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Right of way dedication needs to be addressed to be in line with Glendale Engineering standard G-322. Confirmation of development agreement with signal payments needs to be confirmed.

TRAFFIC IMPACT STUDY
Parkway 303 East
NEC of SR303L & Olive Avenue
Glendale, Arizona

August 22, 2022

PREPARED FOR
Property Reserve, Inc
51 South Main Street, Suite 301
Salt Lake City, Utah 84111

PREPARED BY



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2803 N. 7th Avenue
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UCG Project Number: TR22060



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I. EXECUTIVE SUMMARY

United Civil Group (UCG) was retained by Property Reserve Inc to perform this Traffic Impact Study (TIS) for the planned Parkway 303 East Development located on the northeast corner of SR303L and Olive Avenue in Glendale, Arizona. The site consists of approximately 276.4 acres of agricultural land, Maricopa County Assessor's parcels (501-06-008C and 501-41-004A). The site will be developed as four warehouse buildings totaling approximately 4,381,272 square feet. It is assumed that the warehouse buildings will be constructed in one phase and occupied by year 2025.

Because the City of Glendale follows MCDOT traffic impact standards, this TIS has been performed in general conformance with the *MCDOT Traffic Impact Study Manual* dated May 2017, and per scoping information provided by City of Glendale Transportation Department, locally accepted standards, and industry practice.

Per the *MCDOT Traffic Impact Study Manual*, this planned Parkway 303 East Development is characterized as an Analysis Category II, moderate development which generates 500 or more peak hour trips but fewer than 999 peak hour trips. As such, the study horizon years for this development are opening year, 2025, plus 5 years after opening, 2030. The minimum study area is defined as all site access driveways and all signal-controlled intersections within ½ mile and/or major street intersections without signal control and driveways within ½ mile.

Within these parameters and based on discussions with the City of Glendale staff, the intersections of Cotton Lane/Olive Avenue, Sarival Avenue/Peoria Avenue, Sarival Avenue/Olive Avenue, Sarival Avenue/Northern Parkway, and Reems Road/Olive Avenue are included within the study area.

A. Study Objectives

This study is intended to investigate the existing and future traffic conditions and identify any potential roadway improvements necessary to serve the proposed development. Major study objectives of this traffic report are as follows:

- Analyze the existing study area intersections and site accessibility for the development.
- Determine the site traffic volumes generated by the proposed development and their impacts on the surrounding study area and roadway network.
- Where applicable, recommend safety, intersection and/or roadway improvements, sufficient to meet the needs of the development and adjacent roadway network due to the additional site generated traffic volumes.

B. Conclusions and Recommendations

The site consists of approximately 276.4 acres of agricultural land, Maricopa County Assessor's parcels (501-06-008C and 501-41-004A). The site will be developed as four warehouse buildings with a total of approximately 4,381,272 square feet. It is assumed that the warehouses will be constructed and occupied by year 2025.

Five site driveways are planned for this development. The driveways will align to provide access to development on both the west and east sides of Sarival Avenue. The southern driveway, Access A, will be limited to right in/right out only due to its proximity to the intersection of Sarival Avenue/Olive Avenue, the required southbound left turn storage at Olive Avenue and the location of the railroad crossing north of Olive Avenue. The remaining four accesses are planned as full movement driveways and are spaced at least 500 feet apart, measured center of driveway to center of driveway.

The forecasted trip generation was calculated based on values presented within the 11th Edition of the ITE Trip Generation Manual. On a weekday, after full build-out of Parkway 303 East, the development is estimated to generate a total of 7,492 daily trips with 745 trips occurring in the morning peak hour and 789 trips occurring in the evening peak hour. According to the Trip Generation Manual, it is assumed that approximately 12 percent of the trips in the morning peak hour are heavy vehicles and 16 percent in the evening peak hour.

Right turn deceleration lanes will be required for the development at all the site accesses, Accesses A through E. The right turn lanes should be designed as 150 feet of storage with a 150-foot taper.

A two way left turn lane will be constructed on Sarival Avenue within the project boundary limits. The two way left turn lane is sufficient to accommodate left turn traffic into the site accesses, B through E.

Based on signal warrants, traffic signals will be warranted in the future at the intersections of Sarival Avenue/Peoria Avenue and Sarival Avenue/Olive Avenue by full buildout year 2025. Therefore, the developer should be responsible for 10% of the signal costs at the intersection of Sarival Avenue/Peoria Avenue and 50% of the signal costs at the intersection of Sarival Avenue/Olive Avenue.

Using the forecasted total traffic volumes for years 2025 and 2030, along with the recommended intersection improvements, the study area intersections and the proposed site accesses are anticipated to operate at acceptable levels of service, LOS C or better, during the morning and evening peak hours.

Proper intersection sight distance and sight triangles shall be provided and maintained at the site accesses and intersections of the proposed development to give drivers exiting the accesses a clear view of oncoming traffic. The landscape and hardscape within the sight triangles must not obstruct the driver's view of the adjacent travel lanes. To ensure adequate sight distances and sight distance triangles, AASHTO's *A Policy on Geometric Design of Highways and Streets* Section 9.5 should be followed as appropriate when designing the accesses and landscaping.

Based on the findings of this TIA, the following recommendations apply:

- Within the property boundary, construct Sarival Avenue to its ultimate section with 110 feet or right of way per the City of Glendale's Arterial Section A-1.
- Install new pad, gates, and safety devices to accommodate the roadway widening of Sarival Avenue under the direction of the AT&SF Railroad.
- Provide an exclusive left turn lane for southbound traffic on Sarival Avenue at Olive Avenue. The left turn lane should provide 150 feet of storage with a 100 foot opening. Depending upon the intersection geometrics, the left turn lane may be required to be split (additional length) to avoid vehicles stopped over the tracks.
- Limit Access A to a right in/right out only with a raised driveway island.

130 feet needed at Olive intersection G-322

- Construct right turn deceleration lanes on Sarival Avenue at the site accesses A through E in the northbound and southbound directions. Each right turn lane should provide 150 feet of storage with a 150-foot taper.
- Contribute an in-lieu payment of 10% of the cost of traffic signal design and installation at the intersection of Sarival Avenue/Peoria Avenue.
- Contribute an in-lieu payment of 50% of the cost of traffic signal design and installation at the intersection of Sarival Avenue/Olive Avenue. This signal may include train pre-emption to enhance safety at the intersection.

confirmation needed of
development
agreement.

II. PROPOSED DEVELOPMENT

A. Site Location

The proposed Parkway 303 East Development is planned on approximately 276.4 acres of agricultural land, Maricopa County Assessor's parcels (501-06-008C and 501-41-004A). The site is located on the northeast corner of SR303L and Olive Avenue in Glendale, Arizona. **Figures 1 and 2** present the location of the proposed development within the context of the immediate area and its location within the City of Glendale.

B. Land Use

The site will be developed as four warehouse buildings totaling approximately 4,381,272 square feet as shown on **Figure 3**.

C. Phasing and Timing

It is assumed that all the warehouse buildings will be constructed in one phase and occupied by year 2025.

Per the MCDOT Traffic Impact Study Guidelines, buildout and 5 years after site buildout traffic conditions should be analyzed based on the criteria of a Category II TIS. Therefore, the analysis years for this development are as follows:

- Year 2025 - site buildout of the development
- Year 2030 - 5 years after full buildout

D. Site Accessibility

Five site driveways are planned for this development. All driveways are located on Sarival Avenue. Three of the driveways will access the employee parking areas and truck yards while two driveways will access only the employee parking areas.

Access A is planned to be constructed as a right in/right out driveway and will access both the employee parking areas and truck yards of Buildings B and D. Access A is spaced approximately 360 feet north of Olive Avenue. The measurements are shown as center of roadway to center of driveway.

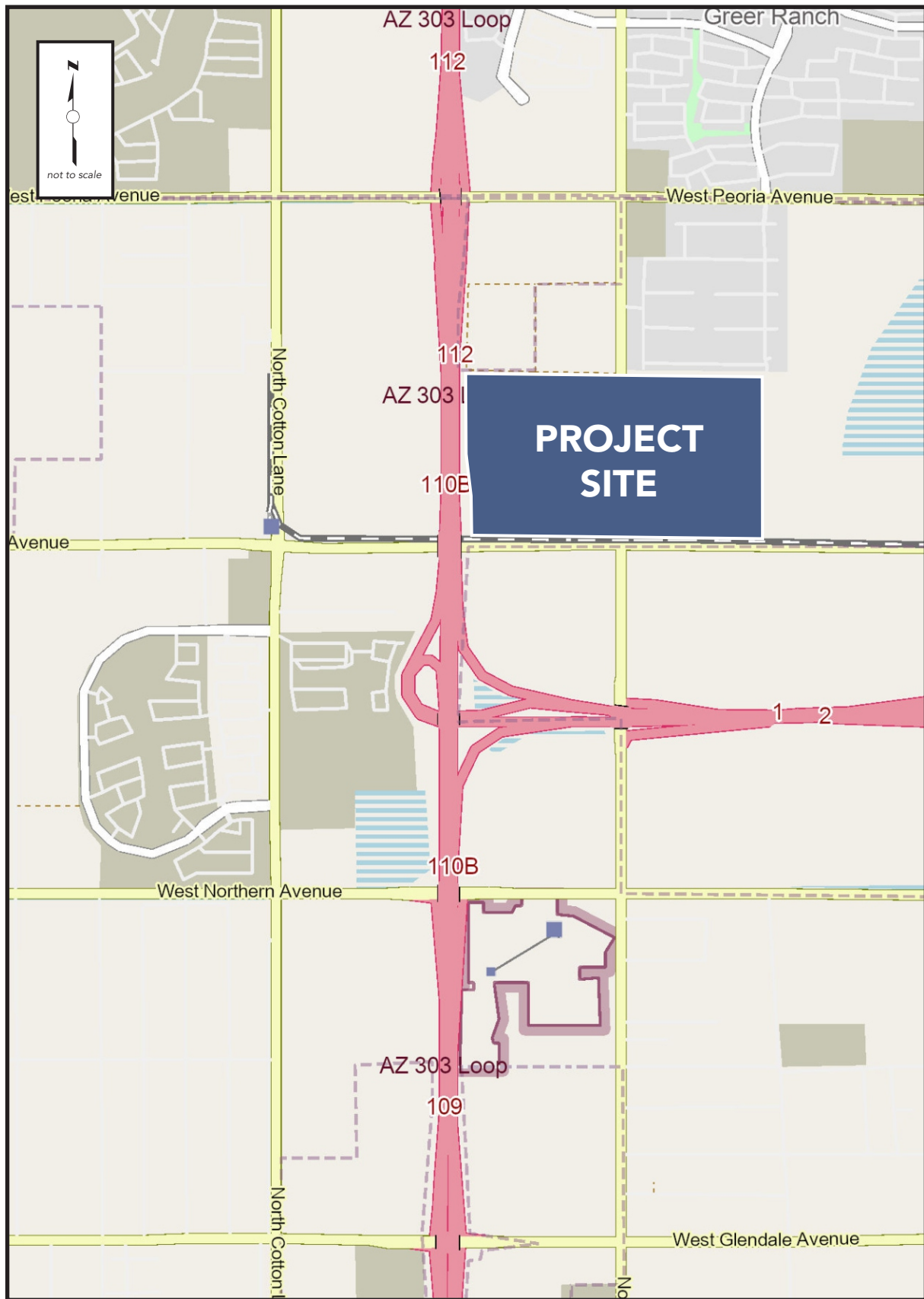
Access B is planned to be constructed as a full movement driveway and will access the employee parking areas to Buildings B and D. Access B is spaced approximately 505 feet north of Access A. The measurements are shown as center of driveway to center of driveway.

Access C is planned to be constructed as a full movement driveway and will access both the employee parking areas and truck yards of Buildings A, B, C and D. Access C is spaced approximately 525 feet north of Access B. The measurements are shown as center of driveway to center of driveway.

Access D is planned to be constructed as a full movement driveway and will access the employee parking areas to Buildings A and C. Access D is spaced approximately 690 feet north of Access C. The measurements are shown as center of driveway to center of driveway.

Access E is planned to be constructed as a full access driveway and will access both the employee parking areas and truck yards of Buildings A and C. Access E is spaced approximately 500 feet north of Access D. The measurements are shown as center of driveway to center of driveway.

The site accesses are discussed in more detail in this TIS within the Traffic and Improvement Analysis section of the report.



ArcGIS - 2022

Figure 1: Vicinity Map



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Figure 2: Aerial View

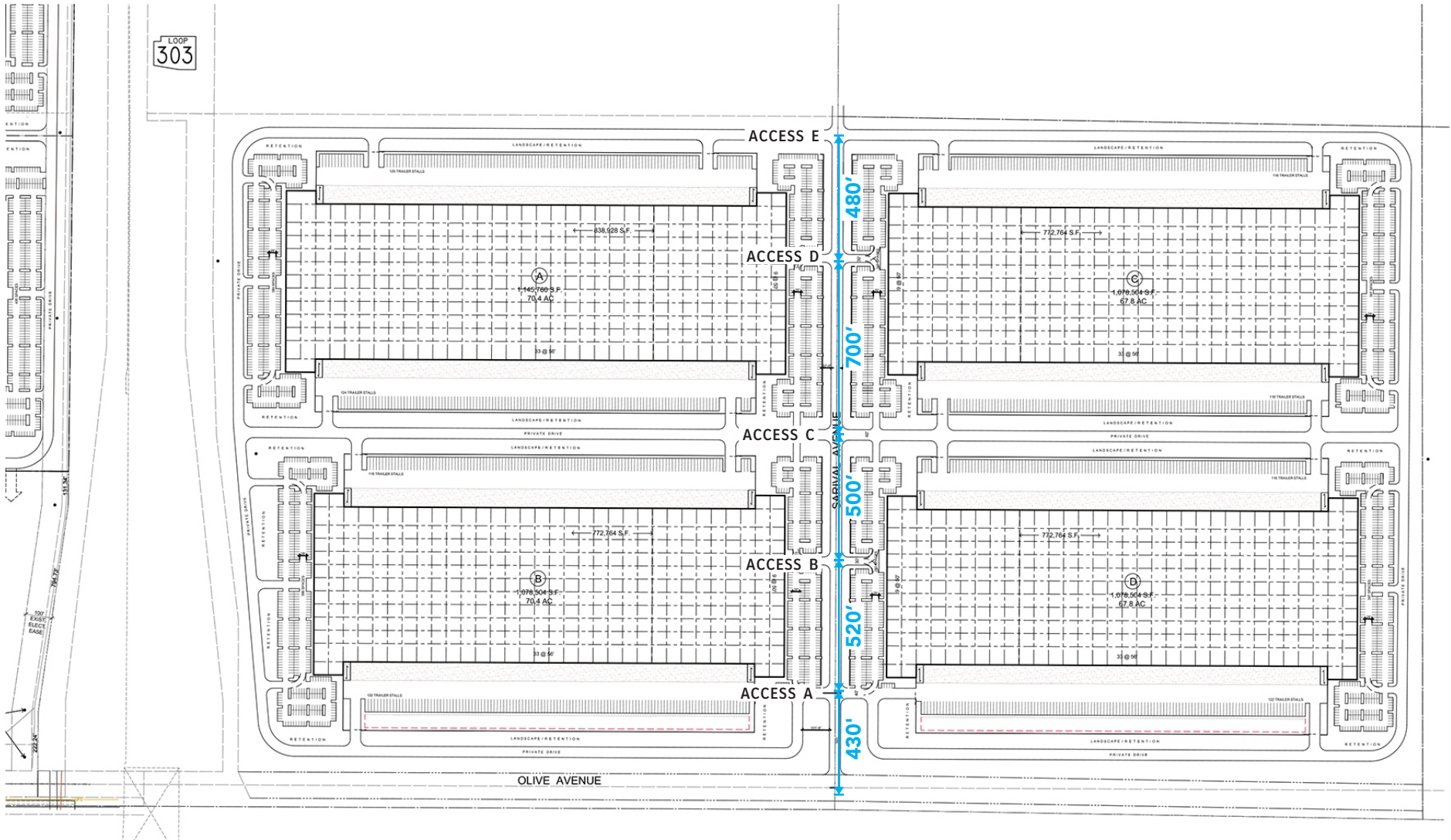


Figure 3: Site Plan



not to scale

III. STUDY AREA CONDITIONS

A. Study Area

Based on the forecasted trip generation of the proposed development, the minimum study area as defined by MCDOT criteria for a Category I TIS includes all site access driveways and all signal-controlled intersections within ½ mile and/or major street intersections without signal control and driveways within ½ mile of the development. Therefore, based on these criteria the study area includes:

- Cotton Lane/Olive Avenue
- Sarival Avenue/Peoria Avenue
- Sarival Avenue/Olive Avenue
- Sarival Avenue/Northern Parkway
- Reems Road/Olive Avenue

B. Study Area Land Use

The following describes the existing land uses of the subject site and surrounding area:

SUBJECT SITE: agricultural land

NORTH: agricultural land and single-family homes

SOUTH: Rail line and Olive Avenue followed by agricultural land, proposed for development

EAST: agricultural land, proposed for industrial development, followed by Reems Road

WEST: SR303L followed by agricultural land

C. Anticipated Future Development and Planned Improvements

There are no capital improvement projects listed within the study area.

One development, Clarius Park, is anticipated within the study area. Clarius Park is proposed on the southwest corner of the intersection of Olive Avenue and Sarival Avenue. Clarius Park will consist of approximately 1,746,000 square feet of industrial warehousing. The site is planned for opening in 2023 with an estimated 4,154 trips per day, 699 in the morning peak hour and 699 in the evening peak hour. These trips are included in the background traffic volumes within this traffic impact study. The site plan and trip distribution for Clarius Park are included in Appendix C.

IV. LEVEL OF SERVICE METHODOLOGY

The roadway system’s ability to accommodate traffic demand is typically limited by the capacity. The level of service (LOS) concept is used in traffic engineering to describe the degree of delay a driver can expect. The concept defines a near-capacity condition as LOS E while a free flow condition under which a driver would experience minimal delay is defined as LOS A.

Intersection capacity analysis is a principal tool used in traffic engineering. Operation is characterized according to the amount of delay at an intersection approach and quantified into a level of service (“LOS”). The intersection LOS was determined using the methodologies presented in the Transportation Research Board’s Highway Capacity Manual (“HCM”). The LOS grades quantify and categorize a driver’s discomfort, frustration, fuel consumption, and travel times experienced as a result of intersection control and the resulting traffic queuing. Per the HCM, the signalized and unsignalized (all-way stop controlled or two-way stop-controlled intersection) delay and associated LOS is presented in **Table 1**. MCDOT guidelines strive to obtain a level of service D or better for both signalized and unsignalized intersection overall operations. Intersections having a LOS E or LOS F may warrant improvements or traffic reductions.

Table 1: Intersection Levels of Service and Delay

Level of Service	Description	Signalized Delay (Sec/Veh)	Unsignalized Delay (Sec/Veh)
A	Minimal control delay, traffic operates at primary free flow conditions, unimpeded movement within traffic stream	≤ 10	≤ 10
B	Minor control delay at signalized intersections, traffic operates at a fairly unimpeded level with slightly restricted movement within traffic stream	> 10 and ≤ 20	> 10 and ≤ 15
C	Moderate control delay, movement within traffic stream more restricted than LOS B, formation of queues contributes to lower average travel speeds	> 20 and ≤ 35	> 15 and ≤ 25
D	Considerable control delay that may be substantially increased by small increases in flow, average travel speeds continue to decrease.	> 35 and ≤ 55	> 25 and ≤ 35
E	High control delay, average travel speed no more than 22 percent of free flow speed	> 55 and ≤ 80	> 35 and ≤ 50
F	Extremely high control	> 80	> 50

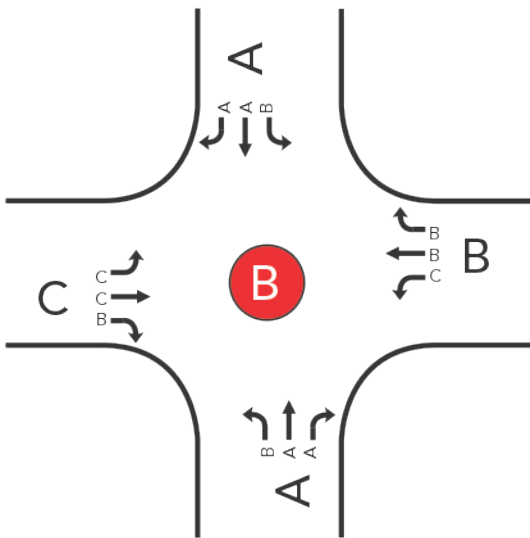
Source: *Highway Capacity Manual 2010*

For signalized and all-way stop controlled intersections, LOS is calculated for a movement (e.g., left, through, right), for the approach (e.g., northbound, southbound, eastbound, westbound) and for the overall intersection.

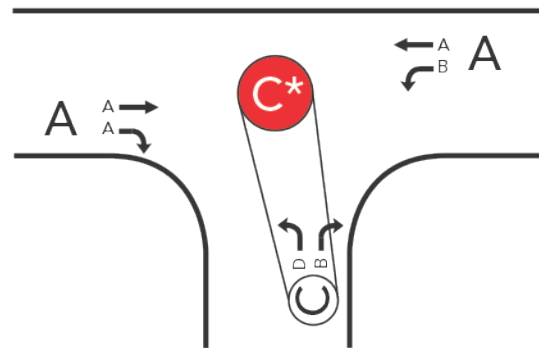
For two-way stop-controlled intersections, LOS is calculated for a movement and for the approach. However, for the overall intersection, LOS is reported as the lowest approach within the intersection. This is because most drivers are on the major roadway and do not experience delay traversing through the intersection. The example below illustrates the various LOS calculations completed for intersections.

EXAMPLE:

Signalized & All-Way Stop Controlled



Two-Way Stop Controlled



*Reported as approach LOS

Source: United Civil Group, 2021

V. EXISTING ROADWAY CONDITIONS

A. Physical Characteristics

Olive Avenue is an east/west roadway and is classified as an arterial roadway within Glendale. It is constructed as a two-lane roadway with one lane in each direction adjacent to the proposed site. The posted speed limit adjacent to the development is 45 miles per hour. The City of Glendale Arterial Count Map for 2020 shows an annual average daily traffic (AADT) volume of 2,200 vehicles per day on Olive Avenue within the vicinity of the site.

An east-west rail line runs on the north side, parallel to Olive Avenue. The rail line is owned by AT&SF. The single-track rail line is located approximately 80 feet north of Olive Avenue, measured center of track to center of intersection.

Sarival Avenue is a north/south roadway and is classified as a principal arterial roadway per MCDOT's Major Street and Routes Plan. It is constructed as a two-lane roadway with one lane in each direction adjacent to the proposed site. The posted speed limit adjacent to the development is 45 miles per hour. The City of Glendale Arterial Count Map for 2020 shows an annual average daily traffic (AADT) volume of 3,200 vehicles per day on Sarival Avenue within the vicinity of the site.

Peoria Avenue is an east/west roadway and is classified as a principal arterial roadway per MCDOT's Major Street and Routes Plan. To the west of Sarival Avenue it is constructed as a two-lane roadway with one lane in each direction. To the east of Sarival Avenue it is constructed as a four-lane roadway with two lanes in each direction separated by a two-way left turn lane. The posted speed limit on Peoria Avenue is 45 miles per hour.

Cotton Lane is a north/south roadway and is classified as a principal arterial roadway per MCDOT's Major Street and Routes Plan. It is constructed as a four-lane roadway with two lanes in each direction separated by a two-way left turn lane. The posted speed limit on Cotton Lane is 45 miles per hour.

Reems Road is a north/south roadway and is classified as a principal arterial roadway per MCDOT's Major Street and Routes Plan. It is constructed as a two-lane roadway with one lane in each direction. The posted speed limit on Reems Road is 45 miles per hour.

Northern Parkway is an east/west freeway section within the vicinity of the site and is classified as a parkway within Glendale. Northern Parkway is a four-lane roadway with two lanes in each direction separated by a 50-foot median. The posted speed limit on Northern Parkway is 55 miles per hour.

The intersection of **Cotton Lane/Olive Avenue** currently operates as a signalized intersection. The intersection has protected left turn phasing in the northbound and southbound directions and protected permissive left turn phasing in the eastbound and westbound directions. The northbound and southbound approaches consist dual left turn lanes, two through lanes and one dedicated right turn lane. The eastbound and westbound approaches consist of one left turn lane, two through lanes and one dedicated right turn lane. The intersection is controlled and operated by Maricopa County.

The intersection of **Sarival Avenue/Peoria Avenue** currently operates as an all-way stop controlled intersection. The northbound approach consists of one exclusive left turn lane, one through lane and one shared through-right turn lane. The eastbound and southbound approaches consist of one exclusive left turn lane and one shared through-right turn lane. The westbound approach consists of one exclusive left turn lane, one through lane and a dedicated right turn lane. The intersection is controlled and operated by Maricopa County and the City of Surprise.

The intersection of **Sarival Avenue/Olive Avenue** currently operates as an all-way stop controlled intersection. All approaches to the intersection consist of a shared left-through-right lane. The intersection is controlled and operated by Maricopa County. The AT&SF rail line runs parallel to Olive Avenue north of the intersection.

The intersection of **Sarival Avenue/Northern Parkway WB Off-Ramp** currently operates as a signalized intersection. The northbound approach consists of one through lane. The southbound approach consists of a three through lanes. The westbound approach consists of one left turn lane and one right turn lane. The intersection is controlled and operated by the City of Glendale.

The intersection of **Sarival Avenue/Northern Parkway EB On-Ramp** currently operates as a signalized intersection. The northbound approach consists of one through lane and one exclusive right turn lane. The southbound approach consists of dual left turn lanes and one through lane. The eastbound approach consists of an exclusive left turn lane and a shared through-right turn lane. The intersection is controlled and operated by the City of Glendale.

The intersection of **Reems Road/Olive Avenue** currently operates as an all-way stop controlled intersection. All approaches to the intersection consist of a shared left-through-right lane. The intersection is controlled and operated by Maricopa County. The AT&SF rail line runs parallel to Olive Avenue north of the intersection.

B. Existing Traffic Volumes

Existing turning movement counts (TMC) in 15-minute intervals were collected at the study area intersections on Thursday, June 23, 2022, during the morning (7:00AM – 9:00AM) and evening (4:00PM – 6:00PM) peak periods. The resulting morning and evening peak hour traffic volumes are presented in **Figure 4**. Complete traffic count data can be found in *Appendix A: Traffic Data*.

Figure 4 graphically depicts the existing roadway and intersection geometry within the study area along with the 2022 turning movement counts.

C. Existing Traffic Observations

Traffic conditions and operations were observed during the study's weekday morning and evening peak periods. No major traffic issues were noted.

D. Crash Data

Three years of crash data (2019 – 2021) were obtained from the Arizona Department of Transportation (ADOT) Arizona Crash Information System (ACIS). The data was queried for the intersections of Cotton Lane/Olive Avenue, Sarival Avenue/Peoria Avenue, Sarival Avenue/Olive Avenue, Sarival Avenue/Northern Parkway and Reems Road/Olive Avenue with an offset of 250 feet on all legs of the intersection. The crash data are summarized by intersection, injury severity and collision manner, respectively. Injury severity is determined by the reporting officer at the time of the crash or soon thereafter and is based on the most severe injury sustained by an involved party.

Table 2: Injury Severity 2019-2021

Year	Fatal	Suspected Serious Injury	Suspected Minor Injury	Possible Injury	No Injury	Total
Cotton Lane/Olive Avenue						
2019			2	1	2	5
2020					2	2
2021			2		3	5
Total			4	1	7	12
Sarival Avenue/Peoria Avenue						
2019					1	1
2020			1		1	2
2021			1		2	3
Total			2		4	6
Sarival Avenue/Olive Avenue						
2019			2	1	2	5
2020						
2021				1	1	2
Total			2	2	3	7
Sarival Avenue/Northern Parkway						
2019			2			2
2020						
2021			1		2	3
Total			3		2	5
Reems Road/Olive Avenue						
2019					4	4
2020					2	2
2021			2		4	6
Total			2		10	12
TOTAL			13	3	26	42

Table 3: Collision Manner 2019-2021

Year	Single Vehicle	Angle	Left Turn	Rear End	Head On	Sideswipe Same Direction	Sideswipe Opposite Direction	Rear to Side	Other/Unknown	Total
Cotton Lane/Olive Avenue										
2019	1	3	1							5
2020	2									2
2021	1	1	2			1				5
Total	4	4	3			1				12
Sarival Avenue/Peoria Avenue										
2019		1								1
2020		1		1						2
2021		1					2			3
Total		3		1			2			6
Sarival Avenue/Olive Avenue										
2019	1		2	2						5
2020										
2021	1	1								2
Total	2	1	2	2						7
Sarival Avenue/Northern Parkway										
2019			2							2
2020										
2021	1		2							3
Total	1		4							5
Reems Road/Olive Avenue										
2019	1	1					1		1	4
2020	1	1								2
2021		2	1	3						6
Total	2	4	1	3			1		1	12
TOTAL	9	12	10	6		1	3		1	42

Tables 2 and 3 show that within the study area, at the five intersections reviewed, a total of 42 reportable crashes occurred over the three-year period. Of the 42 crashes, 12 or 29 percent were angle crashes. Sixty two percent of the crashes, 26, were reported as no injury, where 13 were classified as suspected minor injury.

Based on the data provided in ACIS, it is difficult to determine if crash patterns exist at the study area intersections due to the variability in the data. To determine if crash patterns exist, an extensive review of individual crash records would be required.

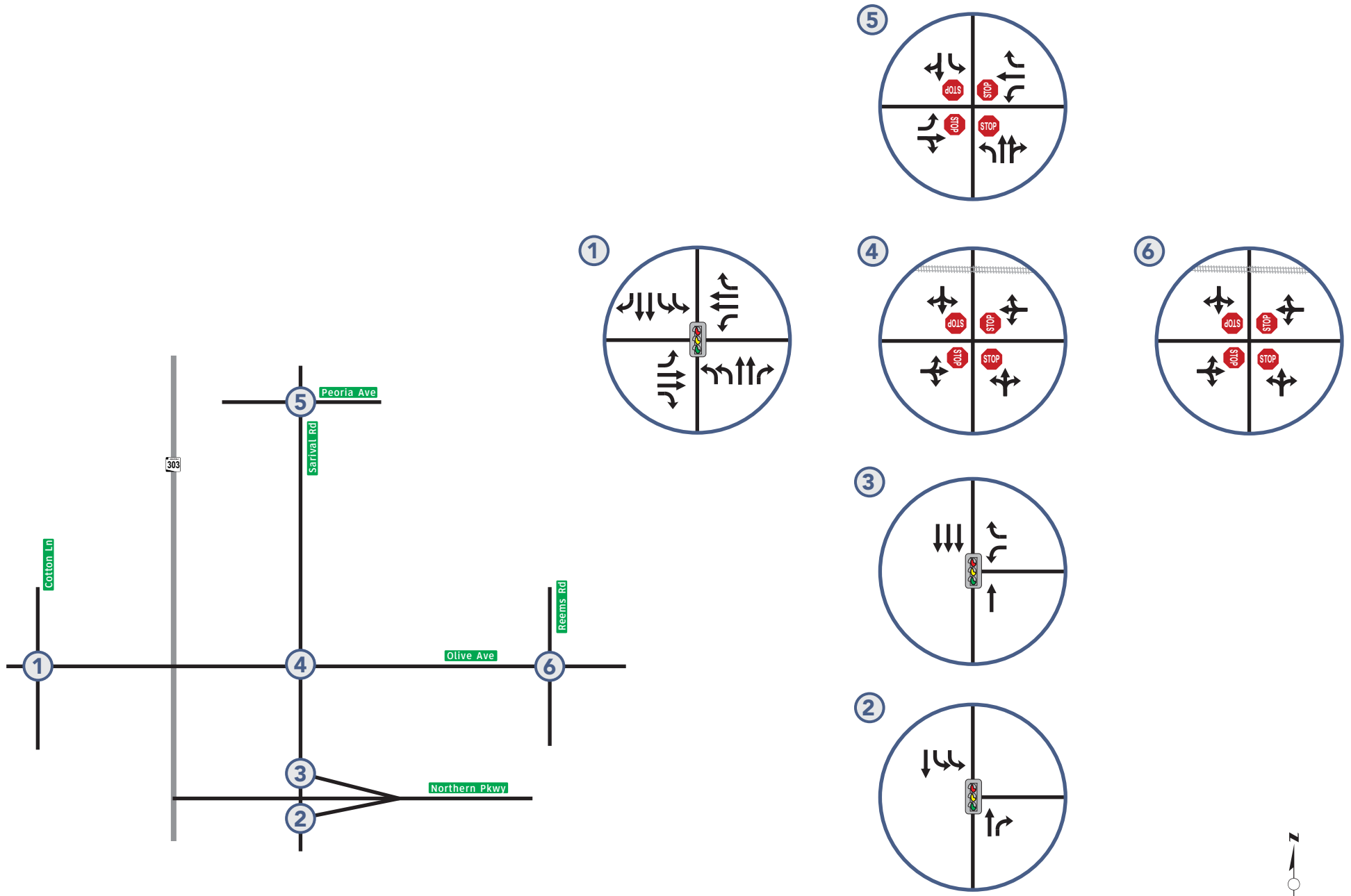
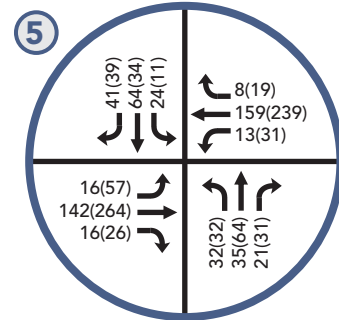
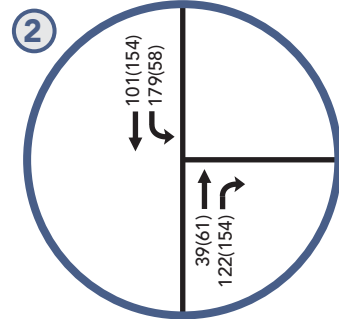
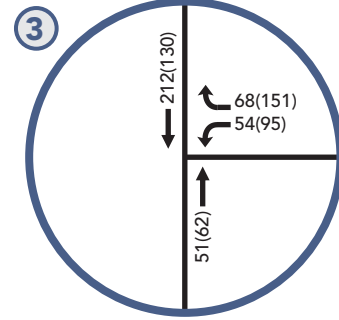
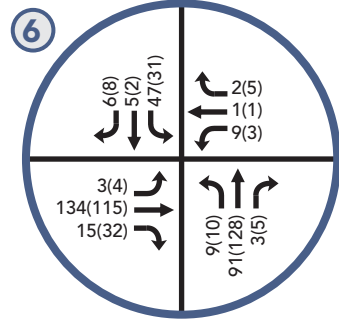
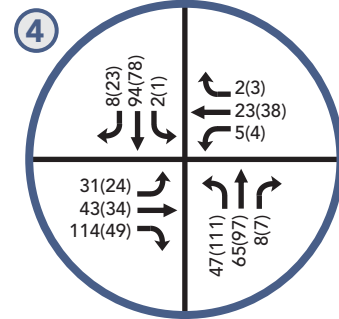
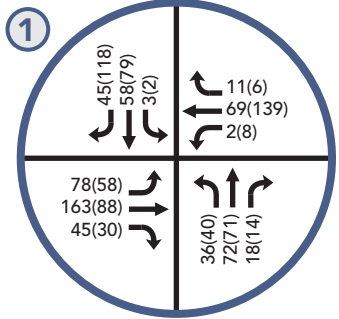
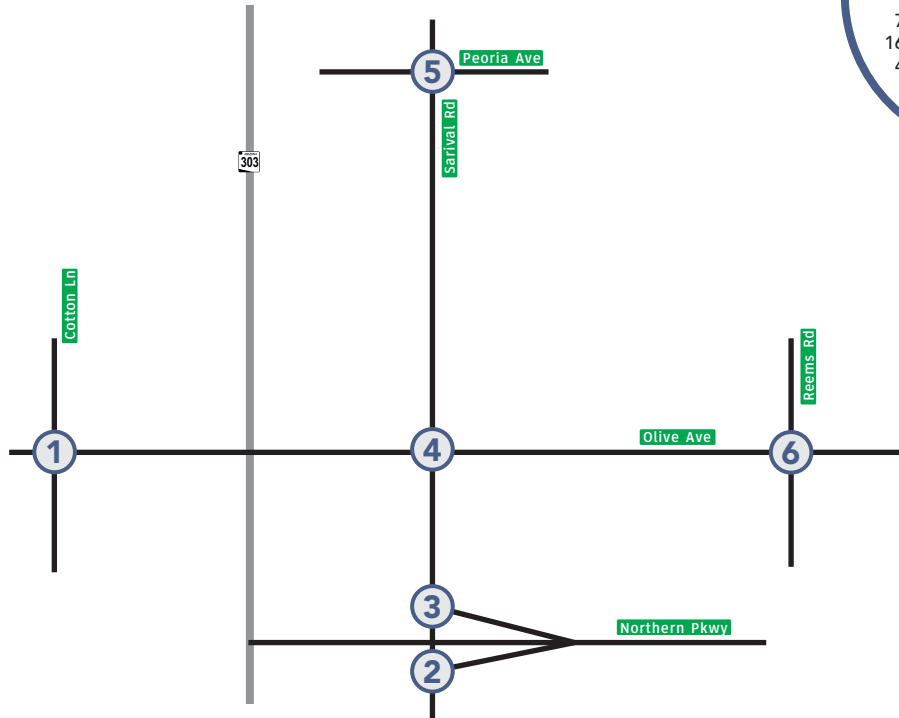


Figure 4: Existing Geometrics - Year 2022

LEGEND

XX(XX) AM(PM) Peak Hour Traffic Volume



not to scale

Figure 5: Existing Traffic - Year 2022

E. Existing Intersection Level of Service Analyses

The level of service (LOS) and average delay at the existing study area intersections were evaluated using the 2022 intersection volumes and the existing lane geometry and traffic control as presented in Figure 4. PTV Vistro traffic modeling software, employing the methodologies as presented in the *Highway Capacity Manual (HCM)*, was utilized for the capacity analyses to obtain the existing conditions levels of service. Summaries of the Vistro output calculations are included in **Appendix B**.

The results of the existing levels of service analysis are presented in **Table 4**.

Table 4: Existing Conditions Intersection Levels of Service

Intersection Location	NB LOS				SB LOS				EB LOS				WB LOS				Overall Intersection
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	LOS
Cotton Lane/Olive Avenue - Signalized																	
AM Peak Hour	D	C	C	D	D	D	D	D	A	A	A	A	A	A	A	A	17.53 B
PM Peak Hour	D	C	C	D	D	D	D	D	A	A	A	A	A	A	A	A	22.58 C
Sarival Avenue/Northern Parkway EB On-Ramp – Signalized																	
AM Peak Hour	-	A	A	A	A	A	-	A	-	-	-	-	-	-	-	-	0.52 A
PM Peak Hour	-	A	A	A	A	A	-	A	-	-	-	-	-	-	-	-	0.61 A
Sarival Avenue/Northern Parkway WB Off-Ramp – Signalized																	
AM Peak Hour	-	A	-	A	-	A	-	A	-	-	-	-	D	-	D	D	15.27 B
PM Peak Hour	-	A	-	A	-	A	-	A	-	-	-	-	D	-	D	D	24.39 C
Sarival Avenue/Olive Avenue – All-Way Stop Controlled																	
AM Peak Hour	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	8.53 A
PM Peak Hour	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	8.88 A
Sarival Avenue/Peoria Avenue – All-Way Stop Controlled																	
AM Peak Hour	A	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	10.01 B
PM Peak Hour	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	13.06 B
Reems Road/Olive Avenue – All-Way Stop Controlled																	
AM Peak Hour	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	8.23 A
PM Peak Hour	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	8.31 A

*LOS presented is for the worst approach for unsignalized intersection.

The existing study area intersections currently operate at acceptable levels of service, LOS C or better, during the AM and PM peak hours.

VI. PROJECTED TRAFFIC

A. Trip Generation

Estimates of the traffic volumes that will be generated by the proposed development were determined from transportation planning data taken from the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 11th Edition, 2021*. The ITE rates are based on studies that measure trip generation characteristics for various types of land uses. The rates are expressed in terms of trips per unit of land use type. For the proposed land use, the most similar land use ITE code was determined to be Warehousing (150).

