

WELCH-COMER

208-664-9382
877-815-5672 (toll free)
208-664-5946 (fax)

350 E. Kathleen Avenue
Coeur d'Alene, ID 83815

ATLAS WATERFRONT / RIVERSTONE TRAFFIC IMPACT STUDY

SUBMITTED TO THE
CITY OF COEUR D'ALENE & IGNITECDA
DECEMBER 2018

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PROJECT NO. 41129.03

SUBMITTED TO THE:

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JANUARY 2019

PREPARED BY:



350 E. Kathleen Avenue
Coeur d'Alene, ID 83815
208-664-9382 ♦ 208-664-5946 Fax
E-Mail: wc@welchcomer.com

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1. DEFINITIONS

The following terms are used throughout the report and are defined here for reference:

- **Volume** is the rate of traffic flow and can be expressed simply as “vehicles” or as a rate such as “vehicles per hour”.
- **Direction of Travel** will be indicated throughout the document. Westbound means that vehicles are traveling toward the west.
- **Delay** is the amount of time spent traversing the intersection. Delay includes time stopped, deceleration and acceleration, and time spent in a queue.
- **Queue** is a line of vehicles waiting to be served. The back of queue or queue length is important for determining length of turn lanes.
- **Level of Service** describes a range of operating conditions. Delay is the measure of effectiveness for intersections.
- **Trip** is a one-direction movement.
- **Trip Generation** is the number of trips specifically entering or exiting a proposed site site over a designated period of time.
- **Peak Hour** is the one hour of the day that has the highest traffic volume. This is often described as the PM (or evening) peak or the AM (or morning) peak.

2. PURPOSE OF REPORT AND STUDY OBJECTIVES

2.1. OBJECTIVES OF THE STUDY

The Riverstone development is on property that was an abandoned lumber mill along the Spokane River that was revitalized into a successful mixed-use development with commercial, retail, recreation, and housing use. The City of Coeur d'Alene recently purchased another abandoned lumber mill adjacent to Riverstone on the west edge of the development. The City is planning to develop these 40 acres into another mixed-use development with retail, housing, commercial properties, and a public waterfront park. Another parcel, owned by Lance Douglass and known as the



Figure 2-1: Northwest Boulevard/Lakewood intersection looking north.

River's Edge, is adjacent to the City's property and is planned to include residential property. Because the transportation network surrounding the Riverstone development is already stressed, the City decided to study the area prior to moving forward with the developments.

The objectives of the study are:

1. Gain and understanding of the existing transportation system surrounding the Riverstone development - the traffic volumes, routes drivers choose, and existing levels of congestion.
2. Understand the impacts the proposed developments will have on the existing transportation network.
3. Vet alternatives for improving conditions both under existing and future conditions so the City can begin planning for needed transportation infrastructure mitigations.

2.2. STUDY BOUNDARY

The study boundary includes:

- Ramsey Road from the intersection of Ramsey/Golf Course Road (where the Kroc Center is located) to the Ramsey/Appleway intersection.
- Northwest Boulevard from the Northwest Boulevard/I-90 WB ramps to the Northwest Boulevard/Lacrosse intersection, including the signalized intersections of Northwest Boulevard/WB I-90 ramps, Northwest Boulevard/Ironwood/Seltice, Northwest Boulevard/Lakewood, and the unsignalized intersection of Northwest Boulevard/Emma.
- Seltice from Atlas to Northwest Boulevard
- Emma from Northwest Boulevard to US 95
- Ironwood from Northwest Boulevard to Lakewood
- Lakewood from Northwest Boulevard to Ironwood
- Lacrosse from Northwest Boulevard to US 95
- The Riverstone Development

Refer to Figure 2-2: Study Boundary.



Figure 2-2: Study Boundary

2.3. STUDY PROCESS

The process for the study included first collecting data (traffic volumes, signal timings, etc.) to build an existing conditions model. The existing conditions (level of service, delay, queue lengths, etc.) were determined for the existing network.

Next, an origin-destination (O-D) study was conducted to determine routes drivers current take into and out of Riverstone.

Next, trip generation analysis estimated the number of trips generated by each proposed use (available land in Riverstone, Atlas Waterfront Development, and River's Edge). The O-D analysis was used to properly assign new trips generated to routes within the network.

The no-build future conditions model was then developed. This model showed the conditions of the network if no improvements are made. The "build" model was then developed. This model assumes future conditions with recommended improvements to the transportation network.

Throughout the study process, the team collaborated with Kootenai Metropolitan Planning Organization (KMPO), Idaho Transportation Department (ITD) District 1, City of Coeur d'Alene Planning and Streets/Engineering Departments, and the River's Edge Development developer and engineers.

The process also included a public information process, which allowed the public opportunities to be informed and provide feedback on the study.

The process for the study is depicted in Figure 2-3.

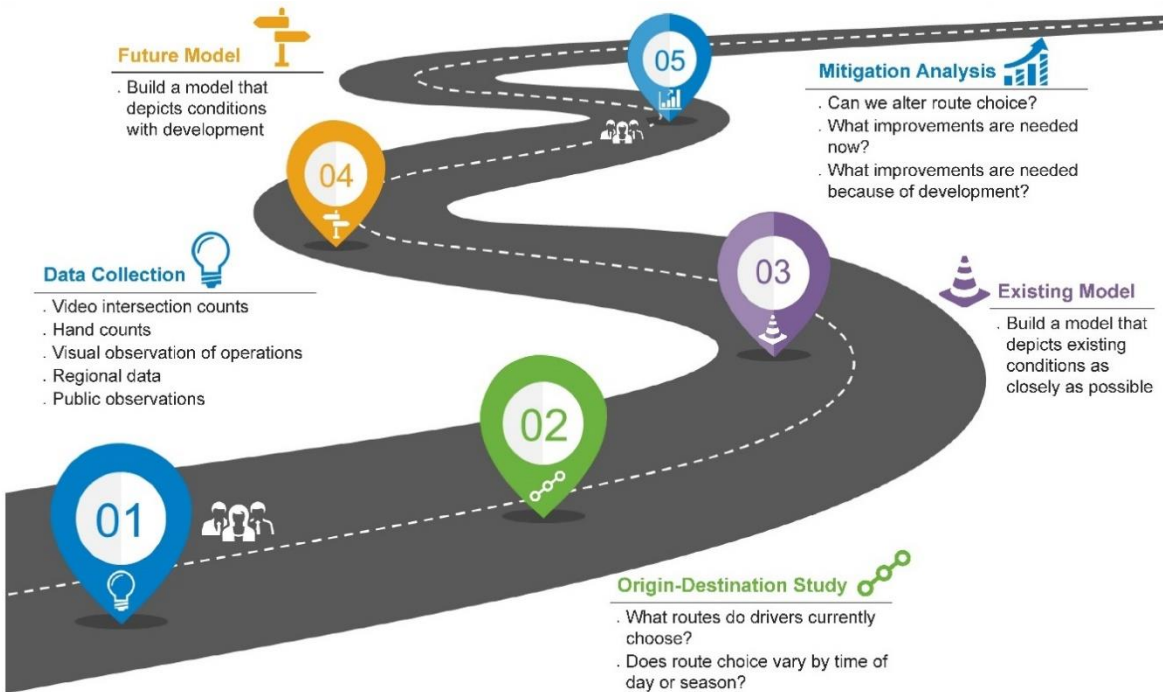


Figure 2-3: Process for Study

3. DATA COLLECTION

3.1. ROADWAY INVENTORY

The existing roadway characteristics were determined and input an existing conditions model using Vistro software. For each roadway, the speed limit, width of travel lanes, and type of intersection control were noted in the software.

Currently, Seltice Way is identified as a principal arterial, Northwest Boulevard, Ramsey Road, and Appleway are identified as a minor arterial's, and Ironwood is identified as a major collector on the 2025 Urban Federal Functional Classification map. Therefore, much of the infrastructure in this portion of the network is vital to the transportation system.

3.2. INTERSECTION TRAFFIC COUNTS

Simultaneous video intersection counts were conducted at 15 intersections between 2 PM and 7 PM on August 24th. This day in August was selected for a variety of reasons, primarily:

- Construction was occurring on Seltice Way and I-90 during the summer of 2018. The TIS team worked closely with the project managers for both projects to determine a day where there would be little to no impact from those construction projects on the traffic data collected.
- Historically, traffic in the Coeur d'Alene area is low Labor Day weekend and lowers once school starts. Therefore, the team found it imperative to collect traffic on a typical summer day where tourist traffic was still contributing to the network peak. The team understood that traffic patterns change after school starts but determined it was more valued to study the peak condition in the summer.
- Additionally, prior to collecting the data, we worked with KMPO to determine the appropriate network peak. By counting from between 2 PM and 7 PM, we were confident that the PM peak would be collected within the data. We understood that some of the traffic movements are heavier in the AM peak and that some areas within the study area have a peak closer to noon; however, the PM was selected as the time when the network as a whole was experiencing the peak condition.



Figure 3-1: Video traffic counter at Riverstone/Lakewood

The benefit of conducting simultaneous video counts is to reduce inherent error in the traffic modeling process. When the data is simultaneous rather than conducted on several days in a row, it allows for a more accurate depiction of existing conditions. Figure 3-2 shows the locations of the video counts. The intersection traffic counts were processed to include counts for passenger cars, commercial trucks, pedestrians, and bicyclists.

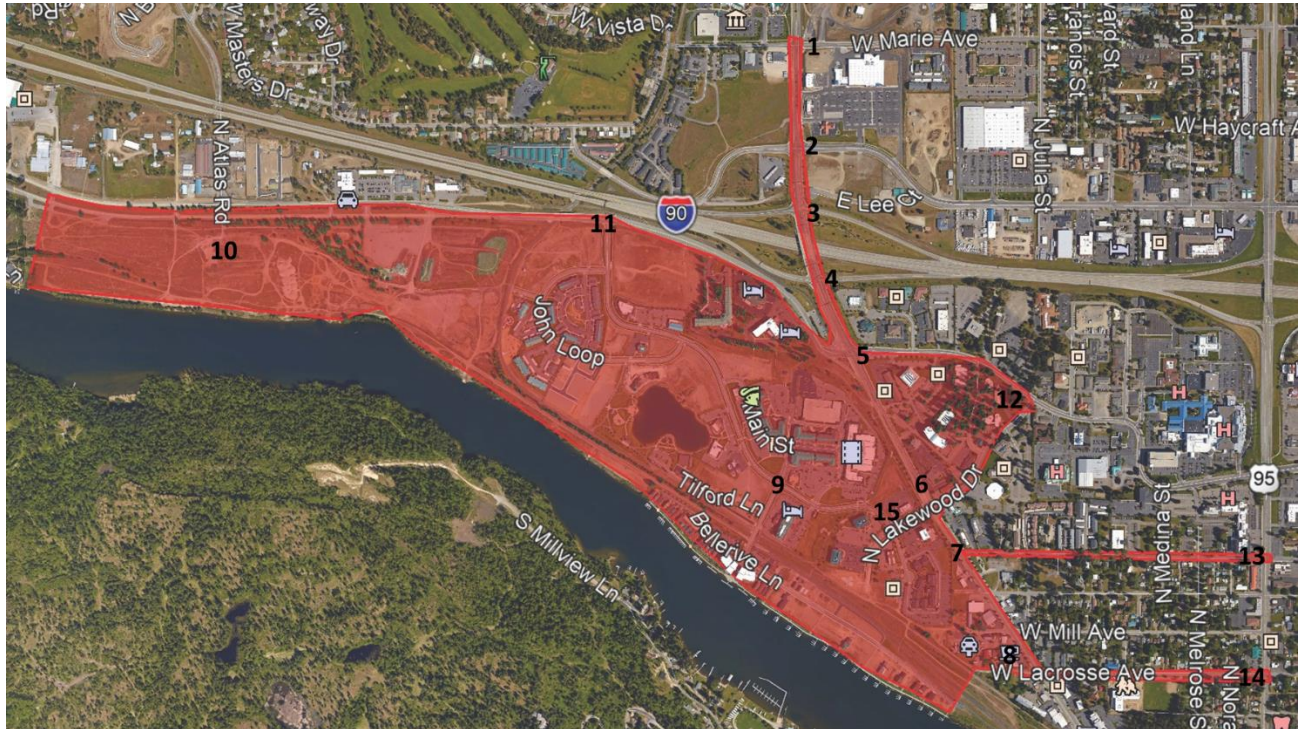


Figure 3-2: Video traffic counter at Riverstone/Lakewood

3.3. DRIVEWAY HAND COUNTS

To supplement the video intersection counts, the team also conducted hand counts along Riverstone Drive within the Riverstone development. Hand counts were taken at both intersections with John's Loop, Old Mill, the driveway by Starbucks, and the driveway by McDonalds. These counts allowed the team to observe locations within Riverstone and to vet the traffic model.

4. PUBLIC INVOLVEMENT

4.1. OPEN HOUSE NO. 1

The first public meeting was held on September 12, 2018. The purpose of this meeting was to explain the process, scope, and limits of the traffic study to the public, to gather public input regarding the transportation network within the study boundary, and to answer questions from the public. The public was encouraged to make notes directly on the boards at the public meeting, provide written comment on available forms, or use the website to make comments. The meeting was advertised by the City on their website and social media and a press release was given to the paper. The boards, comment forms, and website links were also provided on the City's website.



Figure 4-1: Open House 1 was well attended.

4.1.1. FEEDBACK FROM OPEN HOUSE 1

Feedback was gathered from the meeting, through the website, and from comment forms either filled out at the meeting or delivered to the City or Welch Comer after the meeting. Copies of the boards, hand written comment forms, and website comments are provided in Appendix C.

The feedback is summarized below:

Long Delays

- Long delays at Ramsey Road/Golf Course Road
- Long delays at Northwest Boulevard/I-90 on-ramps and off-ramps.
- Long delays at Lakewood/Riverstone Drive and Northwest Boulevard/Lakewood. Long delays for northbound left turns at Northwest Boulevard/Lakewood.
- Desire for a permissive northbound left-turn at Northwest Boulevard/Lakewood.

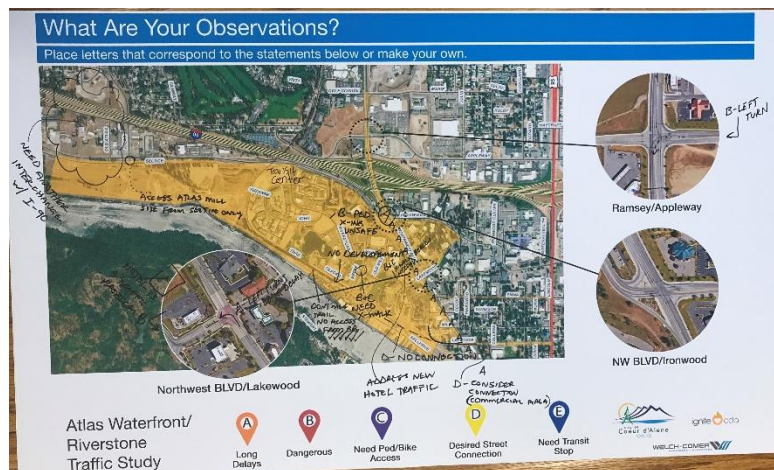


Figure 4-2: A board from Open House 1

Dangerous Road Conditions

- Dangerous intersections at Northwest Boulevard/I-90 on-ramps and off-ramps.
- Dangerous westbound left-turn movement at Ramsey/Appleway.
- Dangerous at Lakewood/Riverstone Drive and Northwest Boulevard/Lakewood.

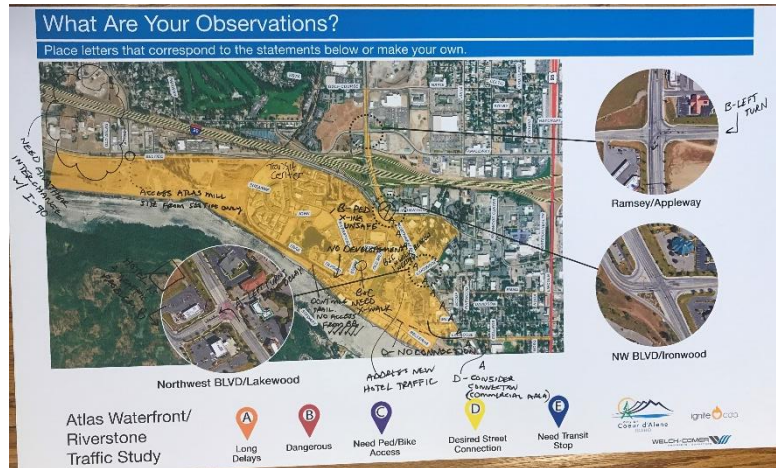


Figure 4-3: Another board from Open House 1

- Dangerous approach at McDonalds/new hotel on Riverstone Drive. Need to address new hotel traffic.
- Dangerous at Riverstone/Beebe intersection.
- The northbound queue at Northwest/Riverstone oftentimes blocks the Northwest/Emma intersection.
- Do not divert more traffic onto Ironwood Drive, which is already overcrowded. Access to the medical buildings on Ironwood is difficult.

Desired Street Connection

- Connect Riverstone development to Lacrosse for an alternative access.
- Need another I-90 interchange west of Northwest Boulevard.
- Atlas Waterfront site should only have access to Seltice Way – no connection to Riverstone.
- Several people noted that they did not want Bellerive to connect to Atlas Waterfront or to Lacrosse, if a new access to Riverstone at Lacrosse were proposed.

Pedestrian or Bicycle

- Need crosswalk to cross Riverstone at Riverstone Drive/Beebe Boulevard intersection.
- Crosswalk across Riverstone for Centennial Trail connection needs a beacon.
- Several people noted that they did not want the Centennial Trail impacted or moved.

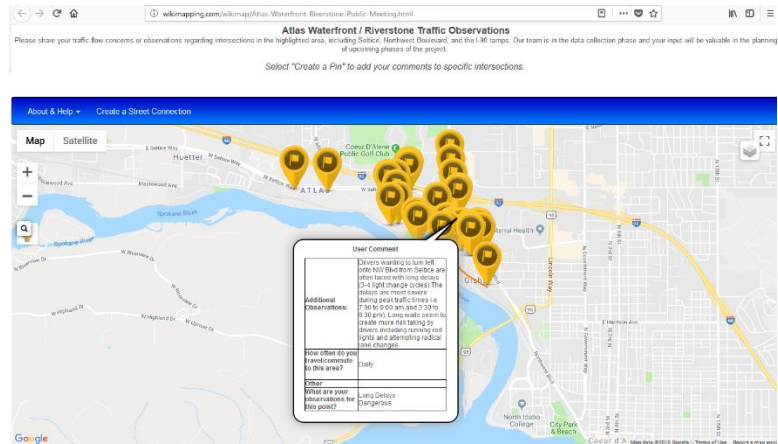


Figure 4-4: Website to gather public comment.

- The ped/bike crossing on Riverstone northwest of the Riverstone Drive/Beebe is unsafe.
- Add a shared-use path from Atlas Road to the proposed Atlas Waterfront development.

Transit

- Transit center expansion going in at Riverstone Drive/Seltice Way.

Miscellaneous Comments

- Save as many trees along the waterfront as possible.
- Maintain the Centennial Trail behind homes on the west edge of Riverstone.
- Desire for no development between Bellerive and Tilford.
- Coordinate the signals on Northwest Boulevard better. Too much back-up of traffic.

A chart showing the most common comments following the first open house is shown in Figure 4-5.

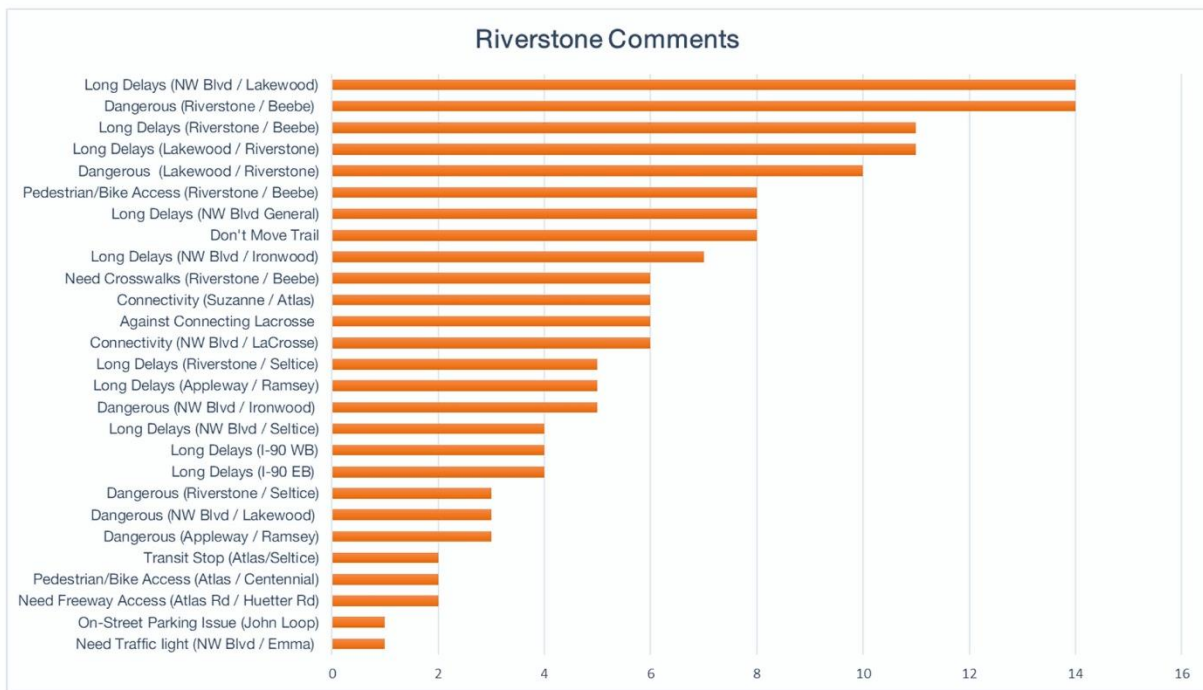


Figure 4-5: Open house no. 1 public comments

4.2. OPEN HOUSE NO. 2

The second open house was held on December 20, 2018. The purpose of this meeting was to explain the existing conditions, explain the process and findings from the O-D study, describe the trip generation for proposed developments, and explain the future conditions and mitigation alternatives. The meeting was advertised by the City on their website and social media and a press release was given to the paper. The boards used at the meeting are provided in Appendix C.



