (s/veh)	10.9		0.2	8.3		
Approach LOS	B		A	A		

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 77
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.59
 Intersection Signal Delay (s/veh): 8.8
 Intersection LOS: A
 Intersection Capacity Utilization 46.9%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 6: Sarival Ave & Northern Pkwy WB Ramps





Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	132	336	84	463
v/c Ratio	0.15	0.51	0.08	0.16
Control Delay (s/veh)	23.1	6.1	0.2	8.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	23.1	6.1	0.2	8.3
Queue Length 50th (ft)	25	0	0	36
Queue Length 95th (ft)	44	61	0	51
Internal Link Dist (ft)	493		420	2330
Turn Bay Length (ft)	420	420		
Base Capacity (vph)	1007	702	1294	3534
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.13	0.48	0.06	0.13
Intersection Summary				

HCM 7th Edition methodology does not support clustered intersections.

7: Sarival Ave & Northern Pkwy EB Ramps

03/26/2025

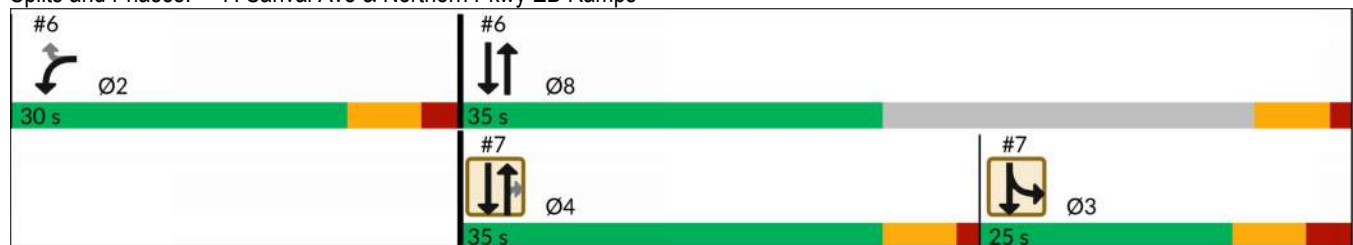


Lane Group	NBT	NBR	SBL	SBT	Ø2	Ø8
Lane Configurations	↑	↗	↖	↑↑		
Traffic Volume (vph)	71	149	357	170		
Future Volume (vph)	71	149	357	170		
Turn Type	NA	Perm	Prot	NA		
Protected Phases	4		3	3 4	2	8
Permitted Phases		4				
Detector Phase	4	4	3	3 4		
Switch Phase						
Minimum Initial (s)	20.0	20.0	5.0		20.0	20.0
Minimum Split (s)	35.0	35.0	25.0		30.0	35.0
Total Split (s)	35.0	35.0	25.0		30.0	35.0
Total Split (%)	38.9%	38.9%	27.8%		33%	39%
Yellow Time (s)	5.0	5.0	5.0		5.0	5.0
All-Red Time (s)	1.5	1.5	3.1		2.4	1.5
Lost Time Adjust (s)	0.0	0.0	0.0			
Total Lost Time (s)	6.5	6.5	8.1			
Lead/Lag	Lead	Lead	Lag			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	Min	Min	None		None	Min
Act Effect Green (s)	20.0	20.0	15.0	41.5		
Actuated g/C Ratio	0.26	0.26	0.19	0.54		
v/c Ratio	0.18	0.32	0.59	0.10		
Control Delay (s/veh)	24.1	6.0	30.3	6.8		
Queue Delay	0.0	0.0	0.0	0.0		
Total Delay (s/veh)	24.1	6.0	30.3	6.8		
LOS	C	A	C	A		
Approach Delay (s/veh)	12.1			22.4		
Approach LOS	B			C		

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 77
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.59
 Intersection Signal Delay (s/veh): 19.2
 Intersection LOS: B
 Intersection Capacity Utilization 46.9%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 7: Sarival Ave & Northern Pkwy EB Ramps



7: Sarival Ave & Northern Pkwy EB Ramps

03/26/2025



Lane Group	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	89	175	397	200
v/c Ratio	0.18	0.32	0.59	0.10
Control Delay (s/veh)	24.1	6.0	30.3	6.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	24.1	6.0	30.3	6.8
Queue Length 50th (ft)	34	0	94	16
Queue Length 95th (ft)	62	39	139	25
Internal Link Dist (ft)	1002			420
Turn Bay Length (ft)		285	430	
Base Capacity (vph)	689	696	753	1995
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.13	0.25	0.53	0.10
Intersection Summary				

HCM 7th Edition methodology does not support clustered intersections.

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↙	↗	↙	↑	↑↑	↗
Traffic Vol, veh/h	11	5	19	310	444	45
Future Vol, veh/h	11	5	19	310	444	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	150	-	-	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	90	90	80
Heavy Vehicles, %	34	34	6	2	2	6
Mvmt Flow	14	6	24	344	493	56

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	885	247	550	0	-	0
Stage 1	493	-	-	-	-	-
Stage 2	392	-	-	-	-	-
Critical Hdwy	7.11	7.41	4.19	-	-	-
Critical Hdwy Stg 1	6.31	-	-	-	-	-
Critical Hdwy Stg 2	5.91	-	-	-	-	-
Follow-up Hdwy	3.823	3.623	2.257	-	-	-
Pot Cap-1 Maneuver	253	675	995	-	-	-
Stage 1	510	-	-	-	-	-
Stage 2	605	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	247	675	995	-	-	-
Mov Cap-2 Maneuver	360	-	-	-	-	-
Stage 1	497	-	-	-	-	-
Stage 2	605	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	13.83	0.56	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	995	-	360	675	-	-
HCM Lane V/C Ratio	0.024	-	0.038	0.009	-	-
HCM Ctrl Dly (s/v)	8.7	-	15.4	10.4	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	0	-	-

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↙	↗		↖	↗	↗
Traffic Vol, veh/h	11	5	19	319	403	45
Future Vol, veh/h	11	5	19	319	403	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	90	90	80
Heavy Vehicles, %	34	34	6	2	2	6
Mvmt Flow	14	6	24	354	448	56

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	850	448	504	0	-	0
Stage 1	448	-	-	-	-	-
Stage 2	402	-	-	-	-	-
Critical Hdwy	6.74	6.54	4.16	-	-	-
Critical Hdwy Stg 1	5.74	-	-	-	-	-
Critical Hdwy Stg 2	5.74	-	-	-	-	-
Follow-up Hdwy	3.806	3.606	2.254	-	-	-
Pot Cap-1 Maneuver	292	549	1040	-	-	-
Stage 1	581	-	-	-	-	-
Stage 2	612	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	284	549	1040	-	-	-
Mov Cap-2 Maneuver	397	-	-	-	-	-
Stage 1	565	-	-	-	-	-
Stage 2	612	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	13.53	0.54	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	113	-	397	549	-	-
HCM Lane V/C Ratio	0.023	-	0.035	0.011	-	-
HCM Ctrl Dly (s/v)	8.5	0	14.4	11.6	-	-
HCM Lane LOS	A	A	B	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	0	-	-

1: Peoria Ave & Loop 303 SB Ramp

03/26/2025

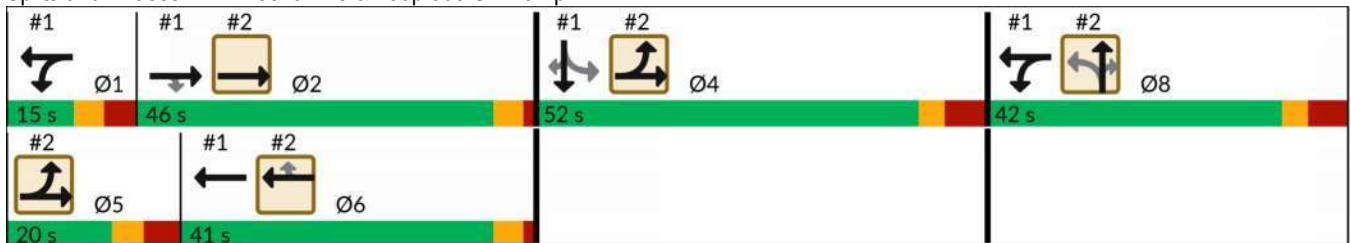


Lane Group	EBT	EBR	WBL	WBT	SBL	SBT	SBR	Ø1	Ø5	Ø6	Ø8
Lane Configurations	↑↑↑↑	↗	↖↗	↑↑↑	↘	↕	↗				
Traffic Volume (vph)	1267	510	347	786	332	4	410				
Future Volume (vph)	1267	510	347	786	332	4	410				
Turn Type	NA	Perm	Prot	NA	Perm	NA	Perm				
Protected Phases	2		18	16 8		4		1	5	6	8
Permitted Phases		2			4		4				
Detector Phase	2	2	18	16 8	4	4	4				
Switch Phase											
Minimum Initial (s)	15.0	15.0			12.0	12.0	12.0	8.0	8.0	15.0	12.0
Minimum Split (s)	45.0	45.0			30.0	30.0	30.0	50.0	30.0	65.0	30.0
Total Split (s)	46.0	46.0			52.0	52.0	52.0	15.0	20.0	41.0	42.0
Total Split (%)	29.7%	29.7%			33.5%	33.5%	33.5%	10%	13%	26%	27%
Yellow Time (s)	3.6	3.6			3.0	3.0	3.0	3.6	3.6	3.6	3.0
All-Red Time (s)	1.2	1.2			4.5	4.5	4.5	3.6	4.1	1.2	4.5
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0				
Total Lost Time (s)	4.8	4.8			7.5	7.5	7.5				
Lead/Lag	Lag	Lag						Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes						Yes	Yes	Yes	
Recall Mode	Max	Max			None	None	None	None	None	Max	None
Act Effect Green (s)	41.4	41.4	48.0	81.9	41.5	41.5	41.5				
Actuated g/C Ratio	0.28	0.28	0.32	0.54	0.28	0.28	0.28				
v/c Ratio	0.68	0.67	0.35	0.32	0.62	0.60	0.52				
Control Delay (s/veh)	51.3	7.7	58.1	3.0	54.4	40.2	26.7				
Queue Delay	3.5	0.0	0.0	0.1	5.3	3.8	0.0				
Total Delay (s/veh)	54.7	7.7	58.1	3.0	59.6	43.9	26.7				
LOS	D	A	E	A	E	D	C				
Approach Delay (s/veh)	41.2			19.9		43.9					
Approach LOS	D			B		D					

Intersection Summary

Cycle Length: 155	
Actuated Cycle Length: 150.4	
Natural Cycle: 155	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.79	
Intersection Signal Delay (s/veh): 35.2	Intersection LOS: D
Intersection Capacity Utilization 78.9%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: Peoria Ave & Loop 303 SB Ramp





Lane Group	EBT	EBR	WBL	WBT	SBL	SBT	SBR
Lane Group Flow (vph)	1408	567	386	873	288	278	264
v/c Ratio	0.68	0.67	0.35	0.32	0.62	0.60	0.52
Control Delay (s/veh)	51.3	7.7	58.1	3.0	54.4	40.2	26.7
Queue Delay	3.5	0.0	0.0	0.1	5.3	3.8	0.0
Total Delay (s/veh)	54.7	7.7	58.1	3.0	59.6	43.9	26.7
Queue Length 50th (ft)	320	0	153	17	265	196	117
Queue Length 95th (ft)	356	108	201	19	375	256	217
Internal Link Dist (ft)	672			342		1245	
Turn Bay Length (ft)		250	300		400		400
Base Capacity (vph)	2075	846	1094	2769	499	496	537
Starvation Cap Reductn	0	0	0	599	0	0	0
Spillback Cap Reductn	556	0	0	0	150	140	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.67	0.35	0.40	0.83	0.78	0.49

Intersection Summary

HCM 7th Edition methodology does not support clustered intersections.

2: Loop 303 NB Ramps & Peoria Ave

03/26/2025

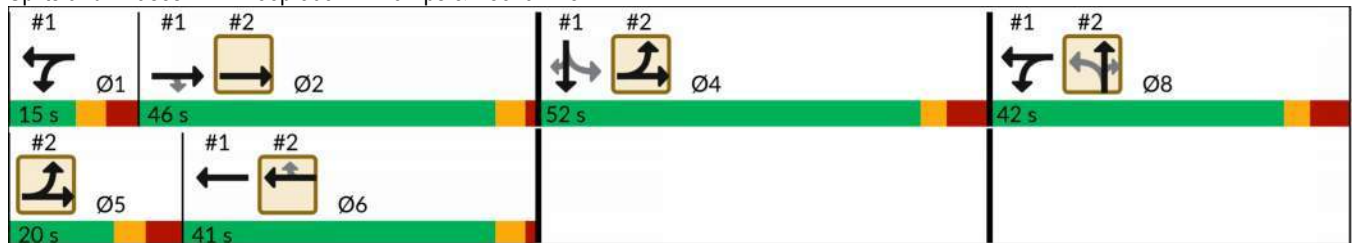


Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	Ø1	Ø2	Ø4	Ø5
Lane Configurations											
Traffic Volume (vph)	814	781	779	409	351	0	403				
Future Volume (vph)	814	781	779	409	351	0	403				
Turn Type	Prot	NA	NA	Perm	Perm	NA	Perm				
Protected Phases	4 5	2 4 5	6			8		1	2	4	5
Permitted Phases				6	8		8				
Detector Phase	4 5	2 4 5	6	6	8	8	8				
Switch Phase											
Minimum Initial (s)			15.0	15.0	12.0	12.0	12.0	8.0	15.0	12.0	8.0
Minimum Split (s)			65.0	65.0	30.0	30.0	30.0	50.0	45.0	30.0	30.0
Total Split (s)			41.0	41.0	42.0	42.0	42.0	15.0	46.0	52.0	20.0
Total Split (%)			26.5%	26.5%	27.1%	27.1%	27.1%	10%	30%	34%	13%
Yellow Time (s)			3.6	3.6	3.0	3.0	3.0	3.6	3.6	3.0	3.6
All-Red Time (s)			1.2	1.2	4.5	4.5	4.5	3.6	1.2	4.5	4.1
Lost Time Adjust (s)			0.0	0.0	0.0	0.0	0.0				
Total Lost Time (s)			4.8	4.8	7.5	7.5	7.5				
Lead/Lag			Lag	Lag				Lead	Lag		Lead
Lead-Lag Optimize?			Yes	Yes				Yes	Yes		Yes
Recall Mode			Max	Max	None	None	None	None	Max	None	None
Act Effct Green (s)	54.0	105.5	36.4	36.4	32.6	32.6	32.6				
Actuated g/C Ratio	0.36	0.70	0.24	0.24	0.22	0.22	0.22				
v/c Ratio	0.73	0.24	0.48	0.63	0.79	0.67	0.54				
Control Delay (s/veh)	40.1	0.4	50.6	8.2	72.8	40.1	16.5				
Queue Delay	2.3	0.1	0.0	0.0	0.0	0.0	0.0				
Total Delay (s/veh)	42.4	0.5	50.6	8.2	72.8	40.1	16.5				
LOS	D	A	D	A	E	D	B				
Approach Delay (s/veh)		21.9	36.0			43.8					
Approach LOS		C	D			D					

Intersection Summary

Cycle Length: 155
 Actuated Cycle Length: 150.4
 Natural Cycle: 155
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.79
 Intersection Signal Delay (s/veh): 31.3
 Intersection LOS: C
 Intersection Capacity Utilization 78.9%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 2: Loop 303 NB Ramps & Peoria Ave





Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	904	868	866	454	289	280	269
v/c Ratio	0.73	0.24	0.48	0.63	0.79	0.67	0.54
Control Delay (s/veh)	40.1	0.4	50.6	8.2	72.8	40.1	16.5
Queue Delay	2.3	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	42.4	0.5	50.6	8.2	72.8	40.1	16.5
Queue Length 50th (ft)	488	2	189	0	292	169	47
Queue Length 95th (ft)	559	2	220	101	#430	232	146
Internal Link Dist (ft)		342	321			840	
Turn Bay Length (ft)	300			265	410		410
Base Capacity (vph)	1306	3673	1823	726	387	436	511
Starvation Cap Reductn	265	1537	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.41	0.48	0.63	0.75	0.64	0.53

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

HCM 7th Edition methodology does not support clustered intersections.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	368	829	140	133	707	342	245	91	34	224	282
v/c Ratio	0.77	0.59	0.19	0.40	0.81	0.76	0.24	0.15	0.13	0.46	0.61
Control Delay (s/veh)	28.4	22.1	2.1	15.5	36.9	34.0	24.2	0.6	19.6	34.9	10.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	28.4	22.1	2.1	15.5	36.9	34.0	24.2	0.6	19.6	34.9	10.5
Queue Length 50th (ft)	115	172	0	31	174	141	55	0	12	56	0
Queue Length 95th (ft)	#266	261	15	62	#278	#208	81	0	27	85	53
Internal Link Dist (ft)		1913			1167		1608			257	
Turn Bay Length (ft)	155			160		170		150	160		250
Base Capacity (vph)	521	1443	753	357	965	450	1200	657	269	850	594
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.57	0.19	0.37	0.73	0.76	0.20	0.14	0.13	0.26	0.47