Table 5 presents the forecasted daily and peak hour vehicle trips generated for the proposed Parkway 303 East Development for a typical weekday upon full build out.

Table 5: Trip Generation – All Vehicles

Land Use	ITE Code	Units	Total Size	Daily	AM Peak			PM Peak		
					Total	In	Out	Total	In	Out
Warehousing	150	1,000s SF	4,381.28	7,492	745	574	171	789	221	568

Warehousing – ITE LUC 150

AM Peak Hour $T = 0.17(X)$ 77% entering, 23% exiting

PM Peak Hour $T = 0.18(X)$ 28% entering, 72% exiting

Daily $T = 1.71(X)$ 50% entering, 50% exiting

Table 6 presents the heavy vehicle volumes that are anticipated to enter and exit the site.

Table 6: Trip Generation – Heavy Vehicles Only

Land Use	ITE Code	Units	Total Size	Daily	AM Peak			PM Peak		
					Total	In	Out	Total	In	Out
Warehousing	150	1,000s SF	4,381.28	2,629	88	46	42	131	68	63

The forecasted trip generation was calculated based on values presented within the ITE Trip Generation Manual. On a weekday, after full build-out of Parkway 303 East, the development is estimated to generate a total of 7,492 daily trips with 745 trips occurring in the morning peak hour and 789 trips occurring in the evening peak hour. According to the Trip Generation Manual, it is assumed that approximately 12 percent of the trips in the morning peak hour are heavy vehicles and 16 percent in the evening peak hour.

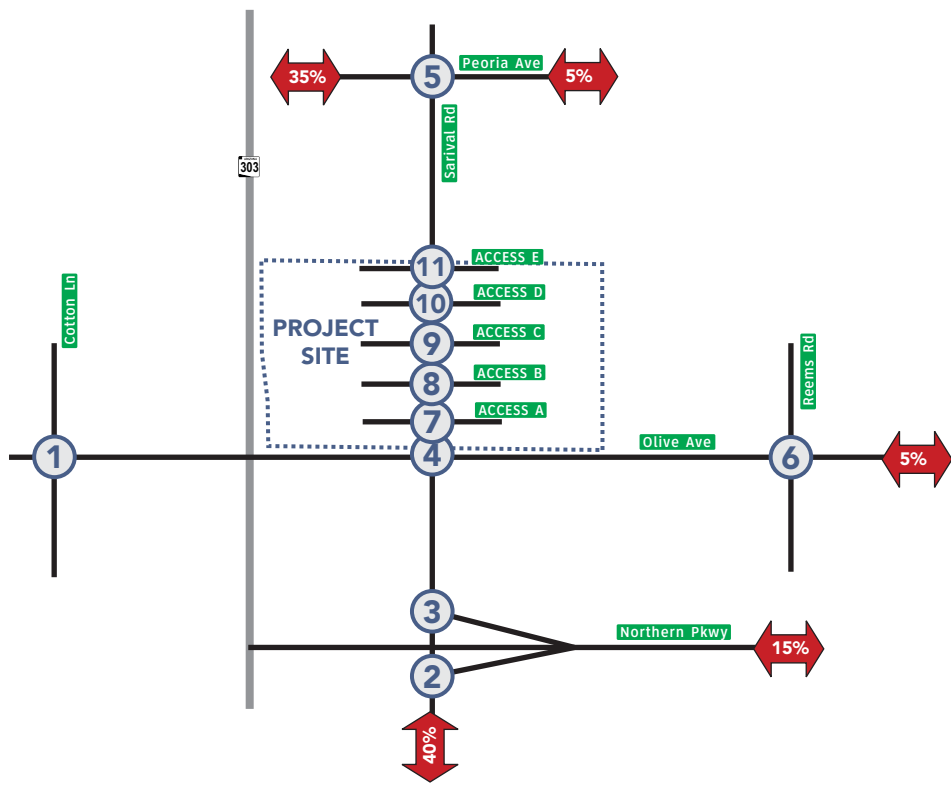
B. Trip Distribution

The trip distribution procedure determines the general pattern of travel for vehicles entering and leaving the development in the study area. The assumed trip distribution percentages for the proposed development are shown in **Table 7**. These percentages are based on the land uses surrounding the site, and the associated street patterns outside the development. Given the relatively unique nature of the proposed development, it may be likely vehicles will originate from longer distances than a typical development, so the percentages are based on a 10-mile radius from the center of the site and peak hour traffic data collected near the site.

Table 7: Trip Distribution Percentages

Direction	Trip Distribution Percentage	
	Arriving From and Departing To	
	the Site at Full Build-out	
Sarival Avenue south of Northern Parkway	40%	
Northern Parkway east of Sarival Avenue	15%	
Olive Avenue east of Reems Road	5%	
Peoria Avenue west of Sarival Avenue	35%	
Peoria Avenue east of Sarival Avenue	5%	

Figure 5 presents the assigned site generated traffic to and from the development.



LEGEND
 XX(XX) AM(PM) Peak Hour Traffic Volume
 X% Trip Distribution Percentage

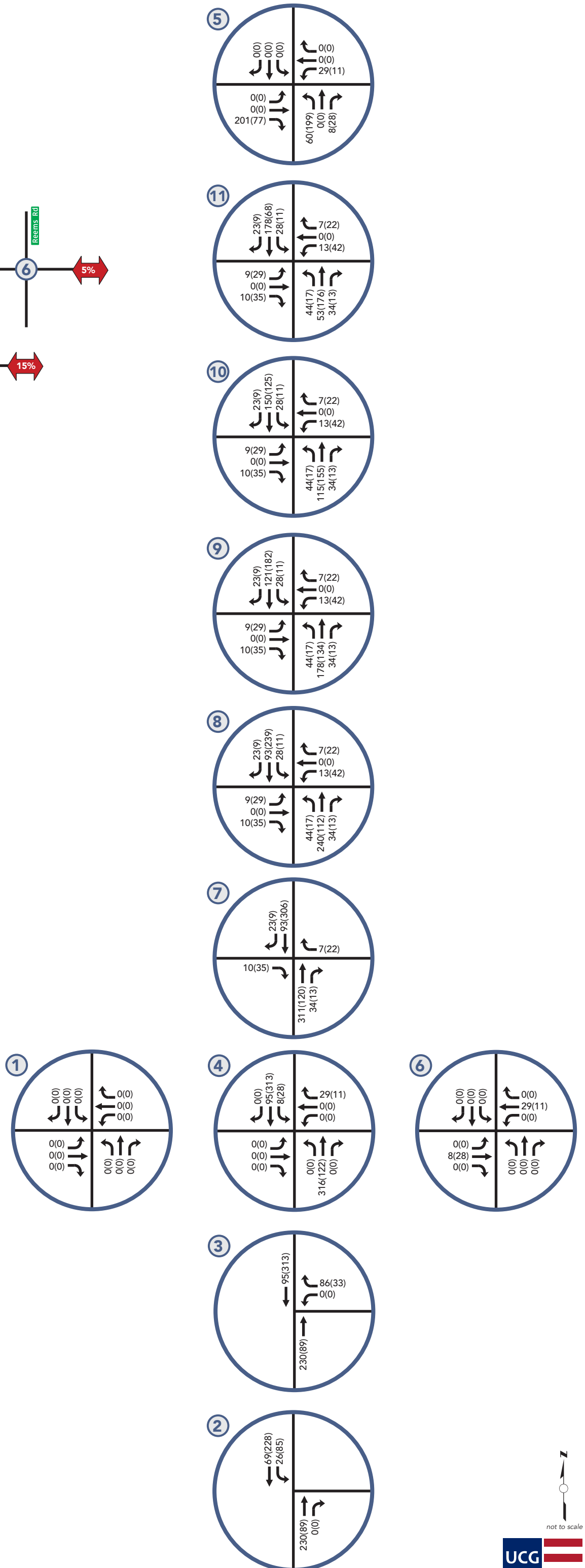


Figure 6: Site Generated Traffic and Trip Distribution

C. Projected Background and Total Traffic Volumes

Non-site or background traffic volumes representing the amount of traffic estimated to be on the area roadway network without the proposed development within the study area are projected for the horizon years of the development: year 2025 and year 2030 (5 years after full site buildout). The yearly growth trends coupled with the site generated traffic of any known proposed developments in the study area are used to forecast the background traffic.

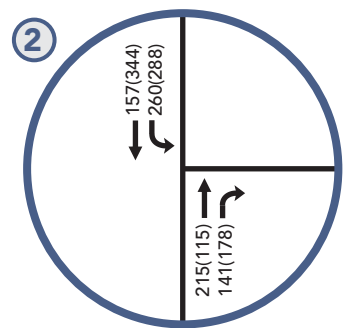
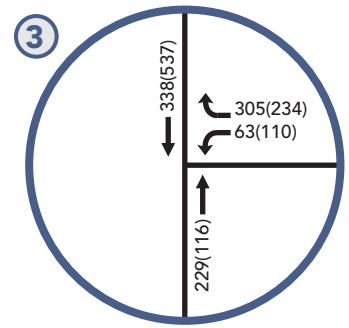
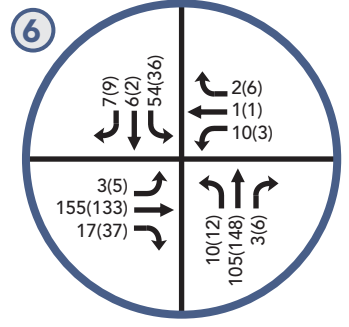
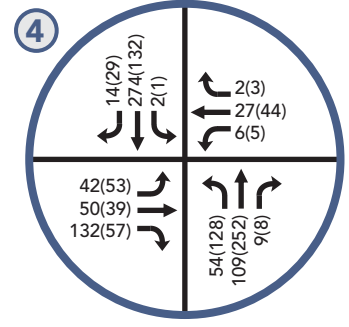
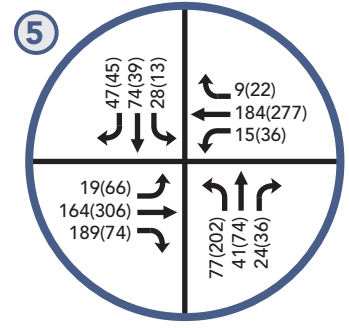
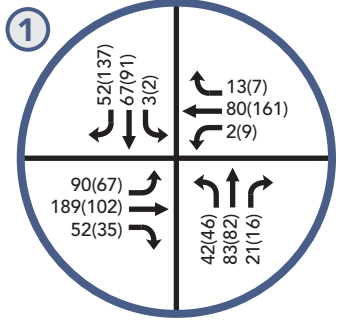
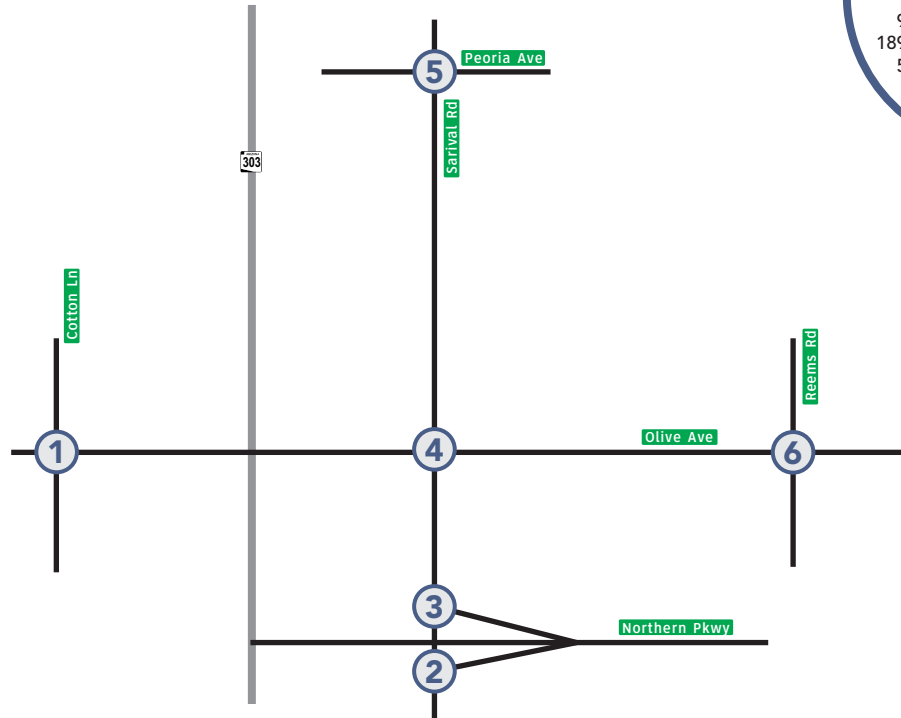
The background traffic was estimated by including the Clarius Development plus a percent growth rate. Because of the other unknown future development in the area, a 5% growth rate was used to estimate background trips from the 2025 data through 2030.

The background traffic volumes are presented in *Figure 6: Background Traffic – Year 2025* and *Figure 7: Background Traffic – Year 2030*.

Total traffic projections for the horizon years of the development were determined by adding the proposed development's site generated traffic to the forecasted horizon background traffic volumes for the full build-out horizon year. The total traffic volumes are presented in *Figure 8: Total Traffic – Year 2025* and *Figure 9: Total Traffic – Year 2030*.

LEGEND

XX(XX) AM(PM) Peak Hour Traffic Volume

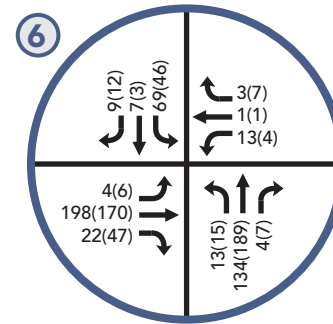
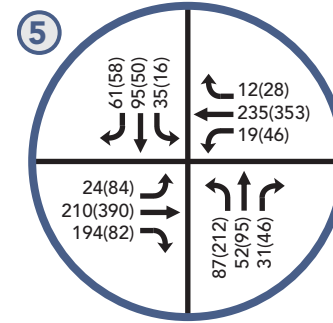
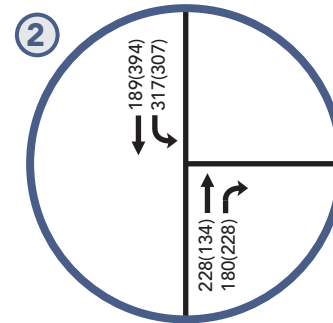
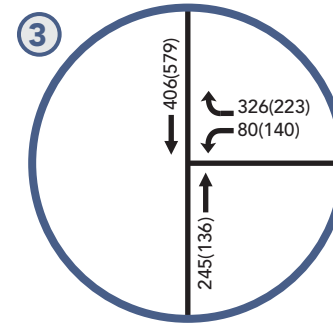
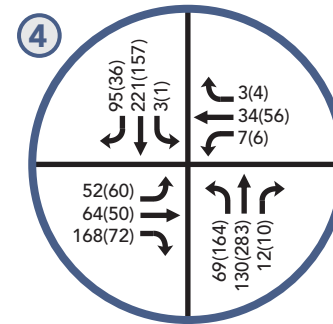
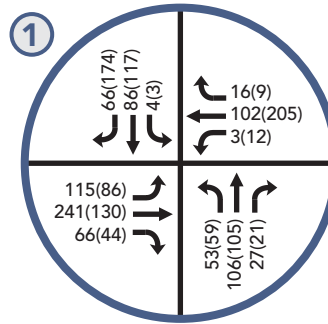
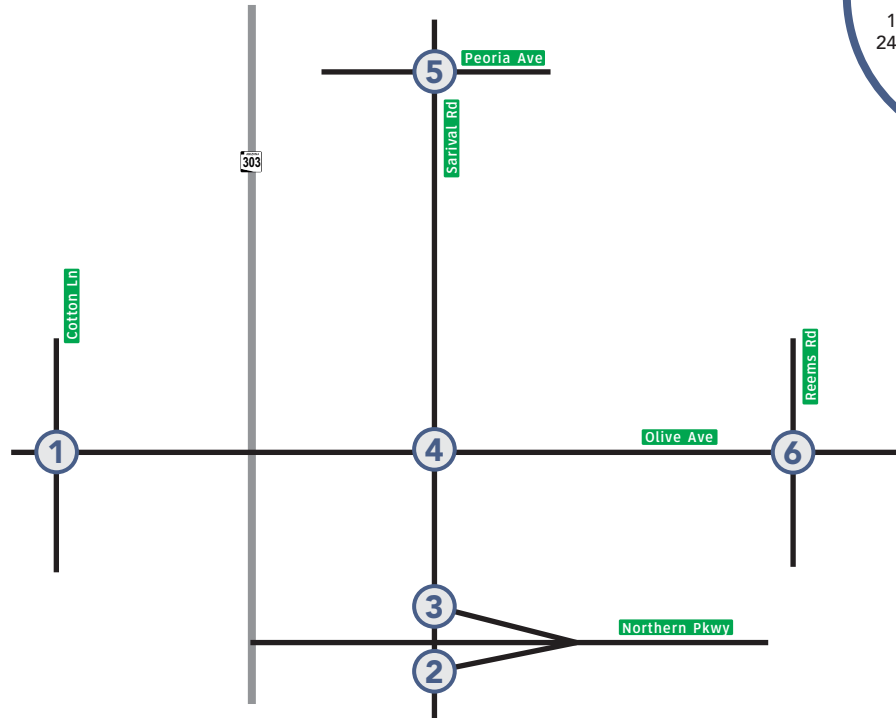


not to scale

Figure 7: Background Traffic - Year 2025

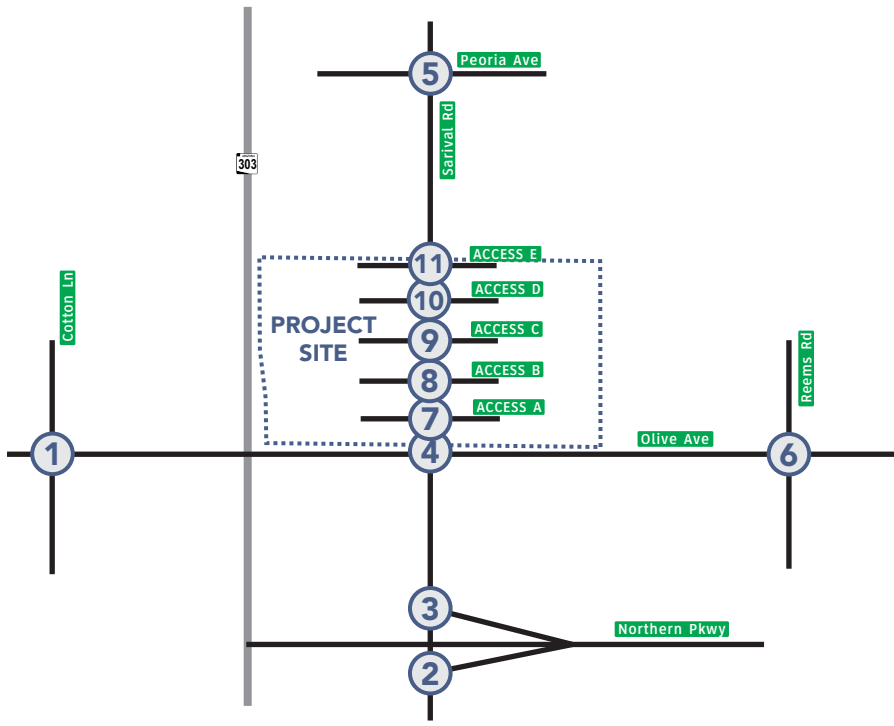
LEGEND

XX(XX) AM(PM) Peak Hour Traffic Volume



not to scale

Figure 8: Background Traffic - Year 2030



LEGEND

XX(XX) AM(PM) Peak Hour Traffic Volume

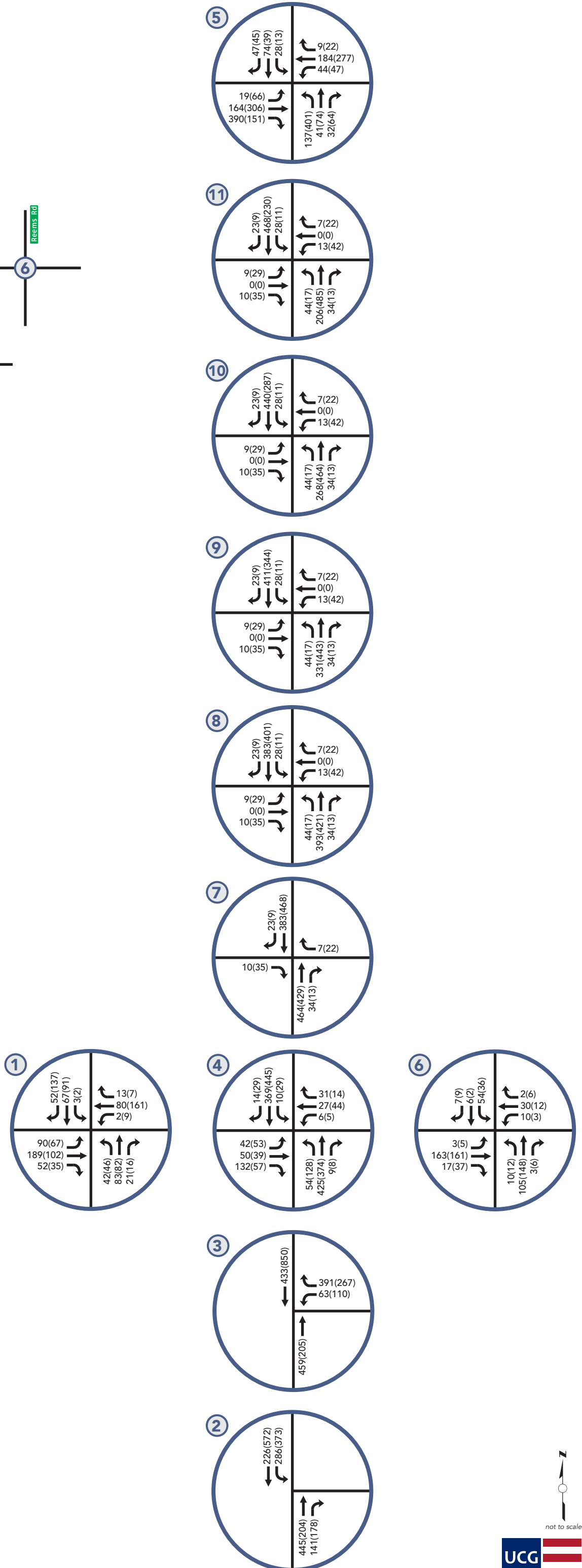
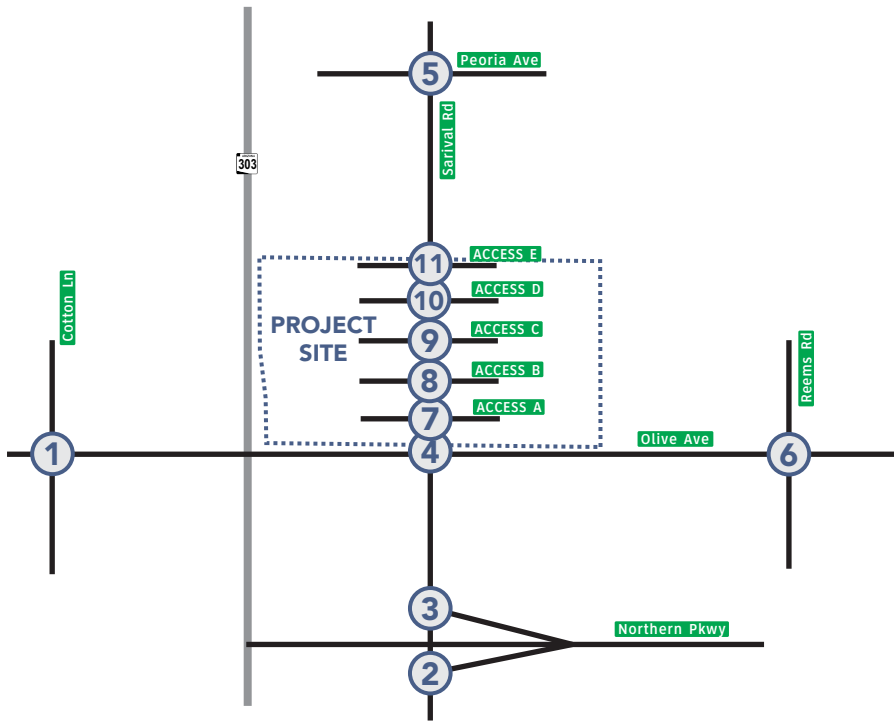


Figure 9: Total Traffic - Year 2025



LEGEND

XX(XX) AM(PM) Peak Hour Traffic Volume

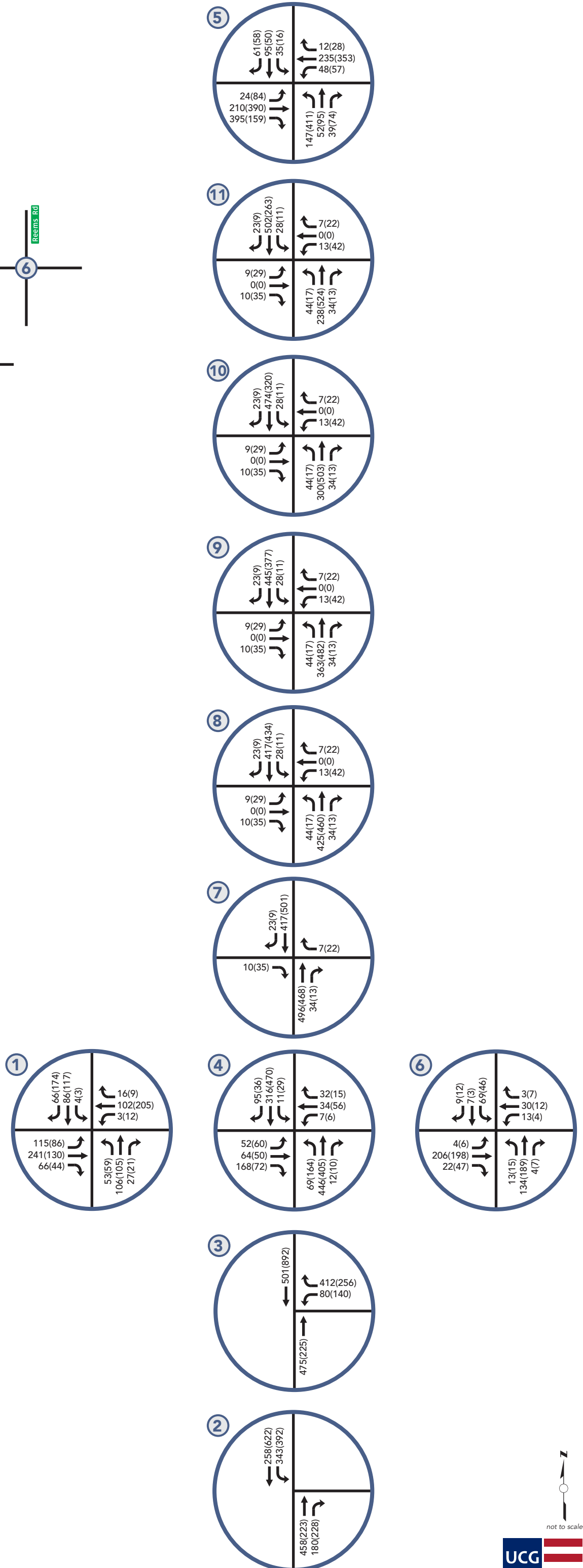


Figure 10: Total Traffic - Year 2030

VII. TRAFFIC AND IMPROVEMENT ANALYSIS

The purpose of this section is to show the relations between traffic operations and roadway geometrics; identify needs pertaining to progressive traffic flow and safety; and identify alternatives for further consideration, where applicable.

A. Roadway Improvements

The proposed development, located on both the east and west sides of Sarival Avenue, is responsible for the widening of Sarival Avenue through the site's development boundary. Per conversations with the City of Glendale staff, Sarival Avenue will be operated and maintained by the City in the near future, therefore the city's typical Arterial Section A-1 with a total of 110 feet of right of way should be constructed, Glendale Standard Detail G-302 and G-322.

130 feet for 250 feet north of Olive Ave

B. Site Accessibility

Per Glendale Standard Detail G-454, the minimum distance from intersections and adjacent driveways is 150 feet measured point of curvature to point of curvature or driveway edge. In addition, when left turn lanes are required, the driveway spacing should be outside the calculated turn lane lengths plus the transition to allow full access. Therefore, based on turn lane length calculations in Section C below, the following access configurations are proposed.

Access A is planned to be constructed as a right in/right out driveway and will access both the employee parking areas and truck yards of Buildings B and D. Access A is spaced approximately 360 feet north of Olive Avenue. The measurements are shown as center of roadway to center of driveway.

Access B is planned to be constructed as a full access driveway and will provide ingress/egress to the employee parking areas of Buildings B and D. Access B is spaced approximately 505 feet north of Access A. The measurements are shown as center of driveway to center of driveway.

Access C is planned to be constructed as a full access driveway and will access both the employee parking areas and truck yards of Buildings A, B, C and D. Access C is spaced approximately 525 feet north of Access B. The measurements are shown as center of driveway to center of driveway.

Access D is planned to be constructed as full access driveway and will provide ingress/egress to the employee parking areas to Buildings A and C. Access D is spaced approximately 690 feet north of Access C. The measurements are shown as center of driveway to center of driveway.

Access E is planned to be constructed as a full access driveway and will provide ingress/egress to both the employee parking areas and truck yards of Buildings A and C. Access E is spaced approximately 500 feet north of Access D. The measurements are shown as center of driveway to center of driveway.

Based on the spacing requirements, all the accesses meet the City of Glendale driveway spacing requirements. Therefore, the proposed Accesses A through E should be allowed.

C. Turn Lane Analysis

C.1. Right-Turn Deceleration Lanes

Per the 2015 Engineering Design and Construction Standards at major driveways, a deceleration right turn lane may be required as determined by the Transportation Engineer. The City of Glendale has indicated that deceleration lanes will be required at all access points that serve heavy vehicles. Therefore, right turn lanes are recommended at all site accesses on Sarival Avenue in both the north- and southbound directions.

To determine the minimum recommended right-turn deceleration lane storage on Sarival Avenue at the site access driveways, a queue analysis was performed for full build out year 2030 forecasted traffic conditions utilizing AASHTO Green Book methodologies for unsignalized intersections. The queue length is calculated for unsignalized intersections as the average number of turning peak hour vehicles likely to arrive in an average 2-minute period, utilizing a length for passenger car vehicles of 25 feet and heavy vehicles of 65 feet. The minimum provided queue length should be 2 car lengths (50 feet), or 1 car and 1 truck (85 feet). A factor of 1.5 was used in the calculation.

Table 8 presents information related to the calculated queue lengths, minimum braking distances, calculated storage lane lengths and minimum storage lane lengths for the right-turn deceleration lane for total traffic conditions in full buildout horizon year 2030. For this development it was also assumed that the average length of a vehicle is 35 feet, due to the anticipated combination of passenger vehicles and heavy vehicles into and out of the site.

Table 9: Right Turn Lane Analyses

Location (Volume)	Calculated Intersection Queue Length per AASHTO	Recommended Min. Storage Lane Length	Taper Length
Access A			
NB Sarival Avenue (34)	60 feet	150 feet	150 feet
SB Sarival Avenue (23)	40 feet	150 feet	150 feet
Access B			
NB Sarival Avenue (34)	60 feet	150 feet	150 feet
SB Sarival Avenue (23)	40 feet	150 feet	150 feet
Access C			
NB Sarival Avenue (34)	60 feet	150 feet	150 feet
SB Sarival Avenue (23)	40 feet	150 feet	150 feet
Access D			
NB Sarival Avenue (34)	60 feet	150 feet	150 feet
SB Sarival Avenue (23)	40 feet	150 feet	150 feet
Access E			
NB Sarival Avenue (34)	60 feet	150 feet	150 feet
SB Sarival Avenue (23)	40 feet	150 feet	150 feet

Utilizing the AASHTO calculations and considering the minimum storage length requirements per the City of Glendale, the recommended storage lengths are shown in Table 9 for each access.

C.2. Left-Turn Deceleration Lanes

A two way left turn lane is planned on Sarival Avenue within the proposed cross section. The two way left turn lane is sufficient to accommodate left turning traffic into site Accesses B through E.

Access A is proposed as right in/right out only and should be limited by a raised driveway island.

A left turn lane will be required for southbound traffic on Sarival Avenue at Olive Avenue. Due to the location of the railroad tracks in relation to the intersection, the left turn lane may be split to hold vehicles so that they do not queue over the tracks. It is estimated that 29 vehicles will want to make a southbound left turn, which equates to a calculated storage of approximately 90 feet. Per the City of Glendale the left turn storage should be a minimum of 150 feet with a 100 foot opening and 50

feet of double yellow stripe, prior to the beginning of the two way left turn lane striping on minor arterial roadways.

D. Traffic Signal Warrant Analysis

The 2009 *Manual on Uniform Traffic Control Devices* (MUTCD) was used as the primary tool to determine if a traffic signal is warranted at the intersections of Sarival Avenue/Olive Avenue and Sarival Avenue/Peoria Avenue by full buildout.

There are nine specific signal warrants in the MUTCD; however, not all warrants are applicable to this study. The warrants used in this analysis include:

- Warrant 1 – Eight-Hour Vehicular Volume
- Warrant 2 – Four-Hour Vehicular Volume

Appendix C: Traffic Signal Warrant Analyses presents the results of the signal warrant analyses.

Warrant 1 – Eight-Hour Vehicular Volume

The Minimum Vehicular Volume, Condition A, is intended for application where the volume of intersecting traffic from a side street or driveway is the principal reason for considering installation of a traffic signal. In this condition, the warrant would be satisfied when, for each of any eight hours of an average day, the traffic volumes on the major and minor approach are equal to or exceeds specified limits located on *Table 4C-1 Warrant 1 Eight-Hour Vehicular Volume* in the *MUTCD 2009*.

The Interruption of Continuous Traffic, Condition B, is intended for application where the traffic volume on a major street is so heavy that the traffic on a minor intersection street or driveway has excessive delay or hazard in entering or crossing the major street. This warrant is met when, for each of any eight hours of an average day, the traffic volumes on the major and minor approach is equal to or exceeds specified limits located on *Table 4C-1 Warrant 1, Eight-Hour Vehicular Volume* in the *MUTCD 2009*.

Volume projections for the eight highest hours on an average day were determined by applying hourly adjustment factors calculated from the available peak hour turning movement count data.

Warrant 1 Results:

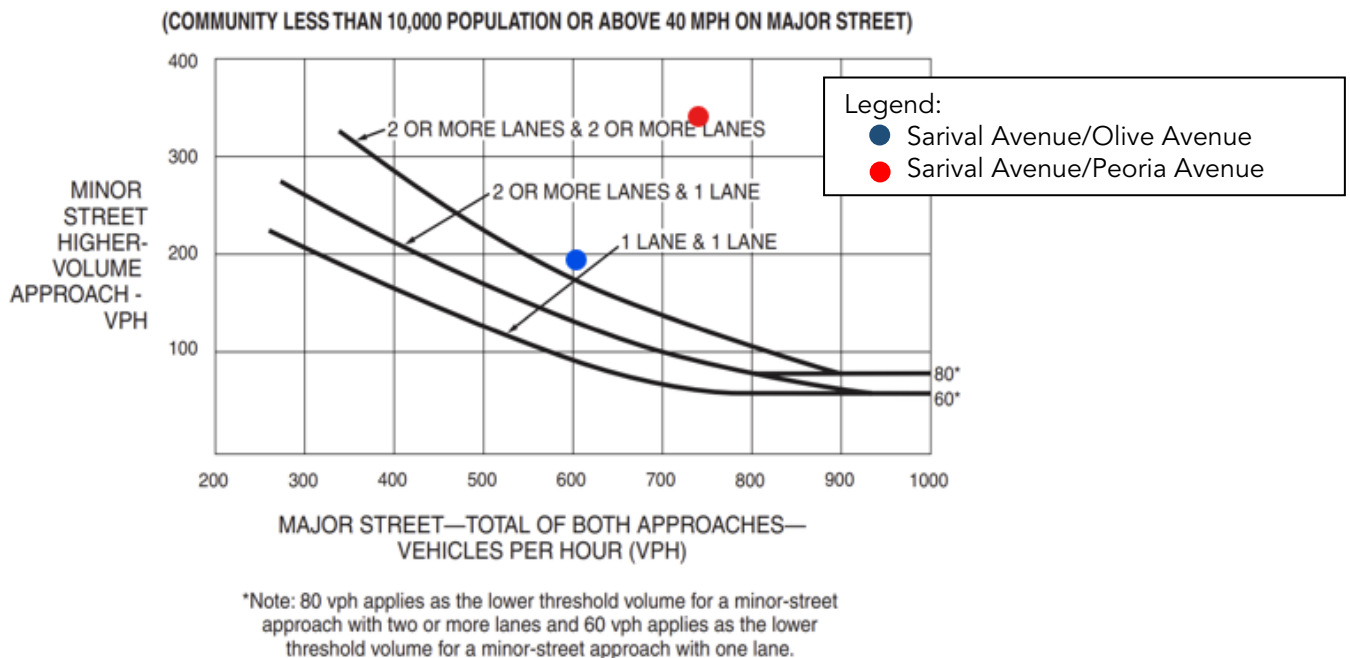
Sarival Avenue/Olive Avenue - Warrant 1 is met for Condition A by 2025

Sarival Avenue/Peoria Avenue - Warrant 1 is met for Condition A by 2025

Warrant 2 – Four-Hour Vehicular Volume

The four-hour vehicular volume signal warrant conditions are intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic control signal. This warrant is satisfied when, for each of any four hours of an average day, plotted points representing vehicles per hour on the major street (total of both approaches) and the vehicles per hour on the minor street approach (one direction only) all fall above the appropriate curve located on *Figure 4C-2 Warrant 2, Four-Hour Vehicular Volume* in the *MUTCD 2009*.

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)



Warrant 2 Results:

Sarival Avenue/Olive Avenue - Warrant 2 is met by 2025

Sarival Avenue/Peoria Avenue - Warrant 2 is met by 2025

Signal Warrant Summary

The traffic signal warrant analyses within this TIA are based on forecasted traffic volumes and conceptual land plans, site access, and assumed land uses.

The developer should conduct a traffic signal warrant analysis once actual development is realized to confirm traffic signal needs at the study intersection.

Developer should be responsible for their proportional share of the signal cost of 50% based on the development at the intersection of Sarival Avenue/Olive Avenue and 10% at the intersection of Sarival Avenue/Peoria Avenue.

E. Intersection Level of Service Analyses

E.1. Background Traffic

Capacity analyses at the existing study area intersections were performed for the forecasted background traffic utilizing the roadway geometries for the horizon year of the study (2025 and 2030) as presented. **Tables 10 and 11** present the background levels of service at the study area intersections without the proposed development within the study area.

Table 10: 2025 Background Traffic Intersection Levels of Service

Intersection Location	NB LOS				SB LOS				EB LOS				WB LOS				Overall Intersection
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	LOS
Cotton Lane/Olive Avenue - Signalized																	
AM Peak Hour	D	C	C	D	D	D	D	D	A	A	A	A	A	A	A	A	17.62 B
PM Peak Hour	D	C	C	D	D	D	D	D	A	A	A	A	A	A	A	A	22.65 C
Sarival Avenue/Northern Parkway EB On-Ramp – Signalized																	
AM Peak Hour	-	A	A	A	A	A	-	A	-	-	-	-	-	-	-	-	0.72 A
PM Peak Hour	-	A	A	A	A	A	-	A	-	-	-	-	-	-	-	-	0.62 A
Sarival Avenue/Northern Parkway WB Off-Ramp – Signalized																	
AM Peak Hour	-	A	-	A	-	A	-	A	-	-	-	-	C	-	D	D	18.21 B
PM Peak Hour	-	A	-	A	-	A	-	A	-	-	-	-	C	-	D	D	16.02 B
Sarival Avenue/Olive Avenue – All-Way Stop Controlled																	
AM Peak Hour	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A	10.94 B
PM Peak Hour	B	B	B	B	A	A	A	A	B	B	B	B	A	A	A	A	12.28 B
Sarival Avenue/Peoria Avenue – All-Way Stop Controlled																	
AM Peak Hour	B	B	B	B	B	B	B	B	C	C	C	C	B	B	B	B	14.49 B
PM Peak Hour	C	C	C	C	B	B	B	B	D	D	D	D	C	C	C	C	23.53 C
Reems Road/Olive Avenue – All-Way Stop Controlled																	
AM Peak Hour	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	8.50 A
PM Peak Hour	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	8.65 A

*LOS presented is for the worst approach for unsignalized intersection.