Figure 4-6: Presentation during open house No. 2

A frequently asked question page was also provided to answer the questions the design team was receiving most often. This information was provided as a handout at the meeting and placed on the City's website.

4.2.1. FEEDBACK FROM OPEN HOUSE 2

Feedback was gathered from the meeting, and from comment forms either filled out at the meeting or delivered to the City or Welch Comer after the meeting. Copies of the presentation, boards, hand written comment forms, and website comments are provided in Appendix C.

This section will be completed once public comment has closed on January 11th, 2019.



Figure 4-7: Discussion after the presentation at Open House No. 2

5. ORIGIN - DESTINATION STUDY

5.1. THE IMPORTANCE OF AN ORIGIN-DESTINATION STUDY

An origin-destination (O-D) study defines the following:

1. Of the trips that start in Riverstone, what route does the traffic take until it leaves the study boundary?
2. Of the trips that originate outside the boundary, what route does the traffic take until it reaches a destination in Riverstone?

For this study, Streetlight Data was used to gather information. Different sections of Riverstone were defined as "zones" and "gates" were placed along specific routes. Streetlight gave us proportions of trips that either originated or terminated within Riverstone and passed through those gates. From this data, we can make educated assumptions about the proportions of trips using various routes to travel either to or from Riverstone.

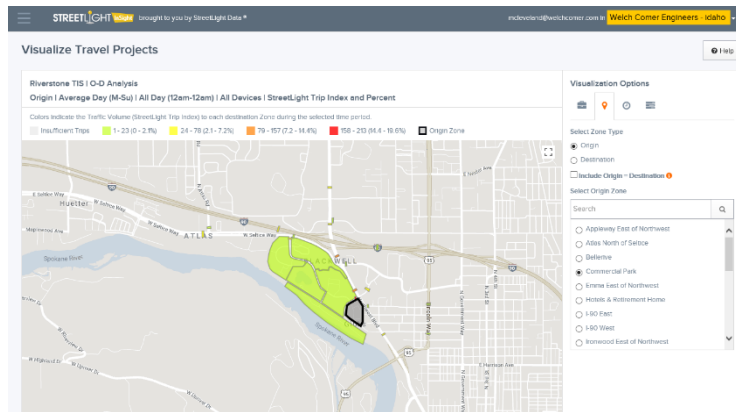


Figure 5-2: Screen shot from Streetlight Data O-D Study showing zones and gates.

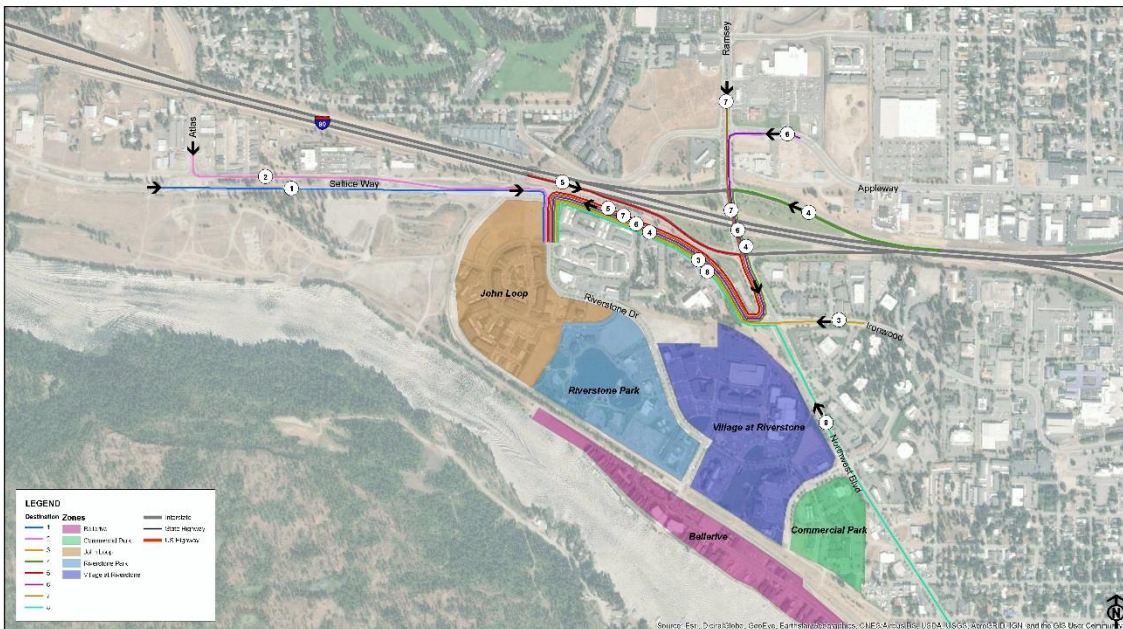


Figure 5-1: Traffic Analysis Zones

The reason this information is helpful to the team is because new traffic generated from development within and near the Riverstone development is likely to choose routes that are similar to the existing traffic. The data allows for team to know how existing traffic is behaving, rather than guessing, and allows for educated assumptions about the routes new traffic generated by development will take. This process allows for fewer inherent errors in the future conditions model.

For the development of the traffic model, we used the Streetlight Data information from August 2016 and 2017 during the PM peak hour. At the time of the study, August 2018 data was unavailable.

Routes for the PM peak and proportions of the existing are shown in Appendix D. and the proportions of PM peak routes are shown in the following tables. The data from Streetlight Data is summarized in a table in Appendix D.

5.2. O-D STUDY RESULTS

The O-D study gave the team insight into existing traffic patterns. For traffic that originates within Riverstone, the data indicated that:

- For origin traffic, the Northwest Boulevard/Lakewood intersection is more heavily used to exit Riverstone than the Riverstone/Seltice intersection except for traffic coming from the John Loop zone.
- Nearly 30% of traffic that originates within the John Loop zone uses the Riverstone/Seltice intersection to exit the development and heads north on Atlas Road.
- Almost 30% of traffic that originates within Riverstone Park zone uses the Northwest Boulevard/Lakewood intersection to exit the development and heads south on Northwest Boulevard.
- Almost 20% of the traffic that originates within the Riverstone Park zone uses the Northwest Boulevard/Lakewood intersection for access and uses Lakewood to head east.
- Approximately 20% of the traffic that originates within the Village at Riverstone zone uses the Northwest Boulevard/Lakewood intersection to exit the development and heads south on Northwest Boulevard.
- Nearly 30% of traffic that originates within the Bellerive zone uses the Riverstone/Seltice intersection to exit the development and heads north on Atlas.
- Approximately 30% of the traffic that originates within the Bellerive zone uses the Northwest Boulevard/Lakewood intersection and heads south on Northwest Boulevard.
- Of the traffic that originates in the office/medical park zone, nearly 40% uses the Riverstone/Seltice intersection to exit the development and heads west on Seltice.
- Of the traffic that originates in the office/medical park zone, nearly 20% uses the Northwest Boulevard/Lakewood intersection to exit the development and heads north on Ramsey Road.
- Approximately four percent of traffic that originates within Riverstone, stays in Riverstone and just moves between zones.
- The majority of traffic that originates within Riverstone travels to either W.Seltice/N. Atlas or south on Northwest Boulevard.

For traffic that originates outside Riverstone and has Riverstone as a destination, the data indicated that:

- For destination traffic, the Northwest Boulevard/Lakewood intersection is more heavily used to access Riverstone than the Riverstone/Seltice intersection except for traffic heading to the John Loop zone.
- Of the traffic heading to the John Loop zone, approximately 60 percent of traffic and 30 percent of traffic used the Riverstone/Seltice and Northwest Boulevard/Lakewood intersections for access respectively. About seven percent of traffic originated from within Riverstone.
- Of the traffic heading to the Riverstone park, nearly one-quarter of the traffic used the Northwest Boulevard/Lakewood intersection for access into Riverstone and came from S. Northwest Boulevard.
- Approximately 30 percent of traffic heading to the Village at Riverstone zone, used the Northwest Boulevard/Lakewood intersection for access into Riverstone and came from S. Northwest Boulevard.
- Approximately 40 percent of traffic heading to the Village at Riverstone zone, used the Northwest Boulevard/Lakewood intersection for access into Riverstone and came from S. Northwest Boulevard.
- Of the traffic heading to the office/medical park zone, approximately 80 percent of traffic used the Northwest Boulevard/Lakewood intersection for access into Riverstone and 20 percent came from N. Ramsey Road and WB I-90 each.
- Approximately four percent of traffic that originates within Riverstone, stays in Riverstone and just moves between zones.

6. EXISTING CONDITIONS

6.1. EXISTING CONDITIONS MODEL

6.1.1. DEVELOPING THE EXISTING CONDITIONS MODEL

The team built a model in Vistro using the video intersection traffic counts and hand intersection traffic counts. The model used signal timing plans obtained from ITD and the City of Coeur d'Alene. The model was calibrated by watching the videos from the intersection traffic counts and by going through model inputs with both ITD's traffic engineers and the City of Coeur d'Alene City Engineer.

6.1.2. PEAK HOUR SELECTION

The peak hour was selected using the traffic counts described in the data collection section. The data was reviewed for the network peak hour, which was found to be 4:30pm to 5:30pm. The network peak hour is the time of day that the entire network experiences the greatest traffic volume. Independently, intersections may experience peak hours at different times. However, it's best to use counts from the same time for the entire network because it produces balanced flows throughout the network. Providing balanced flows is another way that a model is calibrated.



Figure 6-1: Screenshot of the Vistro model demonstrating relatively balanced flows.

6.2. EXISTING INTERSECTION PERFORMANCE

This area of Coeur d'Alene is one of the most congested areas in Coeur d'Alene for multiple reasons. It includes an interstate interchange, three major arterials, provides access to the City Center, major developments, and the health corridor. Table 6-1 summarizes the level of service of the major intersections within the study. Data regarding minor intersections can be found in the appendix.

Using Vistro, level of service, delay and queue lengths were calculated. The figure below shows the levels of service of the studied intersections.



Figure 6-2: Project Overview. See Table 6-1 for Level of Service Summary.

Table 6-1: Level of Service Summary

	Intersections	LOS	Average Intersection Delay, s/veh
1	Golf Course/Ramsey	D	47
2	Appleway/Ramsey	E	55
3	I90 WB/NW	D	44
4	I90 EB/NW	D	43
5	Seltice/NW	E	60
6	Lakewood/NW	D	48
7	Emma/NW*	F	183
8	Lacrosse/NW*	F	153
9	Riverstone/Lakewood	B	20
10	Riverstone/Seltice	A	8
11	Atlas/Seltice	A	8
12	Beebe/Riverstone*	C	17
13	Lakewood/Ironwood	E	44
14	Emma/US 95	C	22
15	Lacrosse/US 95*	E	38

*Two-way stop-controlled intersection. Reported as the worst functioning leg.

Under the current conditions, it can be seen from the table that multiple intersections on Northwest Boulevard are nearing capacity.

6.2.1. NORTHWEST BOULEVARD CORRIDOR

The proximity of the intersections on Northwest Boulevard exacerbates the congestion due to the large amount of traffic utilizing the corridor. This leads to queues backing up into upstream intersections, specifically at Ramsey & Appleway and Northwest & Seltice, which are north and south of I-90, respectively. The northbound left turn at WB I-90 on-ramp Table 6-2 summarizes the delays and queues of the signalized intersections.

During the peak hour, the northbound lefts at Lakewood, Northwest, and the WB I-90 On-ramp are particularly stressful because their queues far exceed the available storage. This can lead to left turning traffic backing up into through lanes, not only creating congestion, but a safety issue as well. Furthermore, the northbound left turn at Lakewood is prone to through traffic intending to reach Seltice. Motorist's will take this left in attempt to avoid the northbound left turn at Northwest & Seltice.

Additionally, the westbound right turn at Northwest & Ironwood is also source of considerable delay. This movement can back up nearly 1000 feet to Ironwood Parkway. One of the major contributing factors of this is the hospital shift changes.

Lastly, after meeting with ITD, it was noted that the signals along this corridor have not been re-evaluated for approximately 5 years. There is an overwhelming sense that much of the delay seen today can be mitigated by proper optimization of the signal corridor. This is discussed further in the Mitigation Recommendations section.

6.2.2. RIVERSTONE

The Riverstone development is a popular destination year-round. Most traffic enters Riverstone via Lakewood. As mentioned above, there's also a significant amount of through traffic that uses Riverstone to avoid Northwest & Seltice. For these reasons, traffic regularly queues to the upstream signal both northeast-bound and southwest-bound between Lakewood and Riverstone.

The Lakewood and Riverstone intersection has unique signal phasing that allows the intersection to operate reasonably well. However, multiple public comments were received that recently this signal has been malfunctioning.

Riverstone Drive is intended to be a low-speed collector providing both vehicular and pedestrian access to the mixed-use residential/commercial development. Many public comments were made regarding the safety on Riverstone ranging from speeds being too high to crosswalks being unsafe.

There were also many concerns about the performance of the Beebe and Riverstone intersection. This intersection does not currently meet any signal warrants. However, it's possible this intersection has a noon-hour peak, which is much different than the network peak, due to the popular restaurant Le Peep being located at the end of Beebe.

6.2.3. SIGNALIZED INTERSECTION LANE GROUP RESULTS

Table 6-2: Lane Group Results

		1		2		3		4	
		Golf Course/ Ramsey		Appleway/Ramsey		I90 WB/NW		I90 EB/NW	
		Signalized		Signalized		Signalized		Signalized	
LOS		D		E		D		D	
Avg. Intx. Delay, s/v		47		55		44		43	
		Ln Grp Dly, s/v	Queue, ft	Ln Grp Dly, s/v	95% Queue, ft	Ln Grp Dly, s/v	95% Queue, ft	Ln Grp Dly, s/v	95% Queue, ft
N	L	69	210	68	170	56	480		
	T	39	850	46	840	28	880	39	780
	R	40	840	25	110			39	790
S	L	81	150	82	140			83	170
	T	43	710	50	680	50	520	23	490
	R			50	670	52	530		
E	L	75	140	75	30			77	380
	T	65	220	87	110			77	380
	R			76	40			67	130
W	L	74	50	79	80	76	200		
	T	62	150	70	70	79	190		
	R			67	70				

		5		6		9		10	
		Seltice/NW		Lakewood/NW		Riverstone/ Lakewood		Riverstone/Seltice	
		Signalized		Signalized		Signalized		Signalized	
LOS		E		E		B		A	
Avg. Intx. Delay, s/v		60		48		20		8	
		Ln Grp Dly, s/v	Queue, ft	Ln Grp Dly, s/v	Queue, ft	Ln Grp Dly, s/v	Queue, ft	Ln Grp Dly, s/v	Queue, ft
N	L	65	390	90	370	0	0	28	150
	T	37	500	22	470	29	70	22	40
	R	37	510	22	470				
S	L	61	210	79	45	19	160		
	T	69	620	55	770	6	0		
	R	52	70	35	45				
E	L	87	270	74	270	16	0		
	T	71	400	74	270	14	20	4	60
	R	64	150	64	90			4	30
W	L	83	80	64	100	29	20	8	20
	T	74	240	68	230	10	0	4	50
	R	70	950			18	170		

6.3. CRASH DATA

Crash data was acquired from LHTAC’s Idaho Local Road Crash Data for Coeur d’Alene. The data includes the number of crashes, crash type, injury level, severity, and location, among other statistics. The data covered crashes from January 1, 2012 to December 31, 2016 for the Study Area. No fatalities occurred in the study area through that time. Figures _ and _ summarize the crash data with regards to statewide accident rates versus accident rates in the study area and for each accident cause.

The most common type of crashes was rear-end crashes at 44%, which is typical for an urban area with significant congestion and many accesses. At the intersection of Seltice Way and Northwest Blvd, there were 48 crashes over that 5-year span of the crash data. That was the highest concentration of crashes, estimated at 4.88 crashes per million entering vehicles. Other high-crash areas were the intersection of Appleway Ave and Ramsey Rd., Golf Course Rd & Ramsey Rd, Seltice Way and Atlas Rd., and Northwest Boulevard between Seltice Way and Lakewood Dr.

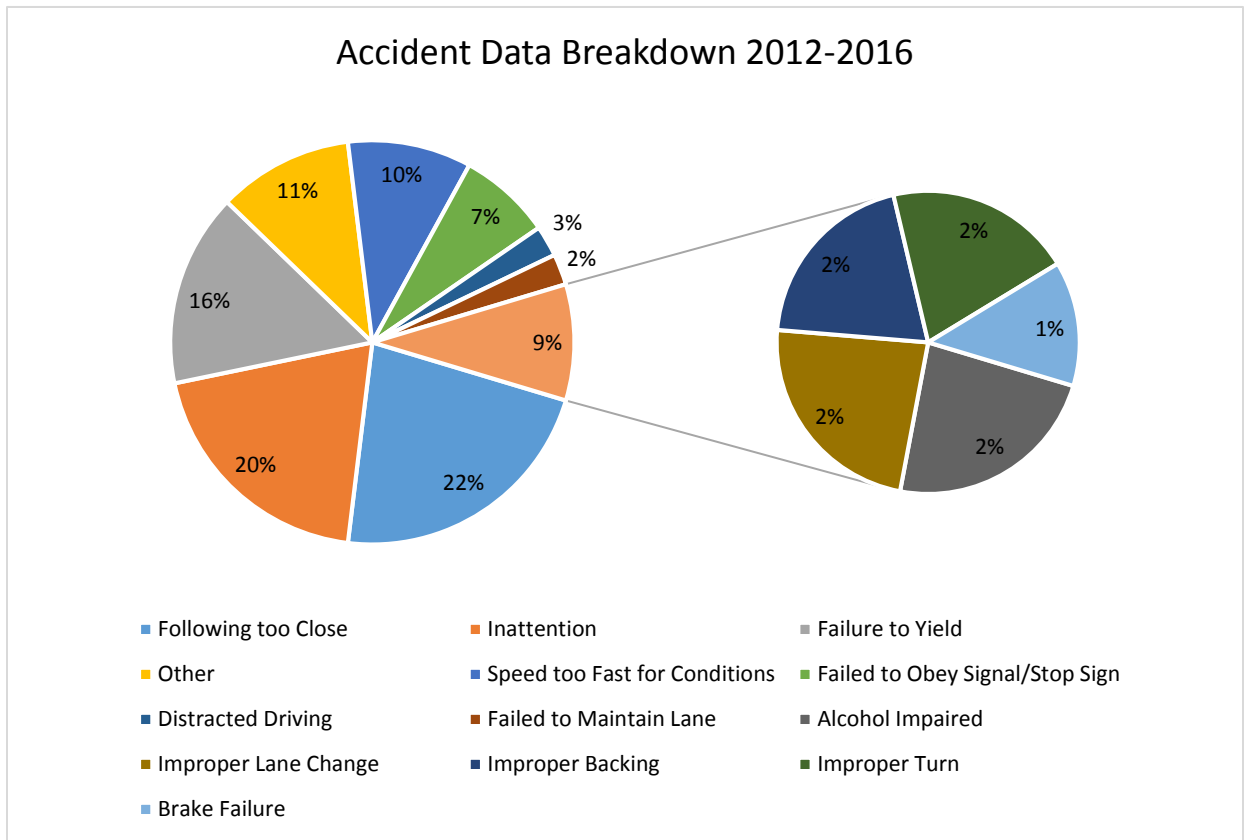


Figure 6-3: Causes of Crashes

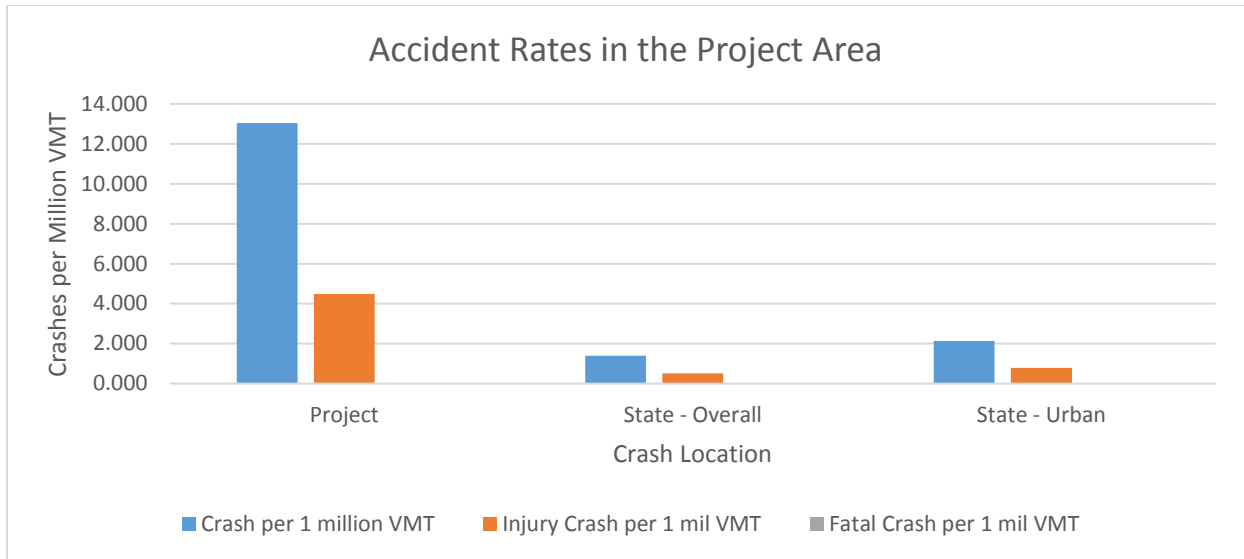


Figure 6-4: Crash Rates per Million VMT for study area and the state of Idaho

6.4. SUMMARY OF EXISTING DEFICIENCIES

The congestion in this area comes from a combination of multiple arterials coming together within a relatively small area and the multiple major developments generating additional traffic. Under the existing conditions, specifically signal timing, the Northwest Boulevard corridor is reaching its capacity.