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

3: Sarival Ave & Peoria Ave

03/26/2025



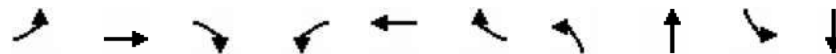
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑		↘	↑↑	↗	↘	↑↑	↗
Traffic Volume (veh/h)	331	746	119	113	604	29	291	208	73	27	190	240
Future Volume (veh/h)	331	746	119	113	604	29	291	208	73	27	190	240
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	368	829	140	133	671	36	342	245	91	34	224	282
Peak Hour Factor	0.90	0.90	0.85	0.85	0.90	0.80	0.85	0.85	0.80	0.80	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	442	1184	528	304	795	43	509	1177	525	364	730	326
Arrive On Green	0.18	0.33	0.33	0.08	0.23	0.23	0.16	0.33	0.33	0.03	0.21	0.21
Sat Flow, veh/h	1781	3554	1585	1781	3430	184	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	368	829	140	133	347	360	342	245	91	34	224	282
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1837	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	11.8	16.2	5.2	4.5	14.9	15.0	11.6	4.0	3.3	1.2	4.3	13.8
Cycle Q Clear(g_c), s	11.8	16.2	5.2	4.5	14.9	15.0	11.6	4.0	3.3	1.2	4.3	13.8
Prop In Lane	1.00		1.00	1.00		0.10	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	442	1184	528	304	412	426	509	1177	525	364	730	326
V/C Ratio(X)	0.83	0.70	0.27	0.44	0.84	0.84	0.67	0.21	0.17	0.09	0.31	0.87
Avail Cap(c_a), veh/h	553	1399	624	368	473	489	509	1177	525	416	831	371
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.5	23.2	19.5	21.2	29.3	29.4	18.9	19.2	19.0	23.6	26.9	30.7
Incr Delay (d2), s/veh	8.7	1.3	0.3	1.0	11.8	11.5	3.5	0.1	0.2	0.1	0.2	17.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.2	6.3	1.8	1.8	7.2	7.4	4.7	1.5	1.1	0.5	1.7	6.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	27.2	24.5	19.8	22.2	41.1	40.9	22.3	19.3	19.1	23.7	27.2	48.0
LnGrp LOS	C	C	B	C	D	D	C	B	B	C	C	D
Approach Vol, veh/h		1337			840			678			540	
Approach Delay, s/veh		24.7			38.0			20.8			37.8	
Approach LOS		C			D			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.2	31.0	10.7	31.2	17.2	20.9	18.8	23.0				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	26.4	9.1	31.5	12.7	18.7	19.3	21.3				
Max Q Clear Time (g_c+I1), s	3.2	6.0	6.5	18.2	13.6	15.8	13.8	17.0				
Green Ext Time (p_c), s	0.0	1.6	0.1	4.7	0.0	0.7	0.6	1.6				
Intersection Summary												
HCM 7th Control Delay, s/veh			29.3									
HCM 7th LOS			C									

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷		↶	↷		↶	↷	↶
Traffic Vol, veh/h	38	0	16	6	0	7	5	482	10	18	401	11
Future Vol, veh/h	38	0	16	6	0	7	5	482	10	18	401	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	150	-	-	150	-	150
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	92	80	80	92	80	80	90	80	80	90	80
Heavy Vehicles, %	9	9	9	2	2	2	20	2	2	2	2	20
Mvmt Flow	48	0	20	8	0	9	6	536	13	23	446	14

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	771	1051	223	822	1059	274	459	0	0	548	0	0
Stage 1	491	491	-	554	554	-	-	-	-	-	-	-
Stage 2	280	561	-	268	504	-	-	-	-	-	-	-
Critical Hdwy	7.68	6.68	7.08	7.54	6.54	6.94	4.5	-	-	4.14	-	-
Critical Hdwy Stg 1	6.68	5.68	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.68	5.68	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.59	4.09	3.39	3.52	4.02	3.32	2.4	-	-	2.22	-	-
Pot Cap-1 Maneuver	278	214	760	266	223	724	981	-	-	1018	-	-
Stage 1	510	529	-	484	512	-	-	-	-	-	-	-
Stage 2	683	491	-	715	539	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	266	208	760	252	217	724	981	-	-	1018	-	-
Mov Cap-2 Maneuver	266	208	-	252	217	-	-	-	-	-	-	-
Stage 1	499	518	-	481	509	-	-	-	-	-	-	-
Stage 2	671	488	-	680	527	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	18	14.52	0.1	0.4
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	981	-	-	266	760	252	724	1018	-	-
HCM Lane V/C Ratio	0.006	-	-	0.178	0.026	0.03	0.012	0.022	-	-
HCM Ctrl Dly (s/v)	8.7	-	-	21.4	9.9	19.7	10	8.6	-	-
HCM Lane LOS	A	-	-	C	A	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.6	0.1	0.1	0	0.1	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	93	160	105	19	304	58	249	353	33	469
v/c Ratio	0.33	0.17	0.21	0.06	0.32	0.12	0.64	0.39	0.07	0.53
Control Delay (s/veh)	18.6	14.2	5.6	15.3	14.8	6.3	16.4	7.8	6.0	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	18.6	14.2	5.6	15.3	14.8	6.3	16.4	7.8	6.0	9.0
Queue Length 50th (ft)	15	13	0	3	25	0	31	37	3	50
Queue Length 95th (ft)	58	44	28	18	76	19	106	109	14	147
Internal Link Dist (ft)		826			672			2330		284
Turn Bay Length (ft)	160		160	160		160	160		160	
Base Capacity (vph)	851	2853	1296	978	2853	1287	761	1755	954	1697
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.06	0.08	0.02	0.11	0.05	0.33	0.20	0.03	0.28

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑	↗	↘	↗		↘	↗	
Traffic Volume (veh/h)	74	136	89	15	258	46	212	303	13	26	309	107
Future Volume (veh/h)	74	136	89	15	258	46	212	303	13	26	309	107
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	92	160	105	19	304	58	249	337	16	32	343	126
Peak Hour Factor	0.80	0.85	0.85	0.80	0.85	0.80	0.85	0.90	0.80	0.80	0.90	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	353	860	384	408	860	384	520	948	45	616	698	257
Arrive On Green	0.24	0.24	0.24	0.24	0.24	0.24	0.54	0.54	0.54	0.54	0.54	0.54
Sat Flow, veh/h	1020	3554	1585	1114	3554	1585	924	1771	84	1028	1305	479
Grp Volume(v), veh/h	92	160	105	19	304	58	249	0	353	32	0	469
Grp Sat Flow(s),veh/h/ln	1020	1777	1585	1114	1777	1585	924	0	1855	1028	0	1784
Q Serve(g_s), s	3.3	1.4	2.2	0.6	2.9	1.2	9.4	0.0	4.4	0.7	0.0	6.7
Cycle Q Clear(g_c), s	6.2	1.4	2.2	2.0	2.9	1.2	16.1	0.0	4.4	5.2	0.0	6.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.05	1.00		0.27
Lane Grp Cap(c), veh/h	353	860	384	408	860	384	520	0	993	616	0	955
V/C Ratio(X)	0.26	0.19	0.27	0.05	0.35	0.15	0.48	0.00	0.36	0.05	0.00	0.49
Avail Cap(c_a), veh/h	901	2770	1236	1007	2770	1236	1157	0	2273	1325	0	2186
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.3	12.2	12.4	12.9	12.7	12.0	11.0	0.0	5.4	6.9	0.0	5.9
Incr Delay (d2), s/veh	0.4	0.1	0.4	0.0	0.2	0.2	0.7	0.0	0.2	0.0	0.0	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.4	0.6	0.1	0.8	0.3	1.3	0.0	0.8	0.1	0.0	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	15.6	12.3	12.8	13.0	12.9	12.2	11.7	0.0	5.6	6.9	0.0	6.3
LnGrp LOS	B	B	B	B	B	B	B		A	A		A
Approach Vol, veh/h		357			381			602				501
Approach Delay, s/veh		13.3			12.8			8.1				6.4
Approach LOS		B			B			A				A
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		26.1		14.3		26.1		14.3				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		49.5		31.5		49.5		31.5				
Max Q Clear Time (g_c+I1), s		18.1		8.2		8.7		4.9				
Green Ext Time (p_c), s		3.5		1.6		3.2		2.0				
Intersection Summary												
HCM 7th Control Delay, s/veh			9.6									
HCM 7th LOS			A									

6: Sarival Ave & Northern Pkwy WB Ramps

03/26/2025

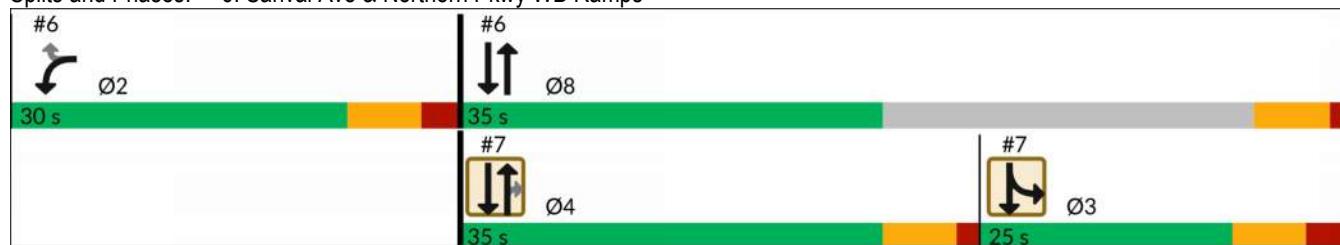


Lane Group	WBL	WBR	NBT	SBT	Ø3	Ø4
Lane Configurations	↖↗	↗	↑	↑↑↑		
Traffic Volume (vph)	132	404	132	509		
Future Volume (vph)	132	404	132	509		
Turn Type	Prot	Perm	NA	NA		
Protected Phases	2		8	8	3	4
Permitted Phases		2				
Detector Phase	2	2	8	8		
Switch Phase						
Minimum Initial (s)	20.0	20.0	20.0	20.0	5.0	20.0
Minimum Split (s)	30.0	30.0	35.0	35.0	25.0	35.0
Total Split (s)	30.0	30.0	35.0	35.0	25.0	35.0
Total Split (%)	33.3%	33.3%	38.9%	38.9%	28%	39%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.4	2.4	1.5	1.5	3.1	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		
Total Lost Time (s)	7.4	7.4	6.5	6.5		
Lead/Lag					Lag	Lead
Lead-Lag Optimize?					Yes	Yes
Recall Mode	None	None	Min	Min	None	Min
Act Effct Green (s)	20.0	20.0	43.5	43.5		
Actuated g/C Ratio	0.26	0.26	0.56	0.56		
v/c Ratio	0.17	0.61	0.15	0.20		
Control Delay (s/veh)	23.7	6.7	0.3	8.5		
Queue Delay	0.0	0.0	0.0	0.0		
Total Delay (s/veh)	23.7	6.7	0.3	8.5		
LOS	C	A	A	A		
Approach Delay (s/veh)	11.0		0.3	8.5		
Approach LOS	B		A	A		

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 77.5
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.61
 Intersection Signal Delay (s/veh): 8.7
 Intersection LOS: A
 Intersection Capacity Utilization 53.3%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 6: Sarival Ave & Northern Pkwy WB Ramps



6: Sarival Ave & Northern Pkwy WB Ramps

03/26/2025



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	155	449	155	566
v/c Ratio	0.17	0.61	0.15	0.20
Control Delay (s/veh)	23.7	6.7	0.3	8.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	23.7	6.7	0.3	8.5
Queue Length 50th (ft)	30	0	0	45
Queue Length 95th (ft)	52	73	0	61
Internal Link Dist (ft)	493		420	2330
Turn Bay Length (ft)	420	420		
Base Capacity (vph)	1002	780	1288	3516
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.15	0.58	0.12	0.16

Intersection Summary

HCM 7th Edition methodology does not support clustered intersections.

7: Sarival Ave & Northern Pkwy EB Ramps

03/26/2025

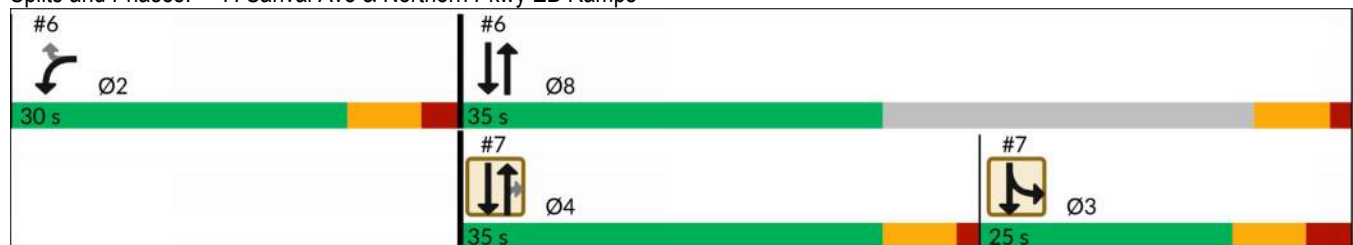


Lane Group	NBT	NBR	SBL	SBT	Ø2	Ø8
Lane Configurations	↑	↗	↖	↑↑		
Traffic Volume (vph)	133	194	340	303		
Future Volume (vph)	133	194	340	303		
Turn Type	NA	Perm	Prot	NA		
Protected Phases	4		3	3 4	2	8
Permitted Phases		4				
Detector Phase	4	4	3	3 4		
Switch Phase						
Minimum Initial (s)	20.0	20.0	5.0		20.0	20.0
Minimum Split (s)	35.0	35.0	25.0		30.0	35.0
Total Split (s)	35.0	35.0	25.0		30.0	35.0
Total Split (%)	38.9%	38.9%	27.8%		33%	39%
Yellow Time (s)	5.0	5.0	5.0		5.0	5.0
All-Red Time (s)	1.5	1.5	3.1		2.4	1.5
Lost Time Adjust (s)	0.0	0.0	0.0			
Total Lost Time (s)	6.5	6.5	8.1			
Lead/Lag	Lead	Lead	Lag			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	Min	Min	None		None	Min
Act Effct Green (s)	20.5	20.5	14.9	41.9		
Actuated g/C Ratio	0.26	0.26	0.19	0.54		
v/c Ratio	0.32	0.39	0.57	0.18		
Control Delay (s/veh)	25.5	5.7	29.9	6.8		
Queue Delay	0.0	0.0	0.0	0.0		
Total Delay (s/veh)	25.5	5.7	29.9	6.8		
LOS	C	A	C	A		
Approach Delay (s/veh)	13.8			19.0		
Approach LOS	B			B		

Intersection Summary

Cycle Length: 90	
Actuated Cycle Length: 77.5	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.61	
Intersection Signal Delay (s/veh): 17.2	Intersection LOS: B
Intersection Capacity Utilization 53.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 7: Sarival Ave & Northern Pkwy EB Ramps



7: Sarival Ave & Northern Pkwy EB Ramps

03/26/2025



Lane Group	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	156	228	378	337
v/c Ratio	0.32	0.39	0.57	0.18
Control Delay (s/veh)	25.5	5.7	29.9	6.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	25.5	5.7	29.9	6.8
Queue Length 50th (ft)	62	0	90	27
Queue Length 95th (ft)	106	42	137	41
Internal Link Dist (ft)	1002			420
Turn Bay Length (ft)		285	430	
Base Capacity (vph)	686	727	749	1988
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.23	0.31	0.50	0.17
Intersection Summary				

HCM 7th Edition methodology does not support clustered intersections.

Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↙	↗	↙	↑	↑↑	↗
Traffic Vol, veh/h	44	19	6	455	409	13
Future Vol, veh/h	44	19	6	455	409	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	150	-	-	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	90	90	80
Heavy Vehicles, %	9	9	20	2	2	20
Mvmt Flow	55	24	8	506	454	16

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	975	227	471	0	-	0
Stage 1	454	-	-	-	-	-
Stage 2	521	-	-	-	-	-
Critical Hdwy	6.735	7.035	4.4	-	-	-
Critical Hdwy Stg 1	5.935	-	-	-	-	-
Critical Hdwy Stg 2	5.535	-	-	-	-	-
Follow-up Hdwy	3.5855	3.3855	2.39	-	-	-
Pot Cap-1 Maneuver	253	758	987	-	-	-
Stage 1	590	-	-	-	-	-
Stage 2	578	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	251	758	987	-	-	-
Mov Cap-2 Maneuver	380	-	-	-	-	-
Stage 1	586	-	-	-	-	-
Stage 2	578	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	14.21	0.13	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	987	-	380	758	-	-
HCM Lane V/C Ratio	0.008	-	0.145	0.031	-	-
HCM Ctrl Dly (s/v)	8.7	-	16.1	9.9	-	-
HCM Lane LOS	A	-	C	A	-	-
HCM 95th %tile Q(veh)	0	-	0.5	0.1	-	-

Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↙	↗		↖	↗	↗
Traffic Vol, veh/h	44	19	6	417	415	13
Future Vol, veh/h	44	19	6	417	415	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	90	90	80
Heavy Vehicles, %	9	9	20	2	2	20
Mvmt Flow	55	24	8	463	461	16

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	939	461	477	0	-	0
Stage 1	461	-	-	-	-	-
Stage 2	478	-	-	-	-	-
Critical Hdwy	6.49	6.29	4.3	-	-	-
Critical Hdwy Stg 1	5.49	-	-	-	-	-
Critical Hdwy Stg 2	5.49	-	-	-	-	-
Follow-up Hdwy	3.581	3.381	2.38	-	-	-
Pot Cap-1 Maneuver	284	586	997	-	-	-
Stage 1	620	-	-	-	-	-
Stage 2	609	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	282	586	997	-	-	-
Mov Cap-2 Maneuver	408	-	-	-	-	-
Stage 1	614	-	-	-	-	-
Stage 2	609	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	14.06	0.14	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	29	-	408	586	-	-
HCM Lane V/C Ratio	0.008	-	0.135	0.041	-	-
HCM Ctrl Dly (s/v)	8.6	0	15.2	11.4	-	-
HCM Lane LOS	A	A	C	B	-	-
HCM 95th %tile Q(veh)	0	-	0.5	0.1	-	-

Appendix I – Year 2035 No Build Capacity Analysis

1: Peoria Ave & Loop 303 SB Ramp

03/26/2025

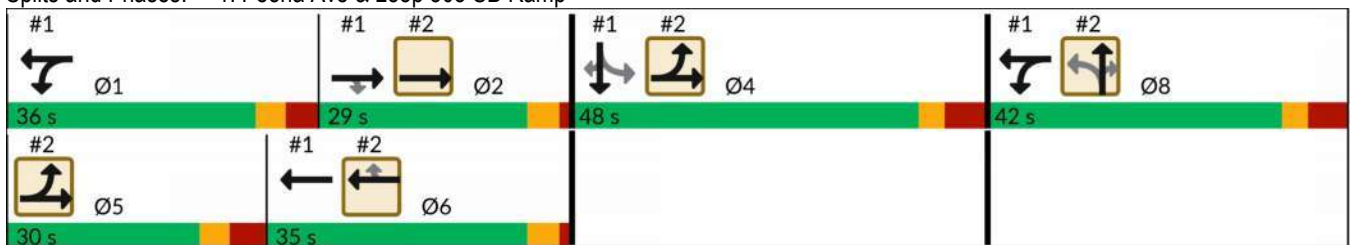


Lane Group	EBT	EBR	WBL	WBT	SBL	SBT	SBR	Ø1	Ø5	Ø6	Ø8
Lane Configurations	↑↑↑↑	↑	↔↔	↑↑↑	↔	↔	↑				
Traffic Volume (vph)	1026	372	246	772	237	4	657				
Future Volume (vph)	1026	372	246	772	237	4	657				
Turn Type	NA	Perm	Prot	NA	Perm	NA	Perm				
Protected Phases	2		18	16 8		4		1	5	6	8
Permitted Phases		2			4		4				
Detector Phase	2	2	18	16 8	4	4	4				
Switch Phase											
Minimum Initial (s)	15.0	15.0			12.0	12.0	12.0	8.0	8.0	15.0	12.0
Minimum Split (s)	45.0	45.0			30.0	30.0	30.0	50.0	30.0	65.0	30.0
Total Split (s)	29.0	29.0			48.0	48.0	48.0	36.0	30.0	35.0	42.0
Total Split (%)	18.7%	18.7%			31.0%	31.0%	31.0%	23%	19%	23%	27%
Yellow Time (s)	3.6	3.6			3.0	3.0	3.0	3.6	3.6	3.6	3.0
All-Red Time (s)	1.2	1.2			4.5	4.5	4.5	3.6	4.1	1.2	4.5
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0				
Total Lost Time (s)	4.8	4.8			7.5	7.5	7.5				
Lead/Lag	Lag	Lag						Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes						Yes	Yes	Yes	
Recall Mode	Max	Max			None	None	None	None	None	Max	None
Act Effct Green (s)	43.1	43.1	48.9	76.9	36.7	36.7	36.7				
Actuated g/C Ratio	0.29	0.29	0.33	0.52	0.25	0.25	0.25				
v/c Ratio	0.52	0.55	0.26	0.33	0.60	0.77	0.74				
Control Delay (s/veh)	45.7	6.7	37.5	2.2	56.6	37.2	35.4				
Queue Delay	0.3	0.0	0.0	0.0	5.4	18.0	0.0				
Total Delay (s/veh)	46.0	6.7	37.5	2.3	61.9	55.2	35.4				
LOS	D	A	D	A	E	E	D				
Approach Delay (s/veh)	35.6			11.1		49.5					
Approach LOS	D			B		D					

Intersection Summary

Cycle Length: 155
 Actuated Cycle Length: 148.3
 Natural Cycle: 155
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.85
 Intersection Signal Delay (s/veh): 31.8
 Intersection LOS: C
 Intersection Capacity Utilization 71.0%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 1: Peoria Ave & Loop 303 SB Ramp





Lane Group	EBT	EBR	WBL	WBT	SBL	SBT	SBR
Lane Group Flow (vph)	1140	413	289	858	251	383	380
v/c Ratio	0.52	0.55	0.26	0.33	0.60	0.77	0.74
Control Delay (s/veh)	45.7	6.7	37.5	2.2	56.6	37.2	35.4
Queue Delay	0.3	0.0	0.0	0.0	5.4	18.0	0.0
Total Delay (s/veh)	46.0	6.7	37.5	2.3	61.9	55.2	35.4
Queue Length 50th (ft)	239	0	84	12	233	209	194
Queue Length 95th (ft)	277	88	105	13	313	274	333
Internal Link Dist (ft)	672			342		1245	
Turn Bay Length (ft)		250	300		400		400
Base Capacity (vph)	2191	752	1602	3295	462	535	548
Starvation Cap Reductn	0	0	0	574	0	0	0
Spillback Cap Reductn	428	0	0	0	151	144	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.65	0.55	0.18	0.32	0.81	0.98	0.69

Intersection Summary

HCM 7th Edition methodology does not support clustered intersections.

2: Loop 303 NB Ramps & Peoria Ave

03/26/2025

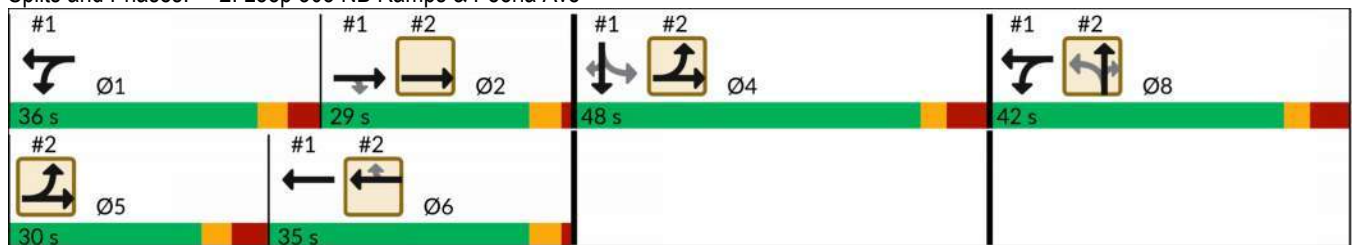


Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	Ø1	Ø2	Ø4	Ø5
Lane Configurations											
Traffic Volume (vph)	739	523	530	277	485	3	274				
Future Volume (vph)	739	523	530	277	485	3	274				
Turn Type	Prot	NA	NA	Perm	Perm	NA	Perm				
Protected Phases	4 5	2 4 5	6			8		1	2	4	5
Permitted Phases				6	8		8				
Detector Phase	4 5	2 4 5	6	6	8	8	8				
Switch Phase											
Minimum Initial (s)			15.0	15.0	12.0	12.0	12.0	8.0	15.0	12.0	8.0
Minimum Split (s)			65.0	65.0	30.0	30.0	30.0	50.0	45.0	30.0	30.0
Total Split (s)			35.0	35.0	42.0	42.0	42.0	36.0	29.0	48.0	30.0
Total Split (%)			22.6%	22.6%	27.1%	27.1%	27.1%	23%	19%	31%	19%
Yellow Time (s)			3.6	3.6	3.0	3.0	3.0	3.6	3.6	3.0	3.6
All-Red Time (s)			1.2	1.2	4.5	4.5	4.5	3.6	1.2	4.5	4.1
Lost Time Adjust (s)			0.0	0.0	0.0	0.0	0.0				
Total Lost Time (s)			4.8	4.8	7.5	7.5	7.5				
Lead/Lag			Lag	Lag				Lead	Lag		Lead
Lead-Lag Optimize?			Yes	Yes				Yes	Yes		Yes
Recall Mode			Max	Max	None	None	None	None	Max	None	None
Act Effct Green (s)	57.7	103.3	30.4	30.4	32.7	32.7	32.7				
Actuated g/C Ratio	0.39	0.70	0.20	0.20	0.22	0.22	0.22				
v/c Ratio	0.61	0.16	0.38	0.56	0.80	0.85	0.50				
Control Delay (s/veh)	40.5	0.4	52.8	9.1	72.5	76.7	8.7				
Queue Delay	0.3	0.0	0.0	0.0	0.0	0.0	0.0				
Total Delay (s/veh)	40.8	0.4	52.8	9.1	72.5	76.7	8.7				
LOS	D	A	D	A	E	E	A				
Approach Delay (s/veh)		24.1	37.3			54.0					
Approach LOS		C	D			D					

Intersection Summary

Cycle Length: 155
 Actuated Cycle Length: 148.3
 Natural Cycle: 155
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.85
 Intersection Signal Delay (s/veh): 36.0
 Intersection LOS: D
 Intersection Capacity Utilization 71.0%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 2: Loop 303 NB Ramps & Peoria Ave





Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	821	581	589	326	296	299	270
v/c Ratio	0.61	0.16	0.38	0.56	0.80	0.85	0.50
Control Delay (s/veh)	40.5	0.4	52.8	9.1	72.5	76.7	8.7
Queue Delay	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	40.8	0.4	52.8	9.1	72.5	76.7	8.7
Queue Length 50th (ft)	432	1	130	0	301	315	0
Queue Length 95th (ft)	512	1	158	63	#446	383	61
Internal Link Dist (ft)		342	321			840	
Turn Bay Length (ft)	300			265	410		410
Base Capacity (vph)	1468	3681	1547	583	394	376	558
Starvation Cap Reductn	207	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.65	0.16	0.38	0.56	0.75	0.80	0.48

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

HCM 7th Edition methodology does not support clustered intersections.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Group Flow (vph)	158	606	84	267	545	153	121	122	51	233	259	
v/c Ratio	0.37	0.34	0.10	0.67	0.30	0.50	0.13	0.23	0.15	0.24	0.42	
Control Delay (s/veh)	10.1	7.3	2.1	18.7	6.9	25.2	17.2	6.0	19.1	17.3	5.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	10.1	7.3	2.1	18.7	6.9	25.2	17.2	6.0	19.1	17.3	5.6	
Queue Length 50th (ft)	20	40	0	42	34	32	12	0	10	23	0	
Queue Length 95th (ft)	69	103	13	142	91	119	43	33	43	75	44	
Internal Link Dist (ft)	1913			1167			1608			257		
Turn Bay Length (ft)	155			160			170			150	160	250
Base Capacity (vph)	762	3226	1450	708	3198	730	2284	1065	811	2284	1114	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.21	0.19	0.06	0.38	0.17	0.21	0.05	0.11	0.06	0.10	0.23	

Intersection Summary

3: Sarival Ave & Peoria Ave

03/26/2025



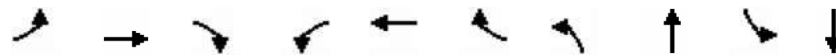
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗		↖	↗	↘	↖	↗	↘
Traffic Volume (veh/h)	134	545	67	227	463	25	130	103	104	41	198	220
Future Volume (veh/h)	134	545	67	227	463	25	130	103	104	41	198	220
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	158	606	84	267	514	31	153	121	122	51	233	259
Peak Hour Factor	0.85	0.90	0.80	0.85	0.90	0.80	0.85	0.85	0.85	0.80	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	540	1932	862	481	1852	111	348	992	442	430	992	442
Arrive On Green	0.54	0.54	0.54	0.54	0.54	0.54	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	862	3554	1585	753	3405	205	905	3554	1585	1137	3554	1585
Grp Volume(v), veh/h	158	606	84	267	268	277	153	121	122	51	233	259
Grp Sat Flow(s),veh/h/ln	862	1777	1585	753	1777	1833	905	1777	1585	1137	1777	1585
Q Serve(g_s), s	6.1	4.8	1.3	15.3	4.1	4.1	8.0	1.3	3.1	1.8	2.6	7.2
Cycle Q Clear(g_c), s	10.3	4.8	1.3	20.1	4.1	4.1	10.5	1.3	3.1	3.1	2.6	7.2
Prop In Lane	1.00		1.00	1.00		0.11	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	540	1932	862	481	966	997	348	992	442	430	992	442
V/C Ratio(X)	0.29	0.31	0.10	0.56	0.28	0.28	0.44	0.12	0.28	0.12	0.23	0.59
Avail Cap(c_a), veh/h	979	3744	1670	865	1872	1932	586	1925	858	729	1925	858
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.0	6.4	5.6	11.9	6.2	6.2	18.2	13.7	14.3	14.8	14.1	15.8
Incr Delay (d2), s/veh	0.3	0.1	0.0	1.0	0.2	0.2	0.9	0.1	0.3	0.1	0.1	1.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	1.1	0.3	1.9	0.9	1.0	1.4	0.4	0.9	0.4	0.8	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	9.3	6.5	5.6	12.9	6.4	6.4	19.1	13.7	14.6	14.9	14.2	17.0
LnGrp LOS	A	A	A	B	A	A	B	B	B	B	B	B
Approach Vol, veh/h		848			812			396			543	
Approach Delay, s/veh		6.9			8.5			16.1			15.6	
Approach LOS		A			A			B			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		18.7		32.1		18.7		32.1				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		27.5		53.5		27.5		53.5				
Max Q Clear Time (g_c+I1), s		12.5		12.3		9.2		22.1				
Green Ext Time (p_c), s		1.6		5.6		2.2		5.5				
Intersection Summary												
HCM 7th Control Delay, s/veh				10.6								
HCM 7th LOS				B								

Intersection						
Int Delay, s/veh	0.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↵	↶	↕↶		↵	↕↕
Traffic Vol, veh/h	20	17	312	16	13	438
Future Vol, veh/h	20	17	312	16	13	438
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	100	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	80	80	85	80	80	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	25	21	367	20	16	487

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	653	194	0	0	387	0
Stage 1	377	-	-	-	-	-
Stage 2	276	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	400	815	-	-	1168	-
Stage 1	663	-	-	-	-	-
Stage 2	746	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	395	815	-	-	1168	-
Mov Cap-2 Maneuver	395	-	-	-	-	-
Stage 1	663	-	-	-	-	-
Stage 2	736	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	12.35	0	0.26
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	395	815	1168
HCM Lane V/C Ratio	-	-	0.063	0.026	0.014
HCM Ctrl Dly (s/v)	-	-	14.7	9.5	8.1
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	181	344	316	21	224	9	204	195	21	515
v/c Ratio	0.48	0.30	0.43	0.06	0.19	0.02	0.69	0.24	0.04	0.63
Control Delay (s/veh)	20.3	14.1	4.4	15.1	13.7	5.1	25.2	9.0	8.4	11.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	20.3	14.1	4.4	15.1	13.7	5.1	25.2	9.0	8.4	11.8
Queue Length 50th (ft)	33	30	0	3	18	0	35	25	3	65
Queue Length 95th (ft)	123	100	42	20	63	5	129	78	14	191
Internal Link Dist (ft)		826			672			2330		284
Turn Bay Length (ft)	160		160	160		160	160		160	
Base Capacity (vph)	835	2592	1244	743	2592	1164	593	1667	1064	1551
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.13	0.25	0.03	0.09	0.01	0.34	0.12	0.02	0.33

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↗↗	↗	↶	↗↗	↗	↶	↗		↶	↗	
Traffic Volume (veh/h)	154	310	269	17	190	7	173	159	6	17	201	237
Future Volume (veh/h)	154	310	269	17	190	7	173	159	6	17	201	237
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	181	344	316	21	224	9	204	187	8	21	236	279
Peak Hour Factor	0.85	0.90	0.85	0.80	0.85	0.80	0.85	0.85	0.80	0.80	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	444	1083	483	327	1083	483	412	908	39	686	398	471
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.51	0.51	0.51	0.51	0.51	0.51
Sat Flow, veh/h	1147	3554	1585	774	3554	1585	886	1780	76	1188	781	923
Grp Volume(v), veh/h	181	344	316	21	224	9	204	0	195	21	0	515
Grp Sat Flow(s),veh/h/ln	1147	1777	1585	774	1777	1585	886	0	1857	1188	0	1704
Q Serve(g_s), s	6.7	3.6	8.4	1.0	2.3	0.2	10.2	0.0	2.8	0.5	0.0	10.3
Cycle Q Clear(g_c), s	9.0	3.6	8.4	4.7	2.3	0.2	20.5	0.0	2.8	3.3	0.0	10.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.04	1.00		0.54
Lane Grp Cap(c), veh/h	444	1083	483	327	1083	483	412	0	946	686	0	869
V/C Ratio(X)	0.41	0.32	0.65	0.06	0.21	0.02	0.50	0.00	0.21	0.03	0.00	0.59
Avail Cap(c_a), veh/h	840	2309	1030	594	2309	1030	865	0	1895	1293	0	1740
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.9	13.0	14.6	14.8	12.5	11.8	15.6	0.0	6.5	7.4	0.0	8.4
Incr Delay (d2), s/veh	0.6	0.2	1.5	0.1	0.1	0.0	0.9	0.0	0.1	0.0	0.0	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	1.1	2.5	0.2	0.7	0.1	1.7	0.0	0.7	0.1	0.0	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	16.5	13.1	16.1	14.9	12.6	11.8	16.5	0.0	6.6	7.4	0.0	9.0
LnGrp LOS	B	B	B	B	B	B	B		A	A		A
Approach Vol, veh/h		841			254			399				536
Approach Delay, s/veh		15.0			12.8			11.7				8.9
Approach LOS		B			B			B				A
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		29.2		19.3		29.2		19.3				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		49.5		31.5		49.5		31.5				
Max Q Clear Time (g_c+I1), s		22.5		11.0		12.3		6.7				
Green Ext Time (p_c), s		2.2		3.8		3.6		1.4				
Intersection Summary												
HCM 7th Control Delay, s/veh				12.5								
HCM 7th LOS				B								