For background traffic conditions in year 2024, the existing study area intersections are forecasted to operate at acceptable levels of service, LOS C or better, during the morning and evening peak hours.

Table 11: 2030 Background Traffic Intersection Levels of Service

Intersection Location	NB LOS				SB LOS				EB LOS				WB LOS				Overall Intersection
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	LOS
Cotton Lane/Olive Avenue - Signalized																	
AM Peak Hour	D	C	C	D	D	D	D	D	A	A	A	A	A	A	A	A	17.88 B
PM Peak Hour	D	C	C	C	D	C	D	D	A	A	A	A	A	A	A	A	22.61 C
Sarival Avenue/Northern Parkway EB On-Ramp – Signalized																	
AM Peak Hour	-	A	A	A	A	A	-	A	-	-	-	-	-	-	-	-	0.59 A
PM Peak Hour	-	A	A	A	A	A	-	A	-	-	-	-	-	-	-	-	0.75 A
Sarival Avenue/Northern Parkway WB Off-Ramp – Signalized																	
AM Peak Hour	-	A	-	A	-	A	-	A	-	-	-	-	D	-	D	D	15.02 B
PM Peak Hour	-	A	-	A	-	A	-	A	-	-	-	-	C	-	D	D	23.34 C
Sarival Avenue/Olive Avenue – All-Way Stop Controlled																	
AM Peak Hour	B	B	B	B	A	A	A	A	B	B	B	B	A	A	A	A	10.12 B
PM Peak Hour	B	B	B	B	A	A	A	A	A	A	A	A	A	A	A	A	10.89 B
Sarival Avenue/Peoria Avenue – All-Way Stop Controlled																	
AM Peak Hour	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	12.95 B
PM Peak Hour	B	B	B	B	B	B	B	B	E	E	E	E	D	D	D	D	31.75 D
Reems Road/Olive Avenue – All-Way Stop Controlled																	
AM Peak Hour	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	9.20 A
PM Peak Hour	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	9.47 A

*LOS presented is for the worst approach for unsignalized intersection.

As traffic continues to increase delay slightly increases as shown in background traffic conditions for year 2030. The existing study area intersections are forecasted to operate at acceptable levels of service, LOS D or better, during the morning and evening peak hours.

E.2. Total Traffic

Capacity analyses at the existing study area intersections and at the site accesses assumed as part of this TIS per initial conceptual planning were performed for the forecasted total traffic and recommended roadway geometries for the horizon years of the study, 2025 and 2030.

Tables 12 and 13 present the total traffic levels of service at the study area intersections with the proposed development and with any recommended roadway improvements.

Table 12: 2025 Total Traffic Intersection Levels of Service

Intersection Location	NB LOS				SB LOS				EB LOS				WB LOS				Overall Intersection
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	LOS
Cotton Lane/Olive Avenue - Signalized																	
AM Peak Hour	D	C	C	D	D	D	D	D	A	A	A	A	A	A	A	A	17.62 B
PM Peak Hour	D	C	C	D	D	D	D	D	A	A	A	A	A	A	A	A	22.65 C
Sarival Avenue/Northern Parkway EB On-Ramp – Signalized																	
AM Peak Hour	-	A	A	A	A	A	-	A	-	-	-	-	-	-	-	-	0.81 A
PM Peak Hour	-	A	A	A	A	A	-	A	-	-	-	-	-	-	-	-	0.72 A
Sarival Avenue/Northern Parkway WB Off-Ramp – Signalized																	
AM Peak Hour	-	A	-	A	-	A	-	A	-	-	-	-	D	-	D	D	13.26 B
PM Peak Hour	-	A	-	A	-	A	-	A	-	-	-	-	C	-	D	D	15.69 B
Sarival Avenue/Olive Avenue – Signalized																	
AM Peak Hour	A	A	A	A	A	A	A	A	C	D	D	D	C	D	D	D	17.24 B
PM Peak Hour	A	A	A	A	A	A	A	A	C	D	D	D	C	D	D	D	12.63 B
Sarival Avenue/Peoria Avenue – Signalized																	
AM Peak Hour	C	C	C	C	C	D	D	D	A	B	B	B	A	A	A	A	17.92 B
PM Peak Hour	D	C	C	C	C	D	D	D	A	B	B	B	A	A	A	A	18.90 B
Reems Road/Olive Avenue – All-Way Stop Controlled																	
AM Peak Hour	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	8.62 A
PM Peak Hour	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	8.90 A
Sarival Avenue/Access A – Two-Way Stop Controlled																	
AM Peak Hour	-	A	A	A	-	A	A	A	-	-	A	A	-	-	A	A	9.75 A*
PM Peak Hour	-	A	A	A	-	A	A	A	-	-	A	A	-	-	A	A	9.95 A*
Sarival Avenue/Access B – Two-Way Stop Controlled																	
AM Peak Hour	A	A	A	A	A	A	A	A	C	-	A	B	C	-	A	B	14.20 B*
PM Peak Hour	A	A	A	A	A	A	A	A	C	-	A	B	C	-	A	B	13.35 B*
Sarival Avenue/Access C – Two-Way Stop Controlled																	
AM Peak Hour	A	A	A	A	A	A	A	A	C	-	A	B	C	-	A	B	13.45 B*
PM Peak Hour	A	A	A	A	A	A	A	A	B	-	A	B	C	-	A	B	13.26 B*
Sarival Avenue/Access D – Two-Way Stop Controlled																	
AM Peak Hour	A	A	A	A	A	A	A	A	C	-	A	B	B	-	A	B	12.76 B*
PM Peak Hour	A	A	A	A	A	A	A	A	B	-	A	B	C	-	A	B	13.16 B*
Sarival Avenue/Access E – Two-Way Stop Controlled																	
AM Peak Hour	A	A	A	A	A	A	A	A	C	-	A	B	B	-	A	B	12.13 B*
PM Peak Hour	A	A	A	A	A	A	A	A	B	-	A	B	B	-	A	B	13.07 B*

*LOS presented is for the worst approach for unsignalized intersection.

For total traffic conditions in year 2025, the study area intersections and accesses are forecasted to operate at acceptable levels of service, LOS C or better, during the morning and evening peak hours.

Table 13: 2030 Total Traffic Intersection Levels of Service

Intersection Location	NB LOS				SB LOS				EB LOS				WB LOS				Overall Intersection
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	LOS
Cotton Lane/Olive Avenue - Signalized																	
AM Peak Hour	D	C	C	D	D	D	D	D	A	A	A	A	A	A	A	A	17.88 B
PM Peak Hour	D	C	C	C	D	C	D	D	A	A	A	A	A	A	A	A	22.61 C
Sarival Avenue/Northern Parkway EB On-Ramp – Signalized																	
AM Peak Hour	-	A	A	A	A	A	-	A	-	-	-	-	-	-	-	-	0.83 A
PM Peak Hour	-	A	A	A	A	A	-	A	-	-	-	-	-	-	-	-	0.80 A
Sarival Avenue/Northern Parkway WB Off-Ramp – Signalized																	
AM Peak Hour	-	A	-	A	-	A	-	A	-	-	-	-	C	-	D	D	13.48 B
PM Peak Hour	-	A	-	A	-	A	-	A	-	-	-	-	C	-	D	D	16.69 B
Sarival Avenue/Olive Avenue – Signalized																	
AM Peak Hour	A	B	B	A	A	A	A	A	C	D	D	D	C	C	C	C	18.71 B
PM Peak Hour	A	A	A	A	A	A	A	A	C	D	D	D	C	D	D	D	13.74 B
Sarival Avenue/Peoria Avenue – Signalized																	
AM Peak Hour	C	C	C	C	C	D	D	D	A	B	B	B	A	A	A	A	19.02 B
PM Peak Hour	C	C	C	C	C	C	C	C	A	B	B	B	A	B	A	B	19.88 B
Reems Road/Olive Avenue – All-Way Stop Controlled																	
AM Peak Hour	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	9.35 A
PM Peak Hour	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	9.80 A
Sarival Avenue/Access A – Two-Way Stop Controlled																	
AM Peak Hour	-	A	A	A	-	A	A	A	-	-	A	A	-	-	A	A	9.88 A*
PM Peak Hour	-	A	A	A	-	A	A	A	-	-	B	B	-	-	A	A	10.10 B*
Sarival Avenue/Access B – Two-Way Stop Controlled																	
AM Peak Hour	A	A	A	A	A	A	A	A	C	-	A	B	C	-	A	C	15.02 C*
PM Peak Hour	A	A	A	A	A	A	A	A	C	-	A	B	C	-	A	B	14.28 B*
Sarival Avenue/Access C – Two-Way Stop Controlled																	
AM Peak Hour	A	A	A	A	A	A	A	A	C	-	A	B	C	-	A	B	14.20 B*
PM Peak Hour	A	A	A	A	A	A	A	A	C	-	A	B	C	-	A	B	14.17 B*
Sarival Avenue/Access D – Two-Way Stop Controlled																	
AM Peak Hour	A	A	A	A	A	A	A	A	C	-	A	B	C	-	A	B	13.44 B*
PM Peak Hour	A	A	A	A	A	A	A	A	C	-	A	B	C	-	A	B	14.06 B*
Sarival Avenue/Access E – Two-Way Stop Controlled																	
AM Peak Hour	A	A	A	A	A	A	A	A	C	-	A	B	B	-	A	B	12.75 B*
PM Peak Hour	A	A	A	A	A	A	A	A	B	-	A	B	C	-	A	B	13.94 B*

*LOS presented is for the worst approach for unsignalized intersection.

Through year 2030, the study intersections and site accesses are expected to operate at acceptable levels of service, LOS C or better, during the morning and evening peak hours.

F. Commercial and Industrial Driveways/Throat Length

To account for the potential for exiting queuing on driveways due to the lack of gaps that may occur from time to time on Sarival Avenue, the site accesses should be designed with adequate throat lengths to prevent on-site blockages, which may lead to issues on the adjacent roadways. Therefore, due to the industrial nature of the site, driveways should be provided with an inbound throat length of at least 80 feet.

G. Intersection Sight Distance

Proper intersection sight distance and sight triangles shall be provided and maintained at the site accesses and intersections of the proposed development to give drivers exiting the accesses a clear view of oncoming traffic. The landscape and hardscape within the sight triangles must not obstruct the driver's view of the adjacent travel lanes. To ensure adequate sight distances and sight distance triangles, AASHTO's *A Policy on Geometric Design of Highways and Streets* Section 9.5 should be followed as appropriate when designing the accesses and landscaping.

H. AT&SF Railroad Crossing

The planned widening of Sarival Avenue along the site boundary will require AT&SF railroad crossing improvements approximately 80 feet north of the Sarival Avenue/Olive Avenue intersection. The development team should reach out to AT&SF Railroad to conduct a diagnostic meeting to determine the required crossing improvements for the at-grade crossing. The improvements may include a new pad, new gates, safety devices and train preemption with the installation of the signal at the intersection of Olive Avenue/Sarival Avenue.

VIII. CONCLUSIONS AND RECOMMENDATIONS

The Parkway 303 East Development is located on the northeast corner of SR303L and Olive Avenue in Glendale, Arizona. The site consists of approximately 276.4 acres of agricultural land, Maricopa County Assessor's parcels (501-06-008C and 501-41-004A). The site will be developed as four warehouse buildings totaling approximately 4,381,272 square feet. It is assumed that the warehouse buildings will be constructed in one phase and occupied by year 2025.

Five site driveways are planned for this development. The driveways will align to provide access to development on both the west and east sides of Sarival Avenue. The southern driveway, Access A, will be limited to right in/right out only due to its proximity to the intersection of Sarival Avenue/Olive Avenue, the required southbound left turn storage at Olive Avenue and the location of the railroad crossing north of Olive Avenue. The remaining four accesses are planned as full movement driveways and are spaces at least 500 feet apart, measured center of driveway to center of driveway.

The forecasted trip generation was calculated based on values presented within the 11th Edition of the ITE Trip Generation Manual. On a weekday, after full build-out of Parkway 303 East, the development is estimated to generate a total of 7,492 daily trips with 745 trips occurring in the morning peak hour and 789 trips occurring in the evening peak hour. According to the Trip Generation Manual, it is assumed that approximately 12 percent of the trips in the morning peak hour are heavy vehicles and 16 percent in the evening peak hour.

Right turn deceleration lanes will be required for the development at all the site accesses, Accesses A through E. The right turn lanes should be designed as 150 feet of storage with a 150-foot taper.

A two way left turn lane will be constructed on Sarival Avenue within the project boundary limits. The two way left turn lane is sufficient to accommodate left turn traffic into the site accesses, B through E.

Based on signal warrants, traffic signals will be warranted in the future at the intersections of Sarival Avenue/Peoria Avenue and Sarival Avenue/Olive Avenue by full buildout year 2025. Therefore, the developer should be responsible for 10% of the signal costs at the intersection of Sarival Avenue/Peoria Avenue and 50% of the signal costs at the intersection of Sarival Avenue/Olive Avenue.

Using the forecasted total traffic volumes for years 2025 and 2030, along with the recommended intersection improvements, the study area intersections and the proposed site accesses are anticipated to operate at acceptable levels of service, LOS C or better, during the morning and evening peak hours.

Proper intersection sight distance and sight triangles shall be provided and maintained at the site accesses and intersections of the proposed development to give drivers exiting the accesses a clear view of oncoming traffic. The landscape and hardscape within the sight triangles must not obstruct the driver's view of the adjacent travel lanes. To ensure adequate sight distances and sight distance triangles, AASHTO's *A Policy on Geometric Design of Highways and Streets* Section 9.5 should be followed as appropriate when designing the accesses and landscaping.

Based on the findings of this TIA, the following recommendations apply:

- Within the property boundary, construct Sarival Avenue to its ultimate section with 110 feet or right of way per the City of Glendale's Arterial Section A-1.
- Install new pad, gates, and safety devices to accommodate the roadway widening of Sarival Avenue under the direction of the AT&SF Railroad.
- Provide an exclusive left turn lane for southbound traffic on Sarival Avenue at Olive Avenue. The left turn lane should provide 150 feet of storage with a 100-foot opening. Depending upon the intersection geometrics, the left turn lane may be required to be split (additional length) to avoid vehicles stopped over the tracks.
- Limit Access A to a right in/right out only with a raised driveway island.
- Construct right turn deceleration lanes on Sarival Avenue at the site accesses A through E in the northbound and southbound directions. Each right turn lane should provide 150 feet of storage with a 150-foot taper.
- Contribute an in-lieu payment of 10% of the cost of traffic signal design and installation at the intersection of Sarival Avenue/Peoria Avenue.
- Contribute an in-lieu payment of 50% of the cost of traffic signal design and installation at the intersection of Sarival Avenue/Olive Avenue. This signal may include train pre-emption to enhance safety at the intersection.

XI. LIMITATIONS

Our professional services have been performed using the degree of skill ordinarily exercised, under similar circumstances, by reputable transportation engineering firms practicing in this locality. No other warranty, expressed or implied, is made.

The contents of this report are intended for the sole use of the addressee and his/her designees. In completing this report, data was obtained from a variety of sources (i.e., City, County, State and Federal sources); United Civil Group has assumed these sources to be reliable and accurate. Should deviations from this report be noted, this firm shall be contacted for review of the area of concern.

A reasonable attempt was made to acquire recent traffic impact studies, traffic projections and/or data that may be helpful in more accurately projecting traffic volumes. United Civil Group is not responsible for incorporating data made available after this document has been finalized.

This report is issued with the understanding that it is the responsibility of the owner to see that its provisions are carried out or brought to the attention of those concerned. If any changes of the proposed project are planned, the conclusions and recommendations contained in this report shall be reviewed and the report shall be modified or supplemented, as necessary.

X. SOURCES

A Policy on Geometric Design of Highways and Streets, American Association of State Highway and Transportation Officials, 7th Edition, 2019.

Engineering Design and Construction Standards, City of Glendale, 2015.

Manual on Uniform Traffic Control Devices, Federal Highway Administration, MUTCD 2009.

Highway Capacity Manual, HCM, Transportation Research Board.

Roadway Design Manual, MCDOT, 2020.

Traffic Impact Study Manual, MCDOT, 2017.

Trip Generation, 11th Edition, Institute of Transportation Engineers, 2021.

Appendix A



Turning Movement Count

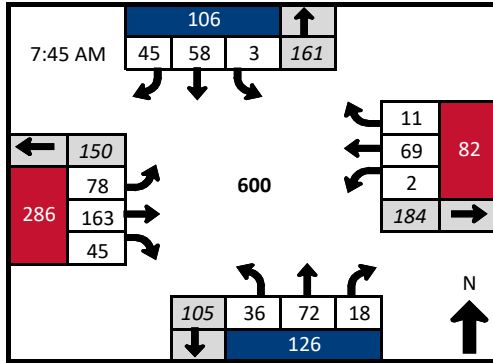
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		Lt	Lt/T	T	T/Rt	Rt	Lt/T/Rt	Lt/Rt
Northbound	45	2		2		1		
Southbound	45	2		2		1		
Eastbound	45	1		2		1		
Westbound	45	1		2		1		

June 23, 2022 (Thursday)

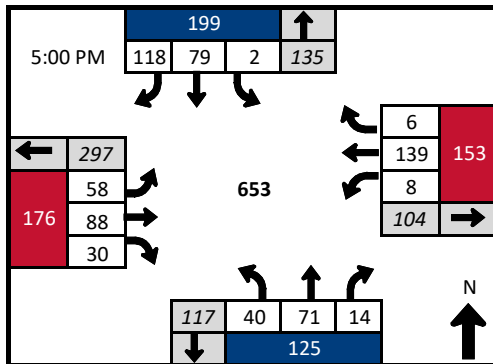
Project No: TR22060

Location: Cotton Lane
and Olive Avenue

Intersection Configuration: Signalized



Start Time	Cotton Lane Northbound				Cotton Lane Southbound				Olive Avenue Eastbound				Olive Avenue Westbound				Total	Peak Hour
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds		
7:00 AM	8	17	2	0	1	13	9	0	13	55	15	0	2	24	2	0	161	
7:15 AM	4	15	6	0	0	8	10	0	14	40	8	0	2	17	2	0	126	
7:30 AM	5	29	5	0	1	7	6	0	19	46	10	0	1	11	1	0	141	
7:45 AM	9	17	2	0	0	19	9	0	28	40	10	0	0	13	1	0	148	576
8:00 AM	9	16	7	0	1	13	13	0	14	46	8	0	0	18	5	0	150	565
8:15 AM	14	19	2	0	1	11	9	0	19	42	12	0	2	28	1	0	160	599
8:30 AM	4	20	7	0	1	15	14	0	17	35	15	0	0	10	4	0	142	600
8:45 AM	7	21	1	0	1	13	16	0	17	30	6	0	2	13	0	0	127	579
Peak Hour Total	36	72	18	0	3	58	45	0	78	163	45	0	2	69	11	0	600	



Start Time	Cotton Lane Northbound				Cotton Lane Southbound				Olive Avenue Eastbound				Olive Avenue Westbound				Total	Peak Hour
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds		
4:00 PM	9	19	4	0	2	19	31	0	8	30	3	0	4	36	1	0	166	
4:15 PM	7	21	2	0	0	22	27	0	12	22	3	0	4	34	1	0	155	
4:30 PM	4	15	3	0	0	14	25	0	16	35	10	0	2	53	2	0	179	
4:45 PM	4	11	3	0	0	20	19	0	16	21	8	0	1	42	3	0	148	648
5:00 PM	9	22	5	0	1	19	28	0	12	20	9	0	1	31	1	0	158	640
5:15 PM	9	14	3	0	0	16	31	0	19	20	6	0	3	34	1	0	156	641
5:30 PM	12	19	3	0	1	18	23	0	14	24	6	0	1	37	2	0	160	622
5:45 PM	10	16	3	0	0	26	36	0	13	24	9	0	3	37	2	0	179	653
Peak Hour Total	40	71	14	0	2	79	118	0	58	88	30	0	8	139	6	0	653	



Turning Movement Count

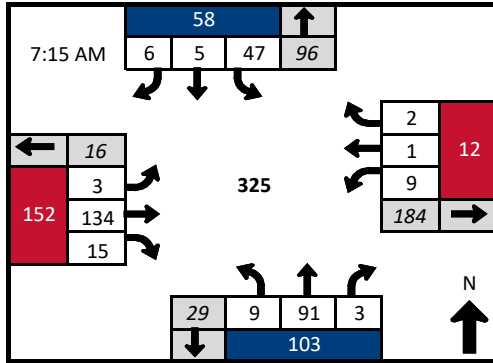
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		Lt	Lt/T	T	T/Rt	Rt	Lt/T/Rt	Lt/Rt
Northbound	45						1	
Southbound	45						1	
Eastbound	45						1	
Westbound	45						1	

June 23, 2022 (Thursday)

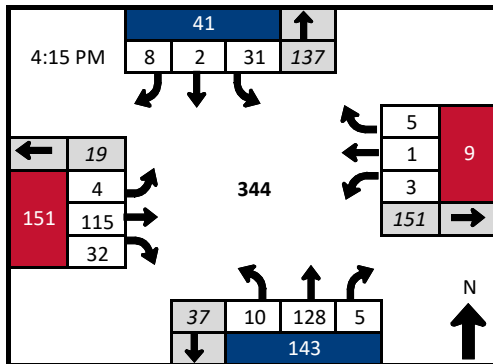
Project No: TR22060

Location: Reems Road
and Olive Avenue

Intersection Configuration: Unsignalized



Start Time	Reems Road Northbound				Reems Road Southbound				Olive Avenue Eastbound				Olive Avenue Westbound				Total	Peak Hour
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds		
7:00 AM	1	20	2	0	7	0	1	0	2	41	2	0	2	0	0	0	78	
7:15 AM	1	21	1	0	10	3	1	0	0	34	1	0	1	1	0	0	74	
7:30 AM	2	27	1	0	15	0	2	0	3	34	6	0	3	0	0	0	93	
7:45 AM	3	23	0	0	12	0	0	0	0	31	3	0	2	0	1	0	75	320
8:00 AM	3	20	1	0	10	2	3	0	0	35	5	0	3	0	1	0	83	325
8:15 AM	5	12	2	0	6	2	4	0	1	22	4	0	1	0	1	0	60	311
8:30 AM	0	19	3	0	10	2	2	0	0	15	5	0	2	0	0	0	58	276
8:45 AM	1	20	1	0	12	1	4	0	3	23	5	0	6	0	1	0	77	278
Peak Hour Total	9	91	3	0	47	5	6	0	3	134	15	0	9	1	2	0	325	



Start Time	Reems Road Northbound				Reems Road Southbound				Olive Avenue Eastbound				Olive Avenue Westbound				Total	Peak Hour
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds		
4:00 PM	1	25	1	0	13	0	1	0	0	32	5	0	2	0	0	0	80	
4:15 PM	2	40	3	0	4	0	2	0	1	28	5	0	1	0	3	0	89	
4:30 PM	4	31	2	0	10	0	0	0	2	32	6	0	0	0	0	0	87	
4:45 PM	1	30	0	0	9	1	5	0	0	28	11	0	0	0	1	0	86	342
5:00 PM	3	27	0	0	8	1	1	0	1	27	10	0	2	1	1	0	82	344
5:15 PM	2	37	1	0	6	0	1	0	1	21	7	0	1	0	1	0	78	333
5:30 PM	3	32	1	0	8	2	5	0	0	25	5	0	0	0	0	0	81	327
5:45 PM	1	36	1	0	7	0	0	0	0	24	4	0	2	0	1	0	76	317
Peak Hour Total	10	128	5	0	31	2	8	0	4	115	32	0	3	1	5	0	344	



Turning Movement Count

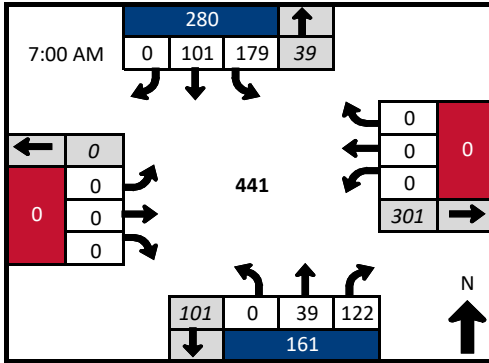
	Speed Limit							
		Lt	Lt/T	T	T/Rt	Rt	Lt/T/Rt	Lt/Rt
Northbound	45			1		1		
Southbound	45	2		1				
Eastbound	55							
Westbound								

June 23, 2022 (Thursday)

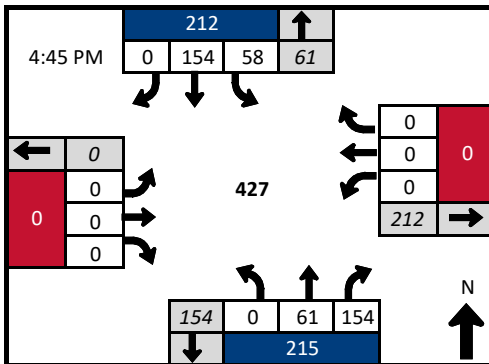
Project No: TR22060

Location: Sarival Avenue
and Northern Parkway EB On-Ramp

Intersection Configuration: Signalized



Start Time	Sarival Avenue Northbound				Sarival Avenue Southbound				Northern Parkway EB On-Ramp Eastbound				Northern Parkway EB On-Ramp Westbound				Total	Peak Hour
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds		
7:00 AM	0	3	25	0	41	34	0	0	0	0	0	0	0	0	0	0	103	
7:15 AM	0	8	38	0	44	29	0	0	0	0	0	0	0	0	0	0	119	
7:30 AM	0	13	30	0	59	10	0	0	0	0	0	0	0	0	0	0	112	
7:45 AM	0	15	29	0	35	28	0	0	0	0	0	0	0	0	0	0	107	441
8:00 AM	0	9	12	0	31	32	0	0	0	0	0	0	0	0	0	0	84	422
8:15 AM	0	14	32	0	44	27	0	0	0	0	0	0	0	0	0	0	117	420
8:30 AM	0	13	40	0	39	28	0	0	0	0	0	0	0	0	0	0	120	428
8:45 AM	0	14	23	0	18	23	0	0	0	0	0	0	0	0	0	0	78	399
Peak Hour Total	0	39	122	0	179	101	0	0	0	0	0	0	0	0	0	0	441	



Start Time	Sarival Avenue Northbound				Sarival Avenue Southbound				Northern Parkway EB On-Ramp Eastbound				Northern Parkway EB On-Ramp Westbound				Total	Peak Hour
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds		
4:00 PM	0	10	26	0	20	33	0	0	0	0	0	0	0	0	0	0	89	
4:15 PM	0	13	21	0	19	25	0	0	0	0	0	0	0	0	0	0	78	
4:30 PM	0	13	19	0	22	39	0	0	0	0	0	0	0	0	0	0	93	
4:45 PM	0	16	24	0	19	35	0	0	0	0	0	0	0	0	0	0	94	354
5:00 PM	0	17	61	0	12	47	0	0	0	0	0	0	0	0	0	0	137	402
5:15 PM	0	16	29	0	17	34	0	0	0	0	0	0	0	0	0	0	96	420
5:30 PM	0	12	40	0	10	38	0	0	0	0	0	0	0	0	0	0	100	427
5:45 PM	0	14	29	0	17	29	0	0	0	0	0	0	0	0	0	0	89	422
Peak Hour Total	0	61	154	0	58	154	0	0	0	0	0	0	0	0	0	0	427	



Turning Movement Count

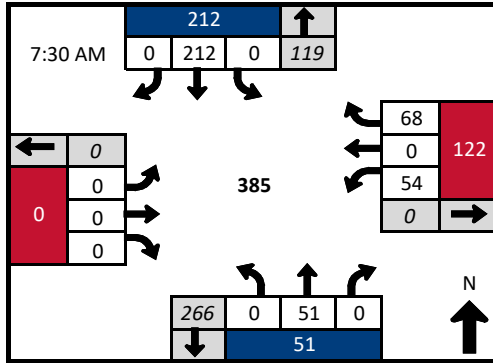
	Speed Limit	Lt	Lt/T	T	T/Rt	Rt	Lt/T/Rt	Lt/Rt
Northbound	45			1				
Southbound	45			3				
Eastbound								
Westbound	55	1				1		

June 23, 2022 (Thursday)

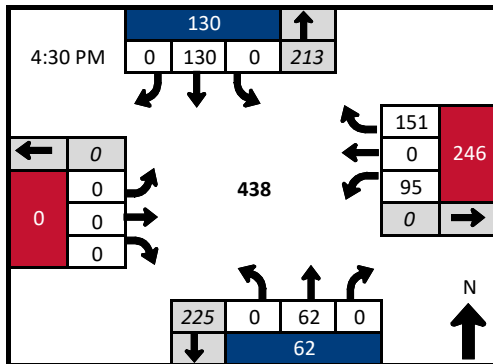
Project No: TR22060

Location: Sarival Avenue
and Northern Parkway WB Off-Ramp

Intersection Configuration: Signalized



Start Time	Sarival Avenue Northbound				Sarival Avenue Southbound				Northern Parkway WB Off-Ran Eastbound				Northern Parkway WB Off-Ran Westbound				Total	Peak Hour
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds		
7:00 AM	0	3	0	0	0	58	0	0	0	0	0	0	17	0	22	0	100	
7:15 AM	0	8	0	0	0	55	0	0	0	0	0	0	18	0	15	0	96	
7:30 AM	0	13	0	0	0	56	0	0	0	0	0	0	13	0	12	0	94	
7:45 AM	0	15	0	0	0	49	0	0	0	0	0	0	14	0	15	0	93	383
8:00 AM	0	9	0	0	0	52	0	0	0	0	0	0	11	0	19	0	91	374
8:15 AM	0	14	0	0	0	55	0	0	0	0	0	0	16	0	22	0	107	385
8:30 AM	0	13	0	0	0	49	0	0	0	0	0	0	18	0	13	0	93	384
8:45 AM	0	14	0	0	0	24	0	0	0	0	0	0	17	0	20	0	75	366
Peak Hour Total	0	51	0	0	0	212	0	0	0	0	0	0	54	0	68	0	385	



Start Time	Sarival Avenue Northbound				Sarival Avenue Southbound				Northern Parkway WB Off-Ran Eastbound				Northern Parkway WB Off-Ran Westbound				Total	Peak Hour
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds		
4:00 PM	0	10	0	0	0	33	0	0	0	0	0	0	20	0	36	0	99	
4:15 PM	0	13	0	0	0	23	0	0	0	0	0	0	21	0	44	0	101	
4:30 PM	0	13	0	0	0	37	0	0	0	0	0	0	24	0	44	0	118	
4:45 PM	0	16	0	0	0	30	0	0	0	0	0	0	24	0	37	0	107	425
5:00 PM	0	17	0	0	0	34	0	0	0	0	0	0	25	0	28	0	104	430
5:15 PM	0	16	0	0	0	29	0	0	0	0	0	0	22	0	42	0	109	438
5:30 PM	0	12	0	0	0	18	0	0	0	0	0	0	30	0	36	0	96	416
5:45 PM	0	14	0	0	0	29	0	0	0	0	0	0	17	0	33	0	93	402
Peak Hour Total	0	62	0	0	0	130	0	0	0	0	0	0	95	0	151	0	438	



Turning Movement Count

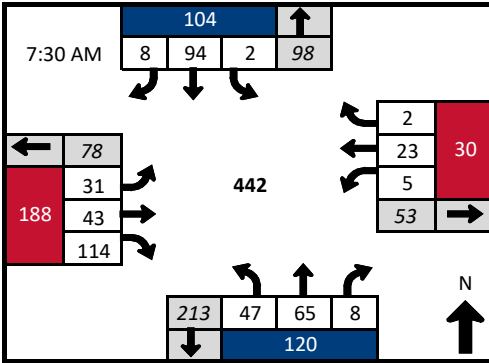
	Speed Limit							
		Lt	Lt/T	T	T/Rt	Rt	Lt/T/Rt	Lt/Rt
Northbound	45						1	
Southbound	45						1	
Eastbound	45						1	
Westbound	45						1	

June 23, 2022 (Thursday)

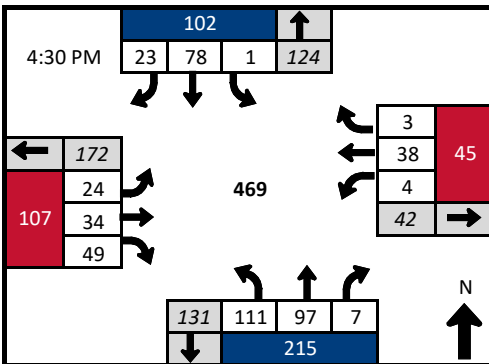
Project No: TR22060

Location: Sarival Avenue
and Olive Avenue

Intersection Configuration: Unsignalized



Start Time	Sarival Avenue Northbound				Sarival Avenue Southbound				Olive Avenue Eastbound				Olive Avenue Westbound				Total	Peak Hour
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds		
7:00 AM	19	7	1	0	0	23	2	0	3	8	40	0	0	4	0	0	107	
7:15 AM	14	8	5	0	0	16	3	0	3	11	34	0	0	3	0	0	97	
7:30 AM	7	16	2	0	0	25	0	0	7	15	30	0	1	6	0	0	109	
7:45 AM	9	19	2	0	1	21	2	0	8	8	26	0	2	3	1	0	102	415
8:00 AM	11	14	3	0	0	26	2	0	10	10	24	0	2	6	0	0	108	416
8:15 AM	20	16	1	0	1	22	4	0	6	10	34	0	0	8	1	0	123	442
8:30 AM	10	10	4	0	0	18	2	0	14	11	20	0	2	4	0	0	95	428
8:45 AM	10	13	2	0	1	13	1	0	9	13	10	0	1	3	2	0	78	404
Peak Hour Total	47	65	8	0	2	94	8	0	31	43	114	0	5	23	2	0	442	



Start Time	Sarival Avenue Northbound				Sarival Avenue Southbound				Olive Avenue Eastbound				Olive Avenue Westbound				Total	Peak Hour
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds		
4:00 PM	29	15	0	0	0	12	6	0	7	12	20	0	1	5	0	0	107	
4:15 PM	37	19	1	0	0	15	3	0	5	6	9	0	0	7	1	0	103	
4:30 PM	33	23	1	0	0	21	11	0	8	8	18	0	1	7	1	0	132	
4:45 PM	30	24	4	0	0	20	4	0	6	11	9	0	0	11	1	0	120	462
5:00 PM	23	18	1	0	1	26	0	0	5	8	8	0	1	11	1	0	103	458
5:15 PM	25	32	1	0	0	11	8	0	5	7	14	0	2	9	0	0	114	469
5:30 PM	31	20	0	0	1	9	4	0	6	14	9	0	0	6	0	0	100	437
5:45 PM	26	13	0	0	0	16	5	0	6	6	12	0	0	6	1	0	91	408
Peak Hour Total	111	97	7	0	1	78	23	0	24	34	49	0	4	38	3	0	469	



Turning Movement Count

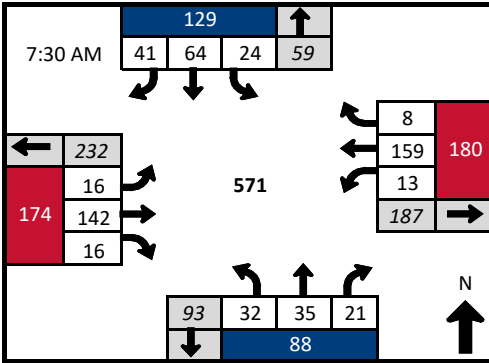
	Speed Limit							
		Lt	Lt/T	T	T/Rt	Rt	Lt/T/Rt	Lt/Rt
Northbound	45	1		1	1			
Southbound	45	1			1			
Eastbound	45	1			1			
Westbound	45	1		1		1		

June 23, 2022 (Thursday)

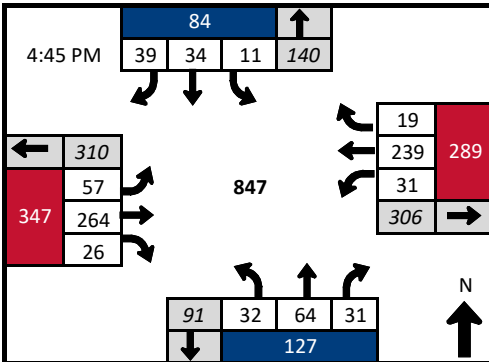
Project No: TR22060

Location: Sarival Avenue
and Peoria Avenue

Intersection Configuration: Unsignalized



Start Time	Sarival Avenue Northbound				Sarival Avenue Southbound				Peoria Avenue Eastbound				Peoria Avenue Westbound				Total	Peak Hour
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds		
7:00 AM	3	5	3	0	6	12	13	0	3	39	2	0	2	53	4	0	145	
7:15 AM	0	9	2	0	9	13	12	0	2	46	0	0	6	42	4	0	145	
7:30 AM	7	6	6	0	10	23	14	0	6	44	1	0	2	34	0	0	153	
7:45 AM	7	7	5	0	2	10	8	0	1	28	5	0	6	43	2	0	124	567
8:00 AM	6	11	7	0	4	11	9	0	5	44	7	0	2	35	4	0	145	567
8:15 AM	12	11	3	0	8	20	10	0	4	26	3	0	3	47	2	0	149	571
8:30 AM	4	15	7	0	1	15	10	0	5	36	3	0	4	39	1	0	140	558
8:45 AM	5	8	7	0	3	7	7	0	3	37	5	0	2	37	1	0	122	556
Peak Hour Total	32	35	21	0	24	64	41	0	16	142	16	0	13	159	8	0	571	



Start Time	Sarival Avenue Northbound				Sarival Avenue Southbound				Peoria Avenue Eastbound				Peoria Avenue Westbound				Total	Peak Hour
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds		
4:00 PM	5	16	6	0	3	9	10	0	10	39	1	0	8	56	3	0	166	
4:15 PM	8	11	11	0	3	9	5	0	17	62	4	0	7	44	2	0	183	
4:30 PM	7	17	1	0	4	19	10	0	15	48	5	0	8	44	3	0	181	
4:45 PM	15	22	4	0	3	11	14	0	12	61	9	0	9	62	7	0	229	759
5:00 PM	1	14	10	0	3	13	10	0	17	63	8	0	4	60	5	0	208	801
5:15 PM	10	10	9	0	3	6	5	0	16	73	5	0	14	62	2	0	215	833
5:30 PM	6	18	8	0	2	4	10	0	12	67	4	0	4	55	5	0	195	847
5:45 PM	6	11	8	0	4	13	5	0	15	60	3	0	8	50	12	0	195	813
Peak Hour Total	32	64	31	0	11	34	39	0	57	264	26	0	31	239	19	0	847	

Appendix B

Intersection Level Of Service Report
Intersection 1: Cotton Lane & Olive Avenue

Control Type:	Signalized	Delay (sec / veh):	17.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.094

Intersection Setup

Name	Cotton Lane			Cotton Lane			Olive Avenue			Olive Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	230.00	100.00	175.00	250.00	100.00	175.00	350.00	100.00	160.00	475.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Cotton Lane			Cotton Lane			Olive Avenue			Olive Avenue		
Base Volume Input [veh/h]	36	72	18	3	58	45	78	163	45	2	69	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	36	72	18	3	58	45	78	163	45	2	69	11
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	20	5	1	16	13	22	45	13	1	19	3
Total Analysis Volume [veh/h]	40	80	20	3	64	50	87	181	50	2	77	12
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	36	14	0	40	18	0	9	27	0	9	27	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	3	12	12	0	9	9	65	61	61	65	57	57
g / C, Green / Cycle	0.04	0.14	0.14	0.00	0.11	0.11	0.73	0.68	0.68	0.73	0.63	0.63
(v / s)_i Volume / Saturation Flow Rate	0.01	0.02	0.01	0.00	0.02	0.03	0.06	0.05	0.03	0.00	0.02	0.01
s, saturation flow rate [veh/h]	3459	3560	1589	3459	3560	1589	1355	3560	1589	1172	3560	1589
c, Capacity [veh/h]	126	487	217	18	376	168	1083	2409	1075	940	2243	1001
d1, Uniform Delay [s]	42.35	34.37	34.03	44.65	36.73	37.24	3.60	4.97	4.87	3.45	6.31	6.22
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.42	0.16	0.18	4.03	0.21	0.98	0.15	0.06	0.08	0.00	0.03	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.32	0.16	0.09	0.16	0.17	0.30	0.08	0.08	0.05	0.00	0.03	0.01
d, Delay for Lane Group [s/veh]	43.77	34.53	34.21	48.68	36.94	38.22	3.74	5.03	4.95	3.45	6.34	6.24
Lane Group LOS	D	C	C	D	D	D	A	A	A	A	A	A
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.44	0.75	0.38	0.04	0.62	1.02	0.35	0.45	0.26	0.01	0.23	0.07
50th-Percentile Queue Length [ft/ln]	11.03	18.73	9.41	1.06	15.62	25.44	8.63	11.21	6.41	0.17	5.79	1.86
95th-Percentile Queue Length [veh/ln]	0.79	1.35	0.68	0.08	1.12	1.83	0.62	0.81	0.46	0.01	0.42	0.13
95th-Percentile Queue Length [ft/ln]	19.85	33.71	16.94	1.91	28.11	45.80	15.53	20.19	11.53	0.31	10.41	3.35