Ramsey/Northwest Boulevard is used as a north/south alternative to US 95, motorists accessing large residential areas to the northwest of the interchange, Riverstone, as well as downtown Coeur d'Alene.

Employer shift changes along the health corridor on Ironwood generate a large amount of westbound right turning traffic at Northwest and Ironwood.

Riverstone is commonly used as a by-pass for traffic attempting to avoid the Northwest and Seltice intersection. This leads to higher volumes and higher speeds than were intended for this corridor.

7. TRIP GENERATION

7.1. TRIP GENERATION METHODOLOGY

The Institute of Transportation Engineers (ITE) Trip Generation, 10th Edition was used to estimate the traffic generated by the future developments within the study area. The team coordinated with the City, KMPO, and the developers to determine land uses and sizes of the developments.

The largest generators include the Atlas Waterfront and River’s Edge developments. However, various developments within Riverstone were also considered. At the time of this report, the River’s Edge development has not been approved. The developer is currently seeking a zone change to complete an 850-unit apartment complex. The current use-by-right would allow them to build anything ranging from a shopping center with residential to 469 multifamily units. After analyzing the volumes, it was decided the 850-unit apartment complex would be used for the future conditions model, as it produced an intermediate amount of traffic between the three options.

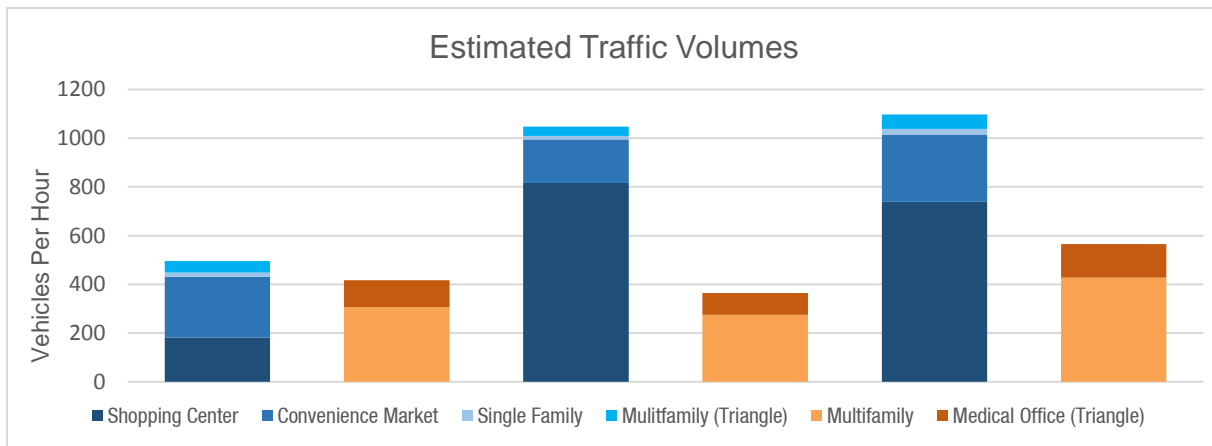


Figure 7-1: Crash Rates per Million VMT for study area and the state of Idaho

The Trip Generation Manual provides multiple rates for different times of day. For this study, the Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 P.M. used, which is consistent with the methodology for the developing the traffic model.

7.2. TRIP GENERATION

Table 7-1 below summarizes the trip generation for the multiple developments within the study area.

7.3. ROUTE CHOICE

Route choice was determined by using the information collected by the OD study. The different routes indicated by the various land uses in Riverstone were applied to the same or similar land uses in the future developments. For instance, the route choices for the residential land uses in Riverstone were applied to the residential land uses in Atlas Waterfront.

Table 7-1: Trip Generation

<i>PUD/Development Name</i>	Description	Land Use Code	Land Use Description	# of X	Unit	Average Trip Ends	Total Entering	Total Exiting
<i>Unknown</i>	Parcel N. of Centennial Trail and E. of Beebe	210	Single Family Detached Housing	23	du	23	14	9
		712	Small Office Building	3	1000 SF GFA	7	2	5
<i>Unknown</i>	Empty lots within Bellerive	210	Single Family Detached Housing	20	du	20	13	7
<i>Riviera Walk 2nd Add.</i>	W of Riverstone Park	210	Single Family Detached Housing	24	du	24	15	9
<i>Unknown</i>	Corner of John Lp/Riverstone	221	Multifamily Housing (Mid-Rise)	49	du	22	13	9
<i>Unknown</i>	3.4 acres NW of Village at Riverstone	710	General Office Building	60	1000 SF GFA	69	11	58
<i>Staybridge Hotel</i>	Hotel next to McDonalds	310	Hotel	96	rooms	52	27	25
<i>Tillford Place</i>	Off of Tillford Lane	210	Single Family Detached Housing	13	du	13	8	5
<i>Riviera Place</i>	NW corner of Suzanne/John Lp	210	Single Family Detached Housing	14	du	14	9	5
<i>Atlas Waterfront</i>	Atlas Waterfront E of Atlas (blocks 1,20)	710	General Office Building	17.9	1000 SF GFA	21	3	18
		931	Quality Restaurant	10	1000 SF GFA	78	52	26
	Block 2	220	Multifamily Housing (Mid-Rise)	60	du	26	16	10
	Blocks 15, 16, 18, 19	221	Multifamily Housing (Low-Rise)	68	du	38	24	14
	Blocks 13, 14	210	Single Family Detached Housing	23	du	23	14	9
	Triangle Parcel	720	Medical/Dental Office	40	1000 SF GFA	138	39	99
	Block 3,11A	220	Multifamily Housing (Mid-Rise)	108	du	48	29	19
	Block 4, 12, 11B	221	Multifamily Housing (Low-Rise)	24	du	13	8	5
	Block 8	210	Single Family Detached Housing	36	du	36	23	13
	Open Space Rec Trails, etc.	411	Public Park	9	ac	1	1	0
	Blocks 6, 17	220	Multifamily Housing (Mid-Rise)	40	du	18	11	7
	Block 7	221	Multifamily Housing (Low-Rise)	8	du	4	3	1
	Blocks 9A, 9B	220	Multifamily Housing (Mid-Rise)	60	du	26	16	10
	Blocks 5, 10	221	Multifamily Housing (Low-Rise)	20	du	11	7	4
	Block 21	931	Quality Restaurant	8.5	1000 SF GFA	66	44	15
	Riverfront Park/Open Space	411	Public Park	11	ac	1	1	0
	<i>Rivers Edge</i>	450 units W of Atlas	221	Multifamily Housing (Mid-Rise)	450	du	188	115
400 units W of Atlas		221	Multifamily Housing (Mid-Rise)	400	du	168	102	66
<i>Transit Center</i>	Park and Ride	90	Park and Ride with Bus	50	parking space	22	6	17

8. FUTURE CONDITIONS

8.1. BACKGROUND GROWTH & INCREASE OF TRAFFIC ON MAIN CORRIDORS

Using trip generation to estimate the traffic demand accounts for a large amount of future traffic volumes. However, it is also necessary to develop a background growth rate for the network to account for future volumes outside of the studied developments.

The team coordinated with KMPO, as well as reviewed historical traffic counts from ITD to determine a background growth rate of 0.5% per year. This growth rate provides a suitable amount of growth without being overly conservative.

Table 8-1: Intersection Volumes

	2018	2028	Growth %	Growth/Year
Atlas/Seltice	2368	3225	36%	3.14%
Northwest/Seltice	4057	4956	22%	2.02%
EB I90/Northwest	3356	3979	19%	1.72%
WB I90/Northwest	3632	4190	15%	1.44%
Appleway/Northwest	3426	3859	13%	1.20%
Lakewood/Northwest	3166	3619	14%	1.35%

8.2. FUTURE INTERSECTION PERFORMANCE

Level of service and queue lengths were completed for 2028 traffic volume forecasts. The future model was run with the following assumptions:

- Optimized signal timing and cycle lengths
- 0.5% background growth rate
- Full buildout of Riverstone, Atlas Waterfront, and River's Edge
- Arrival types will remain the same as the existing conditions*
- Permissive lefts are used, where possible
- FR
- Lacrosse extended from Northwest Boulevard to Beebe

*Arrival types are assumed to remain the same to be conservative. However, they could potentially be improved to Type 4 because the signals will theoretically be coordinated.

Figure 8-1 shows the Level of Service Summary. Once again multiple intersections are beginning to reach their capacity.



Figure 8-1: Project Overview. See Table 8-1 for corresponding level of service values.

Table 8-2: Level of Service Summary

	Intersections	LOS	Average Intersection Delay, s/veh
1	Golf Course/Ramsey	D	37
2	Appleway/Ramsey	D	47
3	I90 WB/NW	D	36
4	I90 EB/NW	C	33
5	Seltice/NW	D	48
6	Lakewood/NW	C	35
7	Emma/NW*	F	3
8	Lacrosse/NW*	B	12
9	Riverstone/Lakewood	D	52
10	Riverstone/Seltice	B	11
11	Atlas/Seltice	D	26
12	Beebe/Riverstone*	E	11
13	Lakewood/Ironwood	F	7
14	Emma/US 95	B	18
15	Lacrosse/US 95*	F	4

*Two-way stop-controlled intersection. Reported as the worst functioning leg.

8.2.1. PERMISSIVE LEFTS

Permissive lefts do not currently exist at I-90 & Northwest or at Lakewood & Northwest. Incorporating this feature could help the intersection perform at a higher level and reduce driver frustration. ITD expressed that they might not allow this functionality during the peak

hour, but for most of the day, this could help. That said, the southbound double left at the eastbound I-90 off ramp may not be a candidate for the permissive left. Due to the large size of that intersection, it may be unsafe to allow two lanes of traffic attempt this movement. It is recommended that ITD and the City study this movement further before incorporating.

8.2.2. LACROSSE CONNECTION

In the near future, Lacrosse will be connected from Northwest Boulevard to Beebe Boulevard. The City has indicated that this connection will be made. This will likely be constructed as part of a future development north of Bellerive. This connection takes pressure off the Lakewood intersections at Northwest and Riverstone by providing another route in and out of Riverstone and Bellerive.

8.3. SIGNALIZED INTERSECTION LANE GROUP RESULTS

Table 8-2: Future Lane Group Results

		1		2		3		4	
		Golf Course/ Ramsey		Appleway/Ramsey		I90 WB/NW		I90 EB/NW	
		Signalized		Signalized		Signalized		Signalized	
LOS		D		D		D		C	
Avg. Intx. Delay, s/v		37		47		36		33	
		Ln Grp Dly, s/v	Queue, ft	Ln Grp Dly, s/v	95% Queue, ft	Ln Grp Dly, s/v	95% Queue, ft	Ln Grp Dly, s/v	95% Queue, ft
N	L	62	150	57	130	54	340		
	T	35	710	44	720	26	740	31	660
	R	36	710	23	490			32	670
S	L	69	110	110	140			67	74
	T	30	580	42	580	34	440	21	470
	R	30	570	42	570	36	550		
E	L	52	100	51	20			52	290
	T	45	160	59	80			52	290
	R			52	30			45	110
W	L	51	30	49	280	50	220		
	T	43	110	44	110	45	130		
	R			42	40				

		5		6		9		10	
		Seltice/NW		Lakewood/NW		Riverstone/ Lakewood		Riverstone/Seltice	
		Signalized		Signalized		Signalized		Signalized	
LOS		D		C		D		B	
Avg. Intx. Delay, s/v		48		35		52		11	
		Ln Grp Dly, s/v	Queue, ft	Ln Grp Dly, s/v	Queue, ft	Ln Grp Dly, s/v	Queue, ft	Ln Grp Dly, s/v	Queue, ft
N	L	56	280	42	200	21	10	26	200
	T	44	340	42	200	20	30		
	R	38	110	34	50			19	60
S	L	67	60	23	110	0	0		
	T	47	250	25	410	43	130		
	R	44	110	25	410				
E	L	69	440	18	20	44	440		
	T	37	410	43	550	9	10	8	140
	R	38	430	24	30			6	50
W	L	61	180	34	50	49	30	23	90
	T	52	510	45	210	15	0	8	140
	R	37	100			68	570		

8.4. SUMMARY OF FUTURE DEFICIENCIES

Interestingly, the deficiencies in 2028 are very similar to the existing deficiencies, assuming signal timing and cycle lengths continue to be optimized as traffic volumes grow.

The Northwest & Seltice intersection is nearing its capacity

9. MITIGATION RECOMMENDATIONS

9.1. CONGESTION MITIGATION OPTIONS NATIONWIDE

The team considered congestion mitigation measures that are currently being implemented nationwide.

9.1.1. SIGNAL OPTIMIZATION/MODIFICATIONS

This type of solution is low cost and the modeling of the future condition indicates that modifications to the signals will improve conditions. Setting up the adaptive system, improving detection, and considering permissive left turns are all signal modifications that could improve transportation network mobility.

9.1.2. ADD LANES

Adding lanes to Northwest Boulevard could certainly improve congestion initially. However, theories of induced demand indicate that merely adding lanes to corridors and intersections does not always have long-term benefits because traffic in the system adapts to use this available capacity almost immediately. Additionally, without significant right of way acquisition, additional through lanes on Northwest Boulevard are not feasible. Therefore, high cost and low likelihood of significant performance improvement make adding lanes a poor option.

9.1.3. ALTERNATIVE INTERSECTION SOLUTIONS

There are innovative intersection solutions (such as median u-turns and continuous flow intersections) being implemented nationwide and our team considered them. However, Northwest Boulevard does not have available right of way width to accommodate those improvements.

9.1.4. GRADE SEPARATION

The team considered grade separation (interchanges and/or overpasses) at the major intersections to improve capacity. These types of improvements would likely improve capacity but have a price tag of 10s to 100s of millions of dollars. To spend this magnitude of funds on large scale improvements when other alternatives exist did not seem reasonable.



Source: www.fhwa.dot.gov/

9.1.5. CONGESTION PRICING

An alternative is to charge drivers who drive on roads during congested time periods. This methodology changes driver behavior, which could divert traffic onto other portions of the transportation network where congestion pricing is not enforced. The team determined that congestion pricing in Coeur d'Alene could be an option in the future but is not a realistic option today.

9.1.6. IMPROVE MASS TRANSIT AND BICYCLE/PEDESTRIAN FACILITIES

Improving transit and pedestrian/bicycle infrastructure and connectivity reduces the reliance on the motor vehicle and can reduce roadway congestion. Coeur d'Alene values alternative transportation solutions and the team encourages them to keep moving forward with this type of infrastructure.

9.1.7. PROVIDE ALTERNATE ROUTES

Riverstone has only two points of access – Riverstone/Seltice and Northwest Boulevard/Lakewood intersection. The traffic to and from the area is now high enough that other points of access should be considered to alleviate the burden on a few intersections (particularly Northwest Boulevard/Lakewood) that carry much of the Riverstone traffic.

Additionally, the area needs alternatives for traffic not generated by Riverstone to navigate this congested corridor. Currently, traffic coming from the residential areas north of I-90 must access I-90 through the Northwest Boulevard/I-90 ramps. However, if an alternative existed (Huetter has been considered), then this traffic would have an alternative route.

Currently, the medical corridor on Ironwood must go through congested intersections to access I-90 or areas north of I-90. Providing an alternative route for this large traffic generator will improve overall network congestion.

9.2. RECOMMENDED MITIGATIONS

The team has several mitigations that should happen as soon as possible to improve congestion and offset impacts on the transportation network caused by the potential developments. Mitigation recommendation are summarized in the figure below.

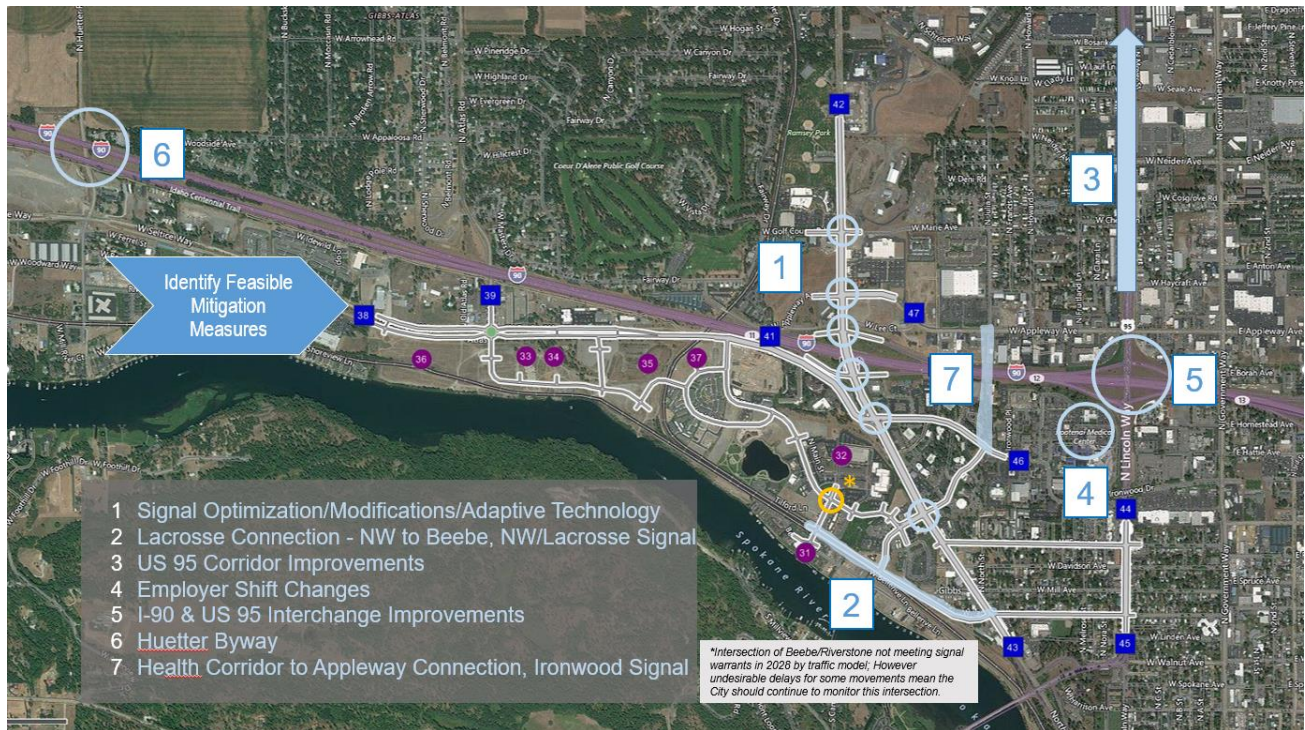


Figure 9-1: Mitigation recommendations

9.2.1. SIGNAL OPTIMIZATIONS/MODIFICATIONS/ADAPTIVE TECHNOLOGY

All signals between Golf Course Road and Lacrosse (which will be a new signal) should be considered for permissive left turns. Permissive left turns allow a left turning vehicle to find a gap in oncoming traffic and turn left while the opposing traffic has a green light. During the peak hour, permissive lefts may not have a significant improvement in congestion because few gaps in oncoming traffic may exist. However, all other times of the day, permissive lefts could help to reduce overall delay, signal cycle lengths, and queue lengths. ITD has concerns about allowing permissive lefts when dual left turns are present at the intersection. ITD has indicated they are willing to try permissive dual lefts during non-peak times of the day. During peak times of the day, when gaps in opposing traffic are few, permissive lefts will likely be restricted.