6: Sarival Ave & Northern Pkwy WB Ramps

03/26/2025

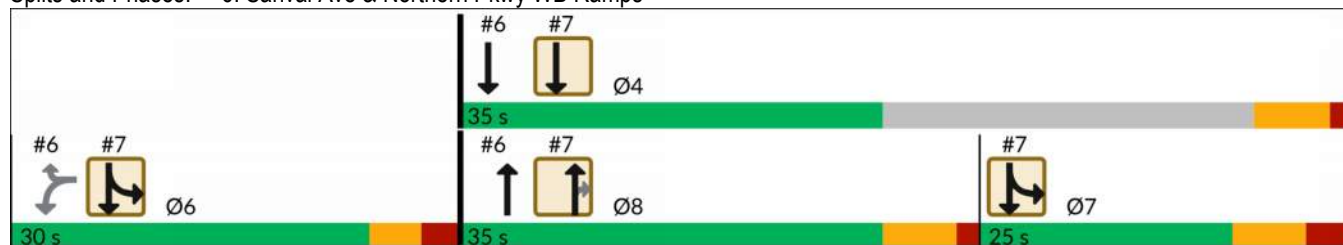


Lane Group	WBL	WBR	NBT	SBT	Ø7
Lane Configurations	↖↗	↗	↑	↑↑↑	
Traffic Volume (vph)	133	308	73	474	
Future Volume (vph)	133	308	73	474	
Turn Type	Perm	Perm	NA	NA	
Protected Phases			8	4	7
Permitted Phases	6	6			
Detector Phase	6	6	8	4	
Switch Phase					
Minimum Initial (s)	5.0	5.0	20.0	20.0	5.0
Minimum Split (s)	37.9	37.9	35.0	35.0	13.1
Total Split (s)	30.0	30.0	35.0	35.0	25.0
Total Split (%)	33.3%	33.3%	38.9%	38.9%	28%
Yellow Time (s)	3.5	3.5	5.0	5.0	5.0
All-Red Time (s)	2.4	2.4	1.5	1.5	3.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.9	5.9	6.5	6.5	
Lead/Lag			Lead		Lag
Lead-Lag Optimize?			Yes		Yes
Recall Mode	None	None	Min	Min	None
Act Effect Green (s)	16.1	16.1	20.3	41.6	
Actuated g/C Ratio	0.23	0.23	0.29	0.59	
v/c Ratio	0.20	0.55	0.17	0.18	
Control Delay (s/veh)	22.2	6.4	6.6	7.4	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	22.2	6.4	6.6	7.4	
LOS	C	A	A	A	
Approach Delay (s/veh)	11.4		6.6	7.4	
Approach LOS	B		A	A	

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 70.3
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.55
 Intersection Signal Delay (s/veh): 9.1
 Intersection LOS: A
 Intersection Capacity Utilization 46.1%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 6: Sarival Ave & Northern Pkwy WB Ramps





Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	156	342	91	527
v/c Ratio	0.20	0.55	0.17	0.18
Control Delay (s/veh)	22.2	6.4	6.6	7.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	22.2	6.4	6.6	7.4
Queue Length 50th (ft)	27	0	5	33
Queue Length 95th (ft)	49	58	9	63
Internal Link Dist (ft)	493		420	2330
Turn Bay Length (ft)	420	420		
Base Capacity (vph)	1192	773	765	3922
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.13	0.44	0.12	0.13
Intersection Summary				

HCM 7th Edition methodology does not support clustered intersections.

7: Sarival Ave & Northern Pkwy EB Ramps

03/26/2025

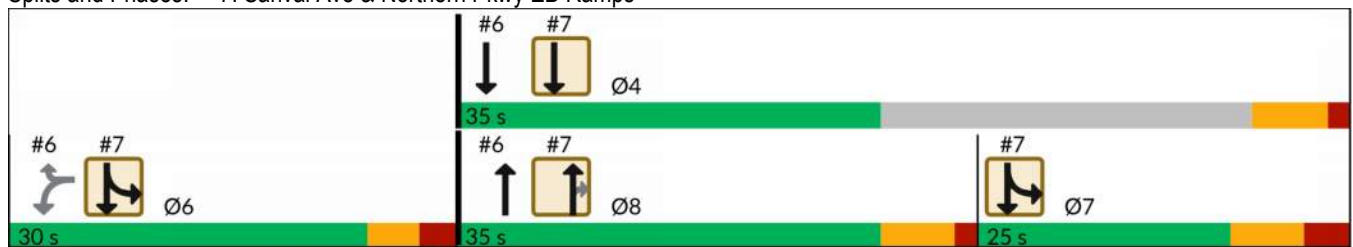


Lane Group	NBT	NBR	SBL	SBT	Ø4	Ø6	Ø7
Lane Configurations	↑	↗	↖	↑↑			
Traffic Volume (vph)	73	176	405	199			
Future Volume (vph)	73	176	405	199			
Turn Type	NA	Perm	Prot	NA			
Protected Phases	8		6 7	4 6 7	4	6	7
Permitted Phases		8					
Detector Phase	8	8	6 7	4 6 7			
Switch Phase							
Minimum Initial (s)	20.0	20.0			20.0	5.0	5.0
Minimum Split (s)	35.0	35.0			35.0	37.9	13.1
Total Split (s)	35.0	35.0			35.0	30.0	25.0
Total Split (%)	38.9%	38.9%			39%	33%	28%
Yellow Time (s)	5.0	5.0			5.0	3.5	5.0
All-Red Time (s)	1.5	1.5			1.5	2.4	3.1
Lost Time Adjust (s)	0.0	0.0					
Total Lost Time (s)	6.5	6.5					
Lead/Lag	Lead	Lead					Lag
Lead-Lag Optimize?	Yes	Yes					Yes
Recall Mode	Min	Min			Min	None	None
Act Effct Green (s)	20.3	20.3	37.5	70.3			
Actuated g/C Ratio	0.29	0.29	0.53	1.00			
v/c Ratio	0.17	0.34	0.25	0.07			
Control Delay (s/veh)	22.7	5.8	10.5	0.0			
Queue Delay	0.0	0.0	0.0	0.0			
Total Delay (s/veh)	22.7	5.8	10.5	0.0			
LOS	C	A	B	A			
Approach Delay (s/veh)	11.0			6.9			
Approach LOS	B			A			

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 70.3
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.55
 Intersection Signal Delay (s/veh): 8.2
 Intersection LOS: A
 Intersection Capacity Utilization 46.1%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 7: Sarival Ave & Northern Pkwy EB Ramps



7: Sarival Ave & Northern Pkwy EB Ramps

03/26/2025



Lane Group	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	91	207	450	234
v/c Ratio	0.17	0.34	0.25	0.07
Control Delay (s/veh)	22.7	5.8	10.5	0.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	22.7	5.8	10.5	0.0
Queue Length 50th (ft)	29	0	60	0
Queue Length 95th (ft)	66	42	102	0
Internal Link Dist (ft)	1002			420
Turn Bay Length (ft)		285	430	
Base Capacity (vph)	765	772	2168	3508
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.12	0.27	0.21	0.07
Intersection Summary				

HCM 7th Edition methodology does not support clustered intersections.

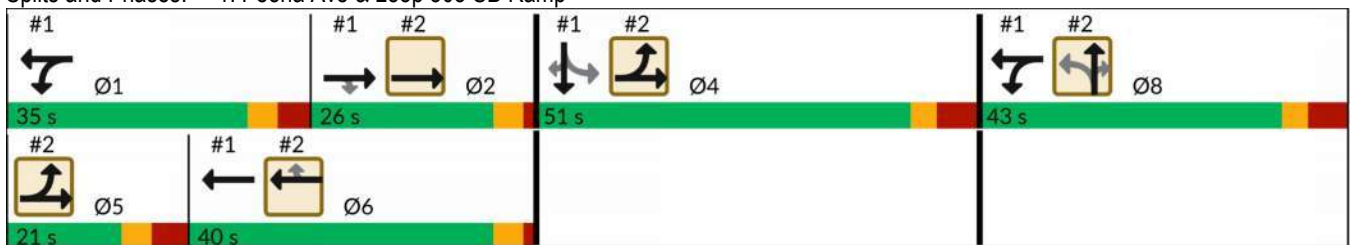


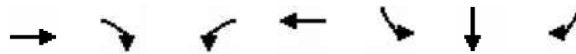
Lane Group	EBT	EBR	WBL	WBT	SBL	SBT	SBR	Ø1	Ø5	Ø6	Ø8
Lane Configurations	↑↑↑↑	↗	↖	↑↑↑	↘	↕	↗				
Traffic Volume (vph)	1361	535	325	825	347	4	446				
Future Volume (vph)	1361	535	325	825	347	4	446				
Turn Type	NA	Perm	Prot	NA	Perm	NA	Perm				
Protected Phases	2		18	16 8		4		1	5	6	8
Permitted Phases		2			4		4				
Detector Phase	2	2	18	16 8	4	4	4				
Switch Phase											
Minimum Initial (s)	15.0	15.0			12.0	12.0	12.0	8.0	8.0	15.0	12.0
Minimum Split (s)	45.0	45.0			30.0	30.0	30.0	50.0	30.0	65.0	30.0
Total Split (s)	26.0	26.0			51.0	51.0	51.0	35.0	21.0	40.0	43.0
Total Split (%)	16.8%	16.8%			32.9%	32.9%	32.9%	23%	14%	26%	28%
Yellow Time (s)	3.6	3.6			3.0	3.0	3.0	3.6	3.6	3.6	3.0
All-Red Time (s)	1.2	1.2			4.5	4.5	4.5	3.6	4.1	1.2	4.5
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0				
Total Lost Time (s)	4.8	4.8			7.5	7.5	7.5				
Lead/Lag	Lag	Lag						Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes						Yes	Yes	Yes	
Recall Mode	Max	Max			None	None	None	None	None	Max	None
Act Effct Green (s)	40.0	40.0	51.0	83.8	41.8	41.8	41.8				
Actuated g/C Ratio	0.26	0.26	0.33	0.55	0.27	0.27	0.27				
v/c Ratio	0.76	0.78	0.31	0.33	0.67	0.63	0.53				
Control Delay (s/veh)	55.4	19.3	55.6	3.2	57.4	40.7	21.8				
Queue Delay	18.9	0.0	0.0	0.1	14.0	6.4	0.0				
Total Delay (s/veh)	74.3	19.3	55.6	3.3	71.4	47.0	21.8				
LOS	E	B	E	A	E	D	C				
Approach Delay (s/veh)	58.8			18.1		47.5					
Approach LOS	E			B		D					

Intersection Summary

Cycle Length: 155	
Actuated Cycle Length: 152.3	
Natural Cycle: 155	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay (s/veh): 44.3	Intersection LOS: D
Intersection Capacity Utilization 81.3%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: Peoria Ave & Loop 303 SB Ramp





Lane Group	EBT	EBR	WBL	WBT	SBL	SBT	SBR
Lane Group Flow (vph)	1512	594	361	917	309	295	283
v/c Ratio	0.76	0.78	0.31	0.33	0.67	0.63	0.53
Control Delay (s/veh)	55.4	19.3	55.6	3.2	57.4	40.7	21.8
Queue Delay	18.9	0.0	0.0	0.1	14.0	6.4	0.0
Total Delay (s/veh)	74.3	19.3	55.6	3.3	71.4	47.0	21.8
Queue Length 50th (ft)	353	118	140	20	292	206	97
Queue Length 95th (ft)	399	296	m180	20	408	268	200
Internal Link Dist (ft)	672			342		1245	
Turn Bay Length (ft)		250	300		400		400
Base Capacity (vph)	1979	762	1563	3185	480	487	551
Starvation Cap Reductn	0	0	0	682	0	0	0
Spillback Cap Reductn	504	0	0	0	151	141	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.03	0.78	0.23	0.37	0.94	0.85	0.51

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM 7th Edition methodology does not support clustered intersections.

2: Loop 303 NB Ramps & Peoria Ave

03/26/2025

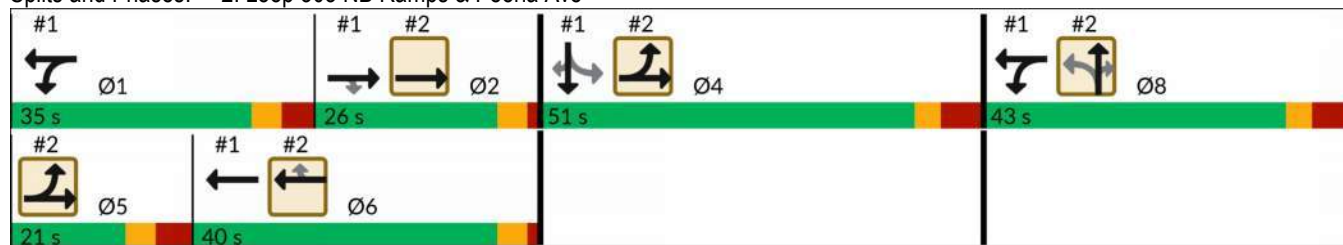


Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	Ø1	Ø2	Ø4	Ø5
Lane Configurations											
Traffic Volume (vph)	884	819	766	397	381	0	438				
Future Volume (vph)	884	819	766	397	381	0	438				
Turn Type	Prot	NA	NA	Perm	Perm	NA	Perm				
Protected Phases	4 5	2 4 5	6			8		1	2	4	5
Permitted Phases				6	8		8				
Detector Phase	4 5	2 4 5	6	6	8	8	8				
Switch Phase											
Minimum Initial (s)			15.0	15.0	12.0	12.0	12.0	8.0	15.0	12.0	8.0
Minimum Split (s)			65.0	65.0	30.0	30.0	30.0	50.0	45.0	30.0	30.0
Total Split (s)			40.0	40.0	43.0	43.0	43.0	35.0	26.0	51.0	21.0
Total Split (%)			25.8%	25.8%	27.7%	27.7%	27.7%	23%	17%	33%	14%
Yellow Time (s)			3.6	3.6	3.0	3.0	3.0	3.6	3.6	3.0	3.6
All-Red Time (s)			1.2	1.2	4.5	4.5	4.5	3.6	1.2	4.5	4.1
Lost Time Adjust (s)			0.0	0.0	0.0	0.0	0.0				
Total Lost Time (s)			4.8	4.8	7.5	7.5	7.5				
Lead/Lag			Lag	Lag				Lead	Lag		Lead
Lead-Lag Optimize?			Yes	Yes				Yes	Yes		Yes
Recall Mode			Max	Max	None	None	None	None	Max	None	None
Act Effct Green (s)	55.4	105.1	35.3	35.3	34.3	34.3	34.3				
Actuated g/C Ratio	0.36	0.69	0.23	0.23	0.23	0.23	0.23				
v/c Ratio	0.79	0.26	0.49	0.63	0.84	0.64	0.58				
Control Delay (s/veh)	42.6	0.4	52.2	8.7	76.1	29.5	20.3				
Queue Delay	5.9	0.1	0.0	0.0	0.0	0.0	0.0				
Total Delay (s/veh)	48.5	0.6	52.2	8.7	76.1	29.5	20.3				
LOS	D	A	D	A	E	C	C				
Approach Delay (s/veh)		25.4	37.3			42.8					
Approach LOS		C	D			D					

Intersection Summary

Cycle Length: 155
 Actuated Cycle Length: 152.3
 Natural Cycle: 155
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.84
 Intersection Signal Delay (s/veh): 33.0
 Intersection LOS: C
 Intersection Capacity Utilization 81.3%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 2: Loop 303 NB Ramps & Peoria Ave





Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	982	910	851	441	317	301	292
v/c Ratio	0.79	0.26	0.49	0.63	0.84	0.64	0.58
Control Delay (s/veh)	42.6	0.4	52.2	8.7	76.1	29.5	20.3
Queue Delay	5.9	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	48.5	0.6	52.2	8.7	76.1	29.5	20.3
Queue Length 50th (ft)	534	2	187	2	324	131	72
Queue Length 95th (ft)	607	2	218	103	#485	194	182
Internal Link Dist (ft)		342	321			840	
Turn Bay Length (ft)	300			265	410		410
Base Capacity (vph)	1286	3567	1746	703	392	481	512
Starvation Cap Reductn	250	1483	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.95	0.44	0.49	0.63	0.81	0.63	0.57

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

HCM 7th Edition methodology does not support clustered intersections.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	415	907	124	145	779	233	268	89	38	249	296
v/c Ratio	0.79	0.63	0.17	0.44	0.82	0.67	0.31	0.17	0.14	0.49	0.61
Control Delay (s/veh)	29.0	21.3	3.9	15.1	35.9	33.6	27.9	0.7	22.1	35.2	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	29.0	21.3	3.9	15.1	35.9	33.6	27.9	0.7	22.1	35.2	10.2
Queue Length 50th (ft)	134	178	0	30	193	98	65	0	14	64	0
Queue Length 95th (ft)	#247	275	23	60	#305	151	94	0	31	94	53
Internal Link Dist (ft)		1913			1167		1608			257	
Turn Bay Length (ft)	155			160		170		150	160		250
Base Capacity (vph)	580	1611	790	372	1056	350	1004	579	271	832	598
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.72	0.56	0.16	0.39	0.74	0.67	0.27	0.15	0.14	0.30	0.49