Movement, Approach, & Intersection Results

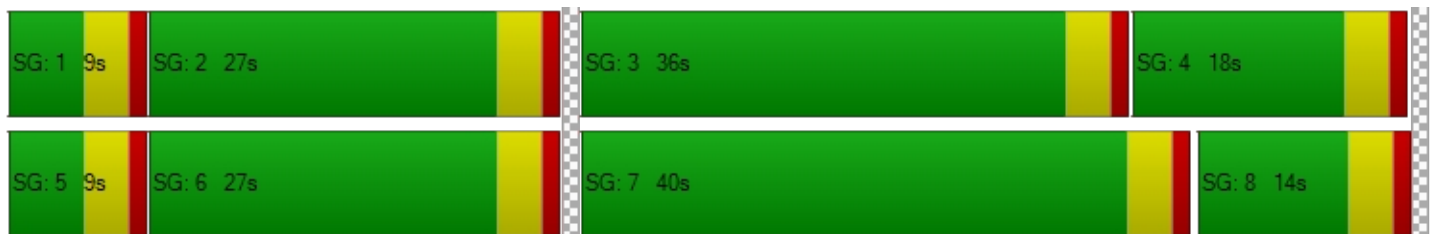
d_M, Delay for Movement [s/veh]	43.77	34.53	34.21	48.68	36.94	38.22	3.74	5.03	4.95	3.45	6.34	6.24
Movement LOS	D	C	C	D	D	D	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	37.13			37.79			4.67			6.26		
Approach LOS	D			D			A			A		
d_I, Intersection Delay [s/veh]	17.53											
Intersection LOS	B											
Intersection V/C	0.094											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			0.0			0.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			0.00			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			0.000			0.000			0.000		
Crosswalk LOS	F			F			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	222			311			511			511		
d_b, Bicycle Delay [s]	35.60			32.13			24.98			24.98		
I_b,int, Bicycle LOS Score for Intersection	1.675			1.656			1.822			1.635		
Bicycle LOS	A			A			A			A		

Sequence

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



Intersection Level Of Service Report

Intersection 2: Sarival Road & Northern Parkway EB On-Ramp

Control Type:	Signalized	Delay (sec / veh):	0.5
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.093

Intersection Setup

Name	Sarival Avenue					
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑		↓			
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	2	0	0	0
Entry Pocket Length [ft]	100.00	170.00	420.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No			
Crosswalk	No		No		No	

Volumes

Name	Sarival Avenue					
Base Volume Input [veh/h]	39	122	179	101	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	122	179	101	0	0
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	34	50	28	0	0
Total Analysis Volume [veh/h]	43	136	199	112	0	0
Presence of On-Street Parking	No	No	No	No		
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Permissive
Signal Group	6	0	5	2	0	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	-	-
Minimum Green [s]	10	0	5	10	0	0
Maximum Green [s]	30	0	30	30	0	0
Amber [s]	3.0	0.0	3.0	3.0	0.0	0.0
All red [s]	1.0	0.0	1.0	1.0	0.0	0.0
Split [s]	55	0	35	90	0	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	0.0	0.0
Walk [s]	5	0	0	5	0	0
Pedestrian Clearance [s]	10	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No		
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	0.0	0.0
Minimum Recall	No		No	No		
Maximum Recall	No		No	No		
Pedestrian Recall	No		No	No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	R	L	C	
C, Cycle Length [s]	90	90	90	90	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	
g_i, Effective Green Time [s]	77	77	86	86	
g / C, Green / Cycle	0.86	0.86	0.96	0.96	
(v / s)_i Volume / Saturation Flow Rate	0.02	0.09	0.08	0.06	
s, saturation flow rate [veh/h]	1870	1589	2432	1870	
c, Capacity [veh/h]	1598	1359	2462	1787	
d1, Uniform Delay [s]	0.97	1.04	0.10	0.09	
k, delay calibration	0.50	0.50	0.50	0.50	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.03	0.15	0.06	0.07	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.03	0.10	0.08	0.06	
d, Delay for Lane Group [s/veh]	1.00	1.18	0.16	0.16	
Lane Group LOS	A	A	A	A	
Critical Lane Group	No	Yes	Yes	No	
50th-Percentile Queue Length [veh/ln]	0.02	0.06	0.02	0.03	
50th-Percentile Queue Length [ft/ln]	0.40	1.58	0.55	0.84	
95th-Percentile Queue Length [veh/ln]	0.03	0.11	0.04	0.06	
95th-Percentile Queue Length [ft/ln]	0.72	2.84	0.99	1.50	

Movement, Approach, & Intersection Results

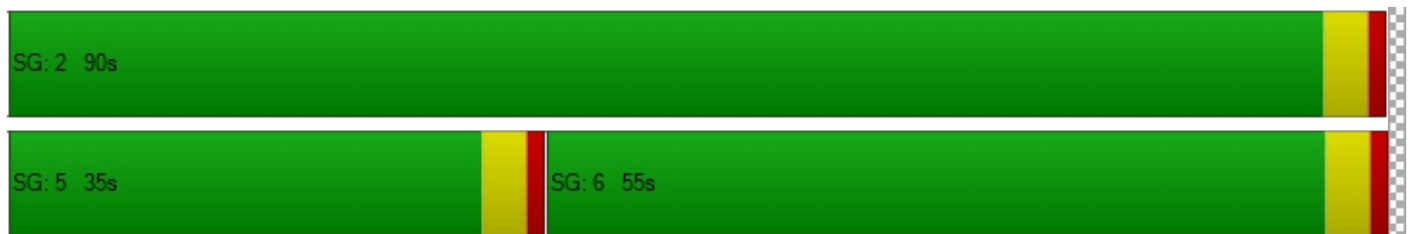
d_M, Delay for Movement [s/veh]	1.00	1.18	0.16	0.16	0.00	0.00
Movement LOS	A	A	A	A		
d_A, Approach Delay [s/veh]	1.14		0.16		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.52					
Intersection LOS	A					
Intersection V/C	0.093					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1133	1911	0
d_b, Bicycle Delay [s]	8.45	0.09	45.00
I_b,int, Bicycle LOS Score for Intersection	1.855	2.073	4.132
Bicycle LOS	A	B	D

Sequence

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



Intersection Level Of Service Report

Intersection 3: Sarival Avenue & Northern Parkway WB Off-Ramp

Control Type:	Signalized	Delay (sec / veh):	15.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.094

Intersection Setup

Name	Sarival Avenue		Sarival Avenue		Northern Parkway WB Pff-Ramp	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑		↑↑↑		↵↶	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	2	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	140.00	100.00	100.00
No. of Lanes in Exit Pocket	0	2	0	0	0	0
Exit Pocket Length [ft]	0.00	49.21	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		55.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Sarival Avenue		Sarival Avenue		Northern Parkway WB Pff-Ramp	
Base Volume Input [veh/h]	51	0	0	212	54	68
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	51	0	0	212	54	68
Peak Hour Factor	0.9000	1.0000	1.0000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	0	0	59	15	19
Total Analysis Volume [veh/h]	57	0	0	236	60	76
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	6	0	0	2	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	10	0	0	10	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	43	0	0	43	47	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	76	76	6	6
g / C, Green / Cycle	0.84	0.84	0.07	0.07
(v / s)_i Volume / Saturation Flow Rate	0.03	0.05	0.03	0.05
s, saturation flow rate [veh/h]	1870	5094	1781	1589
c, Capacity [veh/h]	1571	4279	126	113
d1, Uniform Delay [s]	1.19	1.21	40.19	40.79
k, delay calibration	0.50	0.50	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.04	0.02	2.75	6.79
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.04	0.06	0.47	0.67
d, Delay for Lane Group [s/veh]	1.23	1.23	42.94	47.58
Lane Group LOS	A	A	D	D
Critical Lane Group	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	0.04	0.04	1.29	1.75
50th-Percentile Queue Length [ft/ln]	1.08	1.11	32.24	43.67
95th-Percentile Queue Length [veh/ln]	0.08	0.08	2.32	3.14
95th-Percentile Queue Length [ft/ln]	1.95	1.99	58.04	78.61

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	1.23	0.00	0.00	1.23	42.94	47.58
Movement LOS	A			A	D	D
d_A, Approach Delay [s/veh]	1.23		1.23		45.53	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	15.27					
Intersection LOS	B					
Intersection V/C	0.094					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	867	867	956
d_b, Bicycle Delay [s]	14.45	14.45	12.27
I_b,int, Bicycle LOS Score for Intersection	1.654	1.689	1.560
Bicycle LOS	A	A	A

Sequence

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



Intersection Level Of Service Report
Intersection 4: Sarival Avenue & Olive Avenue

Control Type:	All-way stop	Delay (sec / veh):	8.5
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.246

Intersection Setup

Name	Sarival Avenue			Sarival Avenue			Olive Avenue			Olive Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Sarival Avenue			Sarival Avenue			Olive Avenue			Olive Avenue		
Base Volume Input [veh/h]	47	65	8	2	94	8	31	43	114	5	23	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	47	65	8	2	94	8	31	43	114	5	23	2
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	18	2	1	26	2	9	12	32	1	6	1
Total Analysis Volume [veh/h]	52	72	9	2	104	9	34	48	127	6	26	2
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings**Lanes**

Capacity per Entry Lane [veh/h]	772	781	848	754
Degree of Utilization, x	0.17	0.15	0.25	0.05

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.62	0.51	0.97	0.14
95th-Percentile Queue Length [ft]	15.51	12.87	24.22	3.54
Approach Delay [s/veh]	8.64	8.40	8.63	8.00
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	8.53			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 5: Sarival Avenue & Peoria Avenue

Control Type:	All-way stop	Delay (sec / veh):	10.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.280

Intersection Setup

Name	Sarival Avenue			Sarival Avenue			Peoria Avenue			Peoria Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T			T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	170.00	100.00	100.00	160.00	100.00	100.00	165.00	100.00	100.00	160.00	100.00	160.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Sarival Avenue			Sarival Avenue			Peoria Avenue			Peoria Avenue		
Base Volume Input [veh/h]	32	35	21	24	64	41	16	142	16	13	159	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	32	35	21	24	64	41	16	142	16	13	159	8
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	10	6	7	18	11	4	39	4	4	44	2
Total Analysis Volume [veh/h]	36	39	23	27	71	46	18	158	18	14	177	9
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings**Lanes**

Capacity per Entry Lane [veh/h]	551	596	652	558	634	579	637	580	632	719
Degree of Utilization, x	0.07	0.05	0.05	0.05	0.18	0.03	0.28	0.02	0.28	0.01

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.21	0.16	0.15	0.15	0.67	0.10	1.12	0.07	1.15	0.04
95th-Percentile Queue Length [ft]	5.23	4.10	3.74	3.81	16.80	2.40	28.07	1.85	28.64	0.95
Approach Delay [s/veh]	9.12			9.63		10.36		10.37		
Approach LOS	A			A		B		B		
Intersection Delay [s/veh]	10.01									
Intersection LOS	B									

Intersection Level Of Service Report
Intersection 6: Reems Road & Olive Avenue

Control Type:	All-way stop	Delay (sec / veh):	8.2
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.203

Intersection Setup

Name	Reems Road			Reems Road			Olive Avenue			Olive Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Reems Road			Reems Road			Olive Avenue			Olive Avenue		
Base Volume Input [veh/h]	9	91	3	47	5	6	3	134	15	9	1	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	91	3	47	5	6	3	134	15	9	1	2
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	25	1	13	1	2	1	37	4	3	0	1
Total Analysis Volume [veh/h]	10	101	3	52	6	7	3	149	17	10	1	2
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings**Lanes**

Capacity per Entry Lane [veh/h]	812	786	834	781
Degree of Utilization, x	0.14	0.08	0.20	0.02

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.49	0.27	0.76	0.05
95th-Percentile Queue Length [ft]	12.18	6.74	18.88	1.27
Approach Delay [s/veh]	8.16	7.99	8.41	7.69
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	8.23			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 1: Cotton Lane & Olive Avenue

Control Type:	Signalized	Delay (sec / veh):	22.6
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.151

Intersection Setup

Name	Cotton Lane			Cotton Lane			Olive Avenue			Olive Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	230.00	100.00	175.00	250.00	100.00	175.00	350.00	100.00	160.00	475.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Cotton Lane			Cotton Lane			Olive Avenue			Olive Avenue		
Base Volume Input [veh/h]	40	71	14	2	79	118	58	88	30	8	139	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	40	71	14	2	79	118	58	88	30	8	139	6
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	20	4	1	22	33	16	24	8	2	39	2
Total Analysis Volume [veh/h]	44	79	16	2	88	131	64	98	33	9	154	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	42	40	0	18	16	0	9	23	0	9	23	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	3	13	13	0	10	10	65	60	60	65	57	57
g / C, Green / Cycle	0.04	0.15	0.15	0.00	0.11	0.11	0.72	0.66	0.66	0.72	0.63	0.63
(v / s)_i Volume / Saturation Flow Rate	0.01	0.02	0.01	0.00	0.02	0.08	0.05	0.03	0.02	0.01	0.04	0.00
s, saturation flow rate [veh/h]	3459	3560	1589	3459	3560	1589	1277	3560	1589	1284	3560	1589
c, Capacity [veh/h]	133	519	232	14	397	177	1006	2350	1049	1019	2233	997
d1, Uniform Delay [s]	42.23	33.65	33.23	44.75	36.50	38.80	3.77	5.35	5.32	3.64	6.55	6.30
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.44	0.13	0.12	4.62	0.28	5.94	0.12	0.03	0.06	0.00	0.06	0.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.33	0.15	0.07	0.14	0.22	0.74	0.06	0.04	0.03	0.01	0.07	0.01
d, Delay for Lane Group [s/veh]	43.67	33.78	33.36	49.37	36.78	44.73	3.89	5.39	5.37	3.64	6.61	6.31
Lane Group LOS	D	C	C	D	D	D	A	A	A	A	A	A
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.48	0.73	0.30	0.03	0.86	2.96	0.27	0.26	0.18	0.03	0.48	0.04
50th-Percentile Queue Length [ft/ln]	12.09	18.24	7.40	0.76	21.45	73.98	6.64	6.45	4.53	0.81	11.99	1.10
95th-Percentile Queue Length [veh/ln]	0.87	1.31	0.53	0.05	1.54	5.33	0.48	0.46	0.33	0.06	0.86	0.08
95th-Percentile Queue Length [ft/ln]	21.77	32.83	13.32	1.36	38.62	133.16	11.96	11.60	8.16	1.46	21.58	1.97

Movement, Approach, & Intersection Results

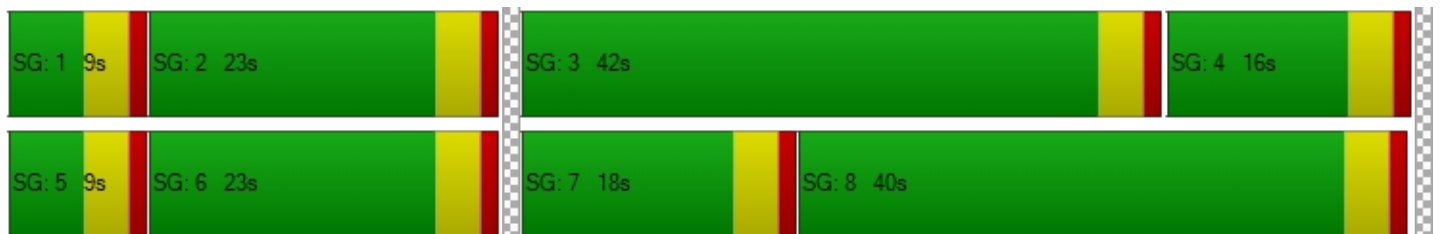
d_M, Delay for Movement [s/veh]	43.67	33.78	33.36	49.37	36.78	44.73	3.89	5.39	5.37	3.64	6.61	6.31
Movement LOS	D	C	C	D	D	D	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	36.86			41.61			4.89			6.44		
Approach LOS	D			D			A			A		
d_I, Intersection Delay [s/veh]	22.58											
Intersection LOS	C											
Intersection V/C	0.151											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			0.0			0.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			0.00			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			0.000			0.000			0.000		
Crosswalk LOS	F			F			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	799			266			422			422		
d_b, Bicycle Delay [s]	16.24			33.84			28.05			28.05		
I_b,int, Bicycle LOS Score for Intersection	1.674			1.742			1.720			1.700		
Bicycle LOS	A			A			A			A		

Sequence

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



Intersection Level Of Service Report

Intersection 2: Sarival Road & Northern Parkway EB On-Ramp

Control Type:	Signalized	Delay (sec / veh):	0.6
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.110

Intersection Setup

Name	Sarival Avenue					
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑		↓			
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	2	0	0	0
Entry Pocket Length [ft]	100.00	170.00	420.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No			
Crosswalk	No		No		No	

Volumes

Name	Sarival Avenue					
Base Volume Input [veh/h]	61	154	58	154	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	61	154	58	154	0	0
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	43	16	43	0	0
Total Analysis Volume [veh/h]	68	171	64	171	0	0
Presence of On-Street Parking	No	No	No	No		
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Permissive
Signal Group	6	0	5	2	0	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	-	-
Minimum Green [s]	10	0	5	10	0	0
Maximum Green [s]	30	0	30	30	0	0
Amber [s]	3.0	0.0	3.0	3.0	0.0	0.0
All red [s]	1.0	0.0	1.0	1.0	0.0	0.0
Split [s]	75	0	15	90	0	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	0.0	0.0
Walk [s]	5	0	0	5	0	0
Pedestrian Clearance [s]	10	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No		
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	0.0	0.0
Minimum Recall	No		No	No		
Maximum Recall	No		No	No		
Pedestrian Recall	No		No	No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	R	L	C	
C, Cycle Length [s]	90	90	90	90	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	
g_i, Effective Green Time [s]	78	78	86	86	
g / C, Green / Cycle	0.87	0.87	0.96	0.96	
(v / s)_i Volume / Saturation Flow Rate	0.04	0.11	0.03	0.09	
s, saturation flow rate [veh/h]	1870	1589	2304	1870	
c, Capacity [veh/h]	1619	1376	2338	1787	
d1, Uniform Delay [s]	0.84	0.91	0.09	0.10	
k, delay calibration	0.50	0.50	0.50	0.50	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.05	0.19	0.02	0.11	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.04	0.12	0.03	0.10	
d, Delay for Lane Group [s/veh]	0.89	1.10	0.12	0.20	
Lane Group LOS	A	A	A	A	
Critical Lane Group	No	Yes	Yes	No	
50th-Percentile Queue Length [veh/ln]	0.02	0.07	0.01	0.05	
50th-Percentile Queue Length [ft/ln]	0.55	1.77	0.18	1.32	
95th-Percentile Queue Length [veh/ln]	0.04	0.13	0.01	0.10	
95th-Percentile Queue Length [ft/ln]	0.99	3.19	0.32	2.38	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.89	1.10	0.12	0.20	0.00	0.00
Movement LOS	A	A	A	A		
d_A, Approach Delay [s/veh]	1.04		0.18		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.61					
Intersection LOS	A					
Intersection V/C	0.110					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1578	1911	0
d_b, Bicycle Delay [s]	2.01	0.09	45.00
I_b,int, Bicycle LOS Score for Intersection	1.954	1.947	4.132
Bicycle LOS	A	A	D

Sequence

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



Intersection Level Of Service Report

Intersection 3: Sarival Avenue & Northern Parkway WB Off-Ramp

Control Type:	Signalized	Delay (sec / veh):	24.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.143

Intersection Setup

Name	Sarival Avenue		Sarival Avenue		Northern Parkway WB Pff-Ramp	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑		↑↑↑		↶↷	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	2	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	140.00	100.00	100.00
No. of Lanes in Exit Pocket	0	2	0	0	0	0
Exit Pocket Length [ft]	0.00	49.21	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		55.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Sarival Avenue		Sarival Avenue		Northern Parkway WB Pff-Ramp	
Base Volume Input [veh/h]	62	0	0	130	95	151
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	62	0	0	130	95	151
Peak Hour Factor	0.9000	1.0000	1.0000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	0	0	36	26	42
Total Analysis Volume [veh/h]	69	0	0	144	106	168
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	6	0	0	2	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	10	0	0	10	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	30	0	0	30	60	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	70	70	12	12
g / C, Green / Cycle	0.78	0.78	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.04	0.03	0.06	0.11
s, saturation flow rate [veh/h]	1870	5094	1781	1589
c, Capacity [veh/h]	1454	3960	238	212
d1, Uniform Delay [s]	2.31	2.29	35.91	37.77
k, delay calibration	0.50	0.50	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.06	0.02	1.31	6.48
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.05	0.04	0.45	0.79
d, Delay for Lane Group [s/veh]	2.38	2.31	37.22	44.25
Lane Group LOS	A	A	D	D
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.17	0.10	2.08	3.70
50th-Percentile Queue Length [ft/ln]	4.16	2.60	51.92	92.50
95th-Percentile Queue Length [veh/ln]	0.30	0.19	3.74	6.66
95th-Percentile Queue Length [ft/ln]	7.49	4.67	93.46	166.50

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	2.38	0.00	0.00	2.31	37.22	44.25
Movement LOS	A			A	D	D
d_A, Approach Delay [s/veh]	2.38		2.31		41.53	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	24.39					
Intersection LOS	C					
Intersection V/C	0.143					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	578	578	1244
d_b, Bicycle Delay [s]	22.76	22.76	6.42
I_b,int, Bicycle LOS Score for Intersection	1.673	1.639	1.560
Bicycle LOS	A	A	A

Sequence

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



Intersection Level Of Service Report
Intersection 4: Sarival Avenue & Olive Avenue

Control Type:	All-way stop	Delay (sec / veh):	8.9
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.303

Intersection Setup

Name	Sarival Avenue			Sarival Avenue			Olive Avenue			Olive Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Sarival Avenue			Sarival Avenue			Olive Avenue			Olive Avenue		
Base Volume Input [veh/h]	111	97	7	1	78	23	24	34	49	4	38	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	111	97	7	1	78	23	24	34	49	4	38	3
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	31	27	2	0	22	6	7	9	14	1	11	1
Total Analysis Volume [veh/h]	123	108	8	1	87	26	27	38	54	4	42	3
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings**Lanes**

Capacity per Entry Lane [veh/h]	789	801	782	734
Degree of Utilization, x	0.30	0.14	0.15	0.07

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.28	0.49	0.54	0.21
95th-Percentile Queue Length [ft]	32.00	12.37	13.38	5.35
Approach Delay [s/veh]	9.53	8.24	8.43	8.25
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	8.88			
Intersection LOS	A			

**Intersection Level Of Service Report
Intersection 5: Sarival Avenue & Peoria Avenue**

Control Type:	All-way stop	Delay (sec / veh):	13.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.537

Intersection Setup

Name	Sarival Avenue			Sarival Avenue			Peoria Avenue			Peoria Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵			↵↵			↵↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	170.00	100.00	100.00	160.00	100.00	100.00	165.00	100.00	100.00	160.00	100.00	160.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Sarival Avenue			Sarival Avenue			Peoria Avenue			Peoria Avenue		
Base Volume Input [veh/h]	32	64	31	11	34	39	57	264	26	31	239	19
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	32	64	31	11	34	39	57	264	26	31	239	19
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	18	9	3	9	11	16	73	7	9	66	5
Total Analysis Volume [veh/h]	36	71	34	12	38	43	63	293	29	34	266	21
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings**Lanes**

Capacity per Entry Lane [veh/h]	490	526	563	484	548	548	599	537	579	652
Degree of Utilization, x	0.07	0.10	0.09	0.02	0.15	0.11	0.54	0.06	0.46	0.03

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.24	0.33	0.31	0.08	0.52	0.39	3.19	0.20	2.40	0.10
95th-Percentile Queue Length [ft]	5.92	8.27	7.68	1.90	12.89	9.68	79.76	5.06	60.05	2.49
Approach Delay [s/veh]	10.18			10.39			14.59		13.27	
Approach LOS	B			B			B		B	
Intersection Delay [s/veh]	13.06									
Intersection LOS	B									

Intersection Level Of Service Report
Intersection 6: Reems Road & Olive Avenue

Control Type:	All-way stop	Delay (sec / veh):	8.3
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.201

Intersection Setup

Name	Reems Road			Reems Road			Olive Avenue			Olive Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Reems Road			Reems Road			Olive Avenue			Olive Avenue		
Base Volume Input [veh/h]	10	128	5	31	2	8	4	115	32	3	1	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	128	5	31	2	8	4	115	32	3	1	5
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	36	1	9	1	2	1	32	9	1	0	1
Total Analysis Volume [veh/h]	11	142	6	34	2	9	4	128	36	3	1	6
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings**Lanes**

Capacity per Entry Lane [veh/h]	820	791	838	838
Degree of Utilization, x	0.19	0.06	0.20	0.01

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.71	0.18	0.75	0.04
95th-Percentile Queue Length [ft]	17.87	4.52	18.65	0.91
Approach Delay [s/veh]	8.44	7.83	8.37	7.35
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	8.31			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 1: Cotton Lane & Olive Avenue

Control Type:	Signalized	Delay (sec / veh):	17.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.109

Intersection Setup

Name	Cotton Lane			Cotton Lane			Olive Avenue			Olive Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	230.00	100.00	175.00	250.00	100.00	175.00	350.00	100.00	160.00	475.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Cotton Lane			Cotton Lane			Olive Avenue			Olive Avenue		
Base Volume Input [veh/h]	36	72	18	3	58	45	78	163	45	2	69	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	42	83	21	3	67	52	90	189	52	2	80	13
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	23	6	1	19	14	25	53	14	1	22	4
Total Analysis Volume [veh/h]	47	92	23	3	74	58	100	210	58	2	89	14
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	36	14	0	40	18	0	9	27	0	9	27	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	4	13	13	0	10	10	65	61	61	65	56	56
g / C, Green / Cycle	0.04	0.14	0.14	0.00	0.11	0.11	0.72	0.67	0.67	0.72	0.62	0.62
(v / s)_i Volume / Saturation Flow Rate	0.01	0.03	0.01	0.00	0.02	0.04	0.07	0.06	0.04	0.00	0.02	0.01
s, saturation flow rate [veh/h]	3459	3560	1589	3459	3560	1589	1342	3560	1589	1135	3560	1589
c, Capacity [veh/h]	137	506	226	18	384	171	1064	2389	1066	905	2218	990
d1, Uniform Delay [s]	42.15	34.05	33.66	44.65	36.65	37.25	3.78	5.19	5.07	3.59	6.58	6.47
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.46	0.17	0.19	4.03	0.24	1.16	0.18	0.07	0.10	0.00	0.03	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.34	0.18	0.10	0.16	0.19	0.34	0.09	0.09	0.05	0.00	0.04	0.01
d, Delay for Lane Group [s/veh]	43.61	34.22	33.86	48.68	36.89	38.40	3.95	5.26	5.16	3.59	6.61	6.50
Lane Group LOS	D	C	C	D	D	D	A	A	A	A	A	A
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.52	0.86	0.43	0.04	0.72	1.18	0.42	0.54	0.31	0.01	0.28	0.09
50th-Percentile Queue Length [ft/ln]	12.90	21.44	10.76	1.06	18.05	29.62	10.40	13.52	7.69	0.18	6.92	2.24
95th-Percentile Queue Length [veh/ln]	0.93	1.54	0.77	0.08	1.30	2.13	0.75	0.97	0.55	0.01	0.50	0.16
95th-Percentile Queue Length [ft/ln]	23.21	38.60	19.36	1.91	32.50	53.32	18.71	24.34	13.84	0.32	12.46	4.03

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	43.61	34.22	33.86	48.68	36.89	38.40	3.95	5.26	5.16	3.59	6.61	6.50
Movement LOS	D	C	C	D	D	D	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	36.90			37.80			4.89			6.54		
Approach LOS	D			D			A			A		
d_I, Intersection Delay [s/veh]	17.62											
Intersection LOS	B											
Intersection V/C	0.109											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			0.0			0.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			0.00			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			0.000			0.000			0.000		
Crosswalk LOS	F			F			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	222			311			511			511		
d_b, Bicycle Delay [s]	35.60			32.13			24.98			24.98		
I_b,int, Bicycle LOS Score for Intersection	1.693			1.671			1.863			1.646		
Bicycle LOS	A			A			A			A		

Sequence

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



Intersection Level Of Service Report

Intersection 2: Sarival Road & Northern Parkway EB On-Ramp

Control Type:	Signalized	Delay (sec / veh):	0.7
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.138

Intersection Setup

Name	Sarival Avenue					
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑		↓			
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	2	0	0	0
Entry Pocket Length [ft]	100.00	170.00	420.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No			
Crosswalk	No		No		No	

Volumes

Name	Sarival Avenue					
Base Volume Input [veh/h]	39	122	179	101	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.1576	1.1576	1.1576	1.1576	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	170	0	53	40	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	215	141	260	157	0	0
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	60	39	72	44	0	0
Total Analysis Volume [veh/h]	239	157	289	174	0	0
Presence of On-Street Parking	No	No	No	No		
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Permissive
Signal Group	6	0	5	2	0	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	-	-
Minimum Green [s]	10	0	5	10	0	0
Maximum Green [s]	30	0	30	30	0	0
Amber [s]	3.0	0.0	3.0	3.0	0.0	0.0
All red [s]	1.0	0.0	1.0	1.0	0.0	0.0
Split [s]	55	0	35	90	0	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	0.0	0.0
Walk [s]	5	0	0	5	0	0
Pedestrian Clearance [s]	10	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No		
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	0.0	0.0
Minimum Recall	No		No	No		
Maximum Recall	No		No	No		
Pedestrian Recall	No		No	No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	R	L	C	
C, Cycle Length [s]	90	90	90	90	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	
g_i, Effective Green Time [s]	77	77	86	86	
g / C, Green / Cycle	0.86	0.86	0.96	0.96	
(v / s)_i Volume / Saturation Flow Rate	0.13	0.10	0.14	0.09	
s, saturation flow rate [veh/h]	1870	1589	2046	1870	
c, Capacity [veh/h]	1598	1358	2060	1787	
d1, Uniform Delay [s]	1.09	1.06	0.14	0.10	
k, delay calibration	0.50	0.50	0.50	0.50	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.20	0.17	0.14	0.11	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.15	0.12	0.14	0.10	
d, Delay for Lane Group [s/veh]	1.29	1.23	0.28	0.21	
Lane Group LOS	A	A	A	A	
Critical Lane Group	Yes	No	Yes	No	
50th-Percentile Queue Length [veh/ln]	0.10	0.08	0.04	0.05	
50th-Percentile Queue Length [ft/ln]	2.60	1.89	1.02	1.35	
95th-Percentile Queue Length [veh/ln]	0.19	0.14	0.07	0.10	
95th-Percentile Queue Length [ft/ln]	4.68	3.40	1.84	2.43	

Movement, Approach, & Intersection Results

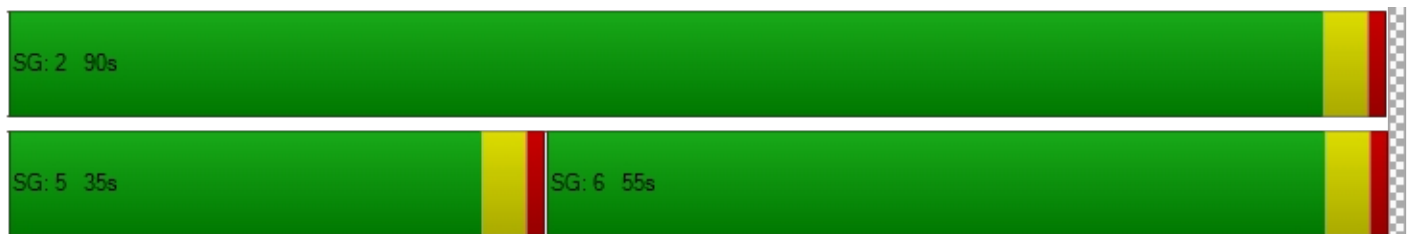
d_M, Delay for Movement [s/veh]	1.29	1.23	0.28	0.21	0.00	0.00
Movement LOS	A	A	A	A		
d_A, Approach Delay [s/veh]	1.27		0.25		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.72					
Intersection LOS	A					
Intersection V/C	0.138					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1133	1911	0
d_b, Bicycle Delay [s]	8.45	0.09	45.00
I_b,int, Bicycle LOS Score for Intersection	2.213	2.324	4.132
Bicycle LOS	B	B	D

Sequence

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



Intersection Level Of Service Report

Intersection 3: Sarival Avenue & Northern Parkway WB Off-Ramp

Control Type:	Signalized	Delay (sec / veh):	18.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.349

Intersection Setup

Name	Sarival Avenue		Sarival Avenue		Northern Parkway WB Pff-Ramp	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑		↑↑↑		↶↷	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	2	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	140.00	100.00	100.00
No. of Lanes in Exit Pocket	0	2	0	0	0	0
Exit Pocket Length [ft]	0.00	49.21	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		55.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Sarival Avenue		Sarival Avenue		Northern Parkway WB Pff-Ramp	
Base Volume Input [veh/h]	51	0	0	212	54	68
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.1576	1.0000	1.0000	1.1576	1.1576	1.1576
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	170	0	0	93	0	226
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	229	0	0	338	63	305
Peak Hour Factor	0.9000	1.0000	1.0000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	64	0	0	94	18	85
Total Analysis Volume [veh/h]	254	0	0	376	70	339
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	6	0	0	2	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	10	0	0	10	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	43	0	0	43	47	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	60	60	22	22
g / C, Green / Cycle	0.67	0.67	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.14	0.07	0.04	0.21
s, saturation flow rate [veh/h]	1870	5094	1781	1589
c, Capacity [veh/h]	1252	3411	430	384
d1, Uniform Delay [s]	5.68	5.30	26.96	32.92
k, delay calibration	0.50	0.50	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.37	0.07	0.18	6.81
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.20	0.11	0.16	0.88
d, Delay for Lane Group [s/veh]	6.05	5.37	27.13	39.72
Lane Group LOS	A	A	C	D
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.50	0.65	1.11	7.18
50th-Percentile Queue Length [ft/ln]	37.47	16.31	27.79	179.39
95th-Percentile Queue Length [veh/ln]	2.70	1.17	2.00	11.57
95th-Percentile Queue Length [ft/ln]	67.45	29.35	50.03	289.21

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	6.05	0.00	0.00	5.37	27.13	39.72
Movement LOS	A			A	C	D
d_A, Approach Delay [s/veh]	6.05		5.37		37.57	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	18.21					
Intersection LOS	B					
Intersection V/C	0.349					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	867	867	956
d_b, Bicycle Delay [s]	14.45	14.45	12.27
I_b,int, Bicycle LOS Score for Intersection	1.979	1.766	1.560
Bicycle LOS	A	A	A

Sequence

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



Intersection Level Of Service Report
Intersection 4: Sarival Avenue & Olive Avenue

Control Type:	All-way stop	Delay (sec / veh):	10.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.444

Intersection Setup

Name	Sarival Avenue			Sarival Avenue			Olive Avenue			Olive Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Sarival Avenue			Sarival Avenue			Olive Avenue			Olive Avenue		
Base Volume Input [veh/h]	47	65	8	2	94	8	31	43	114	5	23	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	34	0	0	165	5	6	0	0	0	0	0
Total Hourly Volume [veh/h]	54	109	9	2	274	14	42	50	132	6	27	2
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	30	3	1	76	4	12	14	37	2	8	1
Total Analysis Volume [veh/h]	60	121	10	2	304	16	47	56	147	7	30	2
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings**Lanes**

Capacity per Entry Lane [veh/h]	693	725	720	633
Degree of Utilization, x	0.28	0.44	0.35	0.06

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.12	2.29	1.56	0.20
95th-Percentile Queue Length [ft]	28.04	57.26	38.88	4.91
Approach Delay [s/veh]	10.16	11.86	10.64	9.06
Approach LOS	B	B	B	A
Intersection Delay [s/veh]	10.94			
Intersection LOS	B			

Intersection Level Of Service Report
Intersection 5: Sarival Avenue & Peoria Avenue

Control Type:	All-way stop	Delay (sec / veh):	14.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.640

Intersection Setup

Name	Sarival Avenue			Sarival Avenue			Peoria Avenue			Peoria Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T			T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	170.00	100.00	100.00	160.00	100.00	100.00	165.00	100.00	100.00	160.00	100.00	160.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Sarival Avenue			Sarival Avenue			Peoria Avenue			Peoria Avenue		
Base Volume Input [veh/h]	32	35	21	24	64	41	16	142	16	13	159	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	40	0	0	0	0	0	0	0	170	0	0	0
Total Hourly Volume [veh/h]	77	41	24	28	74	47	19	164	189	15	184	9
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	11	7	8	21	13	5	46	53	4	51	3
Total Analysis Volume [veh/h]	86	46	27	31	82	52	21	182	210	17	204	10
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings**Lanes**

Capacity per Entry Lane [veh/h]	480	514	571	478	533	534	613	505	543	607
Degree of Utilization, x	0.18	0.09	0.05	0.06	0.25	0.04	0.64	0.03	0.38	0.02

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.65	0.29	0.15	0.21	0.99	0.12	4.57	0.10	1.73	0.05
95th-Percentile Queue Length [ft]	16.18	7.34	3.72	5.18	24.67	3.07	114.21	2.61	43.34	1.26
Approach Delay [s/veh]	11.00			11.52			17.96		12.83	
Approach LOS	B			B			C		B	
Intersection Delay [s/veh]	14.49									
Intersection LOS	B									

**Intersection Level Of Service Report
Intersection 6: Reems Road & Olive Avenue**

Control Type:	All-way stop	Delay (sec / veh):	8.5
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.237

Intersection Setup

Name	Reems Road			Reems Road			Olive Avenue			Olive Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Reems Road			Reems Road			Olive Avenue			Olive Avenue		
Base Volume Input [veh/h]	9	91	3	47	5	6	3	134	15	9	1	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	105	3	54	6	7	3	155	17	10	1	2
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	29	1	15	2	2	1	43	5	3	0	1
Total Analysis Volume [veh/h]	11	117	3	60	7	8	3	172	19	11	1	2
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings**Lanes**

Capacity per Entry Lane [veh/h]	797	770	820	762
Degree of Utilization, x	0.16	0.10	0.24	0.02

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.59	0.32	0.92	0.06
95th-Percentile Queue Length [ft]	14.65	8.06	22.97	1.40
Approach Delay [s/veh]	8.40	8.18	8.75	7.81
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	8.50			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 1: Cotton Lane & Olive Avenue

Control Type:	Signalized	Delay (sec / veh):	22.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.176