ITD is aware that the adaptive system that helps to control the Northwest Boulevard signals is not currently working as well as it could. Some of the advanced detection system was damaged during the I-90 construction and components are planned for replacement in spring 2019.

Additionally, the signal timing of the corridor needs an update. The adaptive system is allowed to make small incremental changes in the timing of the signals to adapt to changing conditions, but a base signal timing must be set. ITD is aware that it has been a few years since the signal timing was updated and is committed to updating this so that the adaptive system can work as efficiently as possible.

9.2.2. LACROSSE CONNECTION

Riverstone needs another point of entry and adding a connection at Lacrosse alleviates some of the demand on the Northwest Boulevard/Lakewood intersection. The intersection of

Northwest Boulevard/Lacrosse will meet signal warrants; therefore, a signal at this proposed intersection is recommended. Another benefit to adding a signal at Lacrosse is that Winton Elementary is located on Lacrosse immediately east of the intersection and the signal will improve access to the school.

9.2.3. US 95 CORRIDOR IMPROVEMENTS

Because of congestion on US 95, many drivers currently choose the Northwest Boulevard/Ramsey Road corridor as an alternate route to the highway. This means that “through” traffic that could and probably should be on US 95 is on Northwest Boulevard and Ramsey Road instead. ITD is currently working on improvements to US 95 through what is called the “FAST” grant. This project will improve US 95 mobility by improving intersection capacity among other improvements. Drivers will almost always choose the route that gives them their perceived path of least resistance. Once US 95 is improved and mobility along that corridor improves, drivers that currently choose the alternative route of Northwest Boulevard and Ramsey Road for access to areas north of Coeur d’Alene, will likely go back to choosing US 95. This shift in route choice will alleviate some of the demand on Ramsey Road and Northwest Boulevard.

9.2.4. EMPLOYER SHIFT CHANGES

There has been discussion to shift employee start and end times in the medical corridor. When everyone begins work at 8 and ends work at 5, the peak times of day are very congested. If employers are open to shifting start and end times, it will spread out the peak so that the peak is a less congested condition.

9.2.5. I-90/US 95 INTERCHANGE IMPROVEMENTS

ITD is currently studying the I-90/US 95 interchange to determine what type of interchange reconstruction is most feasible and will serve traffic best. Once this interchange is improved, a portion of drivers heading north of Coeur d’Alene will choose to exit at US 95 rather than currently exiting at Northwest Boulevard to avoid the US 95 congestion.

9.2.6. HUETTER BYWAY

ITD and KMPO have been working together on the Huetter Byway concept for more than a decade. This project is now moving forward and now congestion within the Coeur d’Alene area network is such that the Huetter Byway is no longer just a hope but is greatly needed. The Huetter Byway will be an access-controlled facility similar to a freeway. The Huetter Byway will have a significant positive impact on the study area corridor because it will allow traffic from north of I-90 that uses the I-90/Northwest Boulevard interchange for access to use the I-90/Huetter Road interchange instead. This new route will change driver route choice preference (similar to improving mobility on US 95) and will reduce the traffic on Ramsey Road and Northwest Boulevard.

9.2.7. HEALTH CORRIDOR TO APPLEWAY CONNECTION & IRONWOOD/LAKEWOOD SIGNAL

The health corridor has proposed an overpass over I-90 from Ironwood to Appleway. Where exactly this connection occurs is still in flux. However, this would allow direct access to the health corridor without this traffic passing through the congestion intersections on either side of I-90 at Northwest Boulevard, Ramsey, and I-90. The proposed overpass will give drivers an alternative route choice that will reduce the impact on the existing transportation system.

10.IMPLEMENTATION



Figure 10-1: Intersection of Northwest Boulevard, Ironwood Ave, and Seltice Way looking southeast

10.1. LOCAL EFFORT

The local effort in implementing the mitigation items is summarized as follows:

- The City of Coeur d’Alene and ITD need to work together on improving the adaptive signal system which helps to control the signals between Golf Course Road and Lakewood on Northwest Boulevard and Ramsey Road. They both need to make sure the detection components are working and updated and installed, replaced, or updated, as necessary.
- The City of Coeur d’Alene and ITD need to work together on signal upgrades and updates to allow permissive lefts at the I-90 off and off ramps and at the Northwest Boulevard/Lakewood intersection. These entities should also consider permissive lefts at Ramsey Road/Appleyway Avenue. We understand that ITD has concerns about allowing permissive lefts during the peak hour when gaps in opposing traffic may be infrequent; however, permissive lefts should be considered at times of the day that are deemed safe and appropriate. The signals at the I-90 ramps are already capable of allowing permissive lefts so the change at those signals will only require programming.

The signals at Ramsey Road/Appleway Avenue and Northwest Boulevard/Lakewood will require signal and controller upgrades to allow permissive lefts.

- The City and ITD work together to retime the signals between Golf Course Road and Lakewood on Ramsey and Northwest Boulevard. The time of day and day of week timing and offsets need to be updated to current traffic conditions. Seasonal changes may also be considered, though may be unnecessary. This timing should be considered for updates annually or more often as traffic volumes change.



Figure 10-2: Intersection of Lakewood & Northwest Boulevard

10.2. REGIONAL EFFORT

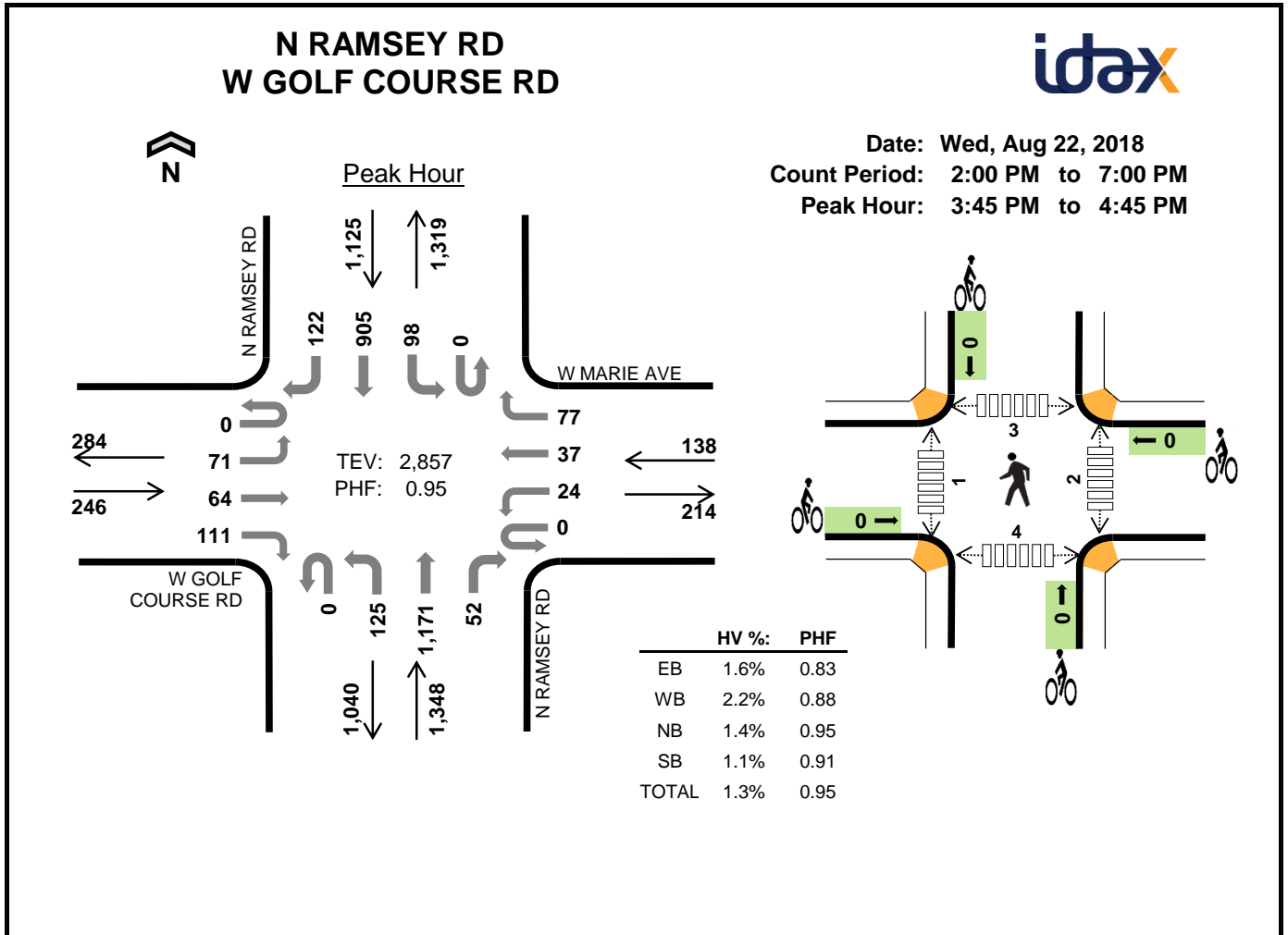
The regional effort in implementing the mitigation item is summarized below:

- The City should support KMPO and ITD's efforts to move forward with the Huetter Bypass as this new access-controlled facility will have a significant positive impact by reducing traffic on Ramsey Road that needs to access I-90. This will give residents north of I-90 an alternate route.
- ITD needs to finish the I-90/US 95 interchange study and then move forward with reconstructing that interchange to improve capacity and mobility. Additionally, ITD needs to move forward with improvements on US 95 that improve US 95 mobility. Adaptive signal systems on US 95 should be considered and should undergo the same

of day and day of week updates to ensure the signals are best serving the traveling public and reducing delay as much as possible. These upgrades to US 95 will allow drivers accessing areas north of Coeur d'Alene to use US 95 for access rather than avoiding US 95 and choosing the Northwest Boulevard and Ramsey Road corridor instead.

- KMPO and ITD need to support the medical corridor in their efforts to provide an I-90 overpass to connect the medical center to areas north of I-90.

Appendix A - Intersection Count Data



	HV %:	PHF
EB	1.6%	0.83
WB	2.2%	0.88
NB	1.4%	0.95
SB	1.1%	0.91
TOTAL	1.3%	0.95

Five-Hour Count Summaries

Interval Start	W GOLF COURSE RD				W MARIE AVE				N RAMSEY RD				N RAMSEY RD				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
3:45 PM	0	13	13	18	0	5	5	18	0	39	290	12	0	20	217	28	678	0
4:00 PM	0	25	16	33	0	8	14	17	0	23	282	9	0	27	208	34	696	0
4:15 PM	0	18	21	35	0	4	9	24	0	36	302	18	0	21	227	33	748	0
4:30 PM	0	15	14	25	0	7	9	18	0	27	297	13	0	30	253	27	735	2,857
Peak Hour	0	71	64	111	0	24	37	77	0	125	1,171	52	0	98	905	122	2,857	0

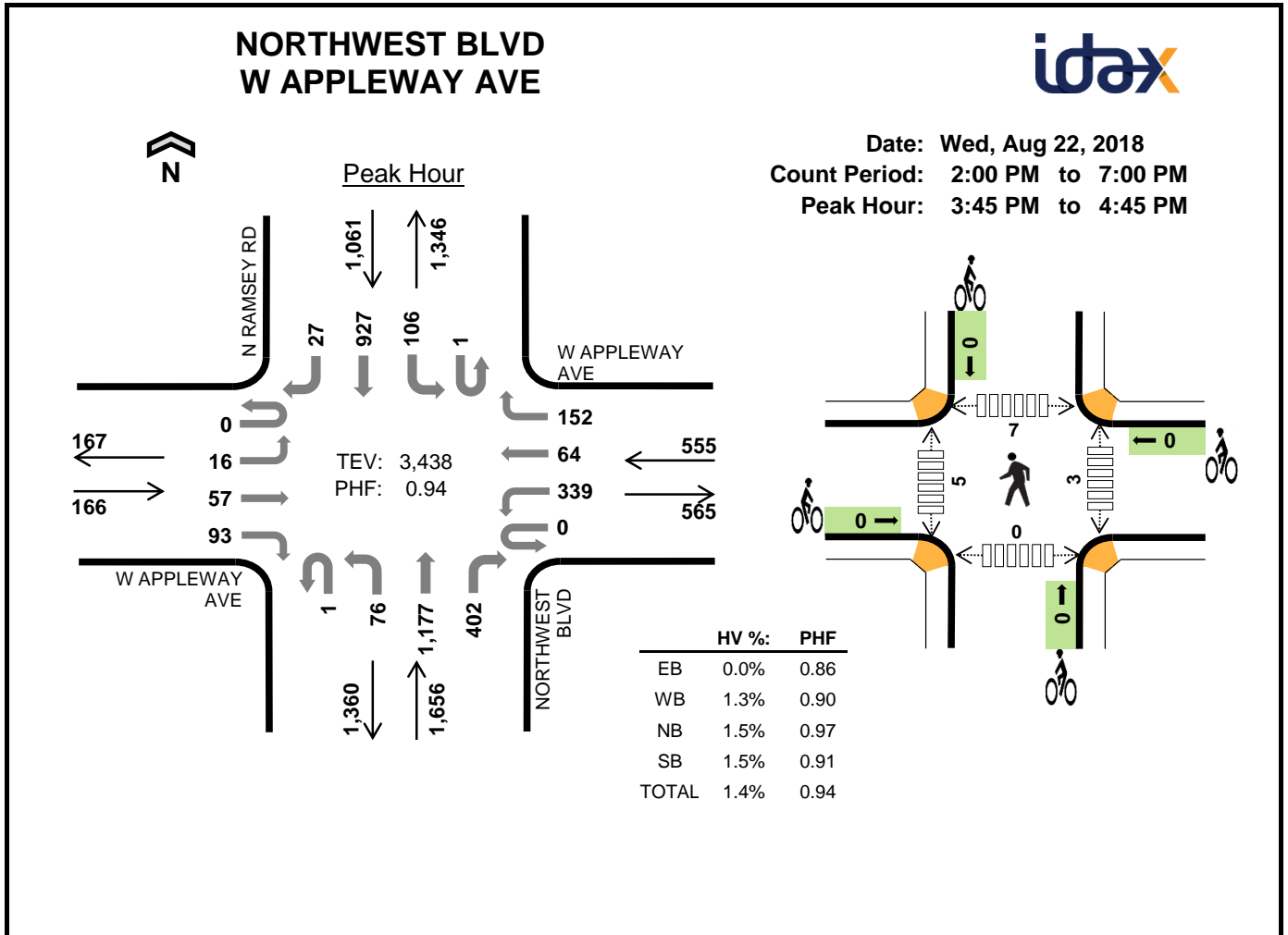
Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
3:45 PM	0	1	5	5	11	0	0	0	0	0	0	0	0	1	1
4:00 PM	0	1	4	1	6	0	0	0	0	0	1	1	2	0	4
4:15 PM	2	0	5	3	10	0	0	0	0	0	1	0	0	3	4
4:30 PM	2	1	5	3	11	0	0	0	0	0	0	0	1	0	1
Peak Hour	4	3	19	12	38	0	0	0	0	0	2	1	3	4	10

Five-Hour Count Summaries																		
Interval Start	W GOLF COURSE RD				W MARIE AVE				N RAMSEY RD				N RAMSEY RD				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	19	8	18	0	8	9	15	0	24	262	12	0	29	199	21	624	0
2:15 PM	0	11	10	27	0	12	15	16	1	26	278	15	0	24	201	16	652	0
2:30 PM	0	17	9	22	0	3	12	12	0	22	261	21	0	21	234	21	655	0
2:45 PM	0	22	19	29	0	6	9	15	0	34	240	6	0	23	192	17	612	2,543
3:00 PM	0	16	11	19	0	7	12	16	0	37	290	11	0	28	170	20	637	2,556
3:15 PM	0	28	22	20	0	9	12	25	1	38	273	10	0	19	209	24	690	2,594
3:30 PM	0	37	17	34	0	11	10	18	1	37	244	9	0	24	209	28	679	2,618
3:45 PM	0	13	13	18	0	5	5	18	0	39	290	12	0	20	217	28	678	2,684
4:00 PM	0	25	16	33	0	8	14	17	0	23	282	9	0	27	208	34	696	2,743
4:15 PM	0	18	21	35	0	4	9	24	0	36	302	18	0	21	227	33	748	2,801
4:30 PM	0	15	14	25	0	7	9	18	0	27	297	13	0	30	253	27	735	2,857
4:45 PM	0	19	22	21	0	9	13	14	0	30	262	14	0	29	195	17	645	2,824
5:00 PM	0	16	12	21	0	4	10	12	0	42	313	14	0	15	244	19	722	2,850
5:15 PM	0	20	11	37	0	4	14	20	0	33	295	17	0	25	203	22	701	2,803
5:30 PM	0	25	14	20	0	5	15	13	0	23	266	10	0	24	205	26	646	2,714
5:45 PM	0	16	18	18	0	4	7	23	1	26	257	12	0	29	172	29	612	2,681
6:00 PM	0	42	19	20	0	4	12	6	1	30	219	5	0	19	169	21	567	2,526
6:15 PM	0	20	12	19	0	7	5	16	0	44	200	12	0	26	129	23	513	2,338
6:30 PM	0	15	17	13	0	6	8	11	0	37	189	10	0	18	142	20	486	2,178
6:45 PM	0	14	11	21	0	5	10	12	2	28	181	8	0	17	107	20	436	2,002
Count Total	0	408	296	470	0	128	210	321	7	636	5,201	238	0	468	3,885	466	12,734	0
Peak Hour	0	71	64	111	0	24	37	77	0	125	1,171	52	0	98	905	122	2,857	0

Note: Five-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:00 PM	1	1	12	12	26	0	0	0	0	0	1	0	3	1	5
2:15 PM	0	0	6	4	10	0	0	0	0	0	0	0	1	0	1
2:30 PM	0	0	5	9	14	0	0	0	0	0	0	0	0	0	0
2:45 PM	3	0	4	6	13	0	0	0	0	0	0	2	3	1	6
3:00 PM	1	1	9	5	16	0	0	0	0	0	0	0	0	2	2
3:15 PM	1	1	6	4	12	0	0	0	0	0	0	0	7	1	8
3:30 PM	1	0	4	7	12	0	0	0	0	0	0	1	0	2	3
3:45 PM	0	1	5	5	11	0	0	0	0	0	0	0	0	1	1
4:00 PM	0	1	4	1	6	0	0	0	0	0	1	1	2	0	4
4:15 PM	2	0	5	3	10	0	0	0	0	0	1	0	0	3	4
4:30 PM	2	1	5	3	11	0	0	0	0	0	0	0	1	0	1
4:45 PM	1	1	7	0	9	0	0	0	0	0	0	0	2	1	3
5:00 PM	0	1	7	2	10	0	0	0	0	0	1	1	1	1	4
5:15 PM	0	1	2	5	8	0	0	0	0	0	0	0	4	2	6
5:30 PM	0	0	4	3	7	0	0	0	0	0	0	0	1	2	3
5:45 PM	0	0	2	2	4	0	0	0	0	0	4	0	4	0	8
6:00 PM	1	0	4	2	7	1	0	0	0	1	0	0	3	0	3
6:15 PM	0	0	3	3	6	0	1	0	0	1	0	4	0	3	7
6:30 PM	0	0	2	3	5	0	0	0	0	0	0	1	2	1	4
6:45 PM	1	0	2	0	3	2	0	0	0	2	1	0	1	4	6
Count Total	14	9	98	79	200	3	1	0	0	4	9	10	35	25	79
Peak Hour	4	3	19	12	38	0	0	0	0	0	2	1	3	4	10



Five-Hour Count Summaries

Interval Start	W APPLEWAY AVE Eastbound				W APPLEWAY AVE Westbound				NORTHWEST BLVD Northbound				N RAMSEY RD Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
3:45 PM	0	6	14	21	0	81	11	36	1	21	293	95	0	26	226	2	833	0
4:00 PM	0	5	14	20	0	80	17	37	0	22	274	109	0	21	221	9	829	0
4:15 PM	0	4	13	21	0	82	15	42	0	16	302	108	1	26	226	10	866	0
4:30 PM	0	1	16	31	0	96	21	37	0	17	308	90	0	33	254	6	910	3,438
Peak Hour	0	16	57	93	0	339	64	152	1	76	1,177	402	1	106	927	27	3,438	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
3:45 PM	0	2	5	5	12	0	0	0	0	0	0	0	1	0	1
4:00 PM	0	3	4	2	9	0	0	0	0	0	1	2	3	0	6
4:15 PM	0	0	6	5	11	0	0	0	0	0	1	1	2	0	4
4:30 PM	0	2	10	4	16	0	0	0	0	0	1	2	1	0	4
Peak Hour	0	7	25	16	48	0	0	0	0	0	3	5	7	0	15