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

3: Sarival Ave & Peoria Ave

03/26/2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↗↗	↗	↘	↗↗		↘	↗↗	↗	↘	↗↗	↗
Traffic Volume (veh/h)	353	816	99	123	662	34	198	228	76	30	212	252
Future Volume (veh/h)	353	816	99	123	662	34	198	228	76	30	212	252
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	415	907	124	145	736	42	233	268	89	38	249	296
Peak Hour Factor	0.85	0.90	0.80	0.85	0.90	0.80	0.85	0.85	0.85	0.80	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	473	1308	583	320	872	50	418	1017	454	373	757	338
Arrive On Green	0.19	0.37	0.37	0.08	0.26	0.26	0.11	0.29	0.29	0.04	0.21	0.21
Sat Flow, veh/h	1781	3554	1585	1781	3417	195	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	415	907	124	145	383	395	233	268	89	38	249	296
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1835	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	12.6	17.1	4.2	4.6	16.1	16.1	7.8	4.6	3.4	1.3	4.7	14.3
Cycle Q Clear(g_c), s	12.6	17.1	4.2	4.6	16.1	16.1	7.8	4.6	3.4	1.3	4.7	14.3
Prop In Lane	1.00		1.00	1.00		0.11	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	473	1308	583	320	454	468	418	1017	454	373	757	338
V/C Ratio(X)	0.88	0.69	0.21	0.45	0.84	0.84	0.56	0.26	0.20	0.10	0.33	0.88
Avail Cap(c_a), veh/h	619	1576	703	402	525	542	418	1017	454	422	824	368
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.1	21.2	17.1	19.5	27.9	27.9	19.7	21.7	21.3	22.7	26.3	30.0
Incr Delay (d2), s/veh	11.0	1.0	0.2	1.0	10.7	10.4	1.7	0.1	0.2	0.1	0.3	19.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	6.4	1.4	1.8	7.6	7.8	3.1	1.8	1.2	0.5	1.9	6.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	28.1	22.2	17.3	20.5	38.6	38.3	21.4	21.9	21.5	22.9	26.5	49.5
LnGrp LOS	C	C	B	C	D	D	C	C	C	C	C	D
Approach Vol, veh/h		1446			923			590			583	
Approach Delay, s/veh		23.5			35.6			21.6			38.0	
Approach LOS		C			D			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.3	27.1	11.0	33.5	13.1	21.3	19.9	24.6				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	21.9	10.1	35.0	8.6	18.3	21.8	23.3				
Max Q Clear Time (g_c+I1), s	3.3	6.6	6.6	19.1	9.8	16.3	14.6	18.1				
Green Ext Time (p_c), s	0.0	1.5	0.1	5.6	0.0	0.6	0.8	2.0				
Intersection Summary												
HCM 7th Control Delay, s/veh			28.7									
HCM 7th LOS			C									

Intersection						
Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↵	↶	↕↗		↵	↕↗
Traffic Vol, veh/h	7	8	448	11	21	420
Future Vol, veh/h	7	8	448	11	21	420
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	100	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	80	80	85	80	80	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	10	527	14	26	467

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	820	270	0	0	541	0
Stage 1	534	-	-	-	-	-
Stage 2	286	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	313	727	-	-	1024	-
Stage 1	552	-	-	-	-	-
Stage 2	737	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	305	727	-	-	1024	-
Mov Cap-2 Maneuver	305	-	-	-	-	-
Stage 1	552	-	-	-	-	-
Stage 2	718	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	13.34	0	0.46
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	305	727	1024	-
HCM Lane V/C Ratio	-	-	0.029	0.014	0.026	-
HCM Ctrl Dly (s/v)	-	-	17.1	10	8.6	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	0.1	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	100	189	125	23	360	64	295	405	25	489
v/c Ratio	0.38	0.21	0.25	0.07	0.39	0.14	0.73	0.42	0.05	0.51
Control Delay (s/veh)	23.7	17.5	6.2	19.1	18.3	7.2	20.7	8.1	6.1	8.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	23.7	17.5	6.2	19.1	18.3	7.2	20.7	8.1	6.1	8.6
Queue Length 50th (ft)	19	18	0	4	36	0	45	48	2	56
Queue Length 95th (ft)	82	62	33	24	111	22	158	133	13	159
Internal Link Dist (ft)		826			672			2330		284
Turn Bay Length (ft)	160		160	160		160	160		160	
Base Capacity (vph)	568	2010	953	669	2010	926	727	1733	849	1674
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.09	0.13	0.03	0.18	0.07	0.41	0.23	0.03	0.29

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑	↗	↘	↗		↘	↗	
Traffic Volume (veh/h)	85	161	106	18	306	51	251	327	16	20	300	116
Future Volume (veh/h)	85	161	106	18	306	51	251	327	16	20	300	116
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	100	189	125	22	360	64	295	385	20	25	353	136
Peak Hour Factor	0.85	0.85	0.85	0.80	0.85	0.80	0.85	0.85	0.80	0.80	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	302	892	398	365	892	398	513	1007	52	585	735	283
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.57	0.57	0.57	0.57	0.57	0.57
Sat Flow, veh/h	963	3554	1585	1066	3554	1585	907	1762	92	980	1286	495
Grp Volume(v), veh/h	100	189	125	22	360	64	295	0	405	25	0	489
Grp Sat Flow(s),veh/h/ln	963	1777	1585	1066	1777	1585	907	0	1854	980	0	1781
Q Serve(g_s), s	4.9	2.1	3.3	0.8	4.3	1.6	14.4	0.0	6.1	0.7	0.0	8.2
Cycle Q Clear(g_c), s	9.2	2.1	3.3	3.0	4.3	1.6	22.6	0.0	6.1	6.8	0.0	8.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.05	1.00		0.28
Lane Grp Cap(c), veh/h	302	892	398	365	892	398	513	0	1060	585	0	1018
V/C Ratio(X)	0.33	0.21	0.31	0.06	0.40	0.16	0.57	0.00	0.38	0.04	0.00	0.48
Avail Cap(c_a), veh/h	507	1647	735	591	1647	735	1024	0	2102	1136	0	2020
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.7	15.0	15.4	16.2	15.8	14.8	13.1	0.0	6.0	7.8	0.0	6.4
Incr Delay (d2), s/veh	0.6	0.1	0.4	0.1	0.3	0.2	1.0	0.0	0.2	0.0	0.0	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.7	1.0	0.2	1.4	0.5	2.2	0.0	1.3	0.1	0.0	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	20.3	15.1	15.9	16.3	16.1	15.0	14.1	0.0	6.2	7.8	0.0	6.8
LnGrp LOS	C	B	B	B	B	B	B		A	A		A
Approach Vol, veh/h		414			446			700				514
Approach Delay, s/veh		16.6			16.0			9.5				6.8
Approach LOS		B			B			A				A
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		33.5		17.2		33.5		17.2				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		57.5		23.5		57.5		23.5				
Max Q Clear Time (g_c+I1), s		24.6		11.2		10.2		6.3				
Green Ext Time (p_c), s		4.3		1.5		3.3		2.2				
Intersection Summary												
HCM 7th Control Delay, s/veh				11.7								
HCM 7th LOS				B								

6: Sarival Ave & Northern Pkwy WB Ramps

03/26/2025

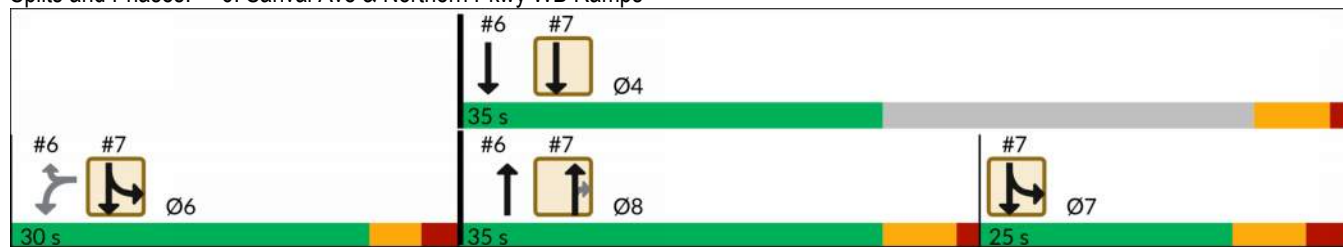


Lane Group	WBL	WBR	NBT	SBT	Ø7
Lane Configurations	↖↗	↗	↑	↑↑↑	
Traffic Volume (vph)	157	451	152	537	
Future Volume (vph)	157	451	152	537	
Turn Type	Perm	Perm	NA	NA	
Protected Phases			8	4	7
Permitted Phases	6	6			
Detector Phase	6	6	8	4	
Switch Phase					
Minimum Initial (s)	5.0	5.0	20.0	20.0	5.0
Minimum Split (s)	37.9	37.9	35.0	35.0	13.1
Total Split (s)	30.0	30.0	35.0	35.0	25.0
Total Split (%)	33.3%	33.3%	38.9%	38.9%	28%
Yellow Time (s)	3.5	3.5	5.0	5.0	5.0
All-Red Time (s)	2.4	2.4	1.5	1.5	3.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.9	5.9	6.5	6.5	
Lead/Lag			Lead		Lag
Lead-Lag Optimize?			Yes		Yes
Recall Mode	None	None	Min	Min	None
Act Effect Green (s)	19.5	19.5	21.1	42.7	
Actuated g/C Ratio	0.26	0.26	0.28	0.57	
v/c Ratio	0.21	0.66	0.36	0.21	
Control Delay (s/veh)	22.4	6.9	7.7	8.5	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	22.4	6.9	7.7	8.5	
LOS	C	A	A	A	
Approach Delay (s/veh)	10.9		7.7	8.5	
Approach LOS	B		A	A	

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 74.8
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.66
 Intersection Signal Delay (s/veh): 9.5
 Intersection LOS: A
 Intersection Capacity Utilization 54.9%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 6: Sarival Ave & Northern Pkwy WB Ramps





Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	185	531	190	597
v/c Ratio	0.21	0.66	0.36	0.21
Control Delay (s/veh)	22.4	6.9	7.7	8.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	22.4	6.9	7.7	8.5
Queue Length 50th (ft)	33	0	11	50
Queue Length 95th (ft)	61	55	16	70
Internal Link Dist (ft)	493		420	2330
Turn Bay Length (ft)	420	420		
Base Capacity (vph)	1120	874	719	3685
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.17	0.61	0.26	0.16
Intersection Summary				

HCM 7th Edition methodology does not support clustered intersections.

7: Sarival Ave & Northern Pkwy EB Ramps

03/26/2025

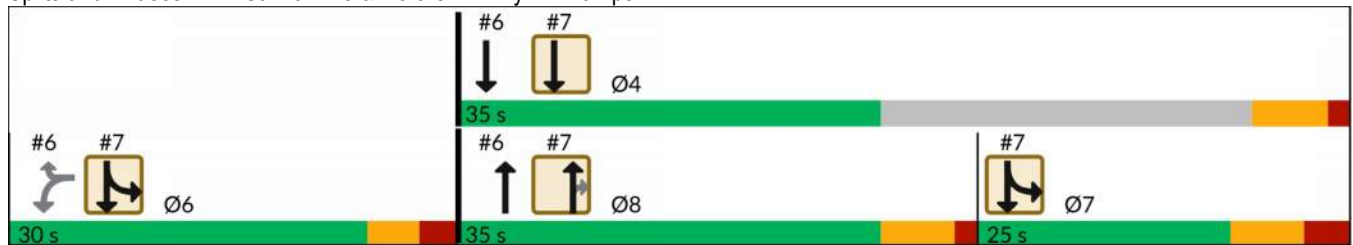


Lane Group	NBT	NBR	SBL	SBT	Ø4	Ø6	Ø7
Lane Configurations	↑	↗	↖	↑↑			
Traffic Volume (vph)	154	230	347	348			
Future Volume (vph)	154	230	347	348			
Turn Type	NA	Perm	Prot	NA			
Protected Phases	8		6 7	4 6 7	4	6	7
Permitted Phases		8					
Detector Phase	8	8	6 7	4 6 7			
Switch Phase							
Minimum Initial (s)	20.0	20.0			20.0	5.0	5.0
Minimum Split (s)	35.0	35.0			35.0	37.9	13.1
Total Split (s)	35.0	35.0			35.0	30.0	25.0
Total Split (%)	38.9%	38.9%			39%	33%	28%
Yellow Time (s)	5.0	5.0			5.0	3.5	5.0
All-Red Time (s)	1.5	1.5			1.5	2.4	3.1
Lost Time Adjust (s)	0.0	0.0					
Total Lost Time (s)	6.5	6.5					
Lead/Lag	Lead	Lead					Lag
Lead-Lag Optimize?	Yes	Yes					Yes
Recall Mode	Min	Min			Min	None	None
Act Effct Green (s)	21.1	21.1	41.1	74.8			
Actuated g/C Ratio	0.28	0.28	0.55	1.00			
v/c Ratio	0.37	0.42	0.20	0.12			
Control Delay (s/veh)	25.7	5.6	10.9	0.1			
Queue Delay	0.0	0.0	0.0	0.0			
Total Delay (s/veh)	25.7	5.6	10.9	0.1			
LOS	C	A	B	A			
Approach Delay (s/veh)	13.9			5.3			
Approach LOS	B			A			

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 74.8
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.66
 Intersection Signal Delay (s/veh): 8.5
 Intersection LOS: A
 Intersection Capacity Utilization 54.9%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 7: Sarival Ave & Northern Pkwy EB Ramps



7: Sarival Ave & Northern Pkwy EB Ramps

03/26/2025



Lane Group	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	193	271	386	409
v/c Ratio	0.37	0.42	0.20	0.12
Control Delay (s/veh)	25.7	5.6	10.9	0.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	25.7	5.6	10.9	0.1
Queue Length 50th (ft)	76	0	58	0
Queue Length 95th (ft)	123	45	94	0
Internal Link Dist (ft)	1002			420
Turn Bay Length (ft)		285	430	
Base Capacity (vph)	719	777	2041	3467
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.27	0.35	0.19	0.12
Intersection Summary				

HCM 7th Edition methodology does not support clustered intersections.

Appendix J – Year 2035 Build Capacity Analysis

1: Peoria Ave & Loop 303 SB Ramp

03/25/2025

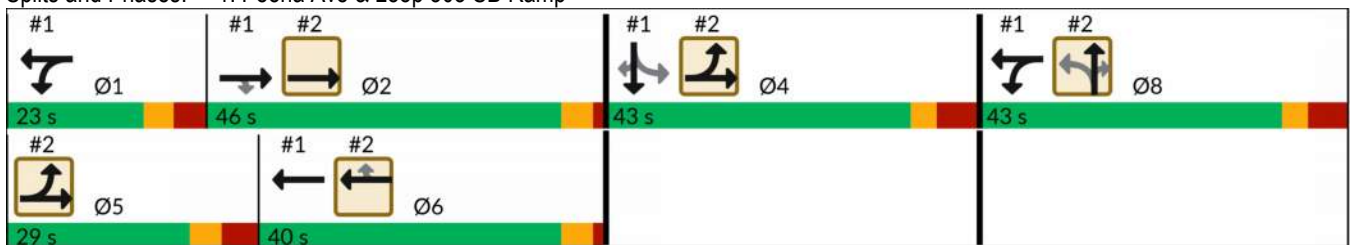


Lane Group	EBT	EBR	WBL	WBT	SBL	SBT	SBR	Ø1	Ø5	Ø6	Ø8
Lane Configurations	↑↑↑↑	↗	↖↗	↑↑↑	↖	↕	↗				
Traffic Volume (vph)	1035	372	260	774	284	4	657				
Future Volume (vph)	1035	372	260	774	284	4	657				
Turn Type	NA	Perm	Prot	NA	Perm	NA	Perm				
Protected Phases	2		18	16 8		4		1	5	6	8
Permitted Phases		2			4		4				
Detector Phase	2	2	18	16 8	4	4	4				
Switch Phase											
Minimum Initial (s)	15.0	15.0			12.0	12.0	12.0	8.0	8.0	15.0	12.0
Minimum Split (s)	45.0	45.0			30.0	30.0	30.0	50.0	30.0	65.0	30.0
Total Split (s)	46.0	46.0			43.0	43.0	43.0	23.0	29.0	40.0	43.0
Total Split (%)	29.7%	29.7%			27.7%	27.7%	27.7%	15%	19%	26%	28%
Yellow Time (s)	3.6	3.6			3.0	3.0	3.0	3.6	3.6	3.6	3.0
All-Red Time (s)	1.2	1.2			4.5	4.5	4.5	3.6	4.1	1.2	4.5
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0				
Total Lost Time (s)	4.8	4.8			7.5	7.5	7.5				
Lead/Lag	Lag	Lag						Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes						Yes	Yes	Yes	
Recall Mode	Max	Max			None	None	None	None	None	Max	None
Act Effct Green (s)	47.4	47.4	50.2	83.0	34.7	34.7	34.7				
Actuated g/C Ratio	0.31	0.31	0.33	0.55	0.23	0.23	0.23				
v/c Ratio	0.49	0.53	0.27	0.31	0.78	0.85	0.81				
Control Delay (s/veh)	43.5	6.1	38.8	2.1	70.7	50.4	46.4				
Queue Delay	0.1	0.0	0.0	0.1	5.1	7.5	0.0				
Total Delay (s/veh)	43.6	6.1	38.8	2.1	75.9	57.9	46.4				
LOS	D	A	D	A	E	E	D				
Approach Delay (s/veh)	33.7			11.8		58.9					
Approach LOS	C			B		E					

Intersection Summary

Cycle Length: 155
 Actuated Cycle Length: 151.8
 Natural Cycle: 155
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.86
 Intersection Signal Delay (s/veh): 34.1
 Intersection LOS: C
 Intersection Capacity Utilization 72.3%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 1: Peoria Ave & Loop 303 SB Ramp





Lane Group	EBT	EBR	WBL	WBT	SBL	SBT	SBR
Lane Group Flow (vph)	1150	413	306	860	301	388	380
v/c Ratio	0.49	0.53	0.27	0.31	0.78	0.85	0.81
Control Delay (s/veh)	43.5	6.1	38.8	2.1	70.7	50.4	46.4
Queue Delay	0.1	0.0	0.0	0.1	5.1	7.5	0.0
Total Delay (s/veh)	43.6	6.1	38.8	2.1	75.9	57.9	46.4
Queue Length 50th (ft)	232	0	91	12	304	258	233
Queue Length 95th (ft)	269	84	m111	14	397	327	#406
Internal Link Dist (ft)	672			342		1245	
Turn Bay Length (ft)		250	300		400		400
Base Capacity (vph)	2354	778	1296	3020	394	465	475
Starvation Cap Reductn	0	0	0	643	0	0	0
Spillback Cap Reductn	269	0	0	0	50	50	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.53	0.24	0.36	0.88	0.93	0.80

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM 7th Edition methodology does not support clustered intersections.