Intersection Setup

Name	Cotton Lane			Cotton Lane			Olive Avenue			Olive Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	230.00	100.00	175.00	250.00	100.00	175.00	350.00	100.00	160.00	475.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Cotton Lane			Cotton Lane			Olive Avenue			Olive Avenue		
Base Volume Input [veh/h]	40	71	14	2	79	118	58	88	30	8	139	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	46	82	16	2	91	137	67	102	35	9	161	7
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	23	4	1	25	38	19	28	10	3	45	2
Total Analysis Volume [veh/h]	51	91	18	2	101	152	74	113	39	10	179	8
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	42	40	0	18	16	0	9	23	0	9	23	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	4	14	14	0	11	11	63	58	58	63	55	55
g / C, Green / Cycle	0.04	0.16	0.16	0.00	0.12	0.12	0.70	0.65	0.65	0.70	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.01	0.03	0.01	0.00	0.03	0.10	0.06	0.03	0.02	0.01	0.05	0.01
s, saturation flow rate [veh/h]	3459	3560	1589	3459	3560	1589	1255	3560	1589	1263	3560	1589
c, Capacity [veh/h]	143	569	254	14	436	195	968	2297	1025	984	2174	971
d1, Uniform Delay [s]	42.06	32.66	32.19	44.75	35.73	38.39	4.19	5.87	5.82	4.02	7.20	6.87
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.50	0.13	0.12	4.62	0.27	6.65	0.15	0.04	0.07	0.00	0.07	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.36	0.16	0.07	0.14	0.23	0.78	0.08	0.05	0.04	0.01	0.08	0.01
d, Delay for Lane Group [s/veh]	43.56	32.79	32.31	49.37	36.00	45.04	4.34	5.91	5.89	4.02	7.27	6.89
Lane Group LOS	D	C	C	D	D	D	A	A	A	A	A	A
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.56	0.83	0.33	0.03	0.97	3.45	0.34	0.32	0.23	0.04	0.60	0.05
50th-Percentile Queue Length [ft/ln]	13.97	20.65	8.16	0.76	24.33	86.34	8.44	8.02	5.77	0.99	15.02	1.34
95th-Percentile Queue Length [veh/ln]	1.01	1.49	0.59	0.05	1.75	6.22	0.61	0.58	0.42	0.07	1.08	0.10
95th-Percentile Queue Length [ft/ln]	25.15	37.18	14.69	1.36	43.79	155.41	15.20	14.43	10.38	1.79	27.04	2.41

Movement, Approach, & Intersection Results

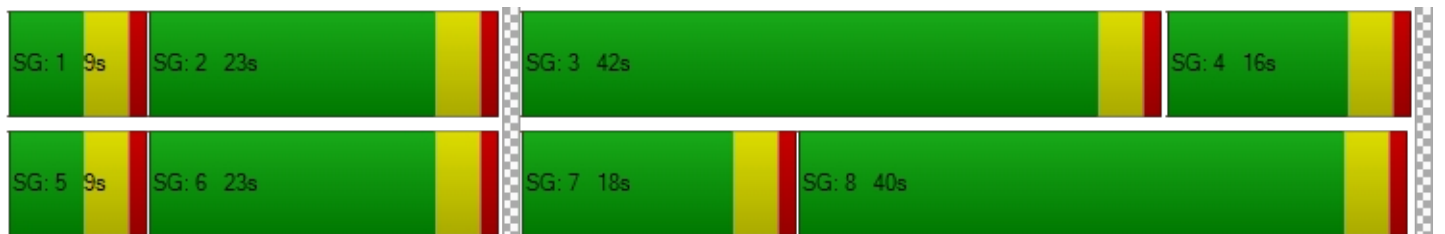
d_M, Delay for Movement [s/veh]	43.56	32.79	32.31	49.37	36.00	45.04	4.34	5.91	5.89	4.02	7.27	6.89
Movement LOS	D	C	C	D	D	D	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	36.17			41.49			5.39			7.09		
Approach LOS	D			D			A			A		
d_I, Intersection Delay [s/veh]	22.65											
Intersection LOS	C											
Intersection V/C	0.176											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			0.0			0.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			0.00			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			0.000			0.000			0.000		
Crosswalk LOS	F			F			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	799			266			422			422		
d_b, Bicycle Delay [s]	16.24			33.84			28.05			28.05		
I_b,int, Bicycle LOS Score for Intersection	1.692			1.770			1.746			1.722		
Bicycle LOS	A			A			A			A		

Sequence

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



Intersection Level Of Service Report

Intersection 2: Sarival Road & Northern Parkway EB On-Ramp

Control Type:	Signalized	Delay (sec / veh):	0.6
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.204

Intersection Setup

Name	Sarival Avenue					
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑		↓			
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	2	0	0	0
Entry Pocket Length [ft]	100.00	170.00	420.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No			
Crosswalk	No		No		No	

Volumes

Name	Sarival Avenue					
Base Volume Input [veh/h]	61	154	58	154	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.1576	1.1576	1.1576	1.1576	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	44	0	221	166	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	115	178	288	344	0	0
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	49	80	96	0	0
Total Analysis Volume [veh/h]	128	198	320	382	0	0
Presence of On-Street Parking	No	No	No	No		
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Permissive
Signal Group	6	0	5	2	0	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	-	-
Minimum Green [s]	10	0	5	10	0	0
Maximum Green [s]	30	0	30	30	0	0
Amber [s]	3.0	0.0	3.0	3.0	0.0	0.0
All red [s]	1.0	0.0	1.0	1.0	0.0	0.0
Split [s]	75	0	15	90	0	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	0.0	0.0
Walk [s]	5	0	0	5	0	0
Pedestrian Clearance [s]	10	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No		
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	0.0	0.0
Minimum Recall	No		No	No		
Maximum Recall	No		No	No		
Pedestrian Recall	No		No	No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	R	L	C	
C, Cycle Length [s]	90	90	90	90	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	
g_i, Effective Green Time [s]	77	77	86	86	
g / C, Green / Cycle	0.85	0.85	0.96	0.96	
(v / s)_i Volume / Saturation Flow Rate	0.07	0.12	0.15	0.20	
s, saturation flow rate [veh/h]	1870	1589	2164	1870	
c, Capacity [veh/h]	1596	1357	2191	1787	
d1, Uniform Delay [s]	1.04	1.10	0.11	0.11	
k, delay calibration	0.50	0.50	0.50	0.50	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.10	0.23	0.14	0.27	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.08	0.15	0.15	0.21	
d, Delay for Lane Group [s/veh]	1.14	1.33	0.25	0.39	
Lane Group LOS	A	A	A	A	
Critical Lane Group	No	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	0.05	0.10	0.04	0.14	
50th-Percentile Queue Length [ft/ln]	1.34	2.54	1.07	3.40	
95th-Percentile Queue Length [veh/ln]	0.10	0.18	0.08	0.24	
95th-Percentile Queue Length [ft/ln]	2.40	4.57	1.92	6.11	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	1.14	1.33	0.25	0.39	0.00	0.00
Movement LOS	A	A	A	A		
d_A, Approach Delay [s/veh]	1.25		0.33		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.62					
Intersection LOS	A					
Intersection V/C	0.204					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1578	1911	0
d_b, Bicycle Delay [s]	2.01	0.09	45.00
I_b,int, Bicycle LOS Score for Intersection	2.098	2.718	4.132
Bicycle LOS	B	B	D

Sequence

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



Intersection Level Of Service Report

Intersection 3: Sarival Avenue & Northern Parkway WB Off-Ramp

Control Type:	Signalized	Delay (sec / veh):	16.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.281

Intersection Setup

Name	Sarival Avenue		Sarival Avenue		Northern Parkway WB Pff-Ramp	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑		↑↑↑		↵↶	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	2	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	140.00	100.00	100.00
No. of Lanes in Exit Pocket	0	2	0	0	0	0
Exit Pocket Length [ft]	0.00	49.21	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		55.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Sarival Avenue		Sarival Avenue		Northern Parkway WB Pff-Ramp	
Base Volume Input [veh/h]	62	0	0	130	95	151
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.1576	1.0000	1.0000	1.1576	1.1576	1.1576
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	44	0	0	387	0	59
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	116	0	0	537	110	234
Peak Hour Factor	0.9000	1.0000	1.0000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	0	0	149	31	65
Total Analysis Volume [veh/h]	129	0	0	597	122	260
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	6	0	0	2	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	10	0	0	10	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	19	0	0	19	71	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	65	65	17	17
g / C, Green / Cycle	0.72	0.72	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.07	0.12	0.07	0.16
s, saturation flow rate [veh/h]	1870	5094	1781	1589
c, Capacity [veh/h]	1345	3663	342	305
d1, Uniform Delay [s]	3.82	4.02	31.53	35.12
k, delay calibration	0.50	0.50	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.14	0.10	0.63	6.65
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.10	0.16	0.36	0.85
d, Delay for Lane Group [s/veh]	3.96	4.12	32.16	41.77
Lane Group LOS	A	A	C	D
Critical Lane Group	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	0.53	0.81	2.18	5.60
50th-Percentile Queue Length [ft/ln]	13.26	20.22	54.51	139.93
95th-Percentile Queue Length [veh/ln]	0.95	1.46	3.92	9.48
95th-Percentile Queue Length [ft/ln]	23.86	36.40	98.12	236.93

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	3.96	0.00	0.00	4.12	32.16	41.77
Movement LOS	A			A	C	D
d_A, Approach Delay [s/veh]	3.96		4.12		38.70	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	16.02					
Intersection LOS	B					
Intersection V/C	0.281					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	333	333	1489
d_b, Bicycle Delay [s]	31.25	31.25	2.94
I_b,int, Bicycle LOS Score for Intersection	1.772	1.888	1.560
Bicycle LOS	A	A	A

Sequence

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



Intersection Level Of Service Report
Intersection 4: Sarival Avenue & Olive Avenue

Control Type:	All-way stop	Delay (sec / veh):	12.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.585

Intersection Setup

Name	Sarival Avenue			Sarival Avenue			Olive Avenue			Olive Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Sarival Avenue			Sarival Avenue			Olive Avenue			Olive Avenue		
Base Volume Input [veh/h]	111	97	7	1	78	23	24	34	49	4	38	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	140	0	0	42	2	25	0	0	0	0	0
Total Hourly Volume [veh/h]	128	252	8	1	132	29	53	39	57	5	44	3
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	70	2	0	37	8	15	11	16	1	12	1
Total Analysis Volume [veh/h]	142	280	9	1	147	32	59	43	63	6	49	3
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings**Lanes**

Capacity per Entry Lane [veh/h]	737	712	665	623
Degree of Utilization, x	0.58	0.25	0.25	0.09

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	3.84	1.00	0.98	0.31
95th-Percentile Queue Length [ft]	95.91	24.98	24.40	7.66
Approach Delay [s/veh]	14.52	9.75	10.20	9.37
Approach LOS	B	A	B	A
Intersection Delay [s/veh]	12.28			
Intersection LOS	B			

Intersection Level Of Service Report
Intersection 5: Sarival Avenue & Peoria Avenue

Control Type:	All-way stop	Delay (sec / veh):	23.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.833

Intersection Setup

Name	Sarival Avenue			Sarival Avenue			Peoria Avenue			Peoria Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵			↵↵			↵↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	170.00	100.00	100.00	160.00	100.00	100.00	165.00	100.00	100.00	160.00	100.00	160.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Sarival Avenue			Sarival Avenue			Peoria Avenue			Peoria Avenue		
Base Volume Input [veh/h]	32	64	31	11	34	39	57	264	26	31	239	19
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	165	0	0	0	0	0	0	0	44	0	0	0
Total Hourly Volume [veh/h]	202	74	36	13	39	45	66	306	74	36	277	22
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	56	21	10	4	11	13	18	85	21	10	77	6
Total Analysis Volume [veh/h]	224	82	40	14	43	50	73	340	82	40	308	24
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	434	461	507	405	450	466	507	446	475	524
Degree of Utilization, x	0.52	0.18	0.08	0.03	0.21	0.16	0.83	0.09	0.65	0.05

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	2.89	0.64	0.26	0.11	0.77	0.55	8.35	0.29	4.54	0.14
95th-Percentile Queue Length [ft]	72.24	16.00	6.40	2.68	19.23	13.79	208.68	7.35	113.58	3.60
Approach Delay [s/veh]	16.75			12.67			32.44		21.09	
Approach LOS	C			B			D		C	
Intersection Delay [s/veh]	23.53									
Intersection LOS	C									

Intersection Level Of Service Report
Intersection 6: Reems Road & Olive Avenue

Control Type:	All-way stop	Delay (sec / veh):	8.6
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.238

Intersection Setup

Name	Reems Road			Reems Road			Olive Avenue			Olive Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Reems Road			Reems Road			Olive Avenue			Olive Avenue		
Base Volume Input [veh/h]	10	128	5	31	2	8	4	115	32	3	1	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	148	6	36	2	9	5	133	37	3	1	6
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	41	2	10	1	3	1	37	10	1	0	2
Total Analysis Volume [veh/h]	13	164	7	40	2	10	6	148	41	3	1	7
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings**Lanes**

Capacity per Entry Lane [veh/h]	805	771	821	819
Degree of Utilization, x	0.23	0.07	0.24	0.01

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.88	0.22	0.92	0.04
95th-Percentile Queue Length [ft]	21.96	5.41	23.10	1.02
Approach Delay [s/veh]	8.79	8.01	8.75	7.46
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	8.65			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 1: Cotton Lane & Olive Avenue

Control Type:	Signalized	Delay (sec / veh):	17.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.139

Intersection Setup

Name	Cotton Lane			Cotton Lane			Olive Avenue			Olive Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	230.00	100.00	175.00	250.00	100.00	175.00	350.00	100.00	160.00	475.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Cotton Lane			Cotton Lane			Olive Avenue			Olive Avenue		
Base Volume Input [veh/h]	36	72	18	3	58	45	78	163	45	2	69	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	53	106	27	4	86	66	115	241	66	3	102	16
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	29	8	1	24	18	32	67	18	1	28	4
Total Analysis Volume [veh/h]	59	118	30	4	96	73	128	268	73	3	113	18
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	36	14	0	40	18	0	9	27	0	9	27	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	4	13	13	1	10	10	64	60	60	64	55	55
g / C, Green / Cycle	0.04	0.15	0.15	0.01	0.11	0.11	0.71	0.66	0.66	0.71	0.62	0.62
(v / s)_i Volume / Saturation Flow Rate	0.02	0.03	0.02	0.00	0.03	0.05	0.10	0.08	0.05	0.00	0.03	0.01
s, saturation flow rate [veh/h]	3459	3560	1589	3459	3560	1589	1315	3560	1589	1068	3560	1589
c, Capacity [veh/h]	153	526	235	23	392	175	1033	2360	1054	844	2185	976
d1, Uniform Delay [s]	41.91	33.87	33.38	44.55	36.69	37.42	4.03	5.54	5.37	3.79	6.94	6.80
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.60	0.21	0.24	3.56	0.32	1.58	0.25	0.10	0.13	0.00	0.04	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.39	0.22	0.13	0.17	0.24	0.42	0.12	0.11	0.07	0.00	0.05	0.02
d, Delay for Lane Group [s/veh]	43.51	34.09	33.62	48.10	37.01	38.99	4.28	5.64	5.50	3.79	6.99	6.84
Lane Group LOS	D	C	C	D	D	D	A	A	A	A	A	A
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.65	1.10	0.56	0.05	0.94	1.51	0.57	0.73	0.41	0.01	0.37	0.12
50th-Percentile Queue Length [ft/ln]	16.13	27.50	13.98	1.35	23.51	37.71	14.20	18.32	10.18	0.28	9.19	3.00
95th-Percentile Queue Length [veh/ln]	1.16	1.98	1.01	0.10	1.69	2.71	1.02	1.32	0.73	0.02	0.66	0.22
95th-Percentile Queue Length [ft/ln]	29.03	49.50	25.16	2.43	42.32	67.87	25.56	32.97	18.32	0.51	16.54	5.39

Movement, Approach, & Intersection Results

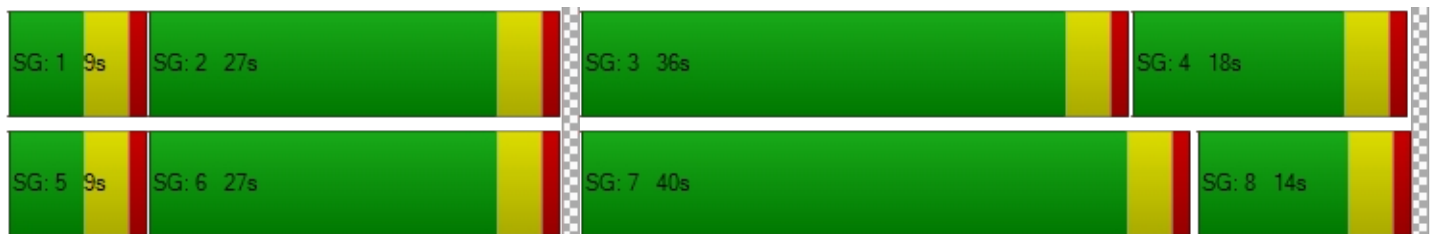
d_M, Delay for Movement [s/veh]	43.51	34.09	33.62	48.10	37.01	38.99	4.28	5.64	5.50	3.79	6.99	6.84
Movement LOS	D	C	C	D	D	D	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	36.70			38.10			5.25			6.90		
Approach LOS	D			D			A			A		
d_I, Intersection Delay [s/veh]	17.88											
Intersection LOS	B											
Intersection V/C	0.139											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			0.0			0.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			0.00			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			0.000			0.000			0.000		
Crosswalk LOS	F			F			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	222			311			511			511		
d_b, Bicycle Delay [s]	35.60			32.13			24.98			24.98		
I_b,int, Bicycle LOS Score for Intersection	1.730			1.702			1.947			1.670		
Bicycle LOS	A			A			A			A		

Sequence

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



Intersection Level Of Service Report

Intersection 2: Sarival Road & Northern Parkway EB On-Ramp

Control Type:	Signalized	Delay (sec / veh):	0.8
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.148

Intersection Setup

Name	Northbound		Southbound		Westbound	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑		↓			
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	2	0	0	0
Entry Pocket Length [ft]	100.00	170.00	420.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No			
Crosswalk	No		No		No	

Volumes

Name	Sarival Avenue					
Base Volume Input [veh/h]	39	122	179	101	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.4775	1.4775	1.4775	1.4775	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	170	0	53	40	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	228	180	317	189	0	0
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	63	50	88	53	0	0
Total Analysis Volume [veh/h]	253	200	352	210	0	0
Presence of On-Street Parking	No	No	No	No		
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Permissive
Signal Group	6	0	5	2	0	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	-	-
Minimum Green [s]	10	0	5	10	0	0
Maximum Green [s]	30	0	30	30	0	0
Amber [s]	3.0	0.0	3.0	3.0	0.0	0.0
All red [s]	1.0	0.0	1.0	1.0	0.0	0.0
Split [s]	55	0	35	90	0	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	0.0	0.0
Walk [s]	5	0	0	5	0	0
Pedestrian Clearance [s]	10	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No		
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	0.0	0.0
Minimum Recall	No		No	No		
Maximum Recall	No		No	No		
Pedestrian Recall	No		No	No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	R	L	C	
C, Cycle Length [s]	90	90	90	90	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	
g_i, Effective Green Time [s]	77	77	86	86	
g / C, Green / Cycle	0.85	0.85	0.96	0.96	
(v / s)_i Volume / Saturation Flow Rate	0.14	0.13	0.18	0.11	
s, saturation flow rate [veh/h]	1870	1589	1956	1870	
c, Capacity [veh/h]	1598	1358	1974	1787	
d1, Uniform Delay [s]	1.10	1.09	0.14	0.10	
k, delay calibration	0.50	0.50	0.50	0.50	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.21	0.23	0.20	0.13	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.16	0.15	0.18	0.12	
d, Delay for Lane Group [s/veh]	1.31	1.32	0.34	0.23	
Lane Group LOS	A	A	A	A	
Critical Lane Group	Yes	No	Yes	No	
50th-Percentile Queue Length [veh/ln]	0.11	0.10	0.05	0.07	
50th-Percentile Queue Length [ft/ln]	2.79	2.50	1.36	1.66	
95th-Percentile Queue Length [veh/ln]	0.20	0.18	0.10	0.12	
95th-Percentile Queue Length [ft/ln]	5.02	4.50	2.44	3.00	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	1.31	1.32	0.34	0.23	0.00	0.00
Movement LOS	A	A	A	A		
d_A, Approach Delay [s/veh]	1.32		0.30		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.75					
Intersection LOS	A					
Intersection V/C	0.148					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1133	1911	0
d_b, Bicycle Delay [s]	8.45	0.09	45.00
I_b,int, Bicycle LOS Score for Intersection	2.307	2.487	4.132
Bicycle LOS	B	B	D

Sequence

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



Intersection Level Of Service Report

Intersection 3: Sarival Avenue & Northern Parkway WB Off-Ramp

Control Type:	Signalized	Delay (sec / veh):	17.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.373

Intersection Setup

Name	Sarival Avenue		Sarival Avenue		Northern Parkway WB Pff-Ramp	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑		↑↑↑		↶↷	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	2	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	140.00	100.00	100.00
No. of Lanes in Exit Pocket	0	2	0	0	0	0
Exit Pocket Length [ft]	0.00	49.21	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		55.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Sarival Avenue		Sarival Avenue		Northern Parkway WB Pff-Ramp	
Base Volume Input [veh/h]	51	0	0	212	54	68
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.4775	1.0000	1.0000	1.4775	1.4775	1.4775
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	170	0	0	93	0	226
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	245	0	0	406	80	326
Peak Hour Factor	0.9000	1.0000	1.0000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	68	0	0	113	22	91
Total Analysis Volume [veh/h]	272	0	0	451	89	362
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	6	0	0	2	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	10	0	0	10	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	43	0	0	43	47	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	59	59	23	23
g / C, Green / Cycle	0.66	0.66	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.15	0.09	0.05	0.23
s, saturation flow rate [veh/h]	1870	5094	1781	1589
c, Capacity [veh/h]	1225	3337	456	407
d1, Uniform Delay [s]	6.26	5.87	26.22	32.26
k, delay calibration	0.50	0.50	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.42	0.08	0.21	6.79
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.22	0.14	0.20	0.89
d, Delay for Lane Group [s/veh]	6.68	5.96	26.43	39.04
Lane Group LOS	A	A	C	D
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.75	0.86	1.39	7.61
50th-Percentile Queue Length [ft/ln]	43.64	21.42	34.85	190.27
95th-Percentile Queue Length [veh/ln]	3.14	1.54	2.51	12.13
95th-Percentile Queue Length [ft/ln]	78.55	38.55	62.73	303.37

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	6.68	0.00	0.00	5.96	26.43	39.04
Movement LOS	A			A	C	D
d_A, Approach Delay [s/veh]	6.68		5.96		36.55	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	17.88					
Intersection LOS	B					
Intersection V/C	0.373					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	867	867	956
d_b, Bicycle Delay [s]	14.45	14.45	12.27
I_b,int, Bicycle LOS Score for Intersection	2.008	1.808	1.560
Bicycle LOS	B	A	A

Sequence

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



Intersection Level Of Service Report
Intersection 4: Sarival Avenue & Olive Avenue

Control Type:	All-way stop	Delay (sec / veh):	12.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.511

Intersection Setup

Name	Sarival Avenue			Sarival Avenue			Olive Avenue			Olive Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Sarival Avenue			Sarival Avenue			Olive Avenue			Olive Avenue		
Base Volume Input [veh/h]	47	65	8	2	94	8	31	43	114	5	23	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	34	0	0	82	83	6	0	0	0	0	0
Total Hourly Volume [veh/h]	69	130	12	3	221	95	52	64	168	7	34	3
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	36	3	1	61	26	14	18	47	2	9	1
Total Analysis Volume [veh/h]	77	144	13	3	246	106	58	71	187	8	38	3
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings**Lanes**

Capacity per Entry Lane [veh/h]	649	695	681	588
Degree of Utilization, x	0.36	0.51	0.46	0.08

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.64	2.93	2.46	0.27
95th-Percentile Queue Length [ft]	41.08	73.19	61.52	6.80
Approach Delay [s/veh]	11.66	13.45	12.77	9.68
Approach LOS	B	B	B	A
Intersection Delay [s/veh]	12.59			
Intersection LOS	B			

Intersection Level Of Service Report
Intersection 5: Sarival Avenue & Peoria Avenue

Control Type:	All-way stop	Delay (sec / veh):	21.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.810

Intersection Setup

Name	Sarival Avenue			Sarival Avenue			Peoria Avenue			Peoria Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵			↵↵			↵↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	170.00	100.00	100.00	160.00	100.00	100.00	165.00	100.00	100.00	160.00	100.00	160.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Sarival Avenue			Sarival Avenue			Peoria Avenue			Peoria Avenue		
Base Volume Input [veh/h]	32	35	21	24	64	41	16	142	16	13	159	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	40	0	0	0	0	0	0	0	170	0	0	0
Total Hourly Volume [veh/h]	87	52	31	35	95	61	24	210	194	19	235	12
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	14	9	10	26	17	7	58	54	5	65	3
Total Analysis Volume [veh/h]	97	58	34	39	106	68	27	233	216	21	261	13
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings**Lanes**

Capacity per Entry Lane [veh/h]	433	461	507	437	482	492	554	463	495	548
Degree of Utilization, x	0.22	0.13	0.07	0.09	0.36	0.05	0.81	0.05	0.53	0.02

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.85	0.43	0.22	0.29	1.63	0.17	7.97	0.14	3.03	0.07
95th-Percentile Queue Length [ft]	21.23	10.71	5.38	7.32	40.63	4.35	199.34	3.55	75.84	1.82
Approach Delay [s/veh]	12.31			13.85			30.07		16.94	
Approach LOS	B			B			D		C	
Intersection Delay [s/veh]	20.96									
Intersection LOS	C									

Intersection Level Of Service Report
Intersection 6: Reems Road & Olive Avenue

Control Type:	All-way stop	Delay (sec / veh):	9.2
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.314

Intersection Setup

Name	Reems Road			Reems Road			Olive Avenue			Olive Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Reems Road			Reems Road			Olive Avenue			Olive Avenue		
Base Volume Input [veh/h]	9	91	3	47	5	6	3	134	15	9	1	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	13	134	4	69	7	9	4	198	22	13	1	3
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	37	1	19	2	3	1	55	6	4	0	1
Total Analysis Volume [veh/h]	14	149	4	77	8	10	4	220	24	14	1	3
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings**Lanes**

Capacity per Entry Lane [veh/h]	765	736	791	727
Degree of Utilization, x	0.22	0.13	0.31	0.02

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.83	0.44	1.34	0.08
95th-Percentile Queue Length [ft]	20.73	11.06	33.61	1.90
Approach Delay [s/veh]	9.02	8.62	9.62	8.08
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	9.20			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 1: Cotton Lane & Olive Avenue

Control Type:	Signalized	Delay (sec / veh):	22.6
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.226

Intersection Setup

Name	Cotton Lane			Cotton Lane			Olive Avenue			Olive Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐ ⇐ ⇐			⇐ ⇐ ⇐			⇐ ⇐ ⇐			⇐ ⇐ ⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	230.00	100.00	175.00	250.00	100.00	175.00	350.00	100.00	160.00	475.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Cotton Lane			Cotton Lane			Olive Avenue			Olive Avenue		
Base Volume Input [veh/h]	40	71	14	2	79	118	58	88	30	8	139	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	59	105	21	3	117	174	86	130	44	12	205	9
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	29	6	1	33	48	24	36	12	3	57	3
Total Analysis Volume [veh/h]	66	117	23	3	130	193	96	144	49	13	228	10
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	42	40	0	18	16	0	9	23	0	9	23	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	4	17	17	0	13	13	61	55	55	61	52	52
g / C, Green / Cycle	0.05	0.19	0.19	0.00	0.15	0.15	0.67	0.61	0.61	0.67	0.58	0.58
(v / s)_i Volume / Saturation Flow Rate	0.02	0.03	0.01	0.00	0.04	0.12	0.08	0.04	0.03	0.01	0.06	0.01
s, saturation flow rate [veh/h]	3459	3560	1589	3459	3560	1589	1212	3560	1589	1224	3560	1589
c, Capacity [veh/h]	160	677	302	18	532	238	892	2173	970	913	2048	914
d1, Uniform Delay [s]	41.82	30.57	30.00	44.65	33.86	37.13	5.21	7.14	7.07	4.93	8.69	8.18
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.71	0.12	0.11	4.03	0.24	6.59	0.24	0.06	0.10	0.01	0.11	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.41	0.17	0.08	0.16	0.24	0.81	0.11	0.07	0.05	0.01	0.11	0.01
d, Delay for Lane Group [s/veh]	43.53	30.69	30.11	48.68	34.09	43.72	5.46	7.20	7.17	4.94	8.80	8.21
Lane Group LOS	D	C	C	D	C	D	A	A	A	A	A	A
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.72	1.02	0.40	0.04	1.21	4.33	0.53	0.48	0.34	0.06	0.89	0.08
50th-Percentile Queue Length [ft/ln]	18.04	25.56	9.97	1.06	30.35	108.26	13.26	11.97	8.43	1.56	22.17	1.90
95th-Percentile Queue Length [veh/ln]	1.30	1.84	0.72	0.08	2.19	7.74	0.95	0.86	0.61	0.11	1.60	0.14
95th-Percentile Queue Length [ft/ln]	32.47	46.00	17.95	1.91	54.63	193.58	23.87	21.55	15.18	2.80	39.90	3.43

Movement, Approach, & Intersection Results

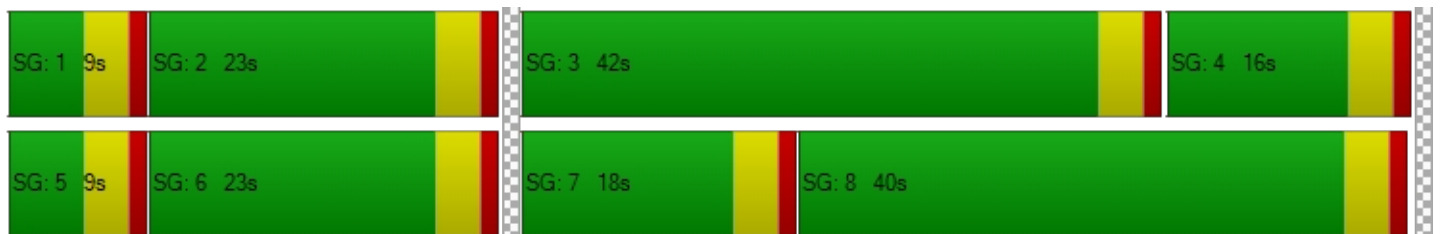
d_M, Delay for Movement [s/veh]	43.53	30.69	30.11	48.68	34.09	43.72	5.46	7.20	7.17	4.94	8.80	8.21
Movement LOS	D	C	C	D	C	D	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	34.74			39.93			6.61			8.58		
Approach LOS	C			D			A			A		
d_I, Intersection Delay [s/veh]	22.61											
Intersection LOS	C											
Intersection V/C	0.226											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			0.0			0.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			0.00			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			0.000			0.000			0.000		
Crosswalk LOS	F			F			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	799			266			422			422		
d_b, Bicycle Delay [s]	16.24			33.84			28.05			28.05		
I_b,int, Bicycle LOS Score for Intersection	1.730			1.829			1.798			1.767		
Bicycle LOS	A			A			A			A		

Sequence

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



Intersection Level Of Service Report

Intersection 2: Sarival Road & Northern Parkway EB On-Ramp

Control Type:	Signalized	Delay (sec / veh):	0.7
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.234

Intersection Setup

Name	Sarival Avenue					
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑		↓			
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	2	0	0	0
Entry Pocket Length [ft]	100.00	170.00	420.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No			
Crosswalk	No		No		No	

Volumes

Name	Sarival Avenue					
Base Volume Input [veh/h]	61	154	58	154	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.4775	1.4775	1.4775	1.4775	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	44	0	221	166	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	134	228	307	394	0	0
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	37	63	85	109	0	0
Total Analysis Volume [veh/h]	149	253	341	438	0	0
Presence of On-Street Parking	No	No	No	No		
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Permissive
Signal Group	6	0	5	2	0	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	-	-
Minimum Green [s]	10	0	5	10	0	0
Maximum Green [s]	30	0	30	30	0	0
Amber [s]	3.0	0.0	3.0	3.0	0.0	0.0
All red [s]	1.0	0.0	1.0	1.0	0.0	0.0
Split [s]	75	0	15	90	0	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	0.0	0.0
Walk [s]	5	0	0	5	0	0
Pedestrian Clearance [s]	10	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No		
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	0.0	0.0
Minimum Recall	No		No	No		
Maximum Recall	No		No	No		
Pedestrian Recall	No		No	No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	R	L	C	
C, Cycle Length [s]	90	90	90	90	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	
g_i, Effective Green Time [s]	77	77	86	86	
g / C, Green / Cycle	0.85	0.85	0.96	0.96	
(v / s)_i Volume / Saturation Flow Rate	0.08	0.16	0.17	0.23	
s, saturation flow rate [veh/h]	1870	1589	2038	1870	
c, Capacity [veh/h]	1596	1357	2068	1787	
d1, Uniform Delay [s]	1.05	1.15	0.12	0.12	
k, delay calibration	0.50	0.50	0.50	0.50	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.12	0.30	0.17	0.33	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.09	0.19	0.16	0.25	
d, Delay for Lane Group [s/veh]	1.17	1.45	0.29	0.44	
Lane Group LOS	A	A	A	A	
Critical Lane Group	No	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	0.06	0.14	0.05	0.16	
50th-Percentile Queue Length [ft/ln]	1.58	3.40	1.23	4.06	
95th-Percentile Queue Length [veh/ln]	0.11	0.25	0.09	0.29	
95th-Percentile Queue Length [ft/ln]	2.84	6.13	2.22	7.30	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	1.17	1.45	0.29	0.44	0.00	0.00
Movement LOS	A	A	A	A		
d_A, Approach Delay [s/veh]	1.35		0.38		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.71					
Intersection LOS	A					
Intersection V/C	0.234					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1578	1911	0
d_b, Bicycle Delay [s]	2.01	0.09	45.00
I_b,int, Bicycle LOS Score for Intersection	2.223	2.845	4.132
Bicycle LOS	B	C	D

Sequence

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



Intersection Level Of Service Report

Intersection 3: Sarival Avenue & Northern Parkway WB Off-Ramp

Control Type:	Signalized	Delay (sec / veh):	15.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.282

Intersection Setup

Name	Sarival Avenue		Sarival Avenue		Northern Parkway WB Pff-Ramp	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑		↑↑↑		↶↷	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	2	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	140.00	100.00	100.00
No. of Lanes in Exit Pocket	0	2	0	0	0	0
Exit Pocket Length [ft]	0.00	49.21	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		55.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Sarival Avenue		Sarival Avenue		Northern Parkway WB Pff-Ramp	
Base Volume Input [veh/h]	62	0	0	130	95	151
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.4775	1.0000	1.0000	1.4775	1.4775	1.4775
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	44	0	0	387	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	136	0	0	579	140	223
Peak Hour Factor	0.9000	1.0000	1.0000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	0	0	161	39	62
Total Analysis Volume [veh/h]	151	0	0	643	156	248
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	6	0	0	2	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	10	0	0	10	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	19	0	0	19	71	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	65	65	17	17
g / C, Green / Cycle	0.73	0.73	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.08	0.13	0.09	0.16
s, saturation flow rate [veh/h]	1870	5094	1781	1589
c, Capacity [veh/h]	1357	3697	330	294
d1, Uniform Delay [s]	3.68	3.87	32.74	35.39
k, delay calibration	0.50	0.50	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.17	0.10	1.05	6.46
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.11	0.17	0.47	0.84
d, Delay for Lane Group [s/veh]	3.85	3.97	33.79	41.85
Lane Group LOS	A	A	C	D
Critical Lane Group	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	0.60	0.84	2.89	5.34
50th-Percentile Queue Length [ft/ln]	15.01	20.95	72.35	133.41
95th-Percentile Queue Length [veh/ln]	1.08	1.51	5.21	9.13
95th-Percentile Queue Length [ft/ln]	27.01	37.71	130.24	228.13

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	3.85	0.00	0.00	3.97	33.79	41.85
Movement LOS	A			A	C	D
d_A, Approach Delay [s/veh]	3.85		3.97		38.74	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	15.68					
Intersection LOS	B					
Intersection V/C	0.282					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	333	333	1489
d_b, Bicycle Delay [s]	31.25	31.25	2.94
I_b,int, Bicycle LOS Score for Intersection	1.809	1.913	1.560
Bicycle LOS	A	A	A

Sequence

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



Intersection Level Of Service Report
Intersection 4: Sarival Avenue & Olive Avenue

Control Type:	All-way stop	Delay (sec / veh):	16.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.730

Intersection Setup

Name	Sarival Avenue			Sarival Avenue			Olive Avenue			Olive Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Sarival Avenue			Sarival Avenue			Olive Avenue			Olive Avenue		
Base Volume Input [veh/h]	111	97	7	1	78	23	24	34	49	4	38	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	140	0	0	42	2	25	0	0	0	0	0
Total Hourly Volume [veh/h]	164	283	10	1	157	36	60	50	72	6	56	4
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	46	79	3	0	44	10	17	14	20	2	16	1
Total Analysis Volume [veh/h]	182	314	11	1	174	40	67	56	80	7	62	4
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings**Lanes**

Capacity per Entry Lane [veh/h]	694	661	618	572
Degree of Utilization, x	0.73	0.33	0.33	0.13

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	6.39	1.41	1.43	0.44
95th-Percentile Queue Length [ft]	159.67	35.27	35.74	10.90
Approach Delay [s/veh]	20.91	11.05	11.66	10.21
Approach LOS	C	B	B	B
Intersection Delay [s/veh]	16.12			
Intersection LOS	C			

Intersection Level Of Service Report
Intersection 5: Sarival Avenue & Peoria Avenue

Control Type:	All-way stop	Delay (sec / veh):	54.9
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.140

Intersection Setup

Name	Sarival Avenue			Sarival Avenue			Peoria Avenue			Peoria Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵			↵			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	170.00	100.00	100.00	160.00	100.00	100.00	165.00	100.00	100.00	160.00	100.00	160.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Sarival Avenue			Sarival Avenue			Peoria Avenue			Peoria Avenue		
Base Volume Input [veh/h]	32	64	31	11	34	39	57	264	26	31	239	19
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	165	0	0	0	0	0	0	0	44	0	0	0
Total Hourly Volume [veh/h]	212	95	46	16	50	58	84	390	82	46	353	28
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	59	26	13	4	14	16	23	108	23	13	98	8
Total Analysis Volume [veh/h]	236	106	51	18	56	64	93	433	91	51	392	31
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings**Lanes**

Capacity per Entry Lane [veh/h]	403	426	463	392	429	426	524	421	445	486
Degree of Utilization, x	0.59	0.25	0.11	0.05	0.28	0.22	1.14	0.12	0.88	0.06

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	3.61	0.97	0.37	0.14	1.13	0.82	18.61	0.41	9.24	0.20
95th-Percentile Queue Length [ft]	90.23	24.24	9.22	3.60	28.30	20.54	465.18	10.26	230.95	5.09
Approach Delay [s/veh]	19.33			14.06			97.86		40.48	
Approach LOS	C			B			F		E	
Intersection Delay [s/veh]	54.94									
Intersection LOS	F									

Intersection Level Of Service Report
Intersection 6: Reems Road & Olive Avenue

Control Type:	All-way stop	Delay (sec / veh):	9.5
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.315

Intersection Setup

Name	Reems Road			Reems Road			Olive Avenue			Olive Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Reems Road			Reems Road			Olive Avenue			Olive Avenue		
Base Volume Input [veh/h]	10	128	5	31	2	8	4	115	32	3	1	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	189	7	46	3	12	6	170	47	4	1	7
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	53	2	13	1	3	2	47	13	1	0	2
Total Analysis Volume [veh/h]	17	210	8	51	3	13	7	189	52	4	1	8
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings**Lanes**

Capacity per Entry Lane [veh/h]	774	735	788	769
Degree of Utilization, x	0.30	0.09	0.31	0.02

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.28	0.30	1.35	0.05
95th-Percentile Queue Length [ft]	32.09	7.50	33.80	1.29
Approach Delay [s/veh]	9.67	8.39	9.66	7.77
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	9.47			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 1: Cotton Lane & Olive Avenue

Control Type:	Signalized	Delay (sec / veh):	17.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.109