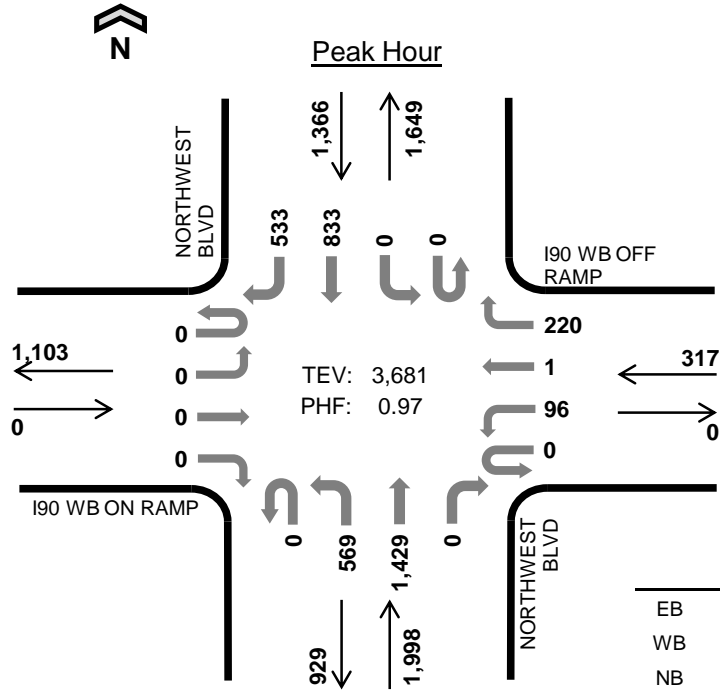
Five-Hour Count Summaries																		
Interval Start	W APPLEWAY AVE				W APPLEWAY AVE				NORTHWEST BLVD				N RAMSEY RD				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	4	10	21	0	100	14	42	0	17	253	108	0	33	189	2	793	0
2:15 PM	0	3	14	22	0	88	12	41	0	14	261	122	0	38	207	9	831	0
2:30 PM	0	2	11	17	0	95	20	34	0	9	268	118	0	31	211	8	824	0
2:45 PM	0	4	16	20	0	110	18	40	0	13	222	98	0	33	179	7	760	3,208
3:00 PM	0	3	12	18	0	77	16	44	1	17	291	132	0	30	174	4	819	3,234
3:15 PM	0	3	15	17	0	84	21	46	0	9	279	101	0	28	195	5	803	3,206
3:30 PM	0	2	13	16	0	88	19	29	2	15	246	71	0	37	205	8	751	3,133
3:45 PM	0	6	14	21	0	81	11	36	1	21	293	95	0	26	226	2	833	3,206
4:00 PM	0	5	14	20	0	80	17	37	0	22	274	109	0	21	221	9	829	3,216
4:15 PM	0	4	13	21	0	82	15	42	0	16	302	108	1	26	226	10	866	3,279
4:30 PM	0	1	16	31	0	96	21	37	0	17	308	90	0	33	254	6	910	3,438
4:45 PM	0	6	13	21	0	80	23	37	0	25	250	95	0	35	175	11	771	3,376
5:00 PM	0	5	8	26	0	81	17	39	4	20	314	99	0	34	228	12	887	3,434
5:15 PM	0	1	14	19	0	87	18	44	0	19	310	92	0	30	220	4	858	3,426
5:30 PM	0	3	17	19	0	81	23	36	2	22	249	73	1	33	180	5	744	3,260
5:45 PM	0	7	11	18	0	53	20	27	1	17	257	88	0	23	175	15	712	3,201
6:00 PM	0	5	17	20	0	63	20	31	0	11	207	76	0	16	175	4	645	2,959
6:15 PM	0	6	7	15	0	66	15	36	1	17	196	86	0	22	120	7	594	2,695
6:30 PM	0	4	9	15	0	59	15	26	0	8	200	89	0	19	149	3	596	2,547
6:45 PM	0	6	9	17	0	63	17	34	1	15	163	83	0	17	102	9	536	2,371
Count Total	0	80	253	394	0	1,614	352	738	13	324	5,143	1,933	2	565	3,811	140	15,362	0
Peak Hour	0	16	57	93	0	339	64	152	1	76	1,177	402	1	106	927	27	3,438	0

Note: Five-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:00 PM	0	1	16	13	30	0	0	0	0	0	3	1	1	0	5
2:15 PM	0	2	6	5	13	0	0	0	0	0	0	2	0	0	2
2:30 PM	0	2	2	12	16	0	0	0	0	0	1	0	0	0	1
2:45 PM	0	0	7	4	11	0	1	0	0	1	0	3	4	0	7
3:00 PM	2	3	8	9	22	0	0	0	0	0	1	0	1	0	2
3:15 PM	0	5	9	2	16	0	0	0	0	0	1	0	0	0	1
3:30 PM	1	2	3	7	13	0	0	0	0	0	3	0	0	0	3
3:45 PM	0	2	5	5	12	0	0	0	0	0	0	0	1	0	1
4:00 PM	0	3	4	2	9	0	0	0	0	0	1	2	3	0	6
4:15 PM	0	0	6	5	11	0	0	0	0	0	1	1	2	0	4
4:30 PM	0	2	10	4	16	0	0	0	0	0	1	2	1	0	4
4:45 PM	1	1	8	2	12	0	0	0	0	0	1	0	0	0	1
5:00 PM	0	0	9	3	12	0	0	0	0	0	2	3	3	0	8
5:15 PM	0	0	3	4	7	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	5	1	6	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	3	3	6	0	0	0	0	0	1	0	0	0	1
6:00 PM	1	0	4	2	7	0	0	0	0	0	4	0	0	0	4
6:15 PM	0	0	3	3	6	0	0	0	0	0	0	3	5	0	8
6:30 PM	0	1	0	2	3	0	0	0	0	0	0	0	1	0	1
6:45 PM	0	1	3	1	5	0	0	0	0	0	1	0	3	0	4
Count Total	5	25	114	89	233	0	1	0	0	1	21	17	25	0	63
Peak Hour	0	7	25	16	48	0	0	0	0	0	3	5	7	0	15

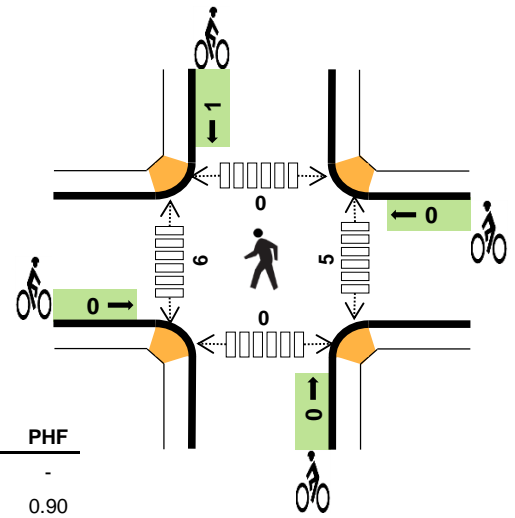


NORTHWEST BLVD I90 WB OFF RAMP



Date: Wed, Aug 22, 2018
Count Period: 2:00 PM to 7:00 PM
Peak Hour: 3:45 PM to 4:45 PM

	HV %:	PHF
EB	-	-
WB	2.8%	0.90
NB	1.3%	0.93
SB	1.1%	0.88
TOTAL	1.4%	0.97



Five-Hour Count Summaries

Interval Start	I90 WB ON RAMP				I90 WB OFF RAMP				NORTHWEST BLVD				NORTHWEST BLVD				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
3:45 PM	0	0	0	0	0	29	0	50	0	132	360	0	0	0	222	115	908	0
4:00 PM	0	0	0	0	0	28	0	60	0	147	340	0	0	0	167	144	886	0
4:15 PM	0	0	0	0	0	18	0	50	0	158	379	0	0	0	214	118	937	0
4:30 PM	0	0	0	0	0	21	1	60	0	132	350	0	0	0	230	156	950	3,681
Peak Hour	0	0	0	0	0	96	1	220	0	569	1,429	0	0	0	833	533	3,681	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
3:45 PM	0	5	4	5	14	0	0	0	0	0	0	1	0	0	1
4:00 PM	0	3	4	1	8	0	0	0	0	0	2	2	0	0	4
4:15 PM	0	1	6	5	12	0	0	0	1	1	1	1	0	0	2
4:30 PM	0	0	12	4	16	0	0	0	0	0	2	2	0	0	4
Peak Hour	0	9	26	15	50	0	0	0	1	1	5	6	0	0	11

Five-Hour Count Summaries

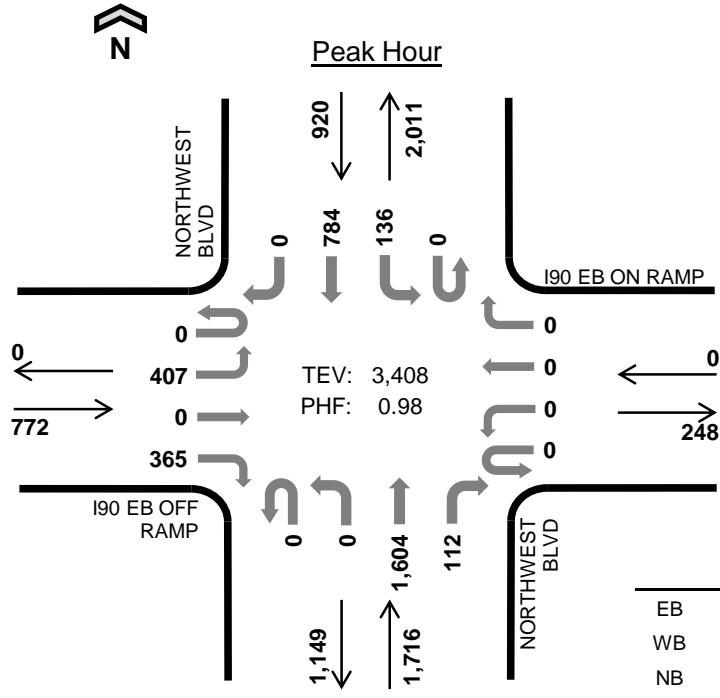
Interval Start	I90 WB ON RAMP				I90 WB OFF RAMP				NORTHWEST BLVD				NORTHWEST BLVD				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	0	0	0	0	25	0	60	0	111	332	0	0	0	200	110	838	0
2:15 PM	0	0	0	0	0	30	1	52	0	114	352	0	0	0	236	99	884	0
2:30 PM	0	0	0	0	0	23	1	32	0	130	350	0	0	0	201	103	840	0
2:45 PM	0	0	0	0	0	25	0	39	0	132	312	0	1	0	207	111	827	3,389
3:00 PM	0	0	0	0	0	29	0	49	0	133	372	0	0	0	161	111	855	3,406
3:15 PM	0	0	0	0	0	31	1	48	0	115	344	0	0	0	200	102	841	3,363
3:30 PM	0	0	0	0	0	33	0	52	0	131	281	0	0	0	180	131	808	3,331
3:45 PM	0	0	0	0	0	29	0	50	0	132	360	0	0	0	222	115	908	3,412
4:00 PM	0	0	0	0	0	28	0	60	0	147	340	0	0	0	167	144	886	3,443
4:15 PM	0	0	0	0	0	18	0	50	0	158	379	0	0	0	214	118	937	3,539
4:30 PM	0	0	0	0	0	21	1	60	0	132	350	0	0	0	230	156	950	3,681
4:45 PM	0	0	0	0	0	26	0	75	0	158	293	0	0	0	160	104	816	3,589
5:00 PM	0	0	0	0	0	28	0	70	0	174	380	0	0	0	183	122	957	3,660
5:15 PM	0	0	0	0	0	22	0	59	0	132	351	0	0	0	202	143	909	3,632
5:30 PM	0	0	0	0	0	28	0	59	0	125	286	0	0	0	163	104	765	3,447
5:45 PM	0	0	0	0	0	24	0	53	0	90	309	0	0	0	169	88	733	3,364
6:00 PM	0	0	0	0	0	23	0	43	0	91	252	0	0	0	140	110	659	3,066
6:15 PM	0	0	0	0	0	18	0	47	0	79	263	0	0	0	125	91	623	2,780
6:30 PM	0	0	0	0	0	12	0	48	0	82	240	0	0	0	146	77	605	2,620
6:45 PM	0	0	0	0	0	13	0	34	0	73	241	0	0	0	119	57	537	2,424
Count Total	0	0	0	0	0	486	4	1,040	0	2,439	6,387	0	1	0	3,625	2,196	16,178	0
Peak Hour	0	0	0	0	0	96	1	220	0	569	1,429	0	0	0	833	533	3,681	0

Note: Five-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:00 PM	0	2	15	12	29	0	0	0	0	0	1	1	0	0	2
2:15 PM	0	3	7	6	16	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	3	5	8	0	0	0	0	0	1	2	0	0	3
2:45 PM	0	1	13	7	21	0	0	0	0	0	0	3	0	0	3
3:00 PM	0	1	12	10	23	0	0	0	0	0	0	1	0	0	1
3:15 PM	0	2	7	5	14	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	2	5	8	15	0	0	0	0	0	2	0	0	0	2
3:45 PM	0	5	4	5	14	0	0	0	0	0	0	1	0	0	1
4:00 PM	0	3	4	1	8	0	0	0	0	0	2	2	0	0	4
4:15 PM	0	1	6	5	12	0	0	0	1	1	1	1	0	0	2
4:30 PM	0	0	12	4	16	0	0	0	0	0	2	2	0	0	4
4:45 PM	0	5	6	2	13	0	0	0	0	0	2	0	0	0	2
5:00 PM	0	5	5	1	11	0	0	0	0	0	1	3	0	0	4
5:15 PM	0	0	4	4	8	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	3	2	0	5	0	0	0	0	0	1	0	0	0	1
5:45 PM	0	1	3	2	6	0	0	0	0	0	1	0	0	0	1
6:00 PM	0	2	4	2	8	0	0	0	0	0	0	0	0	0	0
6:15 PM	0	1	2	2	5	0	0	0	0	0	0	0	0	0	0
6:30 PM	0	0	1	2	3	0	0	0	0	0	0	0	0	0	0
6:45 PM	0	0	4	1	5	0	0	0	0	0	0	0	0	0	0
Count Total	0	37	119	84	240	0	0	0	1	1	14	16	0	0	30
Peak Hour	0	9	26	15	50	0	0	0	1	1	5	6	0	0	11

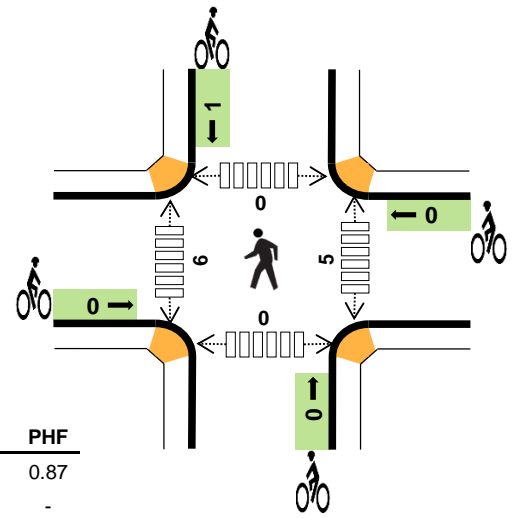


NORTHWEST BLVD I90 EB OFF RAMP



Date: Wed, Aug 22, 2018
Count Period: 2:00 PM to 7:00 PM
Peak Hour: 3:45 PM to 4:45 PM

	HV %:	PHF
EB	0.6%	0.87
WB	-	-
NB	1.2%	0.96
SB	1.4%	0.92
TOTAL	1.1%	0.98



Five-Hour Count Summaries

Interval Start	I90 EB OFF RAMP				I90 EB ON RAMP				NORTHWEST BLVD				NORTHWEST BLVD				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
3:45 PM	0	83	0	98	0	0	0	0	0	0	400	32	0	33	218	0	864	0
4:00 PM	0	115	0	108	0	0	0	0	0	0	387	21	0	35	152	0	818	0
4:15 PM	0	106	0	86	0	0	0	0	0	0	406	24	0	40	198	0	860	0
4:30 PM	0	103	0	73	0	0	0	0	0	0	411	35	0	28	216	0	866	3,408
Peak Hour	0	407	0	365	0	0	0	0	0	0	1,604	112	0	136	784	0	3,408	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
3:45 PM	0	0	4	5	9	0	0	0	0	0	0	1	0	0	1
4:00 PM	0	0	5	2	7	0	0	0	0	0	1	2	0	0	3
4:15 PM	2	0	4	3	9	0	0	0	1	1	3	2	0	0	5
4:30 PM	3	0	7	3	13	0	0	0	0	0	1	1	0	0	2
Peak Hour	5	0	20	13	38	0	0	0	1	1	5	6	0	0	11

Five-Hour Count Summaries

Interval Start	I90 EB OFF RAMP				I90 EB ON RAMP				NORTHWEST BLVD				NORTHWEST BLVD				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	108	1	97	0	0	0	0	0	0	321	14	0	34	182	0	757	0
2:15 PM	0	92	0	115	0	0	0	0	0	0	378	25	1	32	235	0	878	0
2:30 PM	0	81	2	104	0	0	0	0	0	0	390	26	0	32	193	0	828	0
2:45 PM	0	79	3	119	0	0	0	0	0	0	350	28	0	40	201	0	820	3,283
3:00 PM	0	126	1	97	0	0	0	0	0	0	380	23	0	26	156	0	809	3,335
3:15 PM	0	103	0	100	0	0	0	0	0	0	352	20	0	31	194	0	800	3,257
3:30 PM	0	83	2	114	0	0	0	0	0	0	333	35	0	34	187	0	788	3,217
3:45 PM	0	83	0	98	0	0	0	0	0	0	400	32	0	33	218	0	864	3,261
4:00 PM	0	115	0	108	0	0	0	0	0	0	387	21	0	35	152	0	818	3,270
4:15 PM	0	106	0	86	0	0	0	0	0	0	406	24	0	40	198	0	860	3,330
4:30 PM	0	103	0	73	0	0	0	0	0	0	411	35	0	28	216	0	866	3,408
4:45 PM	0	123	2	90	0	0	0	0	0	0	323	25	0	44	145	0	752	3,296
5:00 PM	0	86	0	95	0	0	0	0	0	0	443	29	0	45	177	0	875	3,353
5:15 PM	0	98	0	94	0	0	0	0	0	0	423	29	0	40	179	0	863	3,356
5:30 PM	0	106	1	98	0	0	0	0	0	0	283	21	0	23	168	0	700	3,190
5:45 PM	0	83	0	100	0	0	0	0	0	0	308	29	0	23	176	0	719	3,157
6:00 PM	0	104	0	102	0	0	0	0	0	0	243	17	0	22	131	0	619	2,901
6:15 PM	0	107	1	80	0	0	0	0	0	0	220	21	0	23	126	0	578	2,616
6:30 PM	0	101	0	81	0	0	0	0	0	0	218	9	0	18	140	0	567	2,483
6:45 PM	0	101	1	78	0	0	0	0	0	0	215	20	0	23	110	0	548	2,312
Count Total	0	1,988	14	1,929	0	0	0	0	0	0	6,784	483	1	626	3,484	0	15,309	0
Peak Hour	0	407	0	365	0	0	0	0	0	0	1,604	112	0	136	784	0	3,408	0

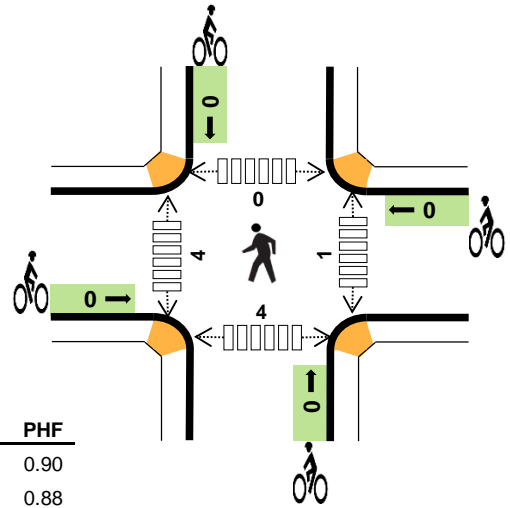
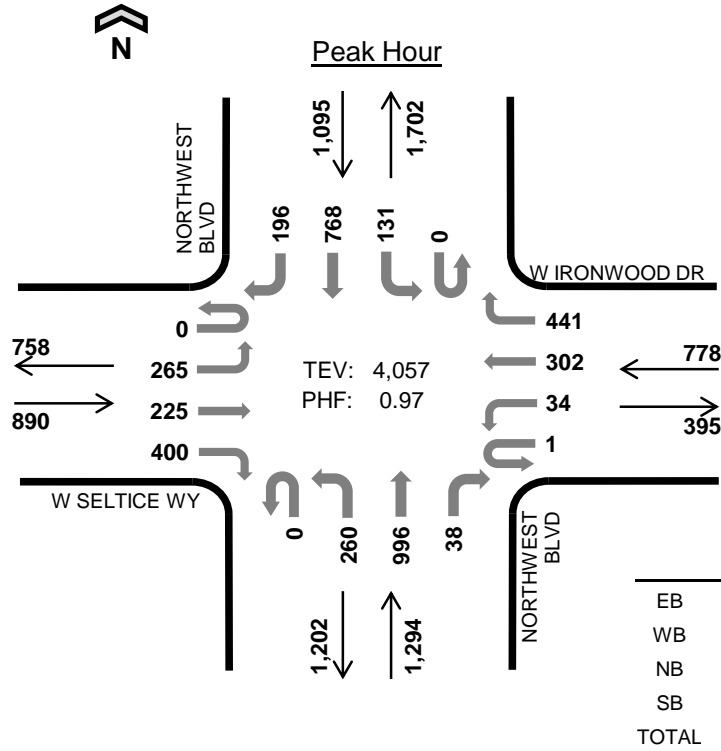
Note: Five-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:00 PM	5	0	11	8	24	0	0	0	0	0	1	0	0	0	1
2:15 PM	0	0	5	4	9	0	0	0	0	0	0	0	0	0	0
2:30 PM	5	0	4	3	12	0	0	0	0	0	1	2	0	0	3
2:45 PM	2	0	11	5	18	0	0	0	0	0	0	2	0	0	2
3:00 PM	6	0	6	8	20	0	0	0	0	0	0	1	0	0	1
3:15 PM	3	0	6	4	13	0	0	0	0	0	1	0	0	0	1
3:30 PM	3	0	4	5	12	0	0	0	0	0	2	0	0	0	2
3:45 PM	0	0	4	5	9	0	0	0	0	0	0	1	0	0	1
4:00 PM	0	0	5	2	7	0	0	0	0	0	1	2	0	0	3
4:15 PM	2	0	4	3	9	0	0	0	1	1	3	2	0	0	5
4:30 PM	3	0	7	3	13	0	0	0	0	0	1	1	0	0	2
4:45 PM	2	0	3	1	6	0	0	0	0	0	2	0	0	0	2
5:00 PM	0	0	3	0	3	0	0	0	0	0	1	1	0	0	2
5:15 PM	3	0	2	1	6	0	0	0	0	0	1	0	0	0	1
5:30 PM	1	0	1	0	2	0	0	0	0	0	1	0	0	0	1
5:45 PM	1	0	1	1	3	0	0	0	0	0	1	0	0	0	1
6:00 PM	3	0	1	1	5	0	0	0	0	0	0	0	0	0	0
6:15 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
6:30 PM	2	0	1	0	3	0	0	0	0	0	0	0	0	0	0
6:45 PM	1	0	4	0	5	0	0	0	0	0	0	0	0	0	0
Count Total	43	0	83	54	180	0	0	0	1	1	16	12	0	0	28
Peak Hour	5	0	20	13	38	0	0	0	1	1	5	6	0	0	11

NORTHWEST BLVD W IRONWOOD DR



Date: Wed, Aug 22, 2018
 Count Period: 2:00 PM to 7:00 PM
 Peak Hour: 4:30 PM to 5:30 PM



	HV %:	PHF
EB	0.7%	0.90
WB	0.5%	0.88
NB	0.9%	0.89
SB	0.5%	0.89
TOTAL	0.7%	0.97

Five-Hour Count Summaries

Interval Start	W SELTICE WY				W IRONWOOD DR				NORTHWEST BLVD				NORTHWEST BLVD				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:30 PM	0	68	53	102	0	7	91	124	0	49	235	8	0	34	216	57	1,044	0
4:45 PM	0	67	70	110	0	9	67	107	0	68	197	11	0	36	170	37	949	0
5:00 PM	0	76	52	88	0	12	61	116	0	71	285	7	0	31	172	55	1,026	0
5:15 PM	0	54	50	100	1	6	83	94	0	72	279	12	0	30	210	47	1,038	4,057
Peak Hour	0	265	225	400	1	34	302	441	0	260	996	38	0	131	768	196	4,057	0

Note: For all three-hour count summary, see next page.