2: Loop 303 NB Ramps & Peoria Ave

03/25/2025

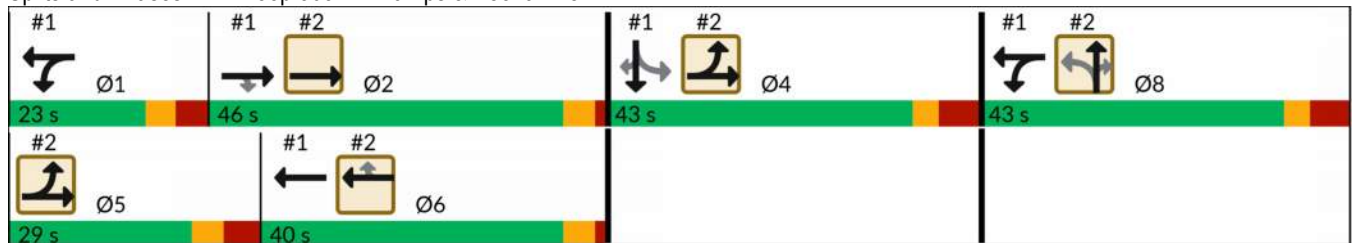


Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	Ø1	Ø2	Ø4	Ø5
Lane Configurations											
Traffic Volume (vph)	739	579	546	288	485	3	330				
Future Volume (vph)	739	579	546	288	485	3	330				
Turn Type	Prot	NA	NA	Perm	Perm	NA	Perm				
Protected Phases	4 5	2 4 5	6			8		1	2	4	5
Permitted Phases				6	8		8				
Detector Phase	4 5	2 4 5	6	6	8	8	8				
Switch Phase											
Minimum Initial (s)			15.0	15.0	12.0	12.0	12.0	8.0	15.0	12.0	8.0
Minimum Split (s)			65.0	65.0	30.0	30.0	30.0	50.0	45.0	30.0	30.0
Total Split (s)			40.0	40.0	43.0	43.0	43.0	23.0	46.0	43.0	29.0
Total Split (%)			25.8%	25.8%	27.7%	27.7%	27.7%	15%	30%	28%	19%
Yellow Time (s)			3.6	3.6	3.0	3.0	3.0	3.6	3.6	3.0	3.6
All-Red Time (s)			1.2	1.2	4.5	4.5	4.5	3.6	1.2	4.5	4.1
Lost Time Adjust (s)			0.0	0.0	0.0	0.0	0.0				
Total Lost Time (s)			4.8	4.8	7.5	7.5	7.5				
Lead/Lag			Lag	Lag				Lead	Lag		Lead
Lead-Lag Optimize?			Yes	Yes				Yes	Yes		Yes
Recall Mode			Max	Max	None	None	None	None	Max	None	None
Act Effct Green (s)	55.2	105.5	35.3	35.3	34.0	34.0	34.0				
Actuated g/C Ratio	0.36	0.69	0.23	0.23	0.22	0.22	0.22				
v/c Ratio	0.66	0.18	0.35	0.54	0.83	0.86	0.51				
Control Delay (s/veh)	45.5	0.6	49.8	8.1	75.8	78.2	8.5				
Queue Delay	0.4	0.0	0.0	0.0	0.0	0.0	0.0				
Total Delay (s/veh)	45.9	0.6	49.8	8.1	75.8	78.2	8.5				
LOS	D	A	D	A	E	E	A				
Approach Delay (s/veh)		26.0	34.9			55.4					
Approach LOS		C	C			E					

Intersection Summary

Cycle Length: 155
 Actuated Cycle Length: 151.8
 Natural Cycle: 155
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.86
 Intersection Signal Delay (s/veh): 36.6
 Intersection LOS: D
 Intersection Capacity Utilization 72.3%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 2: Loop 303 NB Ramps & Peoria Ave





Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	821	643	607	339	313	311	286
v/c Ratio	0.66	0.18	0.35	0.54	0.83	0.86	0.51
Control Delay (s/veh)	45.5	0.6	49.8	8.1	75.8	78.2	8.5
Queue Delay	0.4	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	45.9	0.6	49.8	8.1	75.8	78.2	8.5
Queue Length 50th (ft)	0	1	128	0	318	323	0
Queue Length 95th (ft)	497	7	155	61	#475	393	85
Internal Link Dist (ft)		342	321			840	
Turn Bay Length (ft)	300			265	410		410
Base Capacity (vph)	1291	3562	1752	627	394	376	570
Starvation Cap Reductn	130	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.18	0.35	0.54	0.79	0.83	0.50

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

HCM 7th Edition methodology does not support clustered intersections.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Group Flow (vph)	158	606	211	278	545	185	124	125	51	244	259	
v/c Ratio	0.37	0.34	0.23	0.71	0.30	0.57	0.12	0.23	0.14	0.24	0.40	
Control Delay (s/veh)	11.0	8.0	1.9	21.9	7.6	27.8	17.7	5.8	19.5	17.8	5.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	11.0	8.0	1.9	21.9	7.6	27.8	17.7	5.8	19.5	17.8	5.3	
Queue Length 50th (ft)	23	45	0	52	38	44	13	0	11	27	0	
Queue Length 95th (ft)	74	110	22	163	96	145	44	33	43	79	43	
Internal Link Dist (ft)	1913			1167			1608			257		
Turn Bay Length (ft)	155			160			170			150	160	250
Base Capacity (vph)	731	3115	1419	672	3088	675	2138	1006	758	2138	1059	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.22	0.19	0.15	0.41	0.18	0.27	0.06	0.12	0.07	0.11	0.24	

Intersection Summary

3: Sarival Ave & Peoria Ave

03/25/2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑		↘	↑↑	↗	↘	↑↑	↗
Traffic Volume (veh/h)	134	545	179	236	463	25	157	105	106	41	207	220
Future Volume (veh/h)	134	545	179	236	463	25	157	105	106	41	207	220
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	158	606	211	278	514	31	185	124	125	51	244	259
Peak Hour Factor	0.85	0.90	0.85	0.85	0.90	0.80	0.85	0.85	0.85	0.80	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	530	2020	901	428	1936	117	327	1060	473	415	1060	473
Arrive On Green	0.57	0.57	0.57	0.57	0.57	0.57	0.30	0.30	0.30	0.30	0.30	0.30
Sat Flow, veh/h	862	3554	1585	669	3405	205	896	3554	1585	1131	3554	1585
Grp Volume(v), veh/h	158	606	211	278	268	277	185	124	125	51	244	259
Grp Sat Flow(s),veh/h/ln	862	1777	1585	669	1777	1833	896	1777	1585	1131	1777	1585
Q Serve(g_s), s	7.7	6.0	4.5	25.0	5.2	5.2	13.3	1.7	4.1	2.3	3.5	9.3
Cycle Q Clear(g_c), s	12.9	6.0	4.5	31.0	5.2	5.2	16.8	1.7	4.1	4.0	3.5	9.3
Prop In Lane	1.00		1.00	1.00		0.11	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	530	2020	901	428	1010	1042	327	1060	473	415	1060	473
V/C Ratio(X)	0.30	0.30	0.23	0.65	0.26	0.27	0.57	0.12	0.26	0.12	0.23	0.55
Avail Cap(c_a), veh/h	722	2814	1255	577	1407	1452	425	1446	645	538	1446	645
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.7	7.6	7.3	15.6	7.4	7.4	24.2	17.2	18.1	18.7	17.9	19.9
Incr Delay (d2), s/veh	0.3	0.1	0.1	1.7	0.1	0.1	1.5	0.0	0.3	0.1	0.1	1.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	1.7	1.1	3.1	1.5	1.5	2.6	0.6	1.3	0.6	1.3	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	11.0	7.7	7.4	17.3	7.5	7.5	25.7	17.3	18.4	18.8	18.0	20.9
LnGrp LOS	B	A	A	B	A	A	C	B	B	B	B	C
Approach Vol, veh/h		975			823			434			554	
Approach Delay, s/veh		8.1			10.8			21.2			19.4	
Approach LOS		A			B			C			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		24.7		42.9		24.7		42.9				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		27.5		53.5		27.5		53.5				
Max Q Clear Time (g_c+I1), s		18.8		14.9		11.3		33.0				
Green Ext Time (p_c), s		1.4		6.2		2.2		5.4				
Intersection Summary												
HCM 7th Control Delay, s/veh				13.2								
HCM 7th LOS				B								

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↵	↵		↵	↵		↵	↕↕		↵	↕↕	↵
Traffic Vol, veh/h	9	0	4	20	0	17	17	334	16	13	529	39
Future Vol, veh/h	9	0	4	20	0	17	17	334	16	13	529	39
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	150	-	-	150	-	150
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	92	80	80	92	80	80	90	80	80	90	80
Heavy Vehicles, %	34	34	34	2	2	2	6	2	2	2	2	6
Mvmt Flow	11	0	5	25	0	21	21	371	20	16	588	49

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	848	1054	294	750	1093	196	637	0	0	391	0	0
Stage 1	620	620	-	424	424	-	-	-	-	-	-	-
Stage 2	228	434	-	326	669	-	-	-	-	-	-	-
Critical Hdwy	8.18	7.18	7.58	7.54	6.54	6.94	4.22	-	-	4.14	-	-
Critical Hdwy Stg 1	7.18	6.18	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	7.18	6.18	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.84	4.34	3.64	3.52	4.02	3.32	2.26	-	-	2.22	-	-
Pot Cap-1 Maneuver	207	179	616	300	213	813	916	-	-	1164	-	-
Stage 1	372	406	-	579	586	-	-	-	-	-	-	-
Stage 2	670	506	-	660	454	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	194	172	616	287	205	813	916	-	-	1164	-	-
Mov Cap-2 Maneuver	194	172	-	287	205	-	-	-	-	-	-	-
Stage 1	367	400	-	565	572	-	-	-	-	-	-	-
Stage 2	638	494	-	646	448	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	20.42	14.53	0.46	0.2
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	916	-	-	194	616	287	813	1164	-	-
HCM Lane V/C Ratio	0.023	-	-	0.058	0.008	0.087	0.026	0.014	-	-
HCM Ctrl Dly (s/v)	9	-	-	24.6	10.9	18.8	9.5	8.1	-	-
HCM Lane LOS	A	-	-	C	B	C	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0	0.3	0.1	0	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	192	344	316	21	224	20	204	239	24	528
v/c Ratio	0.51	0.29	0.43	0.06	0.19	0.04	0.71	0.29	0.05	0.64
Control Delay (s/veh)	21.3	14.5	4.4	15.6	14.1	8.0	27.3	9.7	8.7	12.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	21.3	14.5	4.4	15.6	14.1	8.0	27.3	9.7	8.7	12.4
Queue Length 50th (ft)	36	31	0	3	20	0	37	33	3	70
Queue Length 95th (ft)	134	103	42	20	65	12	137	100	15	208
Internal Link Dist (ft)		826			672			2330		284
Turn Bay Length (ft)	160		160	160		160	160		160	
Base Capacity (vph)	814	2527	1220	724	2527	1136	563	1644	1007	1531
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.14	0.26	0.03	0.09	0.02	0.36	0.15	0.02	0.34

Intersection Summary

5: Sarival Ave & Olive Ave

03/25/2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗		↖	↗	
Traffic Volume (veh/h)	163	310	269	17	190	16	173	196	6	19	210	239
Future Volume (veh/h)	163	310	269	17	190	16	173	196	6	19	210	239
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	192	344	316	21	224	20	204	231	8	24	247	281
Peak Hour Factor	0.85	0.90	0.85	0.80	0.85	0.80	0.85	0.85	0.80	0.80	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	438	1097	489	322	1097	489	402	928	32	648	412	469
Arrive On Green	0.31	0.31	0.31	0.31	0.31	0.31	0.52	0.52	0.52	0.52	0.52	0.52
Sat Flow, veh/h	1136	3554	1585	774	3554	1585	875	1797	62	1141	798	908
Grp Volume(v), veh/h	192	344	316	21	224	20	204	0	239	24	0	528
Grp Sat Flow(s),veh/h/ln	1136	1777	1585	774	1777	1585	875	0	1859	1141	0	1707
Q Serve(g_s), s	7.7	3.8	8.9	1.1	2.4	0.5	11.0	0.0	3.7	0.6	0.0	11.1
Cycle Q Clear(g_c), s	10.1	3.8	8.9	4.9	2.4	0.5	22.1	0.0	3.7	4.3	0.0	11.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.03	1.00		0.53
Lane Grp Cap(c), veh/h	438	1097	489	322	1097	489	402	0	960	648	0	882
V/C Ratio(X)	0.44	0.31	0.65	0.07	0.20	0.04	0.51	0.00	0.25	0.04	0.00	0.60
Avail Cap(c_a), veh/h	782	2174	970	556	2174	970	792	0	1788	1156	0	1641
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.9	13.6	15.4	15.5	13.1	12.5	16.5	0.0	6.9	8.1	0.0	8.7
Incr Delay (d2), s/veh	0.7	0.2	1.4	0.1	0.1	0.0	1.0	0.0	0.1	0.0	0.0	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	1.2	2.7	0.2	0.8	0.1	1.8	0.0	1.0	0.1	0.0	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	17.6	13.8	16.8	15.6	13.2	12.5	17.4	0.0	7.0	8.1	0.0	9.4
LnGrp LOS	B	B	B	B	B	B	B		A	A		A
Approach Vol, veh/h		852			265			443				552
Approach Delay, s/veh		15.8			13.4			11.8				9.3
Approach LOS		B			B			B				A
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		31.1		20.4		31.1		20.4				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		49.5		31.5		49.5		31.5				
Max Q Clear Time (g_c+I1), s		24.1		12.1		13.1		6.9				
Green Ext Time (p_c), s		2.5		3.8		3.7		1.4				
Intersection Summary												
HCM 7th Control Delay, s/veh				12.9								
HCM 7th LOS				B								

6: Sarival Ave & Northern Pkwy WB Ramps

03/25/2025

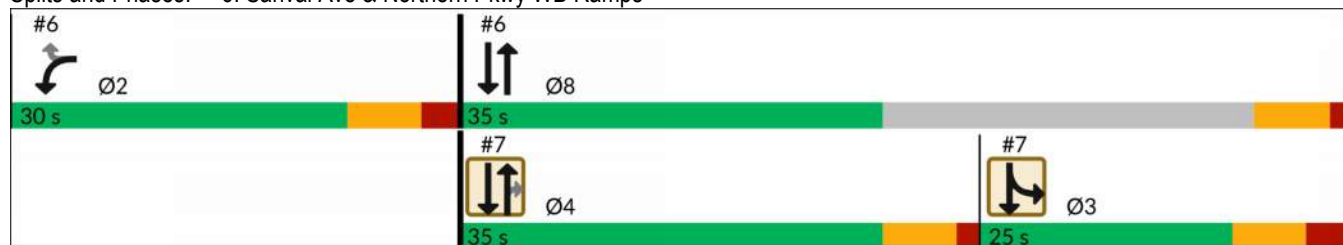


Lane Group	WBL	WBR	NBT	SBT	Ø3	Ø4
Lane Configurations	↖ ↗	↗	↑	↑ ↑ ↑		
Traffic Volume (vph)	133	336	82	483		
Future Volume (vph)	133	336	82	483		
Turn Type	Prot	Perm	NA	NA		
Protected Phases	2		8	8	3	4
Permitted Phases		2				
Detector Phase	2	2	8	8		
Switch Phase						
Minimum Initial (s)	20.0	20.0	20.0	20.0	5.0	20.0
Minimum Split (s)	30.0	30.0	35.0	35.0	25.0	35.0
Total Split (s)	30.0	30.0	35.0	35.0	25.0	35.0
Total Split (%)	33.3%	33.3%	38.9%	38.9%	28%	39%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.4	2.4	1.5	1.5	3.1	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		
Total Lost Time (s)	7.4	7.4	6.5	6.5		
Lead/Lag					Lag	Lead
Lead-Lag Optimize?					Yes	Yes
Recall Mode	None	None	Min	Min	None	Min
Act Effct Green (s)	20.0	20.0	43.8	43.8		
Actuated g/C Ratio	0.26	0.26	0.56	0.56		
v/c Ratio	0.18	0.55	0.09	0.19		
Control Delay (s/veh)	23.5	6.3	0.2	8.4		
Queue Delay	0.0	0.0	0.0	0.0		
Total Delay (s/veh)	23.5	6.3	0.2	8.4		
LOS	C	A	A	A		
Approach Delay (s/veh)	11.3		0.2	8.4		
Approach LOS	B		A	A		

Intersection Summary

Cycle Length: 90	
Actuated Cycle Length: 77.7	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.66	
Intersection Signal Delay (s/veh): 9.1	Intersection LOS: A
Intersection Capacity Utilization 49.1%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: Sarival Ave & Northern Pkwy WB Ramps



6: Sarival Ave & Northern Pkwy WB Ramps

03/25/2025



Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	156	373	96	537
v/c Ratio	0.18	0.55	0.09	0.19
Control Delay (s/veh)	23.5	6.3	0.2	8.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	23.5	6.3	0.2	8.4
Queue Length 50th (ft)	30	0	0	42
Queue Length 95th (ft)	51	64	0	58
Internal Link Dist (ft)	493		420	2330
Turn Bay Length (ft)	420	420		
Base Capacity (vph)	998	725	1283	3502
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.16	0.51	0.07	0.15
Intersection Summary				

HCM 7th Edition methodology does not support clustered intersections.