Intersection Setup

Name	Cotton Lane			Cotton Lane			Olive Avenue			Olive Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐ ⇐ ⇐			⇐ ⇐ ⇐			⇐ ⇐ ⇐			⇐ ⇐ ⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	230.00	100.00	175.00	250.00	100.00	175.00	350.00	100.00	160.00	475.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Cotton Lane			Cotton Lane			Olive Avenue			Olive Avenue		
Base Volume Input [veh/h]	36	72	18	3	58	45	78	163	45	2	69	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	42	83	21	3	67	52	90	189	52	2	80	13
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	23	6	1	19	14	25	53	14	1	22	4
Total Analysis Volume [veh/h]	47	92	23	3	74	58	100	210	58	2	89	14
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	36	14	0	40	18	0	9	27	0	9	27	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	4	13	13	0	10	10	65	61	61	65	56	56
g / C, Green / Cycle	0.04	0.14	0.14	0.00	0.11	0.11	0.72	0.67	0.67	0.72	0.62	0.62
(v / s)_i Volume / Saturation Flow Rate	0.01	0.03	0.01	0.00	0.02	0.04	0.07	0.06	0.04	0.00	0.02	0.01
s, saturation flow rate [veh/h]	3459	3560	1589	3459	3560	1589	1342	3560	1589	1135	3560	1589
c, Capacity [veh/h]	137	506	226	18	384	171	1064	2389	1066	905	2218	990
d1, Uniform Delay [s]	42.15	34.05	33.66	44.65	36.65	37.25	3.78	5.19	5.07	3.59	6.58	6.47
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.46	0.17	0.19	4.03	0.24	1.16	0.18	0.07	0.10	0.00	0.03	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.34	0.18	0.10	0.16	0.19	0.34	0.09	0.09	0.05	0.00	0.04	0.01
d, Delay for Lane Group [s/veh]	43.61	34.22	33.86	48.68	36.89	38.40	3.95	5.26	5.16	3.59	6.61	6.50
Lane Group LOS	D	C	C	D	D	D	A	A	A	A	A	A
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.52	0.86	0.43	0.04	0.72	1.18	0.42	0.54	0.31	0.01	0.28	0.09
50th-Percentile Queue Length [ft/ln]	12.90	21.44	10.76	1.06	18.05	29.62	10.40	13.52	7.69	0.18	6.92	2.24
95th-Percentile Queue Length [veh/ln]	0.93	1.54	0.77	0.08	1.30	2.13	0.75	0.97	0.55	0.01	0.50	0.16
95th-Percentile Queue Length [ft/ln]	23.21	38.60	19.36	1.91	32.50	53.32	18.71	24.34	13.84	0.32	12.46	4.03

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	43.61	34.22	33.86	48.68	36.89	38.40	3.95	5.26	5.16	3.59	6.61	6.50
Movement LOS	D	C	C	D	D	D	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	36.90			37.80			4.89			6.54		
Approach LOS	D			D			A			A		
d_I, Intersection Delay [s/veh]	17.62											
Intersection LOS	B											
Intersection V/C	0.109											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			0.0			0.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			0.00			0.00			0.00		
l_p,int, Pedestrian LOS Score for Intersection	0.000			0.000			0.000			0.000		
Crosswalk LOS	F			F			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	222			311			511			511		
d_b, Bicycle Delay [s]	35.60			32.13			24.98			24.98		
l_b,int, Bicycle LOS Score for Intersection	1.693			1.671			1.863			1.646		
Bicycle LOS	A			A			A			A		

Sequence

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



Intersection Level Of Service Report

Intersection 2: Sarival Road & Northern Parkway EB On-Ramp

Control Type:	Signalized	Delay (sec / veh):	1.1
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.275

Intersection Setup

Name	Sarival Avenue					
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑		↓			
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	2	0	0	0
Entry Pocket Length [ft]	100.00	170.00	420.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No			
Crosswalk	No		No		No	

Volumes

Name	Sarival Avenue					
Base Volume Input [veh/h]	39	122	179	101	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.1576	1.1576	1.1576	1.1576	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	230	0	26	69	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	170	0	53	40	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	445	141	286	226	0	0
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	124	39	79	63	0	0
Total Analysis Volume [veh/h]	494	157	318	251	0	0
Presence of On-Street Parking	No	No	No	No		
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Permissive
Signal Group	6	0	5	2	0	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	-	-
Minimum Green [s]	10	0	5	10	0	0
Maximum Green [s]	30	0	30	30	0	0
Amber [s]	3.0	0.0	3.0	3.0	0.0	0.0
All red [s]	1.0	0.0	1.0	1.0	0.0	0.0
Split [s]	55	0	35	90	0	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	0.0	0.0
Walk [s]	5	0	0	5	0	0
Pedestrian Clearance [s]	10	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No		
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	0.0	0.0
Minimum Recall	No		No	No		
Maximum Recall	No		No	No		
Pedestrian Recall	No		No	No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	R	L	C	
C, Cycle Length [s]	90	90	90	90	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	
g_i, Effective Green Time [s]	77	77	86	86	
g / C, Green / Cycle	0.86	0.86	0.96	0.96	
(v / s)_i Volume / Saturation Flow Rate	0.26	0.10	0.19	0.13	
s, saturation flow rate [veh/h]	1870	1589	1677	1870	
c, Capacity [veh/h]	1598	1358	1668	1787	
d1, Uniform Delay [s]	1.30	1.06	0.30	0.10	
k, delay calibration	0.50	0.50	0.50	0.50	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.50	0.17	0.25	0.16	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.31	0.12	0.19	0.14	
d, Delay for Lane Group [s/veh]	1.80	1.23	0.56	0.27	
Lane Group LOS	A	A	A	A	
Critical Lane Group	Yes	No	Yes	No	
50th-Percentile Queue Length [veh/ln]	0.26	0.08	0.06	0.08	
50th-Percentile Queue Length [ft/ln]	6.59	1.89	1.47	2.04	
95th-Percentile Queue Length [veh/ln]	0.47	0.14	0.11	0.15	
95th-Percentile Queue Length [ft/ln]	11.86	3.41	2.65	3.68	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	1.80	1.23	0.56	0.27	0.00	0.00
Movement LOS	A	A	A	A		
d_A, Approach Delay [s/veh]	1.66		0.43		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	1.09					
Intersection LOS	A					
Intersection V/C	0.275					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1133	1911	0
d_b, Bicycle Delay [s]	8.45	0.09	45.00
I_b,int, Bicycle LOS Score for Intersection	2.634	2.498	4.132
Bicycle LOS	B	B	D

Sequence

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



Intersection Level Of Service Report

Intersection 3: Sarival Avenue & Northern Parkway WB Off-Ramp

Control Type:	Signalized	Delay (sec / veh):	18.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.546

Intersection Setup

Name	Sarival Avenue		Sarival Avenue		Northern Parkway WB Pff-Ramp	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑		↑↑↑		↶↷	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	2	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	140.00	100.00	100.00
No. of Lanes in Exit Pocket	0	2	0	0	0	0
Exit Pocket Length [ft]	0.00	49.21	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		55.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Sarival Avenue		Sarival Avenue		Northern Parkway WB Pff-Ramp	
Base Volume Input [veh/h]	51	0	0	212	54	68
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.1576	1.0000	1.0000	1.1576	1.1576	1.1576
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	230	0	0	95	0	86
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	170	0	0	93	0	226
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	459	0	0	433	63	391
Peak Hour Factor	0.9000	1.0000	1.0000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	128	0	0	120	18	109
Total Analysis Volume [veh/h]	510	0	0	481	70	434
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	6	0	0	2	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	10	0	0	10	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	43	0	0	43	47	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	55	55	27	27
g / C, Green / Cycle	0.61	0.61	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.27	0.09	0.04	0.27
s, saturation flow rate [veh/h]	1870	5094	1781	1589
c, Capacity [veh/h]	1142	3112	535	477
d1, Uniform Delay [s]	9.36	7.52	22.94	30.32
k, delay calibration	0.50	0.50	0.11	0.14
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.26	0.11	0.11	8.98
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.45	0.15	0.13	0.91
d, Delay for Lane Group [s/veh]	10.63	7.63	23.05	39.30
Lane Group LOS	B	A	C	D
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.71	1.12	1.00	9.24
50th-Percentile Queue Length [ft/ln]	117.87	27.99	24.97	231.01
95th-Percentile Queue Length [veh/ln]	8.28	2.02	1.80	14.23
95th-Percentile Queue Length [ft/ln]	206.89	50.38	44.95	355.64

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	10.63	0.00	0.00	7.63	23.05	39.30
Movement LOS	B			A	C	D
d_A, Approach Delay [s/veh]	10.63		7.63		37.04	
Approach LOS	B		A		D	
d_I, Intersection Delay [s/veh]	18.57					
Intersection LOS	B					
Intersection V/C	0.546					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	867	867	956
d_b, Bicycle Delay [s]	14.45	14.45	12.27
I_b,int, Bicycle LOS Score for Intersection	2.401	1.824	1.560
Bicycle LOS	B	A	A

Sequence





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



Intersection Level Of Service Report
Intersection 4: Sarival Avenue & Olive Avenue

Control Type:	Signalized	Delay (sec / veh):	16.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.386

Intersection Setup

Name	Sarival Avenue			Sarival Avenue			Olive Avenue			Olive Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Sarival Avenue			Sarival Avenue			Olive Avenue			Olive Avenue		
Base Volume Input [veh/h]	47	65	8	2	94	8	31	43	114	5	23	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	316	0	8	95	0	0	0	0	0	0	29
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	34	0	0	165	5	6	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	54	425	9	10	369	14	42	50	132	6	27	31
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	118	3	3	103	4	12	14	37	2	8	9
Total Analysis Volume [veh/h]	60	472	10	11	410	16	47	56	147	7	30	34
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	15	0	9	15	0	9	57	0	9	57	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	L	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	2.00	2.00	0.00	2.00	0.00	2.00
g_i, Effective Green Time [s]	64	59	64	56	56	18	13	18	11
g / C, Green / Cycle	0.71	0.65	0.71	0.62	0.62	0.20	0.15	0.20	0.12
(v / s)_i Volume / Saturation Flow Rate	0.06	0.26	0.01	0.22	0.01	0.03	0.12	0.01	0.04
s, saturation flow rate [veh/h]	1037	1863	957	1870	1589	1471	1658	1273	1710
c, Capacity [veh/h]	737	1212	670	1161	987	381	246	250	204
d1, Uniform Delay [s]	4.67	7.41	4.73	8.27	6.53	29.44	37.17	29.27	36.26
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.05	0.98	0.04	0.84	0.03	0.14	6.80	0.04	0.87
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.08	0.40	0.02	0.35	0.02	0.12	0.82	0.03	0.31
d, Delay for Lane Group [s/veh]	4.71	8.38	4.77	9.12	6.56	29.59	43.98	29.32	37.13
Lane Group LOS	A	A	A	A	A	C	D	C	D
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.24	3.67	0.05	3.36	0.10	0.84	4.73	0.12	1.28
50th-Percentile Queue Length [ft/ln]	5.97	91.79	1.23	84.04	2.58	20.99	118.16	2.96	31.94
95th-Percentile Queue Length [veh/ln]	0.43	6.61	0.09	6.05	0.19	1.51	8.29	0.21	2.30
95th-Percentile Queue Length [ft/ln]	10.75	165.21	2.21	151.26	4.65	37.79	207.30	5.33	57.49

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	4.71	8.38	8.38	4.77	9.12	6.56	29.59	43.98	43.98	29.32	37.13	37.13
Movement LOS	A	A	A	A	A	A	C	D	D	C	D	D
d_A, Approach Delay [s/veh]	7.98			8.91			41.27			36.36		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	16.25											
Intersection LOS	B											
Intersection V/C	0.386											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			0.0			0.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			0.00			0.00			0.00		
l_p,int, Pedestrian LOS Score for Intersection	0.000			0.000			0.000			0.000		
Crosswalk LOS	F			F			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	244			244			1178			1178		
d_b, Bicycle Delay [s]	34.67			34.67			7.61			7.61		
l_b,int, Bicycle LOS Score for Intersection	2.454			2.281			1.972			1.677		
Bicycle LOS	B			B			A			A		

Sequence

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



Intersection Level Of Service Report
Intersection 5: Sarival Avenue & Peoria Avenue

Control Type:	Signalized	Delay (sec / veh):	19.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.531

Intersection Setup

Name	Sarival Avenue			Sarival Avenue			Peoria Avenue			Peoria Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↻↵			↵↻↵			↵↻↵			↵↻↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	170.00	100.00	100.00	160.00	100.00	100.00	165.00	100.00	100.00	160.00	100.00	160.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Sarival Avenue			Sarival Avenue			Peoria Avenue			Peoria Avenue		
Base Volume Input [veh/h]	32	35	21	24	64	41	16	142	16	13	159	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	60	0	8	0	0	0	0	0	201	29	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	40	0	0	0	0	0	0	0	170	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	137	41	32	28	74	47	19	164	390	44	184	9
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	11	9	8	21	13	5	46	108	12	51	3
Total Analysis Volume [veh/h]	152	46	36	31	82	52	21	182	433	49	204	10
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	40	0	9	39	0	9	32	0	9	32	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	0.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	20	13	13	20	10	62	55	62	56	56
g / C, Green / Cycle	0.22	0.14	0.14	0.22	0.11	0.69	0.61	0.69	0.63	0.63
(v / s)_i Volume / Saturation Flow Rate	0.10	0.02	0.02	0.02	0.08	0.02	0.37	0.05	0.11	0.01
s, saturation flow rate [veh/h]	1468	1870	1612	1427	1750	1207	1663	894	1870	1589
c, Capacity [veh/h]	355	271	234	409	190	894	1011	545	1168	993
d1, Uniform Delay [s]	30.22	33.66	33.73	27.92	38.75	4.45	10.97	7.14	7.12	6.39
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.82	0.27	0.34	0.08	4.78	0.05	2.72	0.07	0.33	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.43	0.16	0.17	0.08	0.71	0.02	0.61	0.09	0.17	0.01
d, Delay for Lane Group [s/veh]	31.04	33.93	34.07	28.00	43.52	4.50	13.70	7.21	7.45	6.41
Lane Group LOS	C	C	C	C	D	A	B	A	A	A
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.73	0.79	0.75	0.51	2.97	0.10	6.84	0.22	1.44	0.06
50th-Percentile Queue Length [ft/ln]	68.33	19.81	18.67	12.81	74.27	2.49	170.89	5.47	35.90	1.59
95th-Percentile Queue Length [veh/ln]	4.92	1.43	1.34	0.92	5.35	0.18	11.12	0.39	2.58	0.11
95th-Percentile Queue Length [ft/ln]	123.00	35.65	33.60	23.06	133.69	4.49	278.08	9.84	64.62	2.86

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	31.04	33.94	34.07	28.00	43.52	43.52	4.50	13.70	13.70	7.21	7.45	6.41
Movement LOS	C	C	C	C	D	D	A	B	B	A	A	A
d_A, Approach Delay [s/veh]	32.08			40.60			13.39			7.37		
Approach LOS	C			D			B			A		
d_I, Intersection Delay [s/veh]	19.00											
Intersection LOS	B											
Intersection V/C	0.531											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			0.0			0.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			0.00			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			0.000			0.000			0.000		
Crosswalk LOS	F			F			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	800			778			622			622		
d_b, Bicycle Delay [s]	16.20			16.81			21.36			21.36		
I_b,int, Bicycle LOS Score for Intersection	1.753			1.832			2.609			1.994		
Bicycle LOS	A			A			B			A		

Sequence

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



Intersection Level Of Service Report
Intersection 6: Reems Road & Olive Avenue

Control Type:	All-way stop	Delay (sec / veh):	8.6
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.251

Intersection Setup

Name	Reems Road			Reems Road			Olive Avenue			Olive Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Reems Road			Reems Road			Olive Avenue			Olive Avenue		
Base Volume Input [veh/h]	9	91	3	47	5	6	3	134	15	9	1	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	8	0	0	29	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	105	3	54	6	7	3	163	17	10	30	2
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	29	1	15	2	2	1	45	5	3	8	1
Total Analysis Volume [veh/h]	11	117	3	60	7	8	3	181	19	11	33	2
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings**Lanes**

Capacity per Entry Lane [veh/h]	779	752	811	766
Degree of Utilization, x	0.17	0.10	0.25	0.06

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.60	0.33	0.99	0.19
95th-Percentile Queue Length [ft]	15.06	8.27	24.75	4.78
Approach Delay [s/veh]	8.56	8.31	8.92	8.00
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	8.62			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 7: Sarival Avenue & Access A

Control Type:	Two-way stop	Delay (sec / veh):	9.9
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.011

Intersection Setup

Name	Sarival Avenue			Sarival Avenue			Access A			Access A		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	r			r			r			r		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Sarival Avenue			Sarival Avenue			Access A			Access A		
Base Volume Input [veh/h]	0	98	0	0	104	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.1576	1.0000	1.0000	1.1576	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	311	34	0	93	23	0	0	10	0	0	7
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	40	0	0	170	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	464	34	0	383	23	0	0	10	0	0	7
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	129	9	0	106	6	0	0	3	0	0	2
Total Analysis Volume [veh/h]	0	516	38	0	426	26	0	0	11	0	0	8
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.61	0.00	0.00	9.91
Movement LOS		A	A		A	A			A			A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.03
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.06	0.00	0.00	0.82
d_A, Approach Delay [s/veh]	0.00			0.00			9.61			9.91		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	0.18											
Intersection LOS	A											

Intersection Level Of Service Report
Intersection 8: Sarival Avenue & Access B

Control Type:	Two-way stop	Delay (sec / veh):	20.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.056

Intersection Setup

Name	Sarival Avenue			Sarival Avenue			Access B			Access B		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇌⇌⇌			⇌⇌⇌			⇌⇌			⇌⇌		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Sarival Avenue			Sarival Avenue			Access B			Access B		
Base Volume Input [veh/h]	0	98	0	0	104	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.1576	1.0000	1.0000	1.1576	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	44	240	34	28	93	23	9	0	10	13	0	7
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	40	0	0	170	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	44	393	34	28	383	23	9	0	10	13	0	7
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	109	9	8	106	6	3	0	3	4	0	2
Total Analysis Volume [veh/h]	49	437	38	31	426	26	10	0	11	14	0	8
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.00	0.00	0.03	0.00	0.00	0.04	0.00	0.01	0.06	0.00	0.01
d_M, Delay for Movement [s/veh]	8.41	0.00	0.00	8.42	0.00	0.00	19.89	22.50	9.61	20.35	22.20	9.63
Movement LOS	A	A	A	A	A	A	C	C	A	C	C	A
95th-Percentile Queue Length [veh/ln]	0.14	0.00	0.00	0.09	0.00	0.00	0.12	0.04	0.04	0.18	0.03	0.03
95th-Percentile Queue Length [ft/ln]	3.48	0.00	0.00	2.21	0.00	0.00	3.09	1.06	1.06	4.45	0.77	0.77
d_A, Approach Delay [s/veh]	0.79			0.54			14.51			16.45		
Approach LOS	A			A			B			C		
d_I, Intersection Delay [s/veh]	1.28											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 9: Sarival Avenue & Access C

Control Type:	Two-way stop	Delay (sec / veh):	19.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.039

Intersection Setup

Name	Sarival Avenue			Sarival Avenue			Access C			Access C		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Sarival Avenue			Sarival Avenue			Access C			Access C		
Base Volume Input [veh/h]	0	98	0	0	104	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.1576	1.0000	1.0000	1.1576	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	44	178	34	28	121	23	9	0	10	13	0	7
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	40	0	0	170	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	44	331	34	28	411	23	9	0	10	13	0	7
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	92	9	8	114	6	3	0	3	4	0	2
Total Analysis Volume [veh/h]	49	368	38	31	457	26	10	0	11	14	0	8
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.00	0.00	0.03	0.00	0.00	0.04	0.00	0.01	0.05	0.00	0.01
d_M, Delay for Movement [s/veh]	8.51	0.00	0.00	8.22	0.00	0.00	19.79	21.62	9.72	18.97	21.32	9.40
Movement LOS	A	A	A	A	A	A	C	C	A	C	C	A
95th-Percentile Queue Length [veh/ln]	0.14	0.00	0.00	0.08	0.00	0.00	0.12	0.04	0.04	0.16	0.03	0.03
95th-Percentile Queue Length [ft/ln]	3.57	0.00	0.00	2.08	0.00	0.00	3.07	1.08	1.08	4.05	0.73	0.73
d_A, Approach Delay [s/veh]	0.92			0.50			14.51			15.49		
Approach LOS	A			A			B			C		
d_I, Intersection Delay [s/veh]	1.30											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 10: Sarival Avenue & Access D

Control Type:	Two-way stop	Delay (sec / veh):	19.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.039

Intersection Setup

Name	Sarival Avenue			Sarival Avenue			Access D			Access D		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↔↔↔			↔↔↔			↔↔			↔↔		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Sarival Avenue			Sarival Avenue			Access D			Access D		
Base Volume Input [veh/h]	0	98	0	0	104	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.1576	1.0000	1.0000	1.1576	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	44	115	34	28	150	23	9	0	10	13	0	7
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	40	0	0	170	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	44	268	34	28	440	23	9	0	10	13	0	7
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	74	9	8	122	6	3	0	3	4	0	2
Total Analysis Volume [veh/h]	49	298	38	31	489	26	10	0	11	14	0	8
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.00	0.00	0.03	0.00	0.00	0.04	0.00	0.01	0.05	0.00	0.01
d_M, Delay for Movement [s/veh]	8.61	0.00	0.00	8.03	0.00	0.00	19.70	20.78	9.83	17.71	20.49	9.17
Movement LOS	A	A	A	A	A	A	C	C	A	C	C	A
95th-Percentile Queue Length [veh/ln]	0.15	0.00	0.00	0.08	0.00	0.00	0.12	0.04	0.04	0.15	0.03	0.03
95th-Percentile Queue Length [ft/ln]	3.68	0.00	0.00	1.95	0.00	0.00	3.05	1.11	1.11	3.69	0.70	0.70
d_A, Approach Delay [s/veh]	1.10			0.46			14.53			14.61		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	1.33											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 11: Sarival Avenue & Access E

Control Type:	Two-way stop	Delay (sec / veh):	19.6
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.039

Intersection Setup

Name	Sarival Avenue			Sarival Avenue			Access E			Access E		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇌⇌⇌			⇌⇌⇌			⇌⇌			⇌⇌		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Sarival Avenue			Sarival Avenue			Access E			Access E		
Base Volume Input [veh/h]	0	98	0	0	104	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.1576	1.0000	1.0000	1.1576	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	44	53	34	28	178	23	9	0	10	13	0	7
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	40	0	0	170	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	44	206	34	28	468	23	9	0	10	13	0	7
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	57	9	8	130	6	3	0	3	4	0	2
Total Analysis Volume [veh/h]	49	229	38	31	520	26	10	0	11	14	0	8
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.00	0.00	0.02	0.01	0.00	0.04	0.00	0.01	0.04	0.00	0.01
d_M, Delay for Movement [s/veh]	8.71	0.00	0.00	7.85	0.00	0.00	19.60	19.99	9.95	16.59	19.71	8.96
Movement LOS	A	A	A	A	A	A	C	C	A	C	C	A
95th-Percentile Queue Length [veh/ln]	0.15	0.00	0.00	0.07	0.00	0.00	0.12	0.05	0.05	0.13	0.03	0.03
95th-Percentile Queue Length [ft/ln]	3.78	0.00	0.00	1.84	0.00	0.00	3.03	1.13	1.13	3.37	0.66	0.66
d_A, Approach Delay [s/veh]	1.35			0.42			14.54			13.81		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	1.37											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 1: Cotton Lane & Olive Avenue

Control Type:	Signalized	Delay (sec / veh):	22.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.176

Intersection Setup

Name	Cotton Lane			Cotton Lane			Olive Avenue			Olive Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	230.00	100.00	175.00	250.00	100.00	175.00	350.00	100.00	160.00	475.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Cotton Lane			Cotton Lane			Olive Avenue			Olive Avenue		
Base Volume Input [veh/h]	40	71	14	2	79	118	58	88	30	8	139	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	46	82	16	2	91	137	67	102	35	9	161	7
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	23	4	1	25	38	19	28	10	3	45	2
Total Analysis Volume [veh/h]	51	91	18	2	101	152	74	113	39	10	179	8
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	42	40	0	18	16	0	9	23	0	9	23	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	4	14	14	0	11	11	63	58	58	63	55	55
g / C, Green / Cycle	0.04	0.16	0.16	0.00	0.12	0.12	0.70	0.65	0.65	0.70	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.01	0.03	0.01	0.00	0.03	0.10	0.06	0.03	0.02	0.01	0.05	0.01
s, saturation flow rate [veh/h]	3459	3560	1589	3459	3560	1589	1255	3560	1589	1263	3560	1589
c, Capacity [veh/h]	143	569	254	14	436	195	968	2297	1025	984	2174	971
d1, Uniform Delay [s]	42.06	32.66	32.19	44.75	35.73	38.39	4.19	5.87	5.82	4.02	7.20	6.87
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.50	0.13	0.12	4.62	0.27	6.65	0.15	0.04	0.07	0.00	0.07	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.36	0.16	0.07	0.14	0.23	0.78	0.08	0.05	0.04	0.01	0.08	0.01
d, Delay for Lane Group [s/veh]	43.56	32.79	32.31	49.37	36.00	45.04	4.34	5.91	5.89	4.02	7.27	6.89
Lane Group LOS	D	C	C	D	D	D	A	A	A	A	A	A
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.56	0.83	0.33	0.03	0.97	3.45	0.34	0.32	0.23	0.04	0.60	0.05
50th-Percentile Queue Length [ft/ln]	13.97	20.65	8.16	0.76	24.33	86.34	8.44	8.02	5.77	0.99	15.02	1.34
95th-Percentile Queue Length [veh/ln]	1.01	1.49	0.59	0.05	1.75	6.22	0.61	0.58	0.42	0.07	1.08	0.10
95th-Percentile Queue Length [ft/ln]	25.15	37.18	14.69	1.36	43.79	155.41	15.20	14.43	10.38	1.79	27.04	2.41

Movement, Approach, & Intersection Results

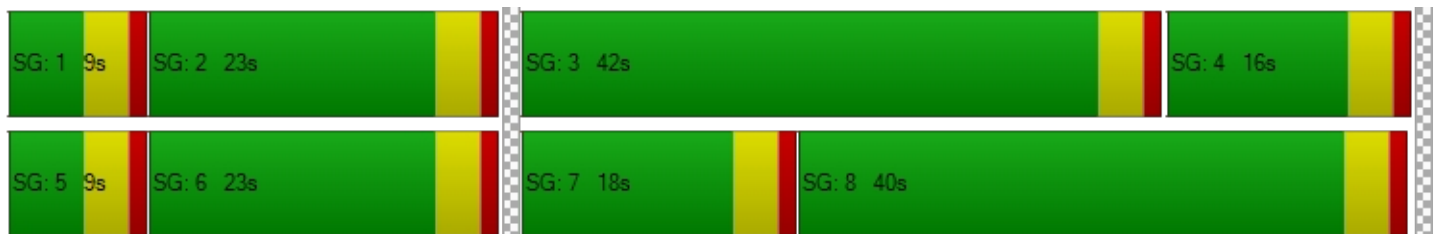
d_M, Delay for Movement [s/veh]	43.56	32.79	32.31	49.37	36.00	45.04	4.34	5.91	5.89	4.02	7.27	6.89
Movement LOS	D	C	C	D	D	D	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	36.17			41.49			5.39			7.09		
Approach LOS	D			D			A			A		
d_I, Intersection Delay [s/veh]	22.65											
Intersection LOS	C											
Intersection V/C	0.176											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			0.0			0.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			0.00			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			0.000			0.000			0.000		
Crosswalk LOS	F			F			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	799			266			422			422		
d_b, Bicycle Delay [s]	16.24			33.84			28.05			28.05		
I_b,int, Bicycle LOS Score for Intersection	1.692			1.770			1.746			1.722		
Bicycle LOS	A			A			A			A		

Sequence

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



Intersection Level Of Service Report

Intersection 2: Sarival Road & Northern Parkway EB On-Ramp

Control Type:	Signalized	Delay (sec / veh):	0.8
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.340

Intersection Setup

Name	Northbound		Southbound		Westbound	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑		↓			
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	2	0	0	0
Entry Pocket Length [ft]	100.00	170.00	420.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No			
Crosswalk	No		No		No	

Volumes

Name	Sarival Avenue					
Base Volume Input [veh/h]	61	154	58	154	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.1576	1.1576	1.1576	1.1576	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	89	0	85	228	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	44	0	221	166	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	204	178	373	572	0	0
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	57	49	104	159	0	0
Total Analysis Volume [veh/h]	227	198	414	636	0	0
Presence of On-Street Parking	No	No	No	No		
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Permissive
Signal Group	6	0	5	2	0	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	-	-
Minimum Green [s]	10	0	5	10	0	0
Maximum Green [s]	30	0	30	30	0	0
Amber [s]	3.0	0.0	3.0	3.0	0.0	0.0
All red [s]	1.0	0.0	1.0	1.0	0.0	0.0
Split [s]	75	0	15	90	0	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	0.0	0.0
Walk [s]	5	0	0	5	0	0
Pedestrian Clearance [s]	10	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No		
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	0.0	0.0
Minimum Recall	No		No	No		
Maximum Recall	No		No	No		
Pedestrian Recall	No		No	No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	R	L	C	
C, Cycle Length [s]	90	90	90	90	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	
g_i, Effective Green Time [s]	77	77	86	86	
g / C, Green / Cycle	0.85	0.85	0.96	0.96	
(v / s)_i Volume / Saturation Flow Rate	0.12	0.12	0.21	0.34	
s, saturation flow rate [veh/h]	1870	1589	2001	1870	
c, Capacity [veh/h]	1596	1357	2019	1787	
d1, Uniform Delay [s]	1.10	1.10	0.14	0.13	
k, delay calibration	0.50	0.50	0.50	0.50	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.19	0.23	0.23	0.56	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.14	0.15	0.21	0.36	
d, Delay for Lane Group [s/veh]	1.29	1.33	0.37	0.69	
Lane Group LOS	A	A	A	A	
Critical Lane Group	No	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	0.10	0.10	0.06	0.28	
50th-Percentile Queue Length [ft/ln]	2.54	2.54	1.61	6.89	
95th-Percentile Queue Length [veh/ln]	0.18	0.18	0.12	0.50	
95th-Percentile Queue Length [ft/ln]	4.57	4.58	2.90	12.41	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	1.29	1.33	0.37	0.69	0.00	0.00
Movement LOS	A	A	A	A		
d_A, Approach Delay [s/veh]	1.31		0.57		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.78					
Intersection LOS	A					
Intersection V/C	0.340					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1578	1911	0
d_b, Bicycle Delay [s]	2.01	0.09	45.00
I_b,int, Bicycle LOS Score for Intersection	2.261	3.292	4.132
Bicycle LOS	B	C	D

Sequence

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



Intersection Level Of Service Report

Intersection 3: Sarival Avenue & Northern Parkway WB Off-Ramp

Control Type:	Signalized	Delay (sec / veh):	13.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.372

Intersection Setup

Name	Sarival Avenue		Sarival Avenue		Northern Parkway WB Pff-Ramp	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑		↑↑↑		↶↷	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	2	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	140.00	100.00	100.00
No. of Lanes in Exit Pocket	0	2	0	0	0	0
Exit Pocket Length [ft]	0.00	49.21	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		55.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Sarival Avenue		Sarival Avenue		Northern Parkway WB Pff-Ramp	
Base Volume Input [veh/h]	62	0	0	130	95	151
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.1576	1.0000	1.0000	1.1576	1.1576	1.1576
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	89	0	0	313	0	33
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	44	0	0	387	0	59
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	205	0	0	850	110	267
Peak Hour Factor	0.9000	1.0000	1.0000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	57	0	0	236	31	74
Total Analysis Volume [veh/h]	228	0	0	944	122	297
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	6	0	0	2	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	10	0	0	10	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	19	0	0	19	71	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	63	63	19	19
g / C, Green / Cycle	0.70	0.70	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.12	0.19	0.07	0.19
s, saturation flow rate [veh/h]	1870	5094	1781	1589
c, Capacity [veh/h]	1299	3539	385	344
d1, Uniform Delay [s]	4.78	5.15	29.67	33.98
k, delay calibration	0.50	0.50	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.29	0.18	0.47	6.48
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.18	0.27	0.32	0.86
d, Delay for Lane Group [s/veh]	5.07	5.33	30.13	40.46
Lane Group LOS	A	A	C	D
Critical Lane Group	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1.16	1.62	2.09	6.32
50th-Percentile Queue Length [ft/ln]	28.88	40.52	52.32	157.89
95th-Percentile Queue Length [veh/ln]	2.08	2.92	3.77	10.44
95th-Percentile Queue Length [ft/ln]	51.99	72.94	94.17	260.92

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	5.07	0.00	0.00	5.33	30.13	40.46
Movement LOS	A			A	C	D
d_A, Approach Delay [s/veh]	5.07		5.33		37.45	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	13.75					
Intersection LOS	B					
Intersection V/C	0.372					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	333	333	1489
d_b, Bicycle Delay [s]	31.25	31.25	2.94
I_b,int, Bicycle LOS Score for Intersection	1.936	2.079	1.560
Bicycle LOS	A	B	A

Sequence





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



Intersection Level Of Service Report
Intersection 4: Sarival Avenue & Olive Avenue

Control Type:	Signalized	Delay (sec / veh):	12.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.357

Intersection Setup

Name	Sarival Avenue			Sarival Avenue			Olive Avenue			Olive Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Sarival Avenue			Sarival Avenue			Olive Avenue			Olive Avenue		
Base Volume Input [veh/h]	111	97	7	1	78	23	24	34	49	4	38	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	122	0	28	313	0	0	0	0	0	0	11
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	140	0	0	42	2	25	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	128	374	8	29	445	29	53	39	57	5	44	14
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	104	2	8	124	8	15	11	16	1	12	4
Total Analysis Volume [veh/h]	142	416	9	32	494	32	59	43	63	6	49	16
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	14	0	9	14	0	9	58	0	9	58	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	L	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	2.00	2.00	0.00	2.00	0.00	2.00
g_i, Effective Green Time [s]	66	59	66	57	57	16	11	16	8
g / C, Green / Cycle	0.73	0.66	0.73	0.64	0.64	0.18	0.13	0.18	0.09
(v / s)_i Volume / Saturation Flow Rate	0.15	0.23	0.03	0.26	0.02	0.04	0.06	0.00	0.04
s, saturation flow rate [veh/h]	971	1863	1021	1870	1589	1498	1692	1371	1792
c, Capacity [veh/h]	704	1225	758	1186	1008	350	214	298	163
d1, Uniform Delay [s]	4.61	6.84	3.88	8.19	6.15	31.44	36.65	30.59	38.56
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.14	0.78	0.10	1.08	0.06	0.23	1.78	0.03	1.56
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.20	0.35	0.04	0.42	0.03	0.17	0.50	0.02	0.40
d, Delay for Lane Group [s/veh]	4.75	7.62	3.99	9.27	6.21	31.67	38.43	30.61	40.12
Lane Group LOS	A	A	A	A	A	C	D	C	D
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.50	3.00	0.12	4.09	0.20	1.10	2.25	0.10	1.36
50th-Percentile Queue Length [ft/ln]	12.62	75.08	3.07	102.15	4.95	27.51	56.31	2.61	34.11
95th-Percentile Queue Length [veh/ln]	0.91	5.41	0.22	7.35	0.36	1.98	4.05	0.19	2.46
95th-Percentile Queue Length [ft/ln]	22.72	135.14	5.53	183.86	8.90	49.53	101.36	4.70	61.40

Movement, Approach, & Intersection Results

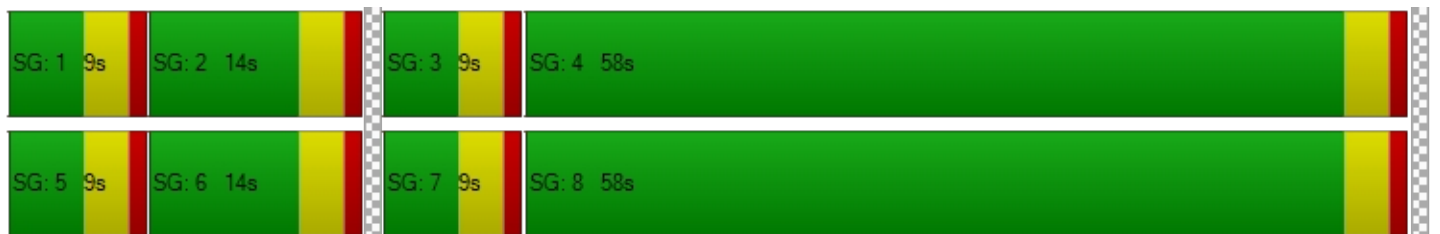
d_M, Delay for Movement [s/veh]	4.75	7.62	7.62	3.99	9.27	6.21	31.67	38.43	38.43	30.61	40.12	40.12
Movement LOS	A	A	A	A	A	A	C	D	D	C	D	D
d_A, Approach Delay [s/veh]	6.90			8.79			36.01			39.32		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	12.90											
Intersection LOS	B											
Intersection V/C	0.357											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			0.0			0.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			0.00			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			0.000			0.000			0.000		
Crosswalk LOS	F			F			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	222			222			1200			1200		
d_b, Bicycle Delay [s]	35.56			35.56			7.20			7.20		
I_b,int, Bicycle LOS Score for Intersection	2.495			2.480			1.832			1.677		
Bicycle LOS	B			B			A			A		

Sequence

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



Intersection Level Of Service Report
Intersection 5: Sarival Avenue & Peoria Avenue

Control Type:	Signalized	Delay (sec / veh):	24.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.457

Intersection Setup

Name	Sarival Avenue			Sarival Avenue			Peoria Avenue			Peoria Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↻↵			↵↻↵			↵↻↵			↵↻↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	170.00	100.00	100.00	160.00	100.00	100.00	165.00	100.00	100.00	160.00	100.00	160.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Sarival Avenue			Sarival Avenue			Peoria Avenue			Peoria Avenue		
Base Volume Input [veh/h]	32	64	31	11	34	39	57	264	26	31	239	19
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	199	0	28	0	0	0	0	0	77	11	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	165	0	0	0	0	0	0	0	44	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	401	74	64	13	39	45	66	306	151	47	277	22
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	111	21	18	4	11	13	18	85	42	13	77	6
Total Analysis Volume [veh/h]	446	82	71	14	43	50	73	340	168	52	308	24
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	51	0	16	58	0	9	14	0	9	14	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	0.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	33	27	27	33	24	49	42	49	41	41
g / C, Green / Cycle	0.36	0.30	0.30	0.36	0.26	0.55	0.46	0.55	0.46	0.46
(v / s)_i Volume / Saturation Flow Rate	0.32	0.04	0.04	0.01	0.05	0.06	0.29	0.05	0.16	0.02
s, saturation flow rate [veh/h]	1405	1870	1590	1292	1708	1140	1767	993	1870	1589
c, Capacity [veh/h]	578	568	483	552	452	628	816	467	852	724
d1, Uniform Delay [s]	27.98	22.82	22.84	18.36	25.75	10.22	18.30	11.83	15.97	13.54
k, delay calibration	0.42	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.09	0.12	0.14	0.02	0.22	0.38	3.57	0.10	1.19	0.09
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.14	0.15	0.03	0.21	0.12	0.62	0.11	0.36	0.03
d, Delay for Lane Group [s/veh]	36.07	22.94	22.98	18.38	25.97	10.60	21.86	11.94	17.16	13.63
Lane Group LOS	D	C	C	B	C	B	C	B	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	8.63	1.20	1.05	0.18	1.49	0.66	7.86	0.43	3.99	0.26
50th-Percentile Queue Length [ft/ln]	215.84	30.08	26.25	4.42	37.15	16.42	196.46	10.74	99.63	6.55
95th-Percentile Queue Length [veh/ln]	13.45	2.17	1.89	0.32	2.68	1.18	12.46	0.77	7.17	0.47
95th-Percentile Queue Length [ft/ln]	336.31	54.15	47.26	7.95	66.88	29.56	311.39	19.33	179.33	11.78