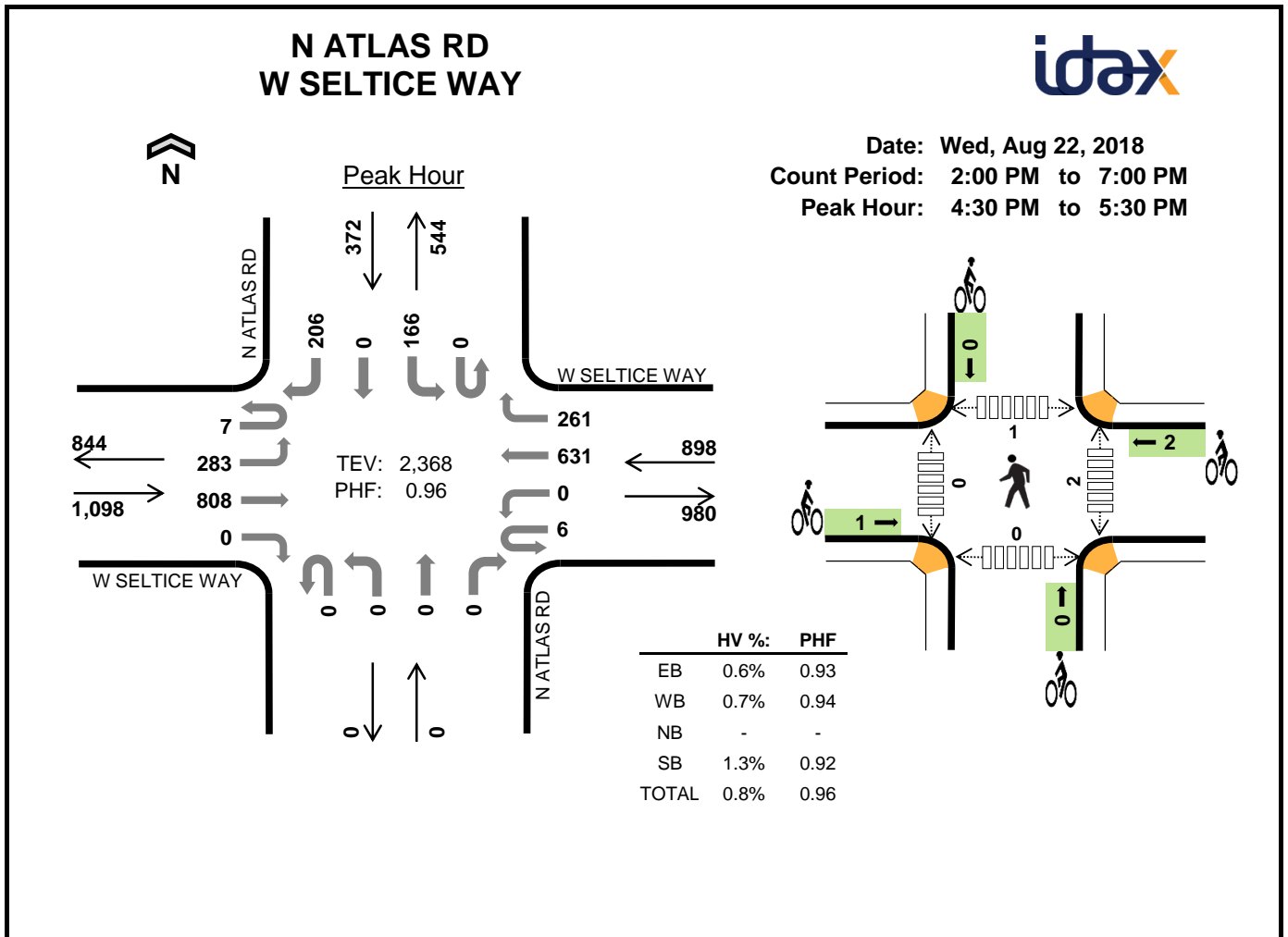
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:30 PM	1	2	5	2	10	0	0	0	0	0	0	1	0	1	2
4:45 PM	1	1	3	1	6	0	0	0	0	0	1	1	0	2	4
5:00 PM	4	1	0	0	5	0	0	0	0	0	0	1	0	1	2
5:15 PM	0	0	3	3	6	0	0	0	0	0	0	1	0	0	1
Peak Hour	6	4	11	6	27	0	0	0	0	0	1	4	0	4	9

Five-Hour Count Summaries

Interval Start	W SELTICE WY				W IRONWOOD DR				NORTHWEST BLVD				NORTHWEST BLVD				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	62	61	64	0	17	47	80	0	46	223	14	0	65	168	38	885	0
2:15 PM	0	65	51	63	0	19	39	79	0	54	268	20	0	79	187	67	991	0
2:30 PM	0	59	48	60	0	9	49	96	0	61	248	19	0	73	200	41	963	0
2:45 PM	0	79	75	63	0	10	48	94	0	58	219	13	0	65	193	53	970	3,809
3:00 PM	0	59	52	59	0	8	43	94	0	52	259	14	0	56	157	47	900	3,824
3:15 PM	0	50	47	79	0	14	38	94	0	46	228	12	0	48	189	53	898	3,731
3:30 PM	0	69	65	85	0	12	49	125	0	46	200	8	0	55	168	56	938	3,706
3:45 PM	0	55	39	71	0	17	53	94	0	56	260	16	0	64	209	65	999	3,735
4:00 PM	0	64	60	81	0	9	49	95	0	58	278	12	0	36	195	32	969	3,804
4:15 PM	0	74	51	83	0	9	65	119	0	65	225	7	0	50	163	61	972	3,878
4:30 PM	0	68	53	102	0	7	91	124	0	49	235	8	0	34	216	57	1,044	3,984
4:45 PM	0	67	70	110	0	9	67	107	0	68	197	11	0	36	170	37	949	3,934
5:00 PM	0	76	52	88	0	12	61	116	0	71	285	7	0	31	172	55	1,026	3,991
5:15 PM	0	54	50	100	1	6	83	94	0	72	279	12	0	30	210	47	1,038	4,057
5:30 PM	0	69	42	93	0	9	72	65	0	42	174	6	0	30	170	47	819	3,832
5:45 PM	0	74	51	103	0	7	34	62	0	40	181	5	0	35	214	47	853	3,736
6:00 PM	1	58	38	73	0	6	35	60	0	39	150	0	0	40	160	36	696	3,406
6:15 PM	0	59	38	52	0	6	28	33	0	44	151	2	0	21	132	46	612	2,980
6:30 PM	0	42	26	55	0	10	28	51	0	32	130	0	0	44	150	30	598	2,759
6:45 PM	0	48	27	47	0	6	34	42	0	30	145	1	1	27	118	38	564	2,470
Count Total	1	1,251	996	1,531	1	202	1,013	1,724	0	1,029	4,335	187	1	919	3,541	953	17,684	0
Peak Hour	0	265	225	400	1	34	302	441	0	260	996	38	0	131	768	196	4,057	0

Note: Five-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:00 PM	8	2	8	6	24	0	0	0	0	0	0	0	0	0	0
2:15 PM	1	1	3	3	8	0	0	0	0	0	1	2	0	2	5
2:30 PM	1	1	3	6	11	0	0	0	0	0	3	2	0	2	7
2:45 PM	3	3	10	2	18	0	0	0	0	0	0	0	0	1	1
3:00 PM	3	3	6	7	19	2	0	0	2	4	0	0	0	1	1
3:15 PM	4	1	3	2	10	0	0	0	0	0	2	1	0	1	4
3:30 PM	3	2	5	7	17	1	0	0	0	1	0	0	0	1	1
3:45 PM	4	1	6	5	16	0	0	0	0	0	2	0	0	0	2
4:00 PM	7	2	2	2	13	0	0	0	0	0	1	2	1	0	4
4:15 PM	4	1	1	1	7	0	0	0	0	0	2	3	0	0	5
4:30 PM	1	2	5	2	10	0	0	0	0	0	0	1	0	1	2
4:45 PM	1	1	3	1	6	0	0	0	0	0	1	1	0	2	4
5:00 PM	4	1	0	0	5	0	0	0	0	0	0	1	0	1	2
5:15 PM	0	0	3	3	6	0	0	0	0	0	0	1	0	0	1
5:30 PM	1	0	1	0	2	0	0	0	0	0	1	0	0	1	2
5:45 PM	1	1	1	1	4	0	0	0	0	0	1	0	0	0	1
6:00 PM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM	0	0	1	2	3	0	0	0	0	0	0	0	0	0	0
6:45 PM	1	2	1	0	4	0	0	0	0	0	0	0	0	0	0
Count Total	49	24	62	50	185	3	0	0	2	5	14	14	1	13	42
Peak Hour	6	4	11	6	27	0	0	0	0	0	1	4	0	4	9



Five-Hour Count Summaries

Interval Start	W SELTICE WAY Eastbound				W SELTICE WAY Westbound				N ATLAS RD Northbound				N ATLAS RD Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:30 PM	5	78	206	0	4	0	158	64	0	0	0	0	0	42	0	59	616	0
4:45 PM	0	65	229	0	1	0	132	66	0	0	0	0	0	47	0	40	580	0
5:00 PM	0	76	192	0	1	0	178	61	0	0	0	0	0	39	0	56	603	0
5:15 PM	2	64	181	0	0	0	163	70	0	0	0	0	0	38	0	51	569	2,368
Peak Hour	7	283	808	0	6	0	631	261	0	0	0	0	0	166	0	206	2,368	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:30 PM	0	2	0	2	4	1	0	0	0	1	1	0	0	0	1
4:45 PM	3	1	0	1	5	0	0	0	0	0	0	0	0	0	0
5:00 PM	3	1	0	2	6	0	2	0	0	2	1	0	1	0	2
5:15 PM	1	2	0	0	3	0	0	0	0	0	0	0	0	0	0
Peak Hour	7	6	0	5	18	1	2	0	0	3	2	0	1	0	3

Five-Hour Count Summaries																		
Interval Start	W SELTICE WAY				W SELTICE WAY				N ATLAS RD				N ATLAS RD				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	1	36	156	0	9	0	117	31	0	0	0	0	0	32	0	30	412	0
2:15 PM	1	23	158	0	4	0	130	31	0	0	0	0	0	29	0	47	423	0
2:30 PM	2	46	161	0	3	0	108	42	0	0	0	0	0	46	0	29	437	0
2:45 PM	2	42	162	0	2	0	128	50	0	0	0	0	0	40	0	37	463	1,735
3:00 PM	3	39	154	0	0	0	132	55	0	0	0	0	0	24	0	40	447	1,770
3:15 PM	3	45	138	0	3	0	133	30	0	0	0	0	0	42	0	46	440	1,787
3:30 PM	2	47	185	0	1	0	118	45	0	0	0	0	0	41	0	52	491	1,841
3:45 PM	4	50	186	0	2	0	129	42	0	0	0	0	0	33	0	42	488	1,866
4:00 PM	4	74	170	0	1	0	117	71	0	0	0	0	0	40	0	40	517	1,936
4:15 PM	0	50	184	0	3	0	147	59	0	0	0	0	0	38	0	49	530	2,026
4:30 PM	5	78	206	0	4	0	158	64	0	0	0	0	0	42	0	59	616	2,151
4:45 PM	0	65	229	0	1	0	132	66	0	0	0	0	0	47	0	40	580	2,243
5:00 PM	0	76	192	0	1	0	178	61	0	0	0	0	0	39	0	56	603	2,329
5:15 PM	2	64	181	0	0	0	163	70	0	0	0	0	0	38	0	51	569	2,368
5:30 PM	3	65	163	0	1	0	130	62	0	0	0	0	0	39	0	46	509	2,261
5:45 PM	4	55	185	0	1	0	93	40	0	0	0	0	0	35	0	41	454	2,135
6:00 PM	3	53	132	0	2	0	106	36	0	0	0	0	0	27	0	44	403	1,935
6:15 PM	2	38	131	0	1	0	87	29	0	0	0	0	0	22	0	25	335	1,701
6:30 PM	0	31	90	0	0	0	65	16	0	0	0	0	0	35	0	27	264	1,456
6:45 PM	3	23	100	0	0	0	68	25	0	0	0	0	0	24	0	24	267	1,269
Count Total	44	1,000	3,263	0	39	0	2,439	925	0	0	0	0	0	713	0	825	9,248	0
Peak Hour	7	283	808	0	6	0	631	261	0	0	0	0	0	166	0	206	2,368	0

Note: Five-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

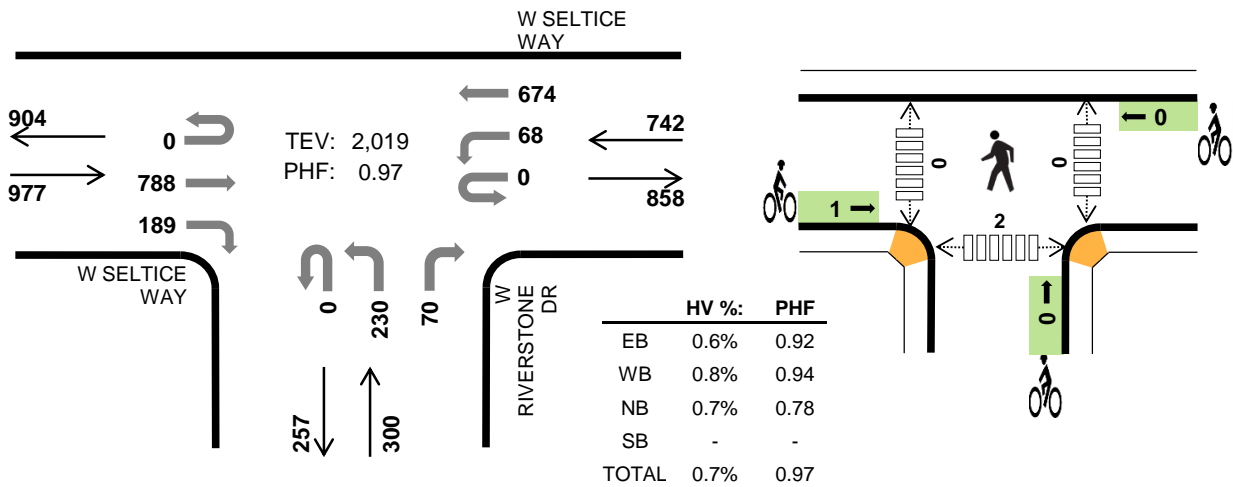
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:00 PM	4	6	0	1	11	0	0	0	0	0	0	0	0	0	0
2:15 PM	1	3	0	2	6	0	0	0	0	0	0	0	0	0	0
2:30 PM	3	2	0	3	8	0	0	0	0	0	0	1	0	1	
2:45 PM	5	3	0	2	10	1	0	0	0	1	2	0	0	2	
3:00 PM	2	4	0	2	8	0	0	0	0	0	0	0	0	0	
3:15 PM	5	2	0	3	10	0	0	0	0	0	0	0	0	0	
3:30 PM	3	3	0	0	6	0	0	0	0	0	0	1	0	1	
3:45 PM	4	4	0	2	10	0	0	0	0	0	0	0	0	0	
4:00 PM	7	1	0	1	9	0	0	0	0	0	0	0	1	1	
4:15 PM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	
4:30 PM	0	2	0	2	4	1	0	0	0	1	1	0	0	1	
4:45 PM	3	1	0	1	5	0	0	0	0	0	0	0	0	0	
5:00 PM	3	1	0	2	6	0	2	0	0	2	1	0	1	2	
5:15 PM	1	2	0	0	3	0	0	0	0	0	0	0	0	0	
5:30 PM	1	0	0	1	2	0	0	0	0	0	0	1	0	1	
5:45 PM	2	0	0	0	2	0	0	0	0	0	0	0	1	1	
6:00 PM	0	1	0	2	3	0	0	0	0	0	0	0	0	0	
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	1	2	
6:45 PM	1	2	0	1	4	0	0	0	0	0	0	0	0	0	
Count Total	47	37	0	25	109	2	2	0	0	4	4	4	4	12	
Peak Hour	7	6	0	5	18	1	2	0	0	3	2	0	1	3	

W RIVERSTONE DR W SELTICE WAY



Peak Hour

Date: Wed, Aug 22, 2018
Count Period: 2:00 PM to 7:00 PM
Peak Hour: 4:30 PM to 5:30 PM



Five-Hour Count Summaries

Interval Start	W SELTICE WAY				W SELTICE WAY				W RIVERSTONE DR				0				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:30 PM	0	0	214	51	0	16	179	0	0	44	0	9	0	0	0	0	513	0
4:45 PM	0	0	205	51	0	14	145	0	0	52	0	12	0	0	0	0	479	0
5:00 PM	0	0	185	49	0	21	170	0	0	73	0	23	0	0	0	0	521	0
5:15 PM	0	0	184	38	0	17	180	0	0	61	0	26	0	0	0	0	506	2,019
Peak Hour	0	0	788	189	0	68	674	0	0	230	0	70	0	0	0	0	2,019	0