7: Sarival Ave & Northern Pkwy EB Ramps

03/25/2025

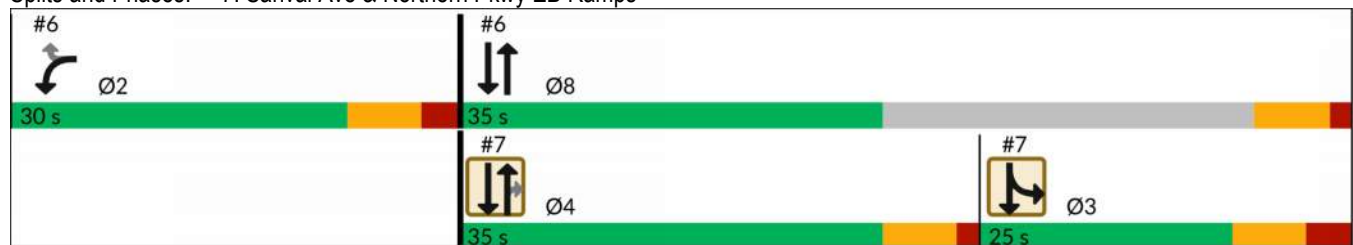


Lane Group	NBT	NBR	SBL	SBT	Ø2	Ø8
Lane Configurations	↑	↗	↖	↑↑		
Traffic Volume (vph)	82	176	412	201		
Future Volume (vph)	82	176	412	201		
Turn Type	NA	Perm	Prot	NA		
Protected Phases	4		3	3 4	2	8
Permitted Phases		4				
Detector Phase	4	4	3	3 4		
Switch Phase						
Minimum Initial (s)	20.0	20.0	5.0		20.0	20.0
Minimum Split (s)	35.0	35.0	25.0		30.0	35.0
Total Split (s)	35.0	35.0	25.0		30.0	35.0
Total Split (%)	38.9%	38.9%	27.8%		33%	39%
Yellow Time (s)	5.0	5.0	5.0		5.0	5.0
All-Red Time (s)	1.5	1.5	3.1		2.4	1.5
Lost Time Adjust (s)	0.0	0.0	0.0			
Total Lost Time (s)	6.5	6.5	8.1			
Lead/Lag	Lead	Lead	Lag			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	Min	Min	None		None	Min
Act Effct Green (s)	20.0	20.0	15.7	42.2		
Actuated g/C Ratio	0.26	0.26	0.20	0.54		
v/c Ratio	0.20	0.37	0.66	0.12		
Control Delay (s/veh)	24.5	5.9	31.8	6.8		
Queue Delay	0.0	0.0	0.0	0.0		
Total Delay (s/veh)	24.5	5.9	31.8	6.8		
LOS	C	A	C	A		
Approach Delay (s/veh)	11.8			23.3		
Approach LOS	B			C		

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 77.7
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.66
 Intersection Signal Delay (s/veh): 19.8
 Intersection LOS: B
 Intersection Capacity Utilization 49.1%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 7: Sarival Ave & Northern Pkwy EB Ramps



7: Sarival Ave & Northern Pkwy EB Ramps

03/25/2025



Lane Group	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	96	207	458	236
v/c Ratio	0.20	0.37	0.66	0.12
Control Delay (s/veh)	24.5	5.9	31.8	6.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	24.5	5.9	31.8	6.8
Queue Length 50th (ft)	37	0	112	20
Queue Length 95th (ft)	71	41	159	30
Internal Link Dist (ft)	1002			420
Turn Bay Length (ft)		285	430	
Base Capacity (vph)	683	712	746	1977
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.14	0.29	0.61	0.12

Intersection Summary

HCM 7th Edition methodology does not support clustered intersections.

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↙	↗	↙	↑	↑↑	↗
Traffic Vol, veh/h	11	5	19	346	507	45
Future Vol, veh/h	11	5	19	346	507	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	150	-	-	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	90	90	80
Heavy Vehicles, %	34	34	6	2	2	6
Mvmt Flow	14	6	24	384	563	56

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	995	282	620	0	-	0
Stage 1	563	-	-	-	-	-
Stage 2	432	-	-	-	-	-
Critical Hdwy	7.11	7.41	4.19	-	-	-
Critical Hdwy Stg 1	6.31	-	-	-	-	-
Critical Hdwy Stg 2	5.91	-	-	-	-	-
Follow-up Hdwy	3.823	3.623	2.257	-	-	-
Pot Cap-1 Maneuver	214	639	936	-	-	-
Stage 1	466	-	-	-	-	-
Stage 2	578	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	208	639	936	-	-	-
Mov Cap-2 Maneuver	325	-	-	-	-	-
Stage 1	454	-	-	-	-	-
Stage 2	578	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	14.73	0.52	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	936	-	325	639	-	-
HCM Lane V/C Ratio	0.025	-	0.042	0.01	-	-
HCM Ctrl Dly (s/v)	8.9	-	16.6	10.7	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	0	-	-

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↙	↗		↖	↗	↗
Traffic Vol, veh/h	11	5	19	355	466	45
Future Vol, veh/h	11	5	19	355	466	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	90	90	80
Heavy Vehicles, %	34	34	6	2	2	6
Mvmt Flow	14	6	24	394	518	56

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	960	518	574	0	-	0
Stage 1	518	-	-	-	-	-
Stage 2	442	-	-	-	-	-
Critical Hdwy	6.74	6.54	4.16	-	-	-
Critical Hdwy Stg 1	5.74	-	-	-	-	-
Critical Hdwy Stg 2	5.74	-	-	-	-	-
Follow-up Hdwy	3.806	3.606	2.254	-	-	-
Pot Cap-1 Maneuver	250	499	979	-	-	-
Stage 1	538	-	-	-	-	-
Stage 2	585	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	242	499	979	-	-	-
Mov Cap-2 Maneuver	361	-	-	-	-	-
Stage 1	521	-	-	-	-	-
Stage 2	585	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	14.4	0.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	102	-	361	499	-	-
HCM Lane V/C Ratio	0.024	-	0.038	0.013	-	-
HCM Ctrl Dly (s/v)	8.8	0	15.4	12.3	-	-
HCM Lane LOS	A	A	C	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	0	-	-

1: Peoria Ave & Loop 303 SB Ramp

03/26/2025

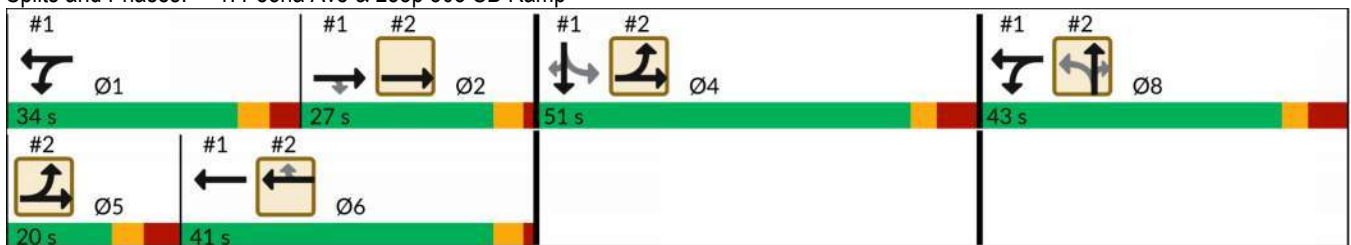


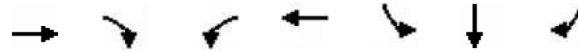
Lane Group	EBT	EBR	WBL	WBT	SBL	SBT	SBR	Ø1	Ø5	Ø6	Ø8
Lane Configurations	↑↑↑↑	↑	↙↘	↑↑↑	↙	↕	↑				
Traffic Volume (vph)	1364	535	378	834	360	4	446				
Future Volume (vph)	1364	535	378	834	360	4	446				
Turn Type	NA	Perm	Prot	NA	Perm	NA	Perm				
Protected Phases	2		18	168		4		1	5	6	8
Permitted Phases		2			4		4				
Detector Phase	2	2	18	168	4	4	4				
Switch Phase											
Minimum Initial (s)	15.0	15.0			12.0	12.0	12.0	8.0	8.0	15.0	12.0
Minimum Split (s)	45.0	45.0			30.0	30.0	30.0	50.0	30.0	65.0	30.0
Total Split (s)	27.0	27.0			51.0	51.0	51.0	34.0	20.0	41.0	43.0
Total Split (%)	17.4%	17.4%			32.9%	32.9%	32.9%	22%	13%	26%	28%
Yellow Time (s)	3.6	3.6			3.0	3.0	3.0	3.6	3.6	3.6	3.0
All-Red Time (s)	1.2	1.2			4.5	4.5	4.5	3.6	4.1	1.2	4.5
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0				
Total Lost Time (s)	4.8	4.8			7.5	7.5	7.5				
Lead/Lag	Lag	Lag						Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes						Yes	Yes	Yes	
Recall Mode	Max	Max			None	None	None	None	None	Max	None
Act Effct Green (s)	39.5	39.5	51.4	85.3	42.1	42.1	42.1				
Actuated g/C Ratio	0.26	0.26	0.34	0.56	0.28	0.28	0.28				
v/c Ratio	0.78	0.78	0.36	0.33	0.67	0.65	0.54				
Control Delay (s/veh)	56.2	19.2	58.2	3.0	57.5	43.9	22.5				
Queue Delay	23.7	0.0	0.0	0.1	15.7	8.6	0.0				
Total Delay (s/veh)	79.9	19.2	58.2	3.1	73.2	52.5	22.5				
LOS	E	B	E	A	E	D	C				
Approach Delay (s/veh)	62.8			20.3		50.1					
Approach LOS	E			C		D					

Intersection Summary

Cycle Length: 155
 Actuated Cycle Length: 152.6
 Natural Cycle: 155
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.85
 Intersection Signal Delay (s/veh): 47.0
 Intersection LOS: D
 Intersection Capacity Utilization 84.3%
 ICU Level of Service E
 Analysis Period (min) 15

Splits and Phases: 1: Peoria Ave & Loop 303 SB Ramp





Lane Group	EBT	EBR	WBL	WBT	SBL	SBT	SBR
Lane Group Flow (vph)	1516	594	420	927	312	301	288
v/c Ratio	0.78	0.78	0.36	0.33	0.67	0.65	0.54
Control Delay (s/veh)	56.2	19.2	58.2	3.0	57.5	43.9	22.5
Queue Delay	23.7	0.0	0.0	0.1	15.7	8.6	0.0
Total Delay (s/veh)	79.9	19.2	58.2	3.1	73.2	52.5	22.5
Queue Length 50th (ft)	355	114	170	19	295	226	103
Queue Length 95th (ft)	401	292	m218	20	414	289	208
Internal Link Dist (ft)	672			342		1245	
Turn Bay Length (ft)		250	300		400		400
Base Capacity (vph)	1953	761	1536	3176	479	479	550
Starvation Cap Reductn	0	0	0	693	0	0	0
Spillback Cap Reductn	494	0	0	0	151	140	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.04	0.78	0.27	0.37	0.95	0.89	0.52

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM 7th Edition methodology does not support clustered intersections.

2: Loop 303 NB Ramps & Peoria Ave

03/26/2025

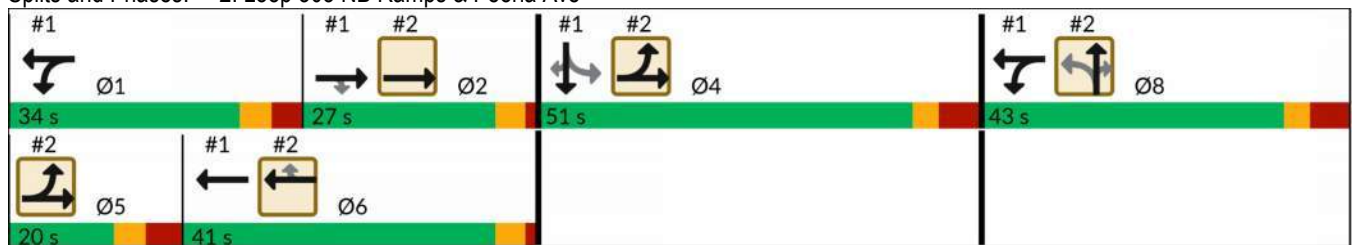


Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	Ø1	Ø2	Ø4	Ø5
Lane Configurations											
Traffic Volume (vph)	884	835	828	442	381	0	453				
Future Volume (vph)	884	835	828	442	381	0	453				
Turn Type	Prot	NA	NA	Perm	Perm	NA	Perm				
Protected Phases	4 5	2 4 5	6			8		1	2	4	5
Permitted Phases				6	8		8				
Detector Phase	4 5	2 4 5	6	6	8	8	8				
Switch Phase											
Minimum Initial (s)			15.0	15.0	12.0	12.0	12.0	8.0	15.0	12.0	8.0
Minimum Split (s)			65.0	65.0	30.0	30.0	30.0	50.0	45.0	30.0	30.0
Total Split (s)			41.0	41.0	43.0	43.0	43.0	34.0	27.0	51.0	20.0
Total Split (%)			26.5%	26.5%	27.7%	27.7%	27.7%	22%	17%	33%	13%
Yellow Time (s)			3.6	3.6	3.0	3.0	3.0	3.6	3.6	3.0	3.6
All-Red Time (s)			1.2	1.2	4.5	4.5	4.5	3.6	1.2	4.5	4.1
Lost Time Adjust (s)			0.0	0.0	0.0	0.0	0.0				
Total Lost Time (s)			4.8	4.8	7.5	7.5	7.5				
Lead/Lag			Lag	Lag				Lead	Lag		Lead
Lead-Lag Optimize?			Yes	Yes				Yes	Yes		Yes
Recall Mode			Max	Max	None	None	None	None	Max	None	None
Act Effct Green (s)	54.6	104.4	36.2	36.2	34.4	34.4	34.4				
Actuated g/C Ratio	0.36	0.68	0.24	0.24	0.23	0.23	0.23				
v/c Ratio	0.80	0.27	0.51	0.69	0.85	0.66	0.60				
Control Delay (s/veh)	42.2	0.4	52.1	12.7	77.3	30.8	21.8				
Queue Delay	8.6	0.1	0.0	0.0	0.0	0.0	0.0				
Total Delay (s/veh)	50.8	0.6	52.1	12.7	77.3	30.8	21.8				
LOS	D	A	D	B	E	C	C				
Approach Delay (s/veh)		26.4	38.4			44.0					
Approach LOS		C	D			D					

Intersection Summary

Cycle Length: 155
 Actuated Cycle Length: 152.6
 Natural Cycle: 155
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.85
 Intersection Signal Delay (s/veh): 34.2
 Intersection LOS: C
 Intersection Capacity Utilization 84.3%
 ICU Level of Service E
 Analysis Period (min) 15

Splits and Phases: 2: Loop 303 NB Ramps & Peoria Ave





Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR
Lane Group Flow (vph)	982	928	920	491	321	308	297
v/c Ratio	0.80	0.27	0.51	0.69	0.85	0.66	0.60
Control Delay (s/veh)	42.2	0.4	52.1	12.7	77.3	30.8	21.8
Queue Delay	8.6	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	50.8	0.6	52.1	12.7	77.3	30.8	21.8
Queue Length 50th (ft)	534	2	202	40	329	140	84
Queue Length 95th (ft)	606	2	234	171	#495	203	196
Internal Link Dist (ft)		342	321			840	
Turn Bay Length (ft)	300			265	410		410
Base Capacity (vph)	1260	3524	1790	711	391	479	507
Starvation Cap Reductn	249	1368	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.43	0.51	0.69	0.82	0.64	0.59

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

HCM 7th Edition methodology does not support clustered intersections.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	392	907	153	148	779	339	279	100	38	253	296
v/c Ratio	0.81	0.66	0.21	0.52	0.87	0.79	0.27	0.17	0.14	0.50	0.62
Control Delay (s/veh)	32.1	23.5	2.7	19.7	41.4	36.6	24.5	0.7	19.5	35.5	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	32.1	23.5	2.7	19.7	41.4	36.6	24.5	0.7	19.5	35.5	10.2
Queue Length 50th (ft)	130	191	0	35	200	139	63	0	13	64	0
Queue Length 95th (ft)	#295	281	21	68	#334	#249	91	0	28	94	53
Internal Link Dist (ft)		1913			1167		1608			257	
Turn Bay Length (ft)	155			160		170		150	160		250
Base Capacity (vph)	517	1445	754	287	903	429	1193	654	265	862	609
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.63	0.20	0.52	0.86	0.79	0.23	0.15	0.14	0.29	0.49

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

3: Sarival Ave & Peoria Ave

03/26/2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	353	816	130	126	662	34	305	237	85	30	215	252
Future Volume (veh/h)	353	816	130	126	662	34	305	237	85	30	215	252
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	392	907	153	148	736	42	339	279	100	38	253	296
Peak Hour Factor	0.90	0.90	0.85	0.85	0.90	0.80	0.90	0.85	0.85	0.80	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	437	1214	541	295	815	46	482	1159	517	361	754	336
Arrive On Green	0.19	0.34	0.34	0.08	0.24	0.24	0.15	0.33	0.33	0.04	0.21	0.21
Sat Flow, veh/h	1781	3554	1585	1781	3417	195	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	392	907	153	148	383	395	339	279	100	38	253	296
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1835	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	13.1	18.9	5.9	5.2	17.5	17.5	12.1	4.8	3.8	1.4	5.1	15.2
Cycle Q Clear(g_c), s	13.1	18.9	5.9	5.2	17.5	17.5	12.1	4.8	3.8	1.4	5.1	15.2
Prop In Lane	1.00		1.00	1.00		0.11	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	437	1214	541	295	424	438	482	1159	517	361	754	336
V/C Ratio(X)	0.90	0.75	0.28	0.50	0.90	0.90	0.70	0.24	0.19	0.11	0.34	0.88
Avail Cap(c_a), veh/h	520	1385	618	303	434	449	482	1159	517	405	826	368
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.2	24.4	20.1	22.0	31.0	31.0	20.1	20.7	20.3	24.3	28.0	32.0
Incr Delay (d2), s/veh	16.3	2.0	0.3	1.3	21.6	21.1	4.6	0.1	0.2	0.1	0.3	19.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.6	7.5	2.0	2.1	9.5	9.7	5.1	1.9	1.3	0.6	2.0	7.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	35.5	26.4	20.4	23.3	52.6	52.2	24.7	20.8	20.5	24.4	28.3	51.9
LnGrp LOS	D	C	C	C	D	D	C	C	C	C	C	D
Approach Vol, veh/h		1452			926			718			587	
Approach Delay, s/veh		28.2			47.7			22.6			39.9	
Approach LOS		C			D			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.4	31.9	11.4	33.1	17.0	22.3	20.1	24.5				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	27.0	7.3	32.7	12.5	19.5	19.5	20.5				
Max Q Clear Time (g_c+I1), s	3.4	6.8	7.2	20.9	14.1	17.2	15.1	19.5				
Green Ext Time (p_c), s	0.0	1.8	0.0	4.9	0.0	0.6	0.5	0.5				
Intersection Summary												
HCM 7th Control Delay, s/veh			33.9									
HCM 7th LOS			C									
Notes												
User approved pedestrian interval to be less than phase max green.												