Movement, Approach, & Intersection Results

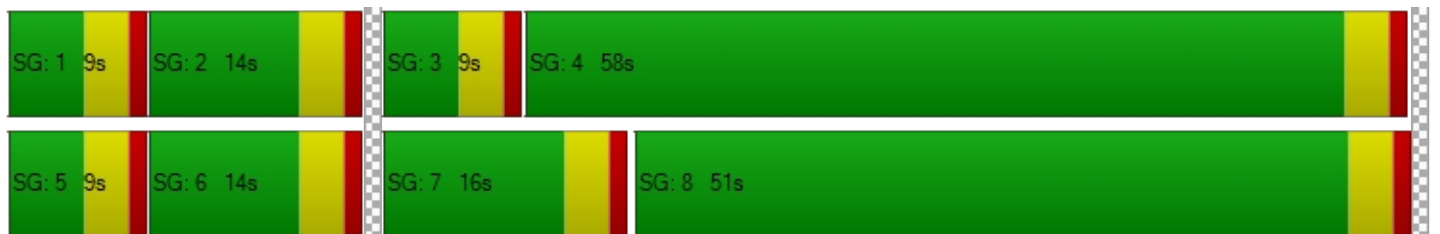
d_M, Delay for Movement [s/veh]	36.07	22.94	22.98	18.38	25.97	25.97	10.60	21.86	21.86	11.94	17.16	13.63
Movement LOS	D	C	C	B	C	C	B	C	C	B	B	B
d_A, Approach Delay [s/veh]	32.72			24.98			20.45			16.23		
Approach LOS	C			C			C			B		
d_I, Intersection Delay [s/veh]	24.17											
Intersection LOS	C											
Intersection V/C	0.457											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			0.0			0.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			0.00			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			0.000			0.000			0.000		
Crosswalk LOS	F			F			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1044			1200			222			222		
d_b, Bicycle Delay [s]	10.27			7.20			35.56			35.56		
I_b,int, Bicycle LOS Score for Intersection	2.054			1.736			2.518			2.193		
Bicycle LOS	B			A			B			B		

Sequence

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



Intersection Level Of Service Report
Intersection 6: Reems Road & Olive Avenue

Control Type:	All-way stop	Delay (sec / veh):	8.9
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.278

Intersection Setup

Name	Reems Road			Reems Road			Olive Avenue			Olive Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Reems Road			Reems Road			Olive Avenue			Olive Avenue		
Base Volume Input [veh/h]	10	128	5	31	2	8	4	115	32	3	1	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576	1.1576
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	28	0	0	11	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	148	6	36	2	9	5	161	37	3	12	6
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	41	2	10	1	3	1	45	10	1	3	2
Total Analysis Volume [veh/h]	13	164	7	40	2	10	6	179	41	3	13	7
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings**Lanes**

Capacity per Entry Lane [veh/h]	786	753	812	779
Degree of Utilization, x	0.23	0.07	0.28	0.03

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.91	0.22	1.14	0.09
95th-Percentile Queue Length [ft]	22.65	5.56	28.47	2.28
Approach Delay [s/veh]	8.97	8.14	9.13	7.76
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	8.90			
Intersection LOS	A			

**Intersection Level Of Service Report
Intersection 7: Sarival Avenue & Access A**

Control Type:	Two-way stop	Delay (sec / veh):	10.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.053

Intersection Setup

Name	Sarival Avenue			Sarival Avenue			Access A			Access A		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	r			r			r			r		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Sarival Avenue			Sarival Avenue			Access A			Access A		
Base Volume Input [veh/h]	0	124	0	0	102	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.1576	1.0000	1.0000	1.1576	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	120	13	0	306	9	0	0	35	0	0	22
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	165	0	0	44	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	429	13	0	468	9	0	0	35	0	0	22
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	119	4	0	130	3	0	0	10	0	0	6
Total Analysis Volume [veh/h]	0	477	14	0	520	10	0	0	39	0	0	24
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.05	0.00	0.00	0.03
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.14	0.00	0.00	9.87
Movement LOS		A	A		A	A			B			A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.10
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.17	0.00	0.00	2.43
d_A, Approach Delay [s/veh]	0.00			0.00			10.14			9.87		
Approach LOS	A			A			B			A		
d_I, Intersection Delay [s/veh]	0.58											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 8: Sarival Avenue & Access B

Control Type:	Two-way stop	Delay (sec / veh):	20.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.171

Intersection Setup

Name	Sarival Avenue			Sarival Avenue			Access B			Access B		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇌⇌⇌			⇌⇌⇌			⇌⇌			⇌⇌		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Sarival Avenue			Sarival Avenue			Access B			Access B		
Base Volume Input [veh/h]	0	124	0	0	102	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.1576	1.0000	1.0000	1.1576	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	17	112	13	11	239	9	29	0	35	42	0	22
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	165	0	0	44	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	17	421	13	11	401	9	29	0	35	42	0	22
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	117	4	3	111	3	8	0	10	12	0	6
Total Analysis Volume [veh/h]	19	468	14	12	446	10	32	0	39	47	0	24
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.00	0.00	0.01	0.00	0.00	0.11	0.00	0.05	0.17	0.00	0.03
d_M, Delay for Movement [s/veh]	8.33	0.00	0.00	8.38	0.00	0.00	19.16	20.36	9.86	20.73	20.19	9.84
Movement LOS	A	A	A	A	A	A	C	C	A	C	C	A
95th-Percentile Queue Length [veh/ln]	0.05	0.00	0.00	0.03	0.00	0.00	0.37	0.16	0.16	0.60	0.10	0.10
95th-Percentile Queue Length [ft/ln]	1.32	0.00	0.00	0.84	0.00	0.00	9.33	3.94	3.94	15.10	2.42	2.42
d_A, Approach Delay [s/veh]	0.32			0.21			14.05			17.05		
Approach LOS	A			A			B			C		
d_I, Intersection Delay [s/veh]	2.22											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 9: Sarival Avenue & Access C

Control Type:	Two-way stop	Delay (sec / veh):	20.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.168

Intersection Setup

Name	Sarival Avenue			Sarival Avenue			Access C			Access C		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Sarival Avenue			Sarival Avenue			Access C			Access C		
Base Volume Input [veh/h]	0	124	0	0	102	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.1576	1.0000	1.0000	1.1576	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	17	134	13	11	182	9	29	0	35	42	0	22
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	165	0	0	44	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	17	443	13	11	344	9	29	0	35	42	0	22
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	123	4	3	96	3	8	0	10	12	0	6
Total Analysis Volume [veh/h]	19	492	14	12	382	10	32	0	39	47	0	24
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.00	0.00	0.01	0.00	0.00	0.10	0.00	0.05	0.17	0.00	0.03
d_M, Delay for Movement [s/veh]	8.15	0.00	0.00	8.45	0.00	0.00	17.85	19.53	9.62	20.42	19.39	9.93
Movement LOS	A	A	A	A	A	A	C	C	A	C	C	A
95th-Percentile Queue Length [veh/ln]	0.05	0.00	0.00	0.03	0.00	0.00	0.34	0.15	0.15	0.59	0.10	0.10
95th-Percentile Queue Length [ft/ln]	1.25	0.00	0.00	0.86	0.00	0.00	8.49	3.75	3.75	14.82	2.46	2.46
d_A, Approach Delay [s/veh]	0.29			0.25			13.33			16.88		
Approach LOS	A			A			B			C		
d_I, Intersection Delay [s/veh]	2.24											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 10: Sarival Avenue & Access D

Control Type:	Two-way stop	Delay (sec / veh):	20.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.165

Intersection Setup

Name	Sarival Avenue			Sarival Avenue			Access D			Access D		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Sarival Avenue			Sarival Avenue			Access D			Access D		
Base Volume Input [veh/h]	0	124	0	0	102	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.1576	1.0000	1.0000	1.1576	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	17	155	13	11	125	9	29	0	35	42	0	22
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	165	0	0	44	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	17	464	13	11	287	9	29	0	35	42	0	22
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	129	4	3	80	3	8	0	10	12	0	6
Total Analysis Volume [veh/h]	19	516	14	12	319	10	32	0	39	47	0	24
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.01	0.00	0.01	0.00	0.00	0.09	0.00	0.05	0.17	0.00	0.03
d_M, Delay for Movement [s/veh]	7.98	0.00	0.00	8.52	0.00	0.00	16.70	18.77	9.40	20.14	18.66	10.02
Movement LOS	A	A	A	A	A	A	C	C	A	C	C	B
95th-Percentile Queue Length [veh/ln]	0.05	0.00	0.00	0.04	0.00	0.00	0.31	0.14	0.14	0.58	0.10	0.10
95th-Percentile Queue Length [ft/ln]	1.18	0.00	0.00	0.88	0.00	0.00	7.74	3.57	3.57	14.56	2.51	2.51
d_A, Approach Delay [s/veh]	0.28			0.30			12.69			16.72		
Approach LOS	A			A			B			C		
d_I, Intersection Delay [s/veh]	2.27											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 11: Sarival Avenue & Access E

Control Type:	Two-way stop	Delay (sec / veh):	19.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.162

Intersection Setup

Name	Sarival Avenue			Sarival Avenue			Access E			Access E		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇌⇌⇌			⇌⇌⇌			⇌⇌			⇌⇌		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Sarival Avenue			Sarival Avenue			Access E			Access E		
Base Volume Input [veh/h]	0	124	0	0	102	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.1576	1.0000	1.0000	1.1576	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	17	176	13	11	68	9	29	0	35	42	0	22
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	165	0	0	44	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	17	485	13	11	230	9	29	0	35	42	0	22
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	135	4	3	64	3	8	0	10	12	0	6
Total Analysis Volume [veh/h]	19	539	14	12	256	10	32	0	39	47	0	24
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.01	0.00	0.01	0.00	0.00	0.09	0.00	0.04	0.16	0.00	0.03
d_M, Delay for Movement [s/veh]	7.82	0.00	0.00	8.60	0.00	0.00	15.65	18.03	9.19	19.84	17.95	10.11
Movement LOS	A	A	A	A	A	A	C	C	A	C	C	B
95th-Percentile Queue Length [veh/ln]	0.04	0.00	0.00	0.04	0.00	0.00	0.28	0.14	0.14	0.57	0.10	0.10
95th-Percentile Queue Length [ft/ln]	1.12	0.00	0.00	0.90	0.00	0.00	7.06	3.40	3.40	14.28	2.55	2.55
d_A, Approach Delay [s/veh]	0.26			0.37			12.10			16.55		
Approach LOS	A			A			B			C		
d_I, Intersection Delay [s/veh]	2.30											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 1: Cotton Lane & Olive Avenue

Control Type:	Signalized	Delay (sec / veh):	17.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.139

Intersection Setup

Name	Cotton Lane			Cotton Lane			Olive Avenue			Olive Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐ ⇐ ⇐			⇐ ⇐ ⇐			⇐ ⇐ ⇐			⇐ ⇐ ⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	230.00	100.00	175.00	250.00	100.00	175.00	350.00	100.00	160.00	475.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Cotton Lane			Cotton Lane			Olive Avenue			Olive Avenue		
Base Volume Input [veh/h]	36	72	18	3	58	45	78	163	45	2	69	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	53	106	27	4	86	66	115	241	66	3	102	16
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	29	8	1	24	18	32	67	18	1	28	4
Total Analysis Volume [veh/h]	59	118	30	4	96	73	128	268	73	3	113	18
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	36	14	0	40	18	0	9	27	0	9	27	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	4	13	13	1	10	10	64	60	60	64	55	55
g / C, Green / Cycle	0.04	0.15	0.15	0.01	0.11	0.11	0.71	0.66	0.66	0.71	0.62	0.62
(v / s)_i Volume / Saturation Flow Rate	0.02	0.03	0.02	0.00	0.03	0.05	0.10	0.08	0.05	0.00	0.03	0.01
s, saturation flow rate [veh/h]	3459	3560	1589	3459	3560	1589	1315	3560	1589	1068	3560	1589
c, Capacity [veh/h]	153	526	235	23	392	175	1033	2360	1054	844	2185	976
d1, Uniform Delay [s]	41.91	33.87	33.38	44.55	36.69	37.42	4.03	5.54	5.37	3.79	6.94	6.80
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.60	0.21	0.24	3.56	0.32	1.58	0.25	0.10	0.13	0.00	0.04	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.39	0.22	0.13	0.17	0.24	0.42	0.12	0.11	0.07	0.00	0.05	0.02
d, Delay for Lane Group [s/veh]	43.51	34.09	33.62	48.10	37.01	38.99	4.28	5.64	5.50	3.79	6.99	6.84
Lane Group LOS	D	C	C	D	D	D	A	A	A	A	A	A
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.65	1.10	0.56	0.05	0.94	1.51	0.57	0.73	0.41	0.01	0.37	0.12
50th-Percentile Queue Length [ft/ln]	16.13	27.50	13.98	1.35	23.51	37.71	14.20	18.32	10.18	0.28	9.19	3.00
95th-Percentile Queue Length [veh/ln]	1.16	1.98	1.01	0.10	1.69	2.71	1.02	1.32	0.73	0.02	0.66	0.22
95th-Percentile Queue Length [ft/ln]	29.03	49.50	25.16	2.43	42.32	67.87	25.56	32.97	18.32	0.51	16.54	5.39

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	43.51	34.09	33.62	48.10	37.01	38.99	4.28	5.64	5.50	3.79	6.99	6.84
Movement LOS	D	C	C	D	D	D	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	36.70			38.10			5.25			6.90		
Approach LOS	D			D			A			A		
d_I, Intersection Delay [s/veh]	17.88											
Intersection LOS	B											
Intersection V/C	0.139											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			0.0			0.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			0.00			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			0.000			0.000			0.000		
Crosswalk LOS	F			F			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	222			311			511			511		
d_b, Bicycle Delay [s]	35.60			32.13			24.98			24.98		
I_b,int, Bicycle LOS Score for Intersection	1.730			1.702			1.947			1.670		
Bicycle LOS	A			A			A			A		

Sequence

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



Intersection Level Of Service Report

Intersection 2: Sarival Road & Northern Parkway EB On-Ramp

Control Type:	Signalized	Delay (sec / veh):	1.1
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.286

Intersection Setup

Name	Northbound		Southbound		Westbound	
Approach						
Lane Configuration	↑		↑			
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	2	0	0	0
Entry Pocket Length [ft]	100.00	170.00	420.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No			
Crosswalk	No		No		No	

Volumes

Name	Sarival Avenue					
Base Volume Input [veh/h]	39	122	179	101	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.4775	1.4775	1.4775	1.4775	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	230	0	26	69	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	170	0	53	40	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	458	180	343	258	0	0
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	127	50	95	72	0	0
Total Analysis Volume [veh/h]	509	200	381	287	0	0
Presence of On-Street Parking	No	No	No	No		
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Permissive
Signal Group	6	0	5	2	0	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	-	-
Minimum Green [s]	10	0	5	10	0	0
Maximum Green [s]	30	0	30	30	0	0
Amber [s]	3.0	0.0	3.0	3.0	0.0	0.0
All red [s]	1.0	0.0	1.0	1.0	0.0	0.0
Split [s]	55	0	35	90	0	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	0.0	0.0
Walk [s]	5	0	0	5	0	0
Pedestrian Clearance [s]	10	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No		
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	0.0	0.0
Minimum Recall	No		No	No		
Maximum Recall	No		No	No		
Pedestrian Recall	No		No	No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	R	L	C	
C, Cycle Length [s]	90	90	90	90	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	
g_i, Effective Green Time [s]	77	77	86	86	
g / C, Green / Cycle	0.85	0.85	0.96	0.96	
(v / s)_i Volume / Saturation Flow Rate	0.27	0.13	0.24	0.15	
s, saturation flow rate [veh/h]	1870	1589	1604	1870	
c, Capacity [veh/h]	1598	1358	1600	1787	
d1, Uniform Delay [s]	1.31	1.09	0.34	0.11	
k, delay calibration	0.50	0.50	0.50	0.50	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.53	0.23	0.35	0.19	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.32	0.15	0.24	0.16	
d, Delay for Lane Group [s/veh]	1.84	1.32	0.69	0.30	
Lane Group LOS	A	A	A	A	
Critical Lane Group	Yes	No	Yes	No	
50th-Percentile Queue Length [veh/ln]	0.28	0.10	0.08	0.10	
50th-Percentile Queue Length [ft/ln]	6.88	2.50	1.95	2.39	
95th-Percentile Queue Length [veh/ln]	0.50	0.18	0.14	0.17	
95th-Percentile Queue Length [ft/ln]	12.39	4.50	3.51	4.30	

Movement, Approach, & Intersection Results

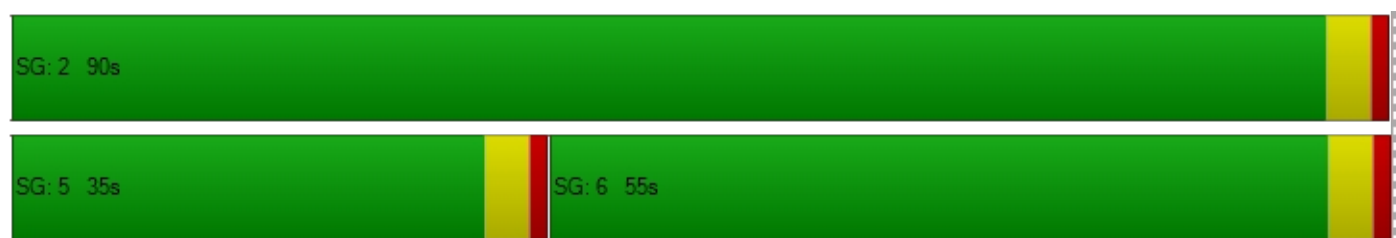
d_M, Delay for Movement [s/veh]	1.84	1.32	0.69	0.30	0.00	0.00
Movement LOS	A	A	A	A		
d_A, Approach Delay [s/veh]	1.69		0.52		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	1.12					
Intersection LOS	A					
Intersection V/C	0.286					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1133	1911	0
d_b, Bicycle Delay [s]	8.45	0.09	45.00
I_b,int, Bicycle LOS Score for Intersection	2.729	2.662	4.132
Bicycle LOS	B	B	D

Sequence

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



Intersection Level Of Service Report

Intersection 3: Sarival Avenue & Northern Parkway WB Off-Ramp

Control Type:	Signalized	Delay (sec / veh):	19.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.570

Intersection Setup

Name	Sarival Avenue		Sarival Avenue		Northern Parkway WB Pff-Ramp	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑		↑↑↑		↵↶	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	2	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	140.00	100.00	100.00
No. of Lanes in Exit Pocket	0	2	0	0	0	0
Exit Pocket Length [ft]	0.00	49.21	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		55.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Sarival Avenue		Sarival Avenue		Northern Parkway WB Pff-Ramp	
Base Volume Input [veh/h]	51	0	0	212	54	68
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.4775	1.0000	1.0000	1.4775	1.4775	1.4775
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	230	0	0	95	0	86
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	170	0	0	93	0	226
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	475	0	0	501	80	412
Peak Hour Factor	0.9000	1.0000	1.0000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	132	0	0	139	22	114
Total Analysis Volume [veh/h]	528	0	0	557	89	458
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	6	0	0	2	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	10	0	0	10	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	43	0	0	43	47	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	54	54	28	28
g / C, Green / Cycle	0.60	0.60	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.28	0.11	0.05	0.29
s, saturation flow rate [veh/h]	1870	5094	1781	1589
c, Capacity [veh/h]	1112	3030	563	503
d1, Uniform Delay [s]	10.29	8.29	22.14	29.55
k, delay calibration	0.50	0.50	0.11	0.17
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.45	0.13	0.13	9.88
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.47	0.18	0.16	0.91
d, Delay for Lane Group [s/veh]	11.75	8.43	22.27	39.44
Lane Group LOS	B	A	C	D
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.26	1.40	1.25	9.81
50th-Percentile Queue Length [ft/ln]	131.52	35.02	31.18	245.15
95th-Percentile Queue Length [veh/ln]	9.02	2.52	2.24	14.94
95th-Percentile Queue Length [ft/ln]	225.55	63.04	56.12	373.54

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	11.75	0.00	0.00	8.43	22.27	39.44
Movement LOS	B			A	C	D
d_A, Approach Delay [s/veh]	11.75		8.43		36.64	
Approach LOS	B		A		D	
d_I, Intersection Delay [s/veh]	18.96					
Intersection LOS	B					
Intersection V/C	0.570					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	867	867	956
d_b, Bicycle Delay [s]	14.45	14.45	12.27
I_b,int, Bicycle LOS Score for Intersection	2.431	1.866	1.560
Bicycle LOS	B	A	A

Sequence





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



Intersection Level Of Service Report
Intersection 4: Sarival Avenue & Olive Avenue

Control Type:	Signalized	Delay (sec / veh):	17.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.435

Intersection Setup

Name	Sarival Avenue			Sarival Avenue			Olive Avenue			Olive Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Sarival Avenue			Sarival Avenue			Olive Avenue			Olive Avenue		
Base Volume Input [veh/h]	47	65	8	2	94	8	31	43	114	5	23	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	316	0	8	95	0	0	0	0	0	0	29
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	34	0	0	82	83	6	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	69	446	12	11	316	95	52	64	168	7	34	32
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	124	3	3	88	26	14	18	47	2	9	9
Total Analysis Volume [veh/h]	77	496	13	12	351	106	58	71	187	8	38	36
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	14	0	9	14	0	9	58	0	9	58	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	L	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	2.00	2.00	0.00	2.00	0.00	2.00
g_i, Effective Green Time [s]	61	55	61	52	52	21	16	21	13
g / C, Green / Cycle	0.67	0.62	0.67	0.58	0.58	0.24	0.18	0.24	0.15
(v / s)_i Volume / Saturation Flow Rate	0.08	0.27	0.01	0.19	0.07	0.04	0.16	0.01	0.04
s, saturation flow rate [veh/h]	1022	1862	939	1870	1589	1450	1658	1212	1722
c, Capacity [veh/h]	706	1144	609	1088	925	422	303	250	259
d1, Uniform Delay [s]	5.60	9.20	6.00	9.69	8.44	27.09	35.61	27.17	33.94
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.07	1.26	0.06	0.79	0.25	0.15	6.73	0.05	0.60
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.11	0.44	0.02	0.32	0.11	0.14	0.85	0.03	0.29
d, Delay for Lane Group [s/veh]	5.67	10.46	6.06	10.48	8.69	27.24	42.34	27.22	34.54
Lane Group LOS	A	B	A	B	A	C	D	C	C
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.38	4.64	0.07	3.21	0.85	0.99	5.93	0.13	1.41
50th-Percentile Queue Length [ft/ln]	9.54	115.96	1.63	80.21	21.14	24.71	148.31	3.21	35.28
95th-Percentile Queue Length [veh/ln]	0.69	8.17	0.12	5.78	1.52	1.78	9.93	0.23	2.54
95th-Percentile Queue Length [ft/ln]	17.17	204.27	2.94	144.38	38.05	44.47	248.17	5.77	63.50

Movement, Approach, & Intersection Results

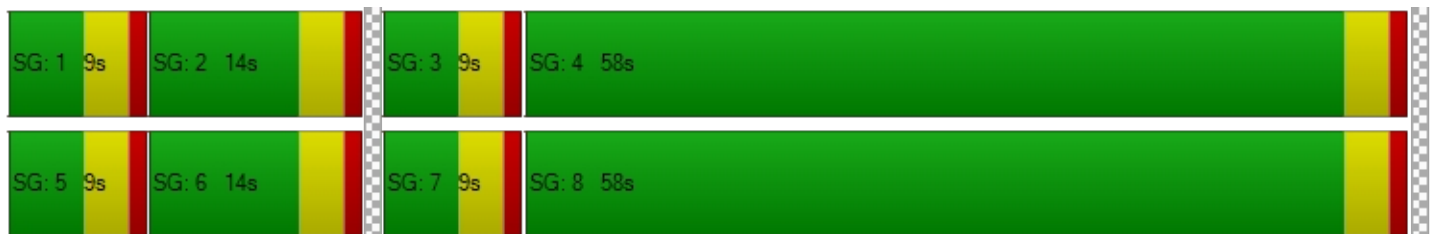
d_M, Delay for Movement [s/veh]	5.67	10.46	10.46	6.06	10.48	8.69	27.24	42.34	42.34	27.22	34.54	34.54
Movement LOS	A	B	B	A	B	A	C	D	D	C	C	C
d_A, Approach Delay [s/veh]	9.83			9.96			39.57			33.83		
Approach LOS	A			A			D			C		
d_I, Intersection Delay [s/veh]	17.69											
Intersection LOS	B											
Intersection V/C	0.435											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			0.0			0.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			0.00			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			0.000			0.000			0.000		
Crosswalk LOS	F			F			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	222			222			1200			1200		
d_b, Bicycle Delay [s]	35.56			35.56			7.20			7.20		
I_b,int, Bicycle LOS Score for Intersection	2.527			2.333			2.081			1.695		
Bicycle LOS	B			B			B			A		

Sequence





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



Intersection Level Of Service Report
Intersection 5: Sarival Avenue & Peoria Avenue

Control Type:	Signalized	Delay (sec / veh):	20.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.590

Intersection Setup

Name	Sarival Avenue			Sarival Avenue			Peoria Avenue			Peoria Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	170.00	100.00	100.00	160.00	100.00	100.00	165.00	100.00	100.00	160.00	100.00	160.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Sarival Avenue			Sarival Avenue			Peoria Avenue			Peoria Avenue		
Base Volume Input [veh/h]	32	35	21	24	64	41	16	142	16	13	159	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	60	0	8	0	0	0	0	0	201	29	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	40	0	0	0	0	0	0	0	170	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	147	52	39	35	95	61	24	210	395	48	235	12
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	41	14	11	10	26	17	7	58	110	13	65	3
Total Analysis Volume [veh/h]	163	58	43	39	106	68	27	233	439	53	261	13
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	56	0	9	56	0	9	16	0	9	16	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	0.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	20	13	13	20	11	62	54	62	55	55
g / C, Green / Cycle	0.22	0.14	0.14	0.22	0.12	0.69	0.60	0.69	0.62	0.62
(v / s)_i Volume / Saturation Flow Rate	0.12	0.03	0.03	0.03	0.10	0.02	0.40	0.06	0.14	0.01
s, saturation flow rate [veh/h]	1409	1870	1618	1418	1749	1154	1677	859	1870	1589
c, Capacity [veh/h]	325	270	234	407	216	835	1010	498	1151	979
d1, Uniform Delay [s]	30.32	33.88	33.96	27.75	38.38	4.69	11.89	8.23	7.73	6.70
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.20	0.34	0.44	0.10	6.86	0.07	3.47	0.09	0.46	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.50	0.19	0.21	0.10	0.80	0.03	0.67	0.11	0.23	0.01
d, Delay for Lane Group [s/veh]	31.52	34.23	34.39	27.85	45.24	4.77	15.35	8.33	8.18	6.73
Lane Group LOS	C	C	C	C	D	A	B	A	A	A
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.95	0.98	0.92	0.64	3.96	0.13	8.11	0.24	1.98	0.09
50th-Percentile Queue Length [ft/ln]	73.82	24.62	23.10	16.09	98.97	3.32	202.87	6.11	49.40	2.14
95th-Percentile Queue Length [veh/ln]	5.31	1.77	1.66	1.16	7.13	0.24	12.79	0.44	3.56	0.15
95th-Percentile Queue Length [ft/ln]	132.87	44.32	41.59	28.96	178.14	5.98	319.67	10.99	88.92	3.86

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	31.52	34.24	34.39	27.85	45.24	45.24	4.77	15.35	15.35	8.33	8.18	6.73
Movement LOS	C	C	C	C	D	D	A	B	B	A	A	A
d_A, Approach Delay [s/veh]	32.58			42.06			14.94			8.15		
Approach LOS	C			D			B			A		
d_I, Intersection Delay [s/veh]	20.41											
Intersection LOS	C											
Intersection V/C	0.590											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			0.0			0.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			0.00			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			0.000			0.000			0.000		
Crosswalk LOS	F			F			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1156			1156			267			267		
d_b, Bicycle Delay [s]	8.02			8.02			33.80			33.80		
I_b,int, Bicycle LOS Score for Intersection	1.777			1.911			2.713			2.099		
Bicycle LOS	A			A			B			B		

Sequence

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



Intersection Level Of Service Report
Intersection 6: Reems Road & Olive Avenue

Control Type:	All-way stop	Delay (sec / veh):	9.4
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.329

Intersection Setup

Name	Reems Road			Reems Road			Olive Avenue			Olive Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Reems Road			Reems Road			Olive Avenue			Olive Avenue		
Base Volume Input [veh/h]	9	91	3	47	5	6	3	134	15	9	1	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	8	0	0	29	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	13	134	4	69	7	9	4	206	22	13	30	3
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	37	1	19	2	3	1	57	6	4	8	1
Total Analysis Volume [veh/h]	14	149	4	77	8	10	4	229	24	14	33	3
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings**Lanes**

Capacity per Entry Lane [veh/h]	747	718	781	727
Degree of Utilization, x	0.22	0.13	0.33	0.07

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.85	0.45	1.44	0.22
95th-Percentile Queue Length [ft]	21.35	11.36	36.04	5.52
Approach Delay [s/veh]	9.20	8.77	9.86	8.31
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	9.35			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 7: Sarival Avenue & Access A

Control Type:	Two-way stop	Delay (sec / veh):	10.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.011

Intersection Setup

Name	Sarival Avenue			Sarival Avenue			Access A			Access A		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	r			r			r			r		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Sarival Avenue			Sarival Avenue			Access A			Access A		
Base Volume Input [veh/h]	0	98	0	0	104	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.4775	1.0000	1.0000	1.4775	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	311	34	0	93	23	0	0	10	0	0	7
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	40	0	0	170	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	496	34	0	417	23	0	0	10	0	0	7
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	138	9	0	116	6	0	0	3	0	0	2
Total Analysis Volume [veh/h]	0	551	38	0	463	26	0	0	11	0	0	8
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.74	0.00	0.00	10.04
Movement LOS		A	A		A	A			A			B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.03
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.09	0.00	0.00	0.84
d_A, Approach Delay [s/veh]	0.00			0.00			9.74			10.04		
Approach LOS	A			A			A			B		
d_I, Intersection Delay [s/veh]	0.17											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 8: Sarival Avenue & Access B

Control Type:	Two-way stop	Delay (sec / veh):	21.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.062

Intersection Setup

Name	Sarival Avenue			Sarival Avenue			Access B			Access B		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇌⇌⇌			⇌⇌⇌			⇌⇌			⇌⇌		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Sarival Avenue			Sarival Avenue			Access B			Access B		
Base Volume Input [veh/h]	0	98	0	0	104	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.4775	1.0000	1.0000	1.4775	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	44	240	34	28	93	23	9	0	10	13	0	7
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	40	0	0	170	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	44	425	34	28	417	23	9	0	10	13	0	7
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	118	9	8	116	6	3	0	3	4	0	2
Total Analysis Volume [veh/h]	49	472	38	31	463	26	10	0	11	14	0	8
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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





Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.00	0.00	0.03	0.00	0.00	0.04	0.00	0.01	0.06	0.00	0.01
d_M, Delay for Movement [s/veh]	8.52	0.00	0.00	8.53	0.00	0.00	21.42	24.36	9.74	21.93	24.02	9.75
Movement LOS	A	A	A	A	A	A	C	C	A	C	C	A
95th-Percentile Queue Length [veh/ln]	0.14	0.00	0.00	0.09	0.00	0.00	0.14	0.04	0.04	0.20	0.03	0.03
95th-Percentile Queue Length [ft/ln]	3.59	0.00	0.00	2.28	0.00	0.00	3.40	1.09	1.09	4.90	0.79	0.79
d_A, Approach Delay [s/veh]	0.75			0.51			15.30			17.50		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	1.24											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 9: Sarival Avenue & Access C

Control Type:	Two-way stop	Delay (sec / veh):	21.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.043

Intersection Setup

Name	Sarival Avenue			Sarival Avenue			Access C			Access C		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Sarival Avenue			Sarival Avenue			Access C			Access C		
Base Volume Input [veh/h]	0	98	0	0	104	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.4775	1.0000	1.0000	1.4775	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	44	178	34	28	121	23	9	0	10	13	0	7
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	40	0	0	170	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	44	363	34	28	445	23	9	0	10	13	0	7
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	101	9	8	124	6	3	0	3	4	0	2
Total Analysis Volume [veh/h]	49	403	38	31	494	26	10	0	11	14	0	8
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.00	0.00	0.03	0.00	0.00	0.04	0.00	0.01	0.06	0.00	0.01
d_M, Delay for Movement [s/veh]	8.62	0.00	0.00	8.32	0.00	0.00	21.31	23.37	9.85	20.40	23.05	9.51
Movement LOS	A	A	A	A	A	A	C	C	A	C	C	A
95th-Percentile Queue Length [veh/ln]	0.15	0.00	0.00	0.09	0.00	0.00	0.14	0.04	0.04	0.18	0.03	0.03
95th-Percentile Queue Length [ft/ln]	3.70	0.00	0.00	2.14	0.00	0.00	3.38	1.11	1.11	4.46	0.75	0.75
d_A, Approach Delay [s/veh]	0.86			0.47			15.31			16.44		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	1.26											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 10: Sarival Avenue & Access D

Control Type:	Two-way stop	Delay (sec / veh):	21.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.043

Intersection Setup

Name	Sarival Avenue			Sarival Avenue			Access D			Access D		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇌⇌⇌			⇌⇌⇌			⇌⇌			⇌⇌		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Sarival Avenue			Sarival Avenue			Access D			Access D		
Base Volume Input [veh/h]	0	98	0	0	104	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.4775	1.0000	1.0000	1.4775	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	44	115	34	28	150	23	9	0	10	13	0	7
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	40	0	0	170	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	44	300	34	28	474	23	9	0	10	13	0	7
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	83	9	8	132	6	3	0	3	4	0	2
Total Analysis Volume [veh/h]	49	333	38	31	527	26	10	0	11	14	0	8
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.00	0.00	0.03	0.01	0.00	0.04	0.00	0.01	0.05	0.00	0.01
d_M, Delay for Movement [s/veh]	8.73	0.00	0.00	8.12	0.00	0.00	21.24	22.47	9.97	19.01	22.15	9.28
Movement LOS	A	A	A	A	A	A	C	C	A	C	C	A
95th-Percentile Queue Length [veh/ln]	0.15	0.00	0.00	0.08	0.00	0.00	0.13	0.05	0.05	0.16	0.03	0.03
95th-Percentile Queue Length [ft/ln]	3.81	0.00	0.00	2.02	0.00	0.00	3.37	1.14	1.14	4.07	0.71	0.71
d_A, Approach Delay [s/veh]	1.02			0.43			15.34			15.47		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	1.28											
Intersection LOS	C											

**Intersection Level Of Service Report
Intersection 11: Sarival Avenue & Access E**

Control Type:	Two-way stop	Delay (sec / veh):	21.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.043

Intersection Setup

Name	Sarival Avenue			Sarival Avenue			Access E			Access E		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Sarival Avenue			Sarival Avenue			Access E			Access E		
Base Volume Input [veh/h]	0	98	0	0	104	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.4775	1.0000	1.0000	1.4775	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	44	53	34	28	178	23	9	0	10	13	0	7
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	40	0	0	170	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	44	238	34	28	502	23	9	0	10	13	0	7
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	66	9	8	139	6	3	0	3	4	0	2
Total Analysis Volume [veh/h]	49	264	38	31	558	26	10	0	11	14	0	8
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.00	0.00	0.02	0.01	0.00	0.04	0.00	0.02	0.05	0.00	0.01
d_M, Delay for Movement [s/veh]	8.84	0.00	0.00	7.94	0.00	0.00	21.13	21.59	10.09	17.76	21.28	9.07
Movement LOS	A	A	A	A	A	A	C	C	B	C	C	A
95th-Percentile Queue Length [veh/ln]	0.16	0.00	0.00	0.08	0.00	0.00	0.13	0.05	0.05	0.15	0.03	0.03
95th-Percentile Queue Length [ft/ln]	3.91	0.00	0.00	1.90	0.00	0.00	3.34	1.17	1.17	3.71	0.68	0.68
d_A, Approach Delay [s/veh]	1.23			0.40			15.35			14.60		
Approach LOS	A			A			C			B		
d_I, Intersection Delay [s/veh]	1.31											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 1: Cotton Lane & Olive Avenue

Control Type:	Signalized	Delay (sec / veh):	22.6
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.226

Intersection Setup

Name	Cotton Lane			Cotton Lane			Olive Avenue			Olive Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐ ⇐ ⇐			⇐ ⇐ ⇐			⇐ ⇐ ⇐			⇐ ⇐ ⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	230.00	100.00	175.00	250.00	100.00	175.00	350.00	100.00	160.00	475.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Cotton Lane			Cotton Lane			Olive Avenue			Olive Avenue		
Base Volume Input [veh/h]	40	71	14	2	79	118	58	88	30	8	139	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	59	105	21	3	117	174	86	130	44	12	205	9
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	29	6	1	33	48	24	36	12	3	57	3
Total Analysis Volume [veh/h]	66	117	23	3	130	193	96	144	49	13	228	10
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	42	40	0	18	16	0	9	23	0	9	23	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	4	17	17	0	13	13	61	55	55	61	52	52
g / C, Green / Cycle	0.05	0.19	0.19	0.00	0.15	0.15	0.67	0.61	0.61	0.67	0.58	0.58
(v / s)_i Volume / Saturation Flow Rate	0.02	0.03	0.01	0.00	0.04	0.12	0.08	0.04	0.03	0.01	0.06	0.01
s, saturation flow rate [veh/h]	3459	3560	1589	3459	3560	1589	1212	3560	1589	1224	3560	1589
c, Capacity [veh/h]	160	677	302	18	532	238	892	2173	970	913	2048	914
d1, Uniform Delay [s]	41.82	30.57	30.00	44.65	33.86	37.13	5.21	7.14	7.07	4.93	8.69	8.18
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.71	0.12	0.11	4.03	0.24	6.59	0.24	0.06	0.10	0.01	0.11	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.41	0.17	0.08	0.16	0.24	0.81	0.11	0.07	0.05	0.01	0.11	0.01
d, Delay for Lane Group [s/veh]	43.53	30.69	30.11	48.68	34.09	43.72	5.46	7.20	7.17	4.94	8.80	8.21
Lane Group LOS	D	C	C	D	C	D	A	A	A	A	A	A
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.72	1.02	0.40	0.04	1.21	4.33	0.53	0.48	0.34	0.06	0.89	0.08
50th-Percentile Queue Length [ft/ln]	18.04	25.56	9.97	1.06	30.35	108.26	13.26	11.97	8.43	1.56	22.17	1.90
95th-Percentile Queue Length [veh/ln]	1.30	1.84	0.72	0.08	2.19	7.74	0.95	0.86	0.61	0.11	1.60	0.14
95th-Percentile Queue Length [ft/ln]	32.47	46.00	17.95	1.91	54.63	193.58	23.87	21.55	15.18	2.80	39.90	3.43

Movement, Approach, & Intersection Results

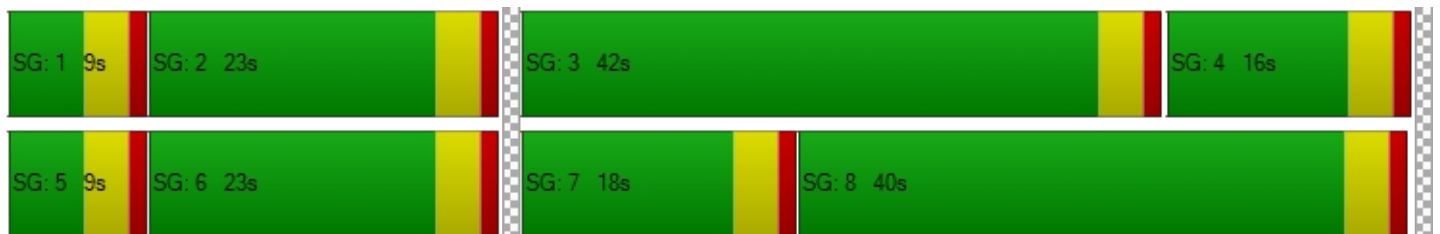
d_M, Delay for Movement [s/veh]	43.53	30.69	30.11	48.68	34.09	43.72	5.46	7.20	7.17	4.94	8.80	8.21
Movement LOS	D	C	C	D	C	D	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	34.74			39.93			6.61			8.58		
Approach LOS	C			D			A			A		
d_I, Intersection Delay [s/veh]	22.61											
Intersection LOS	C											
Intersection V/C	0.226											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			0.0			0.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			0.00			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			0.000			0.000			0.000		
Crosswalk LOS	F			F			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	799			266			422			422		
d_b, Bicycle Delay [s]	16.24			33.84			28.05			28.05		
I_b,int, Bicycle LOS Score for Intersection	1.730			1.829			1.798			1.767		
Bicycle LOS	A			A			A			A		

Sequence

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



Intersection Level Of Service Report

Intersection 2: Sarival Road & Northern Parkway EB On-Ramp

Control Type:	Signalized	Delay (sec / veh):	0.9
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.370