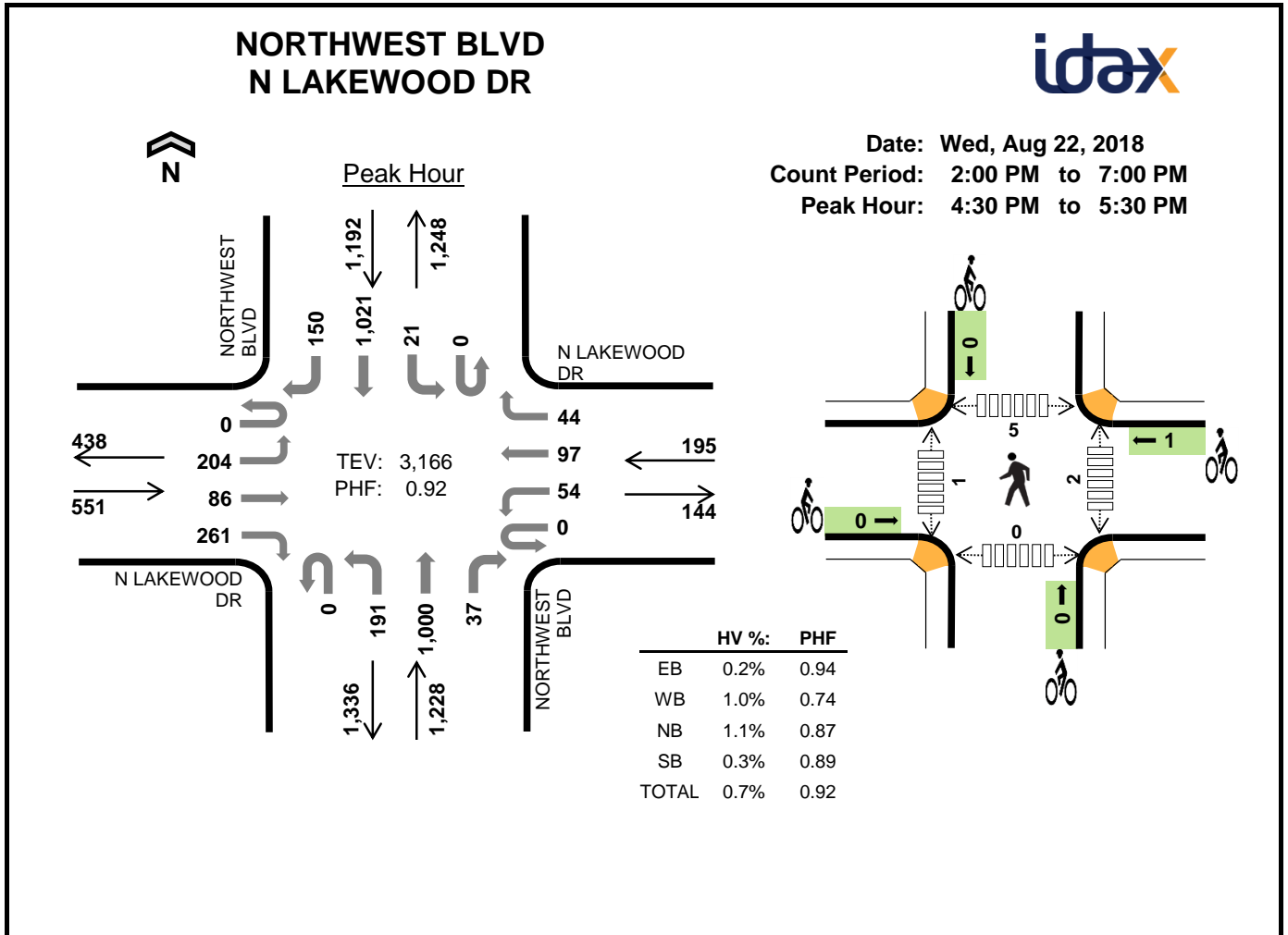
Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:30 PM	0	3	0	0	3	1	0	0	0	1	0	0	0	0	0
4:45 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
5:00 PM	4	1	1	0	6	0	0	0	0	0	0	0	0	2	2
5:15 PM	1	2	1	0	4	0	0	0	0	0	0	0	0	0	0
Peak Hour	6	6	2	0	14	1	0	0	0	1	0	0	0	2	2

Five-Hour Count Summaries																		
Interval Start	W SELTICE WAY				W SELTICE WAY				W RIVERSTONE DR				0				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	0	160	45	0	18	113	0	0	29	0	24	0	0	0	0	389	0
2:15 PM	0	0	139	36	0	24	125	0	0	39	0	18	0	0	0	0	381	0
2:30 PM	0	0	173	41	0	22	125	0	0	37	0	16	0	0	0	0	414	0
2:45 PM	0	0	163	34	0	16	124	0	0	46	0	13	0	0	0	0	396	1,580
3:00 PM	0	0	145	39	0	12	127	0	0	54	0	17	0	0	0	0	394	1,585
3:15 PM	0	0	146	36	0	18	113	0	0	46	0	27	0	0	0	0	386	1,590
3:30 PM	0	0	194	39	0	18	118	0	0	50	0	9	0	0	0	0	428	1,604
3:45 PM	0	0	170	44	0	29	122	0	0	45	0	17	0	0	0	0	427	1,635
4:00 PM	0	0	166	49	0	14	126	0	0	64	0	21	0	0	0	0	440	1,681
4:15 PM	0	0	167	47	0	20	143	0	0	55	0	17	0	0	0	0	449	1,744
4:30 PM	0	0	214	51	0	16	179	0	0	44	0	9	0	0	0	0	513	1,829
4:45 PM	0	0	205	51	0	14	145	0	0	52	0	12	0	0	0	0	479	1,881
5:00 PM	0	0	185	49	0	21	170	0	0	73	0	23	0	0	0	0	521	1,962
5:15 PM	0	0	184	38	0	17	180	0	0	61	0	26	0	0	0	0	506	2,019
5:30 PM	0	0	172	42	0	17	126	0	0	51	0	28	0	0	0	0	436	1,942
5:45 PM	0	0	190	41	0	22	93	0	0	32	0	18	0	0	0	0	396	1,859
6:00 PM	0	0	129	28	0	8	96	0	0	46	0	17	0	0	0	0	324	1,662
6:15 PM	0	0	130	35	0	19	80	0	0	28	0	12	0	0	0	0	304	1,460
6:30 PM	0	0	94	22	0	19	62	0	0	22	0	17	0	0	0	0	236	1,260
6:45 PM	0	0	86	27	0	22	67	0	0	22	0	12	0	0	0	0	236	1,100
Count Total	0	0	3,212	794	0	366	2,434	0	0	896	0	353	0	0	0	0	8,055	0
Peak Hour	0	0	788	189	0	68	674	0	0	230	0	70	0	0	0	0	2,019	0

Note: Five-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:00 PM	6	2	4	0	12	0	0	0	0	0	0	0	0	0	0
2:15 PM	2	2	0	0	4	0	0	0	0	0	0	0	0	0	0
2:30 PM	1	2	0	0	3	1	0	0	0	1	0	0	0	1	1
2:45 PM	4	2	0	0	6	1	0	0	0	1	0	0	0	0	0
3:00 PM	1	2	4	0	7	0	0	0	0	0	1	0	0	3	4
3:15 PM	3	2	2	0	7	0	0	0	0	0	0	0	0	0	0
3:30 PM	3	4	0	0	7	0	0	0	0	0	0	0	0	1	1
3:45 PM	6	3	0	0	9	0	0	0	0	0	0	0	0	0	0
4:00 PM	4	1	3	0	8	0	0	0	0	0	3	0	0	3	6
4:15 PM	3	1	2	0	6	0	0	0	0	0	2	0	0	0	2
4:30 PM	0	3	0	0	3	1	0	0	0	1	0	0	0	0	0
4:45 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
5:00 PM	4	1	1	0	6	0	0	0	0	0	0	0	0	2	2
5:15 PM	1	2	1	0	4	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
5:45 PM	2	1	0	0	3	0	0	0	0	0	0	0	0	0	0
6:00 PM	0	0	3	0	3	0	0	0	0	0	1	0	0	0	1
6:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2
6:30 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	41	28	21	0	90	3	0	0	0	3	9	0	0	11	20
Peak Hr	6	6	2	0	14	1	0	0	0	1	0	0	0	2	2



Five-Hour Count Summaries

Interval Start	N LAKEWOOD DR				N LAKEWOOD DR				NORTHWEST BLVD				NORTHWEST BLVD				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:30 PM	0	60	23	63	0	11	24	12	0	33	226	10	0	7	289	38	796	0
4:45 PM	0	47	17	62	0	12	21	9	0	54	212	4	0	4	218	39	699	0
5:00 PM	0	51	21	67	0	20	28	18	0	46	295	13	0	7	262	29	857	0
5:15 PM	0	46	25	69	0	11	24	5	0	58	267	10	0	3	252	44	814	3,166
Peak Hour	0	204	86	261	0	54	97	44	0	191	1,000	37	0	21	1,021	150	3,166	0

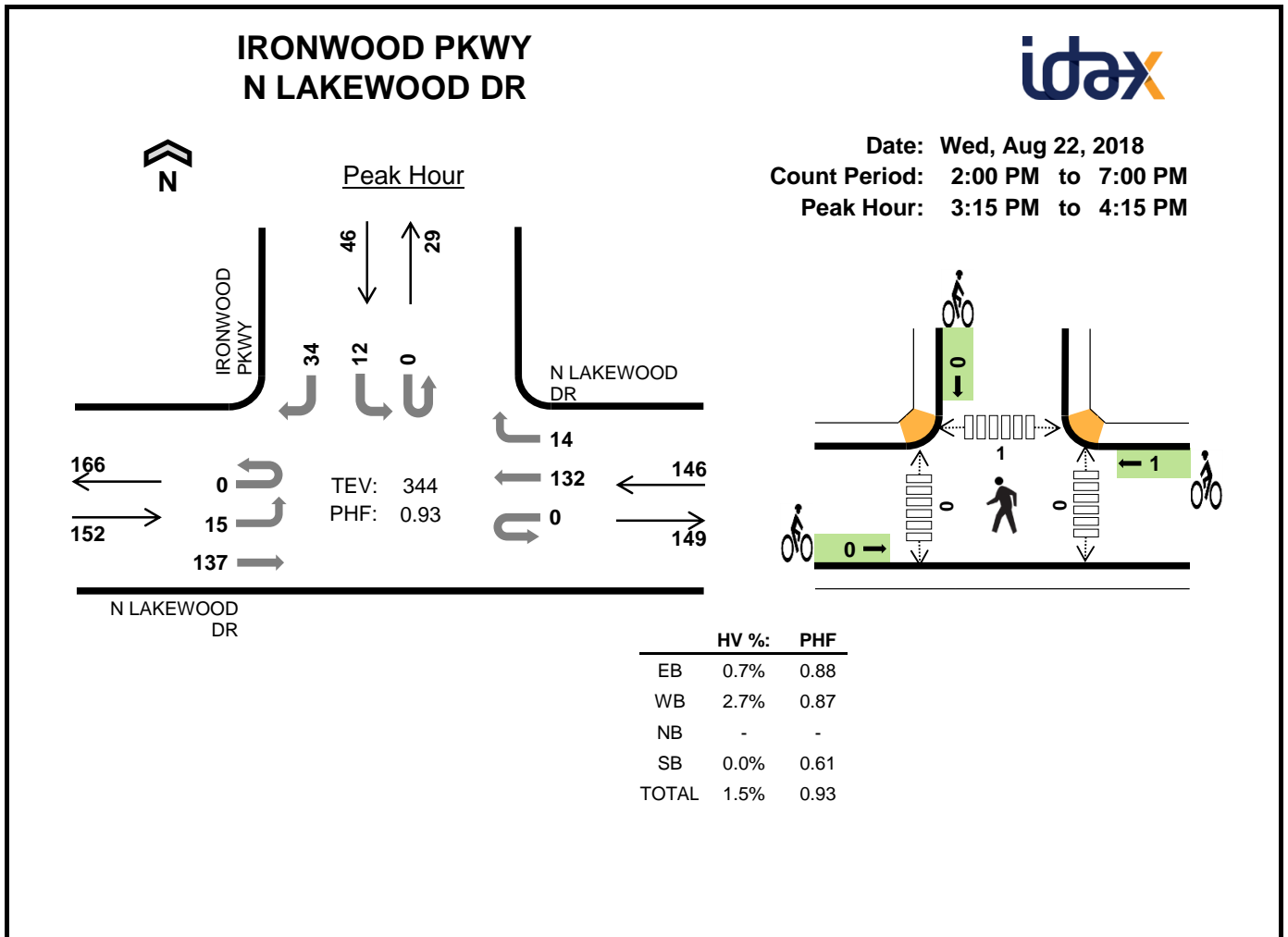
Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:30 PM	1	0	7	2	10	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	1	1	0	2	0	0	0	0	0	0	0	2	0	2
5:00 PM	0	0	1	1	2	0	0	0	0	0	0	1	0	0	1
5:15 PM	0	1	5	1	7	0	1	0	0	1	2	0	3	0	5
Peak Hour	1	2	14	4	21	0	1	0	0	1	2	1	5	0	8

Five-Hour Count Summaries																		
Interval Start	N LAKEWOOD DR				N LAKEWOOD DR				NORTHWEST BLVD				NORTHWEST BLVD				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	57	17	60	0	9	16	4	0	48	231	10	0	6	209	36	703	0
2:15 PM	0	54	14	53	0	11	25	7	0	55	289	12	0	6	214	65	805	0
2:30 PM	0	64	28	68	0	14	20	6	0	58	249	19	0	1	189	44	760	0
2:45 PM	0	70	22	56	0	7	23	7	0	52	226	17	0	7	224	60	771	3,039
3:00 PM	0	64	17	58	0	9	13	9	0	42	235	12	0	4	179	45	687	3,023
3:15 PM	0	58	25	73	0	12	22	7	0	51	197	6	1	5	194	47	698	2,916
3:30 PM	0	53	19	46	0	7	19	16	0	66	244	11	0	7	239	43	770	2,926
3:45 PM	0	43	12	51	0	14	24	11	0	42	255	11	0	6	238	56	763	2,918
4:00 PM	0	65	21	62	0	21	20	12	0	71	256	10	0	7	218	34	797	3,028
4:15 PM	0	31	17	61	0	11	14	5	0	49	246	7	0	4	237	37	719	3,049
4:30 PM	0	60	23	63	0	11	24	12	0	33	226	10	0	7	289	38	796	3,075
4:45 PM	0	47	17	62	0	12	21	9	0	54	212	4	0	4	218	39	699	3,011
5:00 PM	0	51	21	67	0	20	28	18	0	46	295	13	0	7	262	29	857	3,071
5:15 PM	0	46	25	69	0	11	24	5	0	58	267	10	0	3	252	44	814	3,166
5:30 PM	0	35	18	56	0	10	9	2	0	43	180	4	0	3	248	34	642	3,012
5:45 PM	0	37	9	50	0	3	13	2	0	31	183	3	0	1	266	50	648	2,961
6:00 PM	0	31	8	39	0	8	8	5	0	45	149	4	0	3	181	35	516	2,620
6:15 PM	0	24	12	40	0	2	9	2	0	23	167	1	0	0	176	44	500	2,306
6:30 PM	0	37	6	52	0	5	10	3	0	36	119	1	0	3	161	36	469	2,133
6:45 PM	0	39	12	35	0	1	11	3	0	25	137	1	0	3	128	48	443	1,928
Count Total	0	966	343	1,121	0	198	353	145	0	928	4,363	166	1	87	4,322	864	13,857	0
Peak Hour	0	204	86	261	0	54	97	44	0	191	1,000	37	0	21	1,021	150	3,166	0

Note: Five-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:00 PM	0	0	7	4	11	1	0	0	0	1	3	1	4	2	10
2:15 PM	2	0	3	0	5	0	0	0	0	0	0	1	0	1	2
2:30 PM	3	0	4	7	14	1	0	0	0	1	0	0	1	1	2
2:45 PM	0	2	11	6	19	0	1	0	0	1	1	0	1	1	3
3:00 PM	0	0	6	4	10	0	0	0	0	0	0	2	0	0	2
3:15 PM	0	1	4	4	9	0	0	0	0	0	1	3	2	0	6
3:30 PM	1	0	5	6	12	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	1	7	6	14	0	0	0	0	0	3	0	3	0	6
4:00 PM	2	2	1	3	8	0	1	0	0	1	1	0	0	0	1
4:15 PM	0	0	3	3	6	0	1	0	0	1	1	0	2	0	3
4:30 PM	1	0	7	2	10	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	1	1	0	2	0	0	0	0	0	0	0	2	0	2
5:00 PM	0	0	1	1	2	0	0	0	0	0	0	1	0	0	1
5:15 PM	0	1	5	1	7	0	1	0	0	1	2	0	3	0	5
5:30 PM	1	0	0	1	2	0	0	0	0	0	0	0	0	1	1
5:45 PM	0	1	1	0	2	0	0	0	0	0	0	1	0	0	1
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	6	7
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
6:30 PM	1	1	2	1	5	0	0	0	0	0	1	0	0	1	2
6:45 PM	1	0	0	0	1	0	0	0	0	0	0	1	0	1	2
Count Total	12	10	68	49	139	2	4	0	0	6	13	11	18	15	57
Peak Hour	1	2	14	4	21	0	1	0	0	1	2	1	5	0	8



Five-Hour Count Summaries

Interval Start	N LAKEWOOD DR				N LAKEWOOD DR				0				IRONWOOD PKWY				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
3:15 PM	0	0	37	0	0	0	30	5	0	0	0	0	0	2	0	5	79	0
3:30 PM	0	5	34	0	0	0	36	6	0	0	0	0	0	0	0	6	87	0
3:45 PM	0	6	27	0	0	0	37	2	0	0	0	0	0	5	0	9	86	0
4:00 PM	0	4	39	0	0	0	29	1	0	0	0	0	0	5	0	14	92	344
Peak Hour	0	15	137	0	0	0	132	14	0	0	0	0	0	12	0	34	344	0

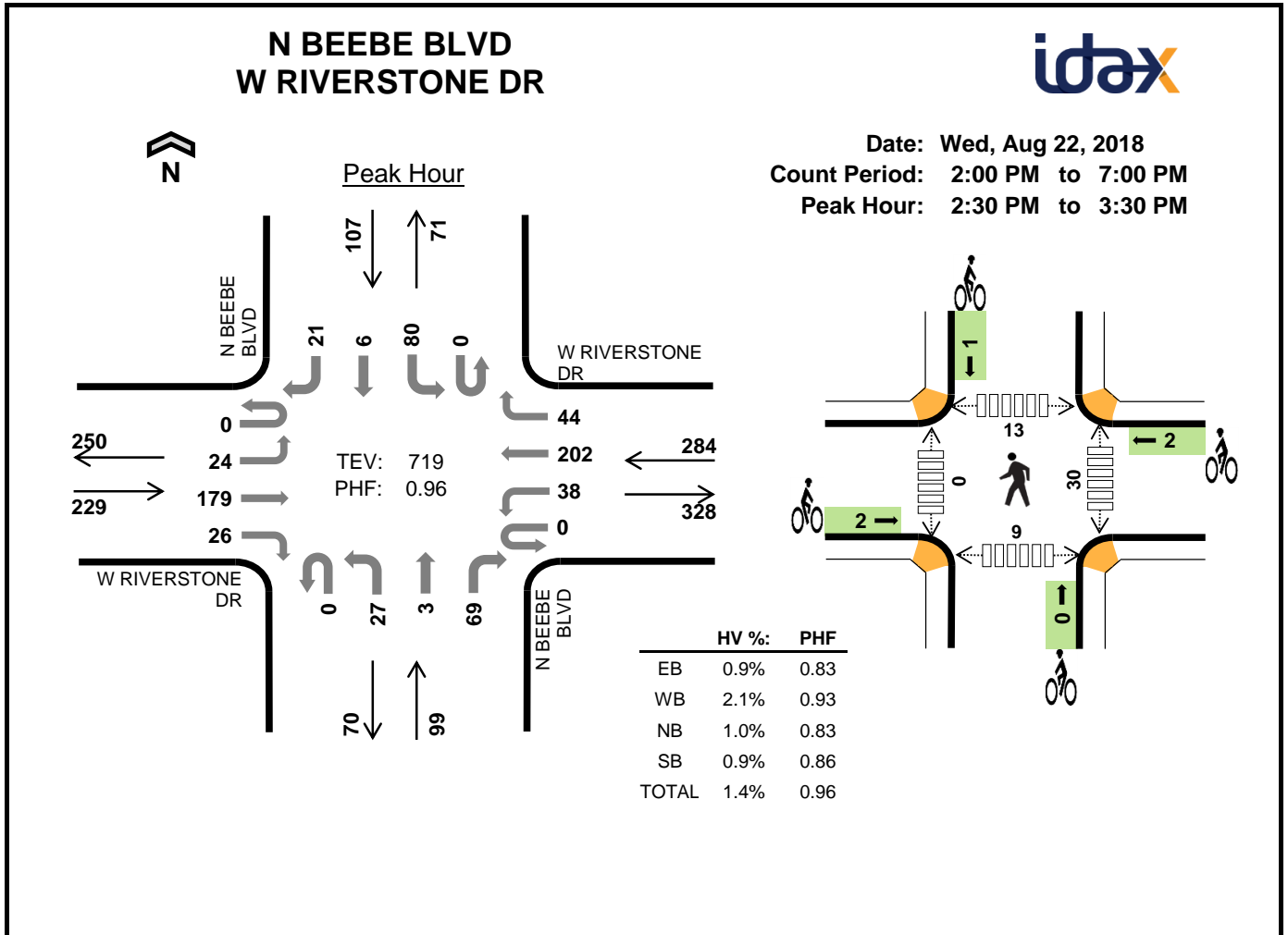
Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
3:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
3:30 PM	1	1	0	0	2	0	0	0	0	0	0	0	1	0	1
3:45 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0
Peak Hour	1	4	0	0	5	0	1	0	0	1	0	0	1	0	1