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷		↶	↶↷		↶	↶↷	↶
Traffic Vol, veh/h	38	0	16	7	0	8	5	536	11	21	446	11
Future Vol, veh/h	38	0	16	7	0	8	5	536	11	21	446	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	150	-	-	150	-	150
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	92	80	80	92	80	80	90	80	80	90	80
Heavy Vehicles, %	9	9	9	2	2	2	20	2	2	2	2	20
Mvmt Flow	48	0	20	9	0	10	6	596	14	26	496	14

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	858	1170	248	915	1177	305	509	0	0	609	0	0
Stage 1	548	548	-	615	615	-	-	-	-	-	-	-
Stage 2	310	622	-	300	562	-	-	-	-	-	-	-
Critical Hdwy	7.68	6.68	7.08	7.54	6.54	6.94	4.5	-	-	4.14	-	-
Critical Hdwy Stg 1	6.68	5.68	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.68	5.68	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.59	4.09	3.39	3.52	4.02	3.32	2.4	-	-	2.22	-	-
Pot Cap-1 Maneuver	239	182	731	228	190	691	936	-	-	965	-	-
Stage 1	471	498	-	445	481	-	-	-	-	-	-	-
Stage 2	656	460	-	684	508	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	228	175	731	214	183	691	936	-	-	965	-	-
Mov Cap-2 Maneuver	228	175	-	214	183	-	-	-	-	-	-	-
Stage 1	458	484	-	442	477	-	-	-	-	-	-	-
Stage 2	642	457	-	647	494	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB			
HCM Ctrl Dly, s/v	20.52		16.01		0.09		0.43			
HCM LOS	C		C							

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	936	-	-	228	731	214	691	965	-	-
HCM Lane V/C Ratio	0.007	-	-	0.209	0.027	0.041	0.014	0.027	-	-
HCM Ctrl Dly (s/v)	8.9	-	-	24.9	10.1	22.5	10.3	8.8	-	-
HCM Lane LOS	A	-	-	C	B	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.8	0.1	0.1	0	0.1	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	104	189	125	23	340	68	295	396	36	520
v/c Ratio	0.42	0.22	0.26	0.08	0.40	0.16	0.68	0.37	0.07	0.50
Control Delay (s/veh)	27.2	19.9	6.6	21.2	21.0	7.5	17.9	7.2	5.7	8.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	27.2	19.9	6.6	21.2	21.0	7.5	17.9	7.2	5.7	8.2
Queue Length 50th (ft)	27	24	0	5	45	0	52	53	4	71
Queue Length 95th (ft)	82	60	34	23	108	22	154	132	15	180
Internal Link Dist (ft)		826			672			2330		284
Turn Bay Length (ft)	160		160	160		160	160		160	
Base Capacity (vph)	661	2295	1070	765	2295	1051	650	1596	802	1545
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.08	0.12	0.03	0.15	0.06	0.45	0.25	0.04	0.34

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	88	161	106	18	306	54	251	338	16	29	336	125
Future Volume (veh/h)	88	161	106	18	306	54	251	338	16	29	336	125
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	104	189	125	22	340	68	295	376	20	36	373	147
Peak Hour Factor	0.85	0.85	0.85	0.80	0.90	0.80	0.85	0.90	0.80	0.80	0.90	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	301	889	396	356	889	396	495	1024	54	597	743	293
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.58	0.58	0.58	0.58	0.58	0.58
Sat Flow, veh/h	978	3554	1585	1066	3554	1585	882	1760	94	988	1277	503
Grp Volume(v), veh/h	104	189	125	22	340	68	295	0	396	36	0	520
Grp Sat Flow(s),veh/h/ln	978	1777	1585	1066	1777	1585	882	0	1854	988	0	1780
Q Serve(g_s), s	5.3	2.3	3.4	0.9	4.3	1.8	15.9	0.0	6.1	1.1	0.0	9.3
Cycle Q Clear(g_c), s	9.5	2.3	3.4	3.2	4.3	1.8	25.2	0.0	6.1	7.2	0.0	9.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.05	1.00		0.28
Lane Grp Cap(c), veh/h	301	889	396	356	889	396	495	0	1079	597	0	1036
V/C Ratio(X)	0.35	0.21	0.32	0.06	0.38	0.17	0.60	0.00	0.37	0.06	0.00	0.50
Avail Cap(c_a), veh/h	631	2088	931	715	2088	931	796	0	1711	934	0	1643
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.6	15.9	16.4	17.2	16.7	15.8	14.0	0.0	6.0	7.9	0.0	6.6
Incr Delay (d2), s/veh	0.7	0.1	0.5	0.1	0.3	0.2	1.1	0.0	0.2	0.0	0.0	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.8	1.1	0.2	1.5	0.6	2.5	0.0	1.4	0.2	0.0	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	21.3	16.0	16.8	17.2	16.9	16.0	15.2	0.0	6.2	7.9	0.0	7.0
LnGrp LOS	C	B	B	B	B	B	B		A	A		A
Approach Vol, veh/h		418			430			691				556
Approach Delay, s/veh		17.6			16.8			10.0				7.1
Approach LOS		B			B			B				A
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		35.7		17.9		35.7		17.9				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		49.5		31.5		49.5		31.5				
Max Q Clear Time (g_c+I1), s		27.2		11.5		11.3		6.3				
Green Ext Time (p_c), s		4.0		1.9		3.6		2.3				
Intersection Summary												
HCM 7th Control Delay, s/veh				12.1								
HCM 7th LOS				B								

6: Sarival Ave & Northern Pkwy WB Ramps

03/26/2025

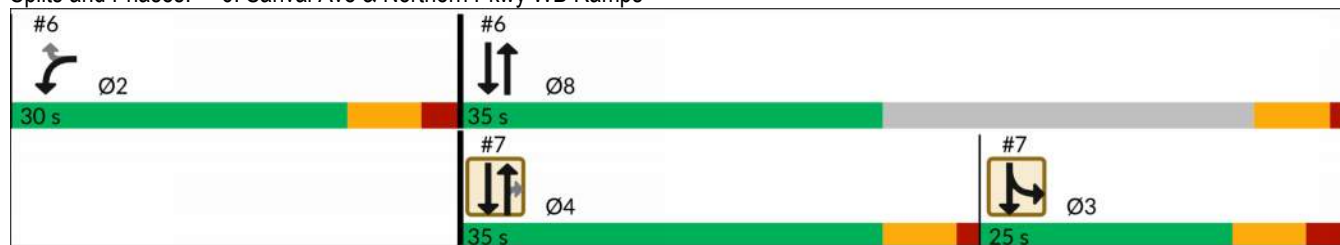


Lane Group	WBL	WBR	NBT	SBT	Ø3	Ø4
Lane Configurations	↙↘	↗	↑	↑↑↑		
Traffic Volume (vph)	157	459	155	573		
Future Volume (vph)	157	459	155	573		
Turn Type	Prot	Perm	NA	NA		
Protected Phases	2		8	8	3	4
Permitted Phases		2				
Detector Phase	2	2	8	8		
Switch Phase						
Minimum Initial (s)	20.0	20.0	20.0	20.0	5.0	20.0
Minimum Split (s)	30.0	30.0	35.0	35.0	25.0	35.0
Total Split (s)	30.0	30.0	35.0	35.0	25.0	35.0
Total Split (%)	33.3%	33.3%	38.9%	38.9%	28%	39%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.4	2.4	1.5	1.5	3.1	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		
Total Lost Time (s)	7.4	7.4	6.5	6.5		
Lead/Lag					Lag	Lead
Lead-Lag Optimize?					Yes	Yes
Recall Mode	None	None	Min	Min	None	Min
Act Effct Green (s)	20.5	20.5	45.1	45.1		
Actuated g/C Ratio	0.26	0.26	0.57	0.57		
v/c Ratio	0.21	0.65	0.17	0.22		
Control Delay (s/veh)	24.6	7.0	0.3	8.7		
Queue Delay	0.0	0.0	0.0	0.0		
Total Delay (s/veh)	24.6	7.0	0.3	8.7		
LOS	C	A	A	A		
Approach Delay (s/veh)	11.7		0.3	8.7		
Approach LOS	B		A	A		

Intersection Summary

Cycle Length: 90	
Actuated Cycle Length: 79.6	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.65	
Intersection Signal Delay (s/veh): 9.1	Intersection LOS: A
Intersection Capacity Utilization 56.7%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 6: Sarival Ave & Northern Pkwy WB Ramps





Lane Group	WBL	WBR	NBT	SBT
Lane Group Flow (vph)	185	510	182	637
v/c Ratio	0.21	0.65	0.17	0.22
Control Delay (s/veh)	24.6	7.0	0.3	8.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	24.6	7.0	0.3	8.7
Queue Length 50th (ft)	37	0	0	51
Queue Length 95th (ft)	64	80	0	75
Internal Link Dist (ft)	493		420	2330
Turn Bay Length (ft)	420	420		
Base Capacity (vph)	977	815	1255	3427
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.19	0.63	0.15	0.19
Intersection Summary				

HCM 7th Edition methodology does not support clustered intersections.

7: Sarival Ave & Northern Pkwy EB Ramps

03/26/2025

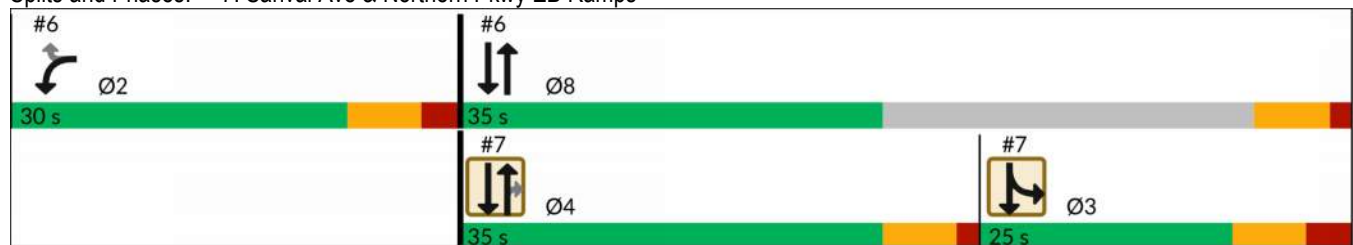


Lane Group	NBT	NBR	SBL	SBT	Ø2	Ø8
Lane Configurations	↑	↗	↖	↑↑		
Traffic Volume (vph)	157	230	374	357		
Future Volume (vph)	157	230	374	357		
Turn Type	NA	Perm	Prot	NA		
Protected Phases	4		3	3 4	2	8
Permitted Phases		4				
Detector Phase	4	4	3	3 4		
Switch Phase						
Minimum Initial (s)	20.0	20.0	5.0		20.0	20.0
Minimum Split (s)	35.0	35.0	25.0		30.0	35.0
Total Split (s)	35.0	35.0	25.0		30.0	35.0
Total Split (%)	38.9%	38.9%	27.8%		33%	39%
Yellow Time (s)	5.0	5.0	5.0		5.0	5.0
All-Red Time (s)	1.5	1.5	3.1		2.4	1.5
Lost Time Adjust (s)	0.0	0.0	0.0			
Total Lost Time (s)	6.5	6.5	8.1			
Lead/Lag	Lead	Lead	Lag			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	Min	Min	None		None	Min
Act Effct Green (s)	21.3	21.3	15.8	43.5		
Actuated g/C Ratio	0.27	0.27	0.20	0.55		
v/c Ratio	0.37	0.44	0.61	0.21		
Control Delay (s/veh)	26.6	5.6	32.0	7.2		
Queue Delay	0.0	0.0	0.0	0.0		
Total Delay (s/veh)	26.6	5.6	32.0	7.2		
LOS	C	A	C	A		
Approach Delay (s/veh)	14.1			19.9		
Approach LOS	B			B		

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 79.6
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.65
 Intersection Signal Delay (s/veh): 17.8
 Intersection LOS: B
 Intersection Capacity Utilization 56.7%
 ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 7: Sarival Ave & Northern Pkwy EB Ramps



7: Sarival Ave & Northern Pkwy EB Ramps

03/26/2025



Lane Group	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	185	271	416	397
v/c Ratio	0.37	0.44	0.61	0.21
Control Delay (s/veh)	26.6	5.6	32.0	7.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay (s/veh)	26.6	5.6	32.0	7.2
Queue Length 50th (ft)	75	0	100	34
Queue Length 95th (ft)	127	44	163	52
Internal Link Dist (ft)	1002			420
Turn Bay Length (ft)		285	430	
Base Capacity (vph)	668	741	730	1938
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.28	0.37	0.57	0.20
Intersection Summary				

HCM 7th Edition methodology does not support clustered intersections.

Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↙	↗	↙	↑	↑↑	↗
Traffic Vol, veh/h	44	19	6	511	456	13
Future Vol, veh/h	44	19	6	511	456	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	150	-	-	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	90	90	80
Heavy Vehicles, %	9	9	20	2	2	20
Mvmt Flow	55	24	8	568	507	16

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1089	253	523	0	-	0
Stage 1	507	-	-	-	-	-
Stage 2	583	-	-	-	-	-
Critical Hdwy	6.735	7.035	4.4	-	-	-
Critical Hdwy Stg 1	5.935	-	-	-	-	-
Critical Hdwy Stg 2	5.535	-	-	-	-	-
Follow-up Hdwy	3.5855	3.3855	2.39	-	-	-
Pot Cap-1 Maneuver	214	728	941	-	-	-
Stage 1	555	-	-	-	-	-
Stage 2	540	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	213	728	941	-	-	-
Mov Cap-2 Maneuver	346	-	-	-	-	-
Stage 1	550	-	-	-	-	-
Stage 2	540	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	15.18	0.12	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	941	-	346	728	-	-
HCM Lane V/C Ratio	0.008	-	0.159	0.033	-	-
HCM Ctrl Dly (s/v)	8.9	-	17.4	10.1	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0	-	0.6	0.1	-	-

Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	44	19	6	473	462	13
Future Vol, veh/h	44	19	6	473	462	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	90	90	80
Heavy Vehicles, %	9	9	20	2	2	20
Mvmt Flow	55	24	8	526	513	16

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1054	513	530	0	-	0
Stage 1	513	-	-	-	-	-
Stage 2	541	-	-	-	-	-
Critical Hdwy	6.49	6.29	4.3	-	-	-
Critical Hdwy Stg 1	5.49	-	-	-	-	-
Critical Hdwy Stg 2	5.49	-	-	-	-	-
Follow-up Hdwy	3.581	3.381	2.38	-	-	-
Pot Cap-1 Maneuver	243	547	952	-	-	-
Stage 1	587	-	-	-	-	-
Stage 2	570	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	240	547	952	-	-	-
Mov Cap-2 Maneuver	372	-	-	-	-	-
Stage 1	580	-	-	-	-	-
Stage 2	570	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	15	0.12	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	25	-	372	547	-	-
HCM Lane V/C Ratio	0.008	-	0.148	0.043	-	-
HCM Ctrl Dly (s/v)	8.8	0	16.3	11.9	-	-
HCM Lane LOS	A	A	C	B	-	-
HCM 95th %tile Q(veh)	0	-	0.5	0.1	-	-