Intersection Setup

Name	Sarival Avenue					
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑		↓			
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	2	0	0	0
Entry Pocket Length [ft]	100.00	170.00	420.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No			
Crosswalk	No		No		No	

Volumes

Name	Sarival Avenue					
Base Volume Input [veh/h]	61	154	58	154	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.4775	1.4775	1.4775	1.4775	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	89	0	85	228	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	44	0	221	166	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	223	228	392	622	0	0
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	62	63	109	173	0	0
Total Analysis Volume [veh/h]	248	253	436	691	0	0
Presence of On-Street Parking	No	No	No	No		
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Permissive
Signal Group	6	0	5	2	0	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	-	-
Minimum Green [s]	10	0	5	10	0	0
Maximum Green [s]	30	0	30	30	0	0
Amber [s]	3.0	0.0	3.0	3.0	0.0	0.0
All red [s]	1.0	0.0	1.0	1.0	0.0	0.0
Split [s]	75	0	15	90	0	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	0.0	0.0
Walk [s]	5	0	0	5	0	0
Pedestrian Clearance [s]	10	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No		
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	0.0	0.0
Minimum Recall	No		No	No		
Maximum Recall	No		No	No		
Pedestrian Recall	No		No	No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	R	L	C	
C, Cycle Length [s]	90	90	90	90	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	
g_i, Effective Green Time [s]	77	77	86	86	
g / C, Green / Cycle	0.85	0.85	0.96	0.96	
(v / s)_i Volume / Saturation Flow Rate	0.13	0.16	0.23	0.37	
s, saturation flow rate [veh/h]	1870	1589	1886	1870	
c, Capacity [veh/h]	1596	1357	1908	1787	
d1, Uniform Delay [s]	1.11	1.15	0.15	0.14	
k, delay calibration	0.50	0.50	0.50	0.50	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.21	0.30	0.28	0.63	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.16	0.19	0.23	0.39	
d, Delay for Lane Group [s/veh]	1.32	1.45	0.43	0.77	
Lane Group LOS	A	A	A	A	
Critical Lane Group	No	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	0.11	0.14	0.07	0.31	
50th-Percentile Queue Length [ft/ln]	2.81	3.41	1.85	7.86	
95th-Percentile Queue Length [veh/ln]	0.20	0.25	0.13	0.57	
95th-Percentile Queue Length [ft/ln]	5.06	6.13	3.33	14.15	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	1.32	1.45	0.43	0.77	0.00	0.00
Movement LOS	A	A	A	A		
d_A, Approach Delay [s/veh]	1.39		0.64		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.87					
Intersection LOS	A					
Intersection V/C	0.370					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1578	1911	0
d_b, Bicycle Delay [s]	2.01	0.09	45.00
I_b,int, Bicycle LOS Score for Intersection	2.386	3.419	4.132
Bicycle LOS	B	C	D

Sequence

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



Intersection Level Of Service Report

Intersection 3: Sarival Avenue & Northern Parkway WB Off-Ramp

Control Type:	Signalized	Delay (sec / veh):	13.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.373

Intersection Setup

Name	Sarival Avenue		Sarival Avenue		Northern Parkway WB Pff-Ramp	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑		↑↑↑		↶↷	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	2	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	140.00	100.00	100.00
No. of Lanes in Exit Pocket	0	2	0	0	0	0
Exit Pocket Length [ft]	0.00	49.21	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		55.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Sarival Avenue		Sarival Avenue		Northern Parkway WB Pff-Ramp	
Base Volume Input [veh/h]	62	0	0	130	95	151
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.4775	1.0000	1.0000	1.4775	1.4775	1.4775
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	89	0	0	313	0	33
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	44	0	0	387	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	225	0	0	892	140	256
Peak Hour Factor	0.9000	1.0000	1.0000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	63	0	0	248	39	71
Total Analysis Volume [veh/h]	250	0	0	991	156	284
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	6	0	0	2	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	10	0	0	10	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	19	0	0	19	71	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	63	63	19	19
g / C, Green / Cycle	0.70	0.70	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.13	0.19	0.09	0.18
s, saturation flow rate [veh/h]	1870	5094	1781	1589
c, Capacity [veh/h]	1315	3582	370	330
d1, Uniform Delay [s]	4.57	4.92	30.95	34.38
k, delay calibration	0.50	0.50	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.32	0.19	0.76	6.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.19	0.28	0.42	0.86
d, Delay for Lane Group [s/veh]	4.89	5.11	31.71	40.91
Lane Group LOS	A	A	C	D
Critical Lane Group	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1.23	1.64	2.78	6.06
50th-Percentile Queue Length [ft/ln]	30.65	40.98	69.47	151.52
95th-Percentile Queue Length [veh/ln]	2.21	2.95	5.00	10.10
95th-Percentile Queue Length [ft/ln]	55.17	73.77	125.05	252.46

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	4.89	0.00	0.00	5.11	31.71	40.91
Movement LOS	A			A	C	D
d_A, Approach Delay [s/veh]	4.89		5.11		37.65	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	13.60					
Intersection LOS	B					
Intersection V/C	0.373					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	333	333	1489
d_b, Bicycle Delay [s]	31.25	31.25	2.94
I_b,int, Bicycle LOS Score for Intersection	1.972	2.105	1.560
Bicycle LOS	A	B	A

Sequence





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



Intersection Level Of Service Report
Intersection 4: Sarival Avenue & Olive Avenue

Control Type:	Signalized	Delay (sec / veh):	14.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.399

Intersection Setup

Name	Sarival Avenue			Sarival Avenue			Olive Avenue			Olive Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Sarival Avenue			Sarival Avenue			Olive Avenue			Olive Avenue		
Base Volume Input [veh/h]	111	97	7	1	78	23	24	34	49	4	38	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	122	0	28	313	0	0	0	0	0	0	11
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	140	0	0	42	2	25	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	164	405	10	29	470	36	60	50	72	6	56	15
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	46	113	3	8	131	10	17	14	20	2	16	4
Total Analysis Volume [veh/h]	182	450	11	32	522	40	67	56	80	7	62	17
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	14	0	9	14	0	9	58	0	9	58	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	L	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	2.00	2.00	0.00	2.00	0.00	2.00
g_i, Effective Green Time [s]	65	58	65	56	56	17	12	17	9
g / C, Green / Cycle	0.72	0.65	0.72	0.63	0.63	0.19	0.13	0.19	0.10
(v / s)_i Volume / Saturation Flow Rate	0.19	0.25	0.03	0.28	0.03	0.05	0.08	0.01	0.04
s, saturation flow rate [veh/h]	948	1862	993	1870	1589	1486	1694	1341	1802
c, Capacity [veh/h]	671	1208	719	1167	992	352	227	285	176
d1, Uniform Delay [s]	5.26	7.38	4.26	8.81	6.51	30.94	36.71	30.05	38.32
k, delay calibration	0.14	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.28	0.92	0.12	1.24	0.08	0.26	2.54	0.03	1.79
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.27	0.38	0.04	0.45	0.04	0.19	0.60	0.02	0.45
d, Delay for Lane Group [s/veh]	5.54	8.30	4.38	10.05	6.59	31.20	39.26	30.08	40.11
Lane Group LOS	A	A	A	B	A	C	D	C	D
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.72	3.49	0.13	4.60	0.26	1.24	2.94	0.12	1.66
50th-Percentile Queue Length [ft/ln]	18.09	87.21	3.28	115.07	6.48	31.02	73.48	3.02	41.47
95th-Percentile Queue Length [veh/ln]	1.30	6.28	0.24	8.12	0.47	2.23	5.29	0.22	2.99
95th-Percentile Queue Length [ft/ln]	32.57	156.98	5.91	203.03	11.66	55.84	132.26	5.43	74.64

Movement, Approach, & Intersection Results

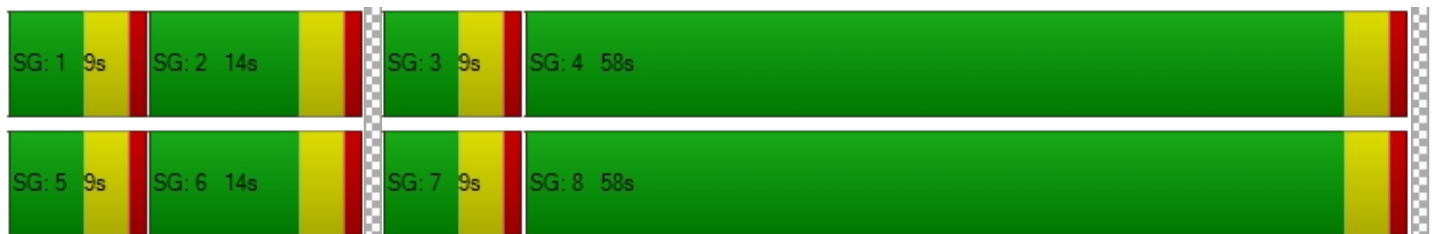
d_M, Delay for Movement [s/veh]	5.54	8.30	8.30	4.38	10.05	6.59	31.20	39.26	39.26	30.08	40.11	40.11
Movement LOS	A	A	A	A	B	A	C	D	D	C	D	D
d_A, Approach Delay [s/veh]	7.52			9.51			36.60			39.29		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	13.95											
Intersection LOS	B											
Intersection V/C	0.399											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			0.0			0.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			0.00			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			0.000			0.000			0.000		
Crosswalk LOS	F			F			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	222			222			1200			1200		
d_b, Bicycle Delay [s]	35.56			35.56			7.20			7.20		
I_b,int, Bicycle LOS Score for Intersection	2.621			2.540			1.895			1.702		
Bicycle LOS	B			B			A			A		

Sequence





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



Intersection Level Of Service Report
Intersection 5: Sarival Avenue & Peoria Avenue

Control Type:	Signalized	Delay (sec / veh):	26.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.533

Intersection Setup

Name	Sarival Avenue			Sarival Avenue			Peoria Avenue			Peoria Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	170.00	100.00	100.00	160.00	100.00	100.00	165.00	100.00	100.00	160.00	100.00	160.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Sarival Avenue			Sarival Avenue			Peoria Avenue			Peoria Avenue		
Base Volume Input [veh/h]	32	64	31	11	34	39	57	264	26	31	239	19
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	199	0	28	0	0	0	0	0	77	11	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	165	0	0	0	0	0	0	0	44	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	411	95	74	16	50	58	84	390	159	57	353	28
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	114	26	21	4	14	16	23	108	44	16	98	8
Total Analysis Volume [veh/h]	457	106	82	18	56	64	93	433	177	63	392	31
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	51	0	16	58	0	9	14	0	9	14	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	0.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	35	30	30	35	26	47	39	47	38	38
g / C, Green / Cycle	0.39	0.33	0.33	0.39	0.29	0.52	0.43	0.52	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.33	0.05	0.05	0.01	0.07	0.09	0.34	0.07	0.21	0.02
s, saturation flow rate [veh/h]	1372	1870	1605	1258	1709	1078	1779	935	1870	1589
c, Capacity [veh/h]	595	616	529	572	503	527	762	358	790	671
d1, Uniform Delay [s]	26.55	21.37	21.39	16.75	24.11	12.29	22.37	15.34	19.00	15.31
k, delay calibration	0.45	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.34	0.12	0.15	0.02	0.24	0.73	8.64	0.23	2.22	0.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.16	0.17	0.03	0.24	0.18	0.80	0.18	0.50	0.05
d, Delay for Lane Group [s/veh]	34.89	21.50	21.54	16.77	24.35	13.02	31.01	15.57	21.22	15.44
Lane Group LOS	C	C	C	B	C	B	C	B	C	B
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	8.49	1.42	1.24	0.21	1.85	0.94	11.79	0.58	5.88	0.37
50th-Percentile Queue Length [ft/ln]	212.37	35.51	31.08	5.35	46.26	23.57	294.74	14.48	147.12	9.21
95th-Percentile Queue Length [veh/ln]	13.27	2.56	2.24	0.39	3.33	1.70	17.42	1.04	9.86	0.66
95th-Percentile Queue Length [ft/ln]	331.87	63.93	55.95	9.63	83.27	42.42	435.52	26.07	246.58	16.57

Movement, Approach, & Intersection Results

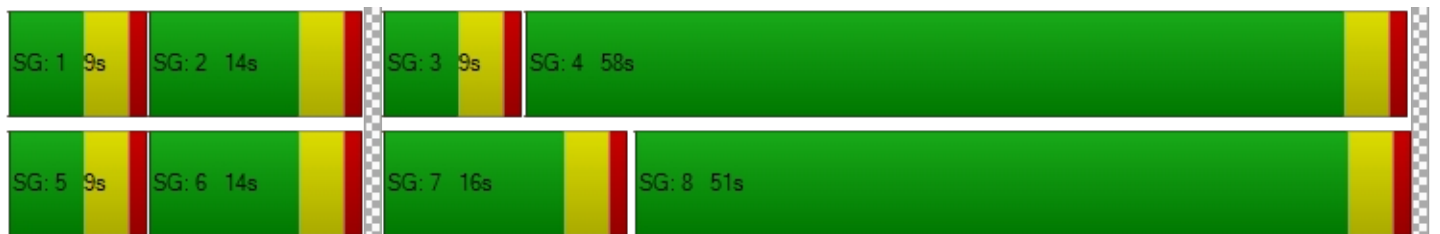
d_M, Delay for Movement [s/veh]	34.89	21.50	21.54	16.77	24.35	24.35	13.02	31.01	31.01	15.57	21.22	15.44
Movement LOS	C	C	C	B	C	C	B	C	C	B	C	B
d_A, Approach Delay [s/veh]	30.99			23.36			28.63			20.12		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	26.94											
Intersection LOS	C											
Intersection V/C	0.533											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			0.0			0.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			0.00			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			0.000			0.000			0.000		
Crosswalk LOS	F			F			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1044			1200			222			222		
d_b, Bicycle Delay [s]	10.27			7.20			35.56			35.56		
I_b,int, Bicycle LOS Score for Intersection	2.092			1.787			2.720			2.362		
Bicycle LOS	B			A			B			B		

Sequence

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



Intersection Level Of Service Report
Intersection 6: Reems Road & Olive Avenue

Control Type:	All-way stop	Delay (sec / veh):	9.8
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.358

Intersection Setup

Name	Reems Road			Reems Road			Olive Avenue			Olive Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Reems Road			Reems Road			Olive Avenue			Olive Avenue		
Base Volume Input [veh/h]	10	128	5	31	2	8	4	115	32	3	1	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775	1.4775
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	28	0	0	11	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	189	7	46	3	12	6	198	47	4	12	7
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	53	2	13	1	3	2	55	13	1	3	2
Total Analysis Volume [veh/h]	17	210	8	51	3	13	7	220	52	4	13	8
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings**Lanes**

Capacity per Entry Lane [veh/h]	755	716	780	735
Degree of Utilization, x	0.31	0.09	0.36	0.03

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.33	0.31	1.63	0.11
95th-Percentile Queue Length [ft]	33.20	7.71	40.76	2.64
Approach Delay [s/veh]	9.90	8.55	10.17	8.07
Approach LOS	A	A	B	A
Intersection Delay [s/veh]	9.80			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 7: Sarival Avenue & Access A

Control Type:	Two-way stop	Delay (sec / veh):	10.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.054

Intersection Setup

Name	Sarival Avenue			Sarival Avenue			Access A			Access A		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	r			r			r			r		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Sarival Avenue			Sarival Avenue			Access A			Access A		
Base Volume Input [veh/h]	0	124	0	0	102	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.4775	1.0000	1.0000	1.4775	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	120	13	0	306	9	0	0	35	0	0	22
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	165	0	0	44	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	468	13	0	501	9	0	0	35	0	0	22
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	130	4	0	139	3	0	0	10	0	0	6
Total Analysis Volume [veh/h]	0	520	14	0	557	10	0	0	39	0	0	24
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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





Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.05	0.00	0.00	0.03
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.30	0.00	0.00	10.04
Movement LOS		A	A		A	A			B			B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.10
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.29	0.00	0.00	2.52
d_A, Approach Delay [s/veh]	0.00			0.00			10.30			10.04		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	0.55											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 8: Sarival Avenue & Access B

Control Type:	Two-way stop	Delay (sec / veh):	22.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.189

Intersection Setup

Name	Sarival Avenue			Sarival Avenue			Access B			Access B		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Sarival Avenue			Sarival Avenue			Access B			Access B		
Base Volume Input [veh/h]	0	124	0	0	102	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.4775	1.0000	1.0000	1.4775	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	17	112	13	11	239	9	29	0	35	42	0	22
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	165	0	0	44	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	17	460	13	11	434	9	29	0	35	42	0	22
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	128	4	3	121	3	8	0	10	12	0	6
Total Analysis Volume [veh/h]	19	511	14	12	482	10	32	0	39	47	0	24
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.01	0.00	0.01	0.00	0.00	0.12	0.00	0.05	0.19	0.00	0.03
d_M, Delay for Movement [s/veh]	8.43	0.00	0.00	8.51	0.00	0.00	20.81	22.11	9.99	22.85	21.93	10.00
Movement LOS	A	A	A	A	A	A	C	C	A	C	C	B
95th-Percentile Queue Length [veh/ln]	0.05	0.00	0.00	0.04	0.00	0.00	0.42	0.16	0.16	0.68	0.10	0.10
95th-Percentile Queue Length [ft/ln]	1.36	0.00	0.00	0.88	0.00	0.00	10.40	4.05	4.05	17.05	2.50	2.50
d_A, Approach Delay [s/veh]	0.29			0.20			14.87			18.51		
Approach LOS	A			A			B			C		
d_I, Intersection Delay [s/veh]	2.21											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 9: Sarival Avenue & Access C

Control Type:	Two-way stop	Delay (sec / veh):	22.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.187

Intersection Setup

Name	Sarival Avenue			Sarival Avenue			Access C			Access C		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Sarival Avenue			Sarival Avenue			Access C			Access C		
Base Volume Input [veh/h]	0	124	0	0	102	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.4775	1.0000	1.0000	1.4775	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	17	134	13	11	182	9	29	0	35	42	0	22
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	165	0	0	44	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	17	482	13	11	377	9	29	0	35	42	0	22
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	134	4	3	105	3	8	0	10	12	0	6
Total Analysis Volume [veh/h]	19	536	14	12	419	10	32	0	39	47	0	24
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.01	0.00	0.01	0.00	0.00	0.11	0.00	0.05	0.19	0.00	0.03
d_M, Delay for Movement [s/veh]	8.25	0.00	0.00	8.59	0.00	0.00	19.37	21.23	9.75	22.55	21.07	10.10
Movement LOS	A	A	A	A	A	A	C	C	A	C	C	B
95th-Percentile Queue Length [veh/ln]	0.05	0.00	0.00	0.04	0.00	0.00	0.38	0.15	0.15	0.67	0.10	0.10
95th-Percentile Queue Length [ft/ln]	1.29	0.00	0.00	0.90	0.00	0.00	9.47	3.86	3.86	16.77	2.55	2.55
d_A, Approach Delay [s/veh]	0.28			0.23			14.09			18.34		
Approach LOS	A			A			B			C		
d_I, Intersection Delay [s/veh]	2.22											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 10: Sarival Avenue & Access D

Control Type:	Two-way stop	Delay (sec / veh):	22.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.183

Intersection Setup

Name	Sarival Avenue			Sarival Avenue			Access D			Access D		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇌⇌⇌			⇌⇌⇌			⇌⇌			⇌⇌		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Sarival Avenue			Sarival Avenue			Access D			Access D		
Base Volume Input [veh/h]	0	124	0	0	102	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.4775	1.0000	1.0000	1.4775	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	17	155	13	11	125	9	29	0	35	42	0	22
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	165	0	0	44	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	17	503	13	11	320	9	29	0	35	42	0	22
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	140	4	3	89	3	8	0	10	12	0	6
Total Analysis Volume [veh/h]	19	559	14	12	356	10	32	0	39	47	0	24
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.01	0.00	0.01	0.00	0.00	0.10	0.00	0.05	0.18	0.00	0.03
d_M, Delay for Movement [s/veh]	8.08	0.00	0.00	8.66	0.00	0.00	18.06	20.35	9.53	22.18	20.23	10.19
Movement LOS	A	A	A	A	A	A	C	C	A	C	C	B
95th-Percentile Queue Length [veh/ln]	0.05	0.00	0.00	0.04	0.00	0.00	0.34	0.15	0.15	0.66	0.10	0.10
95th-Percentile Queue Length [ft/ln]	1.22	0.00	0.00	0.91	0.00	0.00	8.62	3.67	3.67	16.44	2.59	2.59
d_A, Approach Delay [s/veh]	0.26			0.27			13.37			18.13		
Approach LOS	A			A			B			C		
d_I, Intersection Delay [s/veh]	2.24											
Intersection LOS	C											

**Intersection Level Of Service Report
Intersection 11: Sarival Avenue & Access E**

Control Type:	Two-way stop	Delay (sec / veh):	21.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.180

Intersection Setup

Name	Sarival Avenue			Sarival Avenue			Access E			Access E		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇌⇌⇌			⇌⇌⇌			⇌⇌			⇌⇌		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Sarival Avenue			Sarival Avenue			Access E			Access E		
Base Volume Input [veh/h]	0	124	0	0	102	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.4775	1.0000	1.0000	1.4775	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	17	176	13	11	68	9	29	0	35	42	0	22
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	165	0	0	44	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	17	524	13	11	263	9	29	0	35	42	0	22
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	146	4	3	73	3	8	0	10	12	0	6
Total Analysis Volume [veh/h]	19	582	14	12	292	10	32	0	39	47	0	24
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.01	0.00	0.01	0.00	0.00	0.10	0.00	0.04	0.18	0.00	0.03
d_M, Delay for Movement [s/veh]	7.91	0.00	0.00	8.73	0.00	0.00	16.85	19.50	9.31	21.81	19.41	10.28
Movement LOS	A	A	A	A	A	A	C	C	A	C	C	B
95th-Percentile Queue Length [veh/ln]	0.05	0.00	0.00	0.04	0.00	0.00	0.31	0.14	0.14	0.64	0.11	0.11
95th-Percentile Queue Length [ft/ln]	1.15	0.00	0.00	0.93	0.00	0.00	7.84	3.50	3.50	16.10	2.64	2.64
d_A, Approach Delay [s/veh]	0.24			0.33			12.71			17.91		
Approach LOS	A			A			B			C		
d_I, Intersection Delay [s/veh]	2.27											
Intersection LOS	C											

Appendix C

Signal Warrants Report For Intersection 4: Sarival Avenue & Olive Avenue

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E, W
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	N	S	E	W
1	223	454	64	218
2	216	440	62	211
3	212	431	61	207
4	198	404	57	194
5	176	359	51	172
6	174	354	50	170
7	172	350	49	168
8	156	318	45	153
9	154	313	44	150
10	152	309	44	148
11	132	268	38	129
12	123	250	35	120
13	120	245	35	118
14	89	182	26	87
15	89	182	26	87
16	62	127	18	61
17	36	73	10	35
18	36	73	10	35
19	20	41	6	20
20	11	23	3	11
21	7	14	2	7
22	2	5	1	2
23	2	5	1	2
24	2	5	1	2

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	677	1	218	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
2	1	656	1	211	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
3	1	643	1	207	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
4	1	602	1	194	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
5	1	535	1	172	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
6	1	528	1	170	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
7	1	522	1	168	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	No
8	1	474	1	153	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
9	1	467	1	150	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
10	1	461	1	148	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
11	1	400	1	129	No	Yes	Yes	Yes	No	No	No	No	No	No
12	1	373	1	120	No	No	Yes	Yes	No	No	No	No	No	No
13	1	365	1	118	No	No	Yes	Yes	No	No	No	No	No	No
14	1	271	1	87	No	No	No	No	No	No	No	No	No	No
15	1	271	1	87	No	No	No	No	No	No	No	No	No	No
16	1	189	1	61	No	No	No	No	No	No	No	No	No	No
17	1	109	1	35	No	No	No	No	No	No	No	No	No	No
18	1	109	1	35	No	No	No	No	No	No	No	No	No	No
19	1	61	1	20	No	No	No	No	No	No	No	No	No	No
20	1	34	1	11	No	No	No	No	No	No	No	No	No	No
21	1	21	1	7	No	No	No	No	No	No	No	No	No	No
22	1	7	1	2	No	No	No	No	No	No	No	No	No	No
23	1	7	1	2	No	No	No	No	No	No	No	No	No	No
24	1	7	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					7	11	13	13	0	4	6	10	10	1

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.2	12.5
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:10	0:45
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	64	218
High Minor Volume Condition Met	No	Yes
Total Entering Volume on All Approaches During Same Hour	959	959
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	No	

Signal Warrants Report For Intersection 5: Sarival Avenue & Peoria Avenue

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S, N
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	S	N
1	346	479	374	97
2	336	465	363	94
3	329	455	355	92
4	308	426	333	86
5	273	378	295	77
6	270	374	292	76
7	266	369	288	75
8	242	335	262	68
9	239	331	258	67
10	235	326	254	66
11	204	283	221	57
12	190	263	206	53
13	187	259	202	52
14	138	192	150	39
15	138	192	150	39
16	97	134	105	27
17	55	77	60	16
18	55	77	60	16
19	31	43	34	9
20	17	24	19	5
21	10	14	11	3
22	3	5	4	1
23	3	5	4	1
24	3	5	4	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	3	825	3	374	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
2	3	801	3	363	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
3	3	784	3	355	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
4	3	734	3	333	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
5	3	651	3	295	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
6	3	644	3	292	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
7	3	635	3	288	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
8	3	577	3	262	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
9	3	570	3	258	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
10	3	561	3	254	No	Yes	Yes	Yes	No	No	No	Yes	Yes	No
11	3	487	3	221	No	Yes	Yes	Yes	No	No	No	No	No	No
12	3	453	3	206	No	No	Yes	Yes	No	No	No	No	No	No
13	3	446	3	202	No	No	Yes	Yes	No	No	No	No	No	No
14	3	330	3	150	No	No	No	No	No	No	No	No	No	No
15	3	330	3	150	No	No	No	No	No	No	No	No	No	No
16	3	231	3	105	No	No	No	No	No	No	No	No	No	No
17	3	132	3	60	No	No	No	No	No	No	No	No	No	No
18	3	132	3	60	No	No	No	No	No	No	No	No	No	No
19	3	74	3	34	No	No	No	No	No	No	No	No	No	No
20	3	41	3	19	No	No	No	No	No	No	No	No	No	No
21	3	24	3	11	No	No	No	No	No	No	No	No	No	No
22	3	8	3	4	No	No	No	No	No	No	No	No	No	No
23	3	8	3	4	No	No	No	No	No	No	No	No	No	No
24	3	8	3	4	No	No	No	No	No	No	No	No	No	No
Hours Met					7	11	13	13	0	4	7	10	10	6

Warrant 3 Condition A

Orientation	S	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	20.2	13.4
Number of Lanes on Minor Street Approach	3	2
VehicleHours of Stopped Delay on Minor Approach (h:mm)	2:06	0:21
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	374	97
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	1296	1296
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	No	

Appendix D



TRAFFIC IMPACT ANALYSIS

CLARIUS PARK

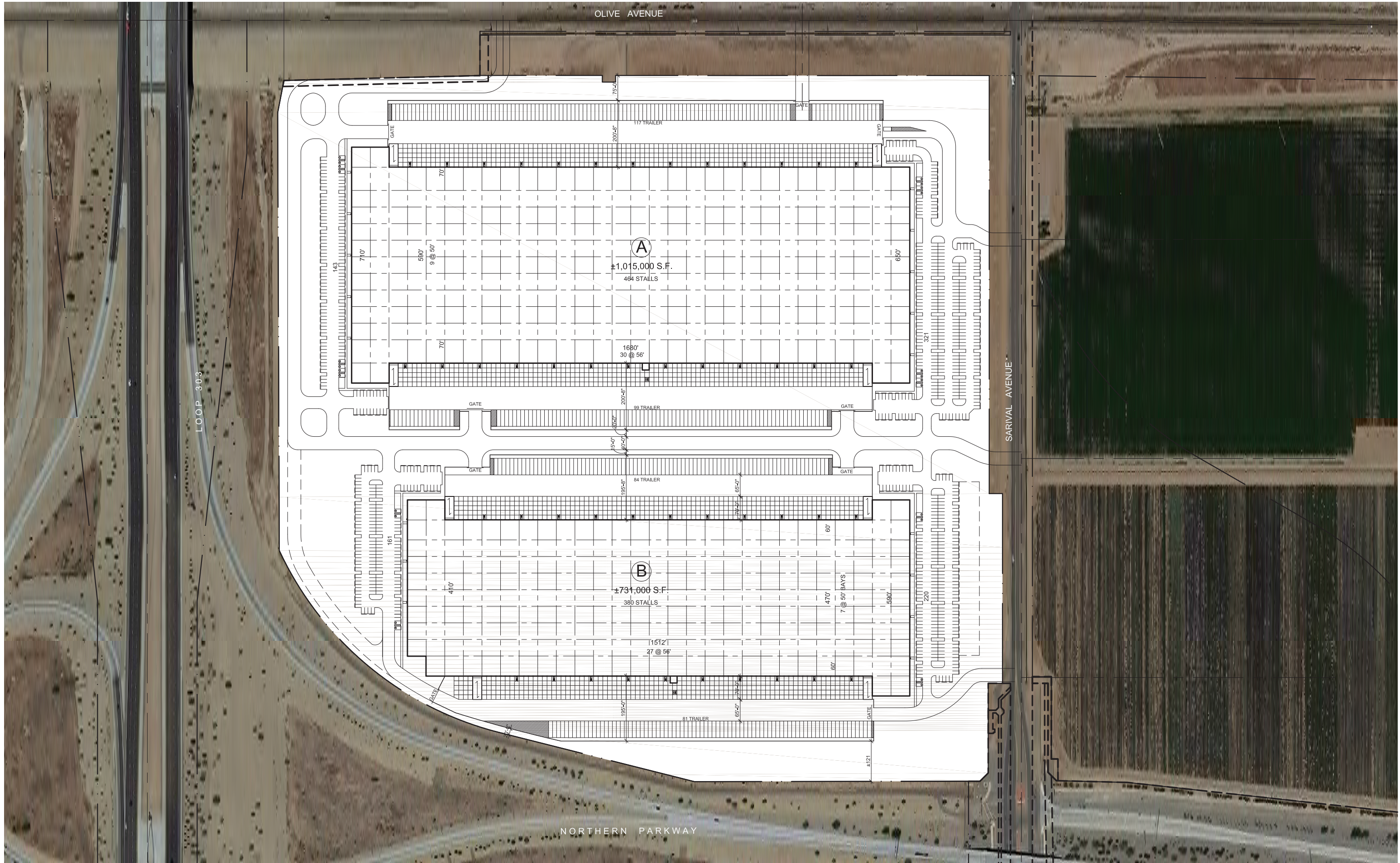
OLIVE AVENUE/SARIVAL AVENUE

4 MAY 2021



PREPARED FOR
CLARIUS PARTNERS
8901 EAST PIMA CENTER PARKWAY, SUITE 120
SCOTTSDALE, ARIZONA 85258

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



OLIVE AVENUE

LOOP 303

SARIVAL AVENUE

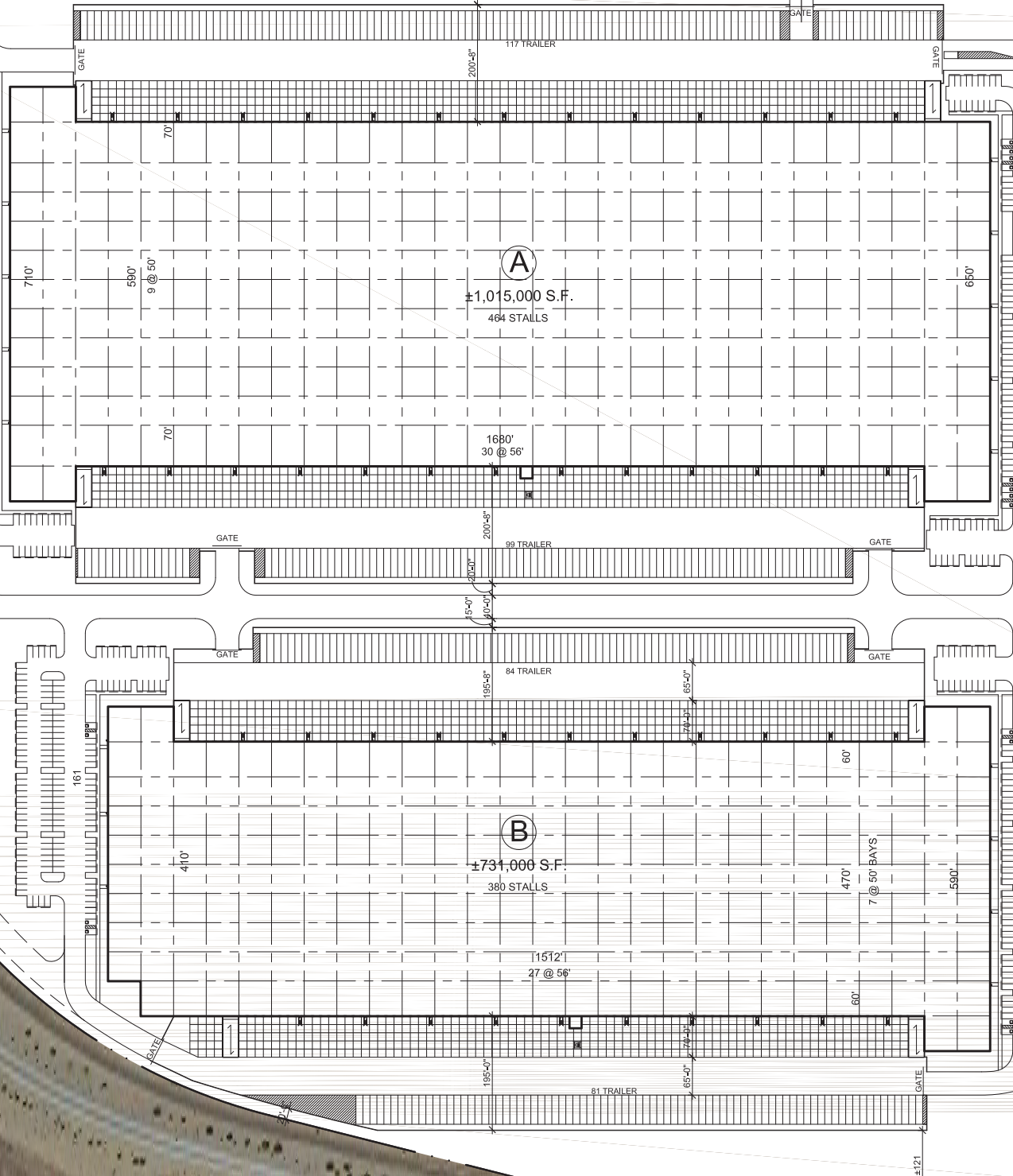
NORTHERN PARKWAY

A

±1,015,000 S.F.
464 STALLS

B

±731,000 S.F.
380 STALLS



GATE

GATE

GATE

GATE

GATE

GATE

GATE

GATE

143

710'

590'

9 @ 50'

70'

1650'

30 @ 56'

200'-8"

5'-0"

80'-0"

195'-8"

161

410'

1512'

27 @ 56'

185'-0"

81 TRAILER

65'-0"

74'-0"

60'

470'

7 @ 50' BAYS

195'-8"

161

74'-0"

65'-0"

60'

470'

7 @ 50' BAYS

75'-0"

200'-8"

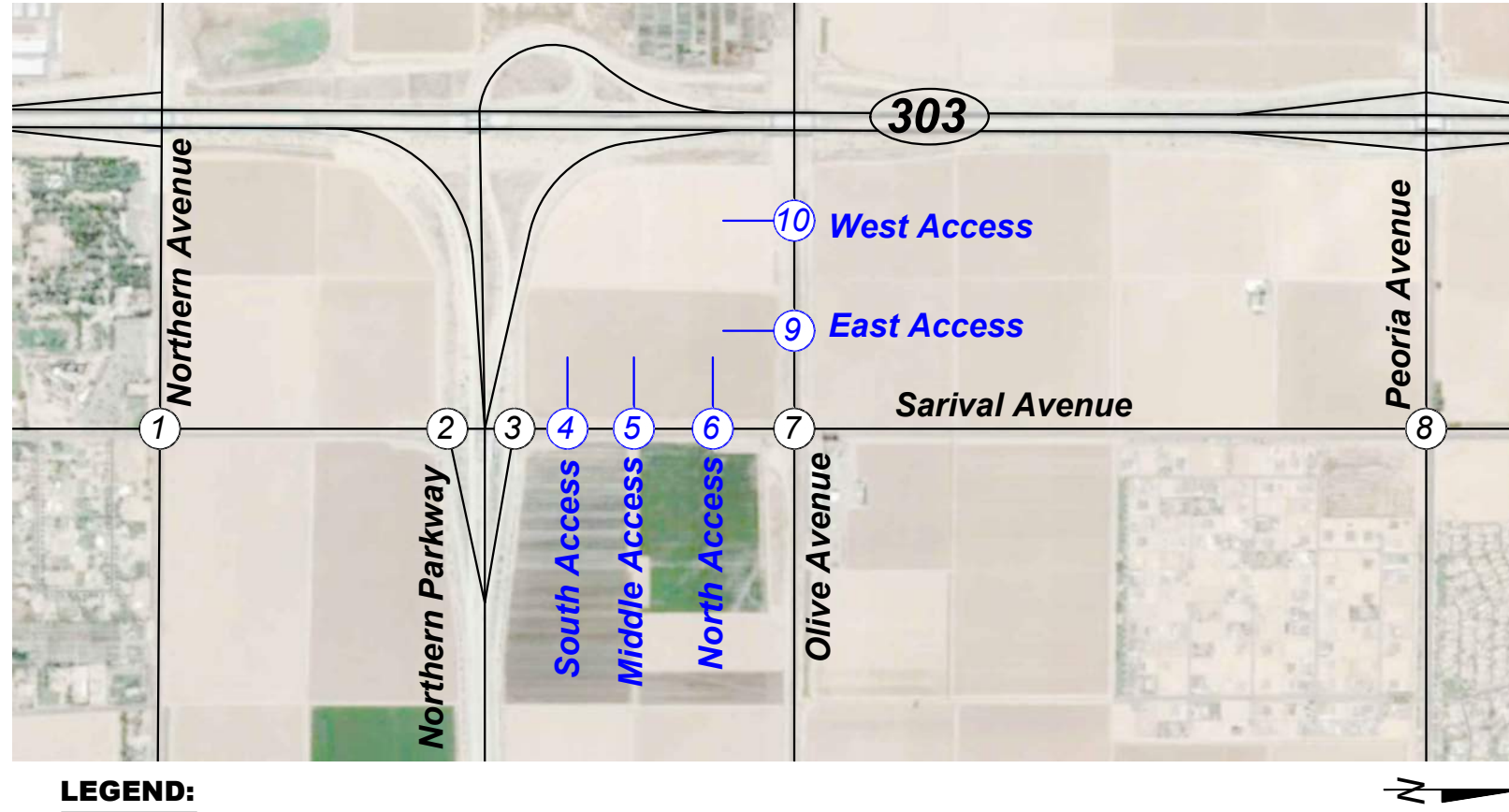
117 TRAILER

650'

321

220

4121



LEGEND:

- XX = Weekday AM Peak Hour
- (XX) = Weekday PM Peak Hour
- Vehicles Per Hour
- = Existing Road
- = Proposed Access

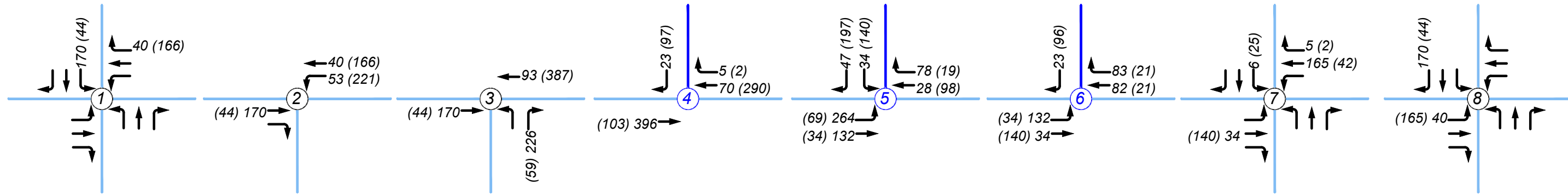


Figure 7 - Weekday Peak Hour Trip Assignment