Five-Hour Count Summaries																		
Interval Start	N LAKEWOOD DR				N LAKEWOOD DR				0				IRONWOOD PKWY				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	4	33	0	1	0	23	2	0	0	0	0	0	1	0	8	72	0
2:15 PM	0	6	24	0	0	0	36	0	0	0	0	0	0	5	0	7	78	0
2:30 PM	0	1	49	0	0	0	39	1	0	0	0	0	0	1	0	3	94	0
2:45 PM	0	2	40	0	0	0	33	4	0	0	0	0	0	3	0	4	86	330
3:00 PM	0	2	31	0	0	0	18	2	0	0	0	0	0	3	0	3	59	317
3:15 PM	0	0	37	0	0	0	30	5	0	0	0	0	0	2	0	5	79	318
3:30 PM	0	5	34	0	0	0	36	6	0	0	0	0	0	0	0	6	87	311
3:45 PM	0	6	27	0	0	0	37	2	0	0	0	0	0	5	0	9	86	311
4:00 PM	0	4	39	0	0	0	29	1	0	0	0	0	0	5	0	14	92	344
4:15 PM	0	2	30	0	0	0	26	1	0	0	0	0	0	3	0	3	65	330
4:30 PM	0	4	34	0	0	0	34	1	0	0	0	0	0	2	0	7	82	325
4:45 PM	0	3	25	0	0	0	31	2	0	0	0	0	0	0	0	8	69	308
5:00 PM	1	4	37	0	0	0	45	1	0	0	0	0	0	0	0	20	108	324
5:15 PM	0	0	40	0	0	0	28	1	0	0	0	0	0	0	0	3	72	331
5:30 PM	0	0	24	0	0	0	19	1	0	0	0	0	0	3	0	3	50	299
5:45 PM	0	0	12	0	0	0	15	0	0	0	0	0	0	0	0	1	28	258
6:00 PM	0	1	12	0	0	0	17	0	0	0	0	0	0	0	0	4	34	184
6:15 PM	0	2	12	0	0	0	9	0	0	0	0	0	0	0	0	1	24	136
6:30 PM	0	5	8	0	0	0	14	1	0	0	0	0	0	1	0	2	31	117
6:45 PM	0	0	16	0	0	0	15	0	0	0	0	0	0	0	0	0	31	120
Count Total	1	51	564	0	1	0	534	31	0	0	0	0	0	34	0	111	1,327	0
Peak Hour	0	15	137	0	0	0	132	14	0	0	0	0	0	12	0	34	344	0

Note: Five-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	1	0	0	0	1	1	1	0	0	2	0	0	0	0	0
2:45 PM	0	2	0	0	2	0	0	0	0	0	0	1	1	0	2
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	2	0	3
3:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
3:30 PM	1	1	0	0	2	0	0	0	0	0	0	0	1	0	1
3:45 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	1	1	0	0	2	0	1	0	0	1	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0
6:30 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	4	10	0	0	14	1	4	0	0	5	0	2	4	0	6
Peak Hr	1	4	0	0	5	0	1	0	0	1	0	0	1	0	1



Five-Hour Count Summaries

Interval Start	W RIVERSTONE DR Eastbound				W RIVERSTONE DR Westbound				N BEEBE BLVD Northbound				N BEEBE BLVD Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:30 PM	0	10	51	8	0	8	47	10	0	6	0	19	0	24	1	4	188	0
2:45 PM	0	7	42	6	0	7	50	19	0	5	3	15	0	24	2	5	185	0
3:00 PM	0	3	41	4	0	10	55	8	0	8	0	22	0	12	1	4	168	0
3:15 PM	0	4	45	8	0	13	50	7	0	8	0	13	0	20	2	8	178	719
Peak Hour	0	24	179	26	0	38	202	44	0	27	3	69	0	80	6	21	719	0

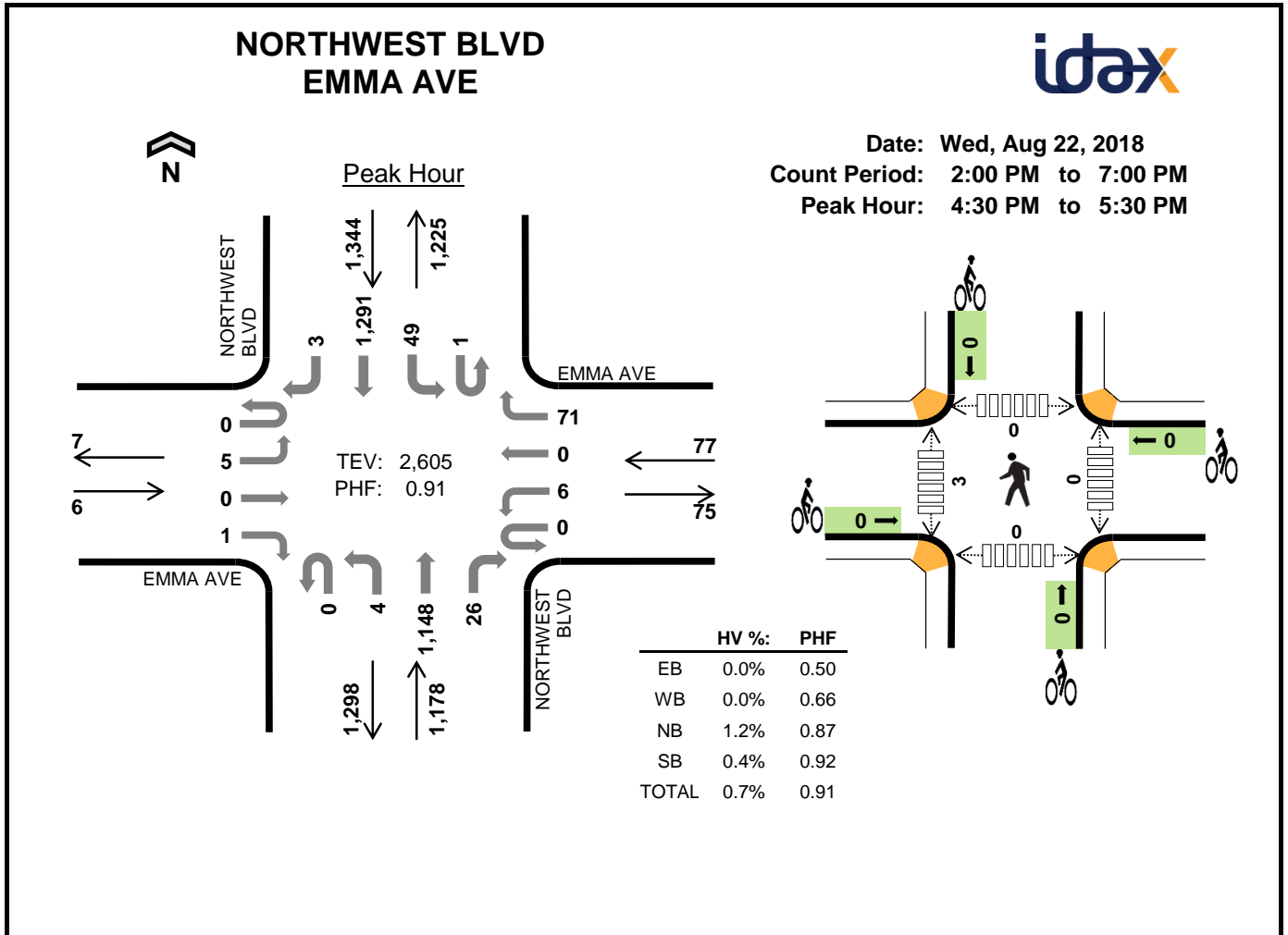
Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:30 PM	2	2	0	0	4	1	1	0	0	2	6	0	5	1	12
2:45 PM	0	2	1	0	3	1	1	0	0	2	23	0	5	2	30
3:00 PM	0	2	0	1	3	0	0	0	0	0	1	0	0	6	7
3:15 PM	0	0	0	0	0	0	0	0	1	1	0	0	3	0	3
Peak Hour	2	6	1	1	10	2	2	0	1	5	30	0	13	9	52

Five-Hour Count Summaries																		
Interval Start	W RIVERSTONE DR				W RIVERSTONE DR				N BEEBE BLVD				N BEEBE BLVD				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	9	54	3	0	15	31	10	0	3	0	16	0	16	0	4	161	0
2:15 PM	0	5	43	12	0	10	51	16	0	3	2	13	0	12	1	5	173	0
2:30 PM	0	10	51	8	0	8	47	10	0	6	0	19	0	24	1	4	188	0
2:45 PM	0	7	42	6	0	7	50	19	0	5	3	15	0	24	2	5	185	707
3:00 PM	0	3	41	4	0	10	55	8	0	8	0	22	0	12	1	4	168	714
3:15 PM	0	4	45	8	0	13	50	7	0	8	0	13	0	20	2	8	178	719
3:30 PM	0	8	34	1	0	11	47	18	0	6	3	15	0	19	2	5	169	700
3:45 PM	0	5	38	10	0	9	53	11	0	9	0	18	0	23	0	2	178	693
4:00 PM	0	6	45	3	0	10	59	9	0	3	1	10	0	16	0	6	168	693
4:15 PM	0	9	34	3	0	10	43	8	0	5	3	4	0	21	0	3	143	658
4:30 PM	0	5	49	5	0	16	48	14	0	4	1	9	0	11	2	4	168	657
4:45 PM	0	5	38	3	0	8	54	13	0	3	1	16	0	18	1	5	165	644
5:00 PM	0	5	38	4	0	12	64	18	0	7	1	9	0	14	1	6	179	655
5:15 PM	0	5	48	4	0	5	71	12	0	4	1	19	0	16	0	4	189	701
5:30 PM	0	7	42	3	0	7	38	7	0	5	0	12	0	9	2	7	139	672
5:45 PM	0	5	34	2	0	6	36	10	0	1	1	5	0	15	1	8	124	631
6:00 PM	0	8	18	3	0	8	28	8	0	0	1	6	0	13	1	7	101	553
6:15 PM	0	9	41	4	0	6	28	7	0	5	1	10	0	16	1	3	131	495
6:30 PM	0	3	27	2	0	6	29	7	0	3	2	8	0	11	0	3	101	457
6:45 PM	0	12	35	3	0	5	30	11	0	2	1	7	0	11	1	2	120	453
Count Total	0	130	797	91	0	182	912	223	0	90	22	246	0	321	19	95	3,128	0
Peak Hour	0	24	179	26	0	38	202	44	0	27	3	69	0	80	6	21	719	0

Note: Five-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:00 PM	0	0	0	0	0	0	0	0	0	0	9	0	0	0	9
2:15 PM	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0
2:30 PM	2	2	0	0	4	1	1	0	0	2	6	0	5	1	12
2:45 PM	0	2	1	0	3	1	1	0	0	2	23	0	5	2	30
3:00 PM	0	2	0	1	3	0	0	0	0	0	1	0	0	6	7
3:15 PM	0	0	0	0	0	0	0	0	1	1	0	0	3	0	3
3:30 PM	0	2	1	0	3	0	0	0	0	0	0	0	2	0	2
3:45 PM	0	2	1	0	3	0	1	0	0	1	2	0	0	1	3
4:00 PM	1	1	0	1	3	0	0	0	0	0	1	0	0	0	1
4:15 PM	0	1	0	0	1	0	0	0	0	0	2	2	1	2	7
4:30 PM	0	0	0	0	0	2	0	0	0	2	9	4	0	0	13
4:45 PM	0	1	0	0	1	0	0	0	0	0	2	0	3	0	5
5:00 PM	1	0	0	0	1	0	0	0	0	0	1	0	0	1	2
5:15 PM	0	3	0	0	3	0	0	1	0	1	3	0	2	2	7
5:30 PM	1	0	0	0	1	1	1	0	0	2	3	3	0	0	6
5:45 PM	0	1	0	0	1	0	0	0	0	0	4	0	2	3	9
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
6:15 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
6:30 PM	0	2	0	0	2	0	0	0	0	0	0	1	1	1	3
6:45 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	4	4
Count Total	10	19	3	2	34	5	4	1	1	11	66	10	24	24	124
Peak Hour	2	6	1	1	10	2	2	0	1	5	30	0	13	9	52



Five-Hour Count Summaries

Interval Start	EMMA AVE Eastbound				EMMA AVE Westbound				NORTHWEST BLVD Northbound				NORTHWEST BLVD Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:30 PM	0	0	0	0	0	1	0	14	0	2	260	3	0	12	352	1	645	0
4:45 PM	0	2	0	0	0	1	0	15	0	0	262	11	0	19	276	0	586	0
5:00 PM	0	1	0	0	0	3	0	26	0	1	332	7	0	8	341	0	719	0
5:15 PM	0	2	0	1	0	1	0	16	0	1	294	5	1	10	322	2	655	2,605
Peak Hour	0	5	0	1	0	6	0	71	0	4	1,148	26	1	49	1,291	3	2,605	0

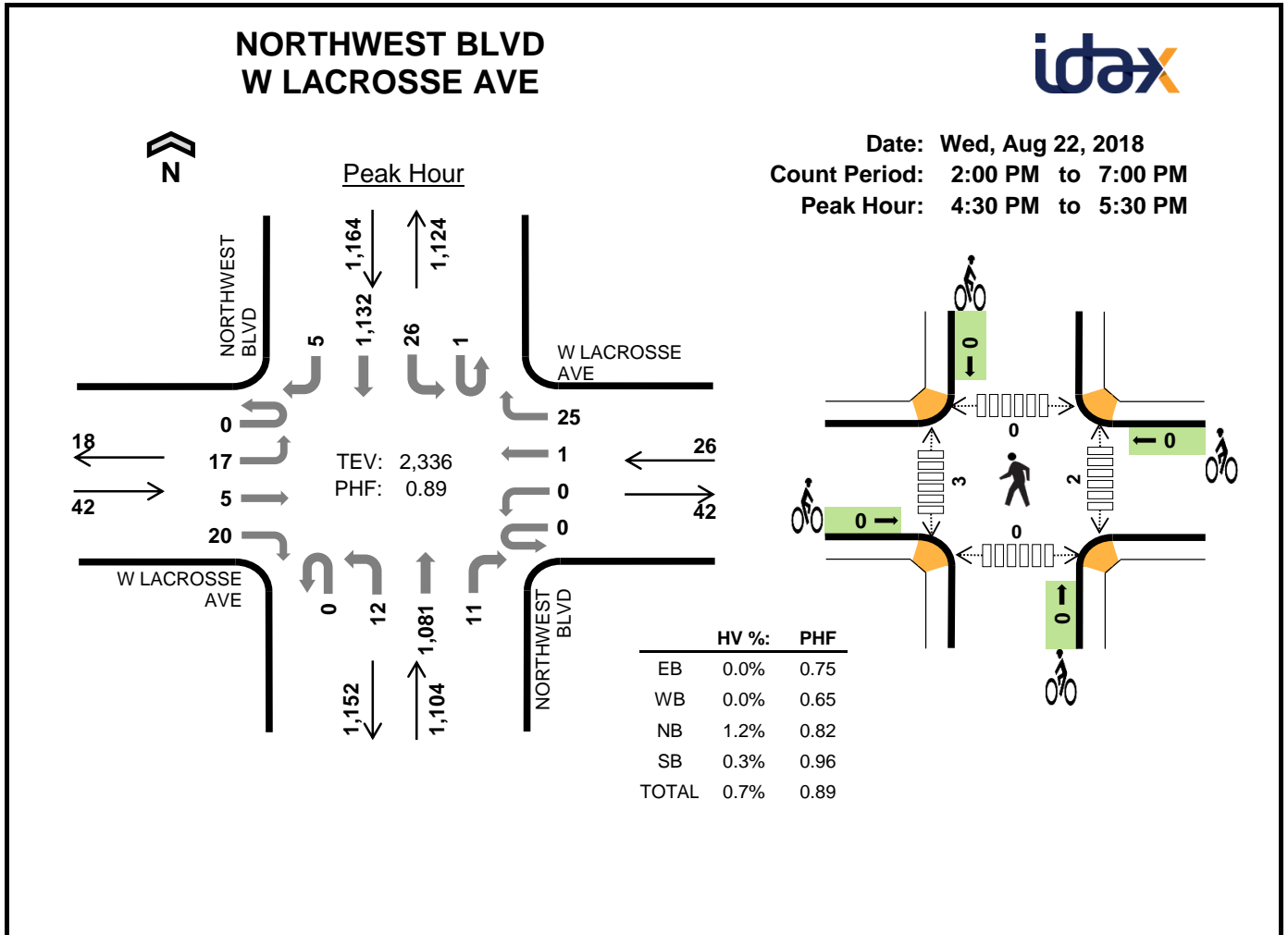
Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:30 PM	0	0	5	3	8	0	0	0	0	0	0	2	0	0	2
4:45 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	1	1	2	0	0	0	0	0	0	1	0	0	1
5:15 PM	0	0	7	1	8	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	14	5	19	0	0	0	0	0	0	3	0	0	3

Five-Hour Count Summaries																		
Interval Start	EMMA AVE				EMMA AVE				NORTHWEST BLVD				NORTHWEST BLVD				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	2	0	0	0	1	0	20	0	1	264	7	0	18	260	0	573	0
2:15 PM	0	0	0	0	0	2	0	17	0	0	343	5	0	9	271	0	647	0
2:30 PM	0	1	0	0	0	2	0	25	0	0	300	8	0	15	260	1	612	0
2:45 PM	0	1	0	0	0	2	0	11	0	1	283	0	0	15	269	1	583	2,415
3:00 PM	0	1	0	1	0	1	0	15	0	0	265	10	1	9	237	1	541	2,383
3:15 PM	0	1	0	0	0	1	0	20	0	0	236	3	0	14	266	0	541	2,277
3:30 PM	0	1	0	1	0	5	0	13	0	0	316	3	0	15	275	0	629	2,294
3:45 PM	0	0	0	0	0	1	0	14	0	1	281	6	1	9	295	0	608	2,319
4:00 PM	0	1	0	0	0	0	0	11	0	1	331	9	0	10	291	1	655	2,433
4:15 PM	0	2	0	0	0	5	0	17	0	1	266	5	0	14	296	3	609	2,501
4:30 PM	0	0	0	0	0	1	0	14	0	2	260	3	0	12	352	1	645	2,517
4:45 PM	0	2	0	0	0	1	0	15	0	0	262	11	0	19	276	0	586	2,495
5:00 PM	0	1	0	0	0	3	0	26	0	1	332	7	0	8	341	0	719	2,559
5:15 PM	0	2	0	1	0	1	0	16	0	1	294	5	1	10	322	2	655	2,605
5:30 PM	0	0	0	0	0	3	0	16	0	2	212	2	0	17	299	1	552	2,512
5:45 PM	0	0	0	0	1	0	0	21	0	0	194	6	0	10	307	1	540	2,466
6:00 PM	0	0	0	1	0	2	0	10	0	0	184	2	0	8	216	4	427	2,174
6:15 PM	0	1	0	0	0	0	1	13	0	0	174	1	0	11	207	1	409	1,928
6:30 PM	0	1	0	0	0	1	0	11	0	0	141	1	1	5	212	1	374	1,750
6:45 PM	0	0	0	1	0	1	0	7	0	1	151	0	0	3	160	2	326	1,536
Count Total	0	17	0	5	1	33	1	312	0	12	5,089	94	4	231	5,412	20	11,231	0
Peak Hour	0	5	0	1	0	6	0	71	0	4	1,148	26	1	49	1,291	3	2,605	0

Note: Five-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:00 PM	0	0	7	4	11	0	0	0	0	0	1	0	0	0	1
2:15 PM	0	0	4	3	7	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	1	2	9	12	0	0	0	0	0	1	2	0	0	3
2:45 PM	0	0	11	6	17	0	0	0	0	0	1	1	0	0	2
3:00 PM	0	1	4	3	8	0	0	0	0	0	0	3	0	1	4
3:15 PM	0	0	5	3	8	0	0	0	0	0	0	3	0	0	3
3:30 PM	0	0	4	5	9	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	6	6	12	0	0	0	0	0	3	1	0	0	4
4:00 PM	0	0	1	4	5	0	0	0	0	0	1	0	0	0	1
4:15 PM	0	1	2	3	6	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	5	3	8	0	0	0	0	0	0	2	0	0	2
4:45 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	1	1	2	0	0	0	0	0	0	1	0	0	1
5:15 PM	0	0	7	1	8	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	2	2	1	0	0	0	1	1	2	0	0	3
5:45 PM	0	0	1	0	1	0	0	0	0	0	0	3	0	0	3
6:00 PM	0	0	0	0	0	0	0	0	0	0	6	1	0	0	7
6:15 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
6:30 PM	0	0	1	1	2	0	0	0	0	0	2	0	0	0	2
6:45 PM	0	0	0	1	1	0	0	0	0	0	1	0	0	0	1
Count Total	0	3	62	56	121	1	0	0	0	1	17	19	0	1	37
Peak Hour	0	0	14	5	19	0	0	0	0	0	0	3	0	0	3



Five-Hour Count Summaries

Interval Start	W LACROSSE AVE Eastbound				W LACROSSE AVE Westbound				NORTHWEST BLVD Northbound				NORTHWEST BLVD Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:30 PM	0	2	0	5	0	0	0	9	0	1	243	3	0	13	285	1	562	0
4:45 PM	0	3	3	4	0	0	0	3	0	3	260	3	0	1	277	2	559	0
5:00 PM	0	4	1	6	0	0	1	3	0	5	328	3	0	5	296	2	654	0
5:15 PM	0	8	1	5	0	0	0	10	0	3	250	2	1	7	274	0	561	2,336
Peak Hour	0	17	5	20	0	0	1	25	0	12	1,081	11	1	26	1,132	5	2,336	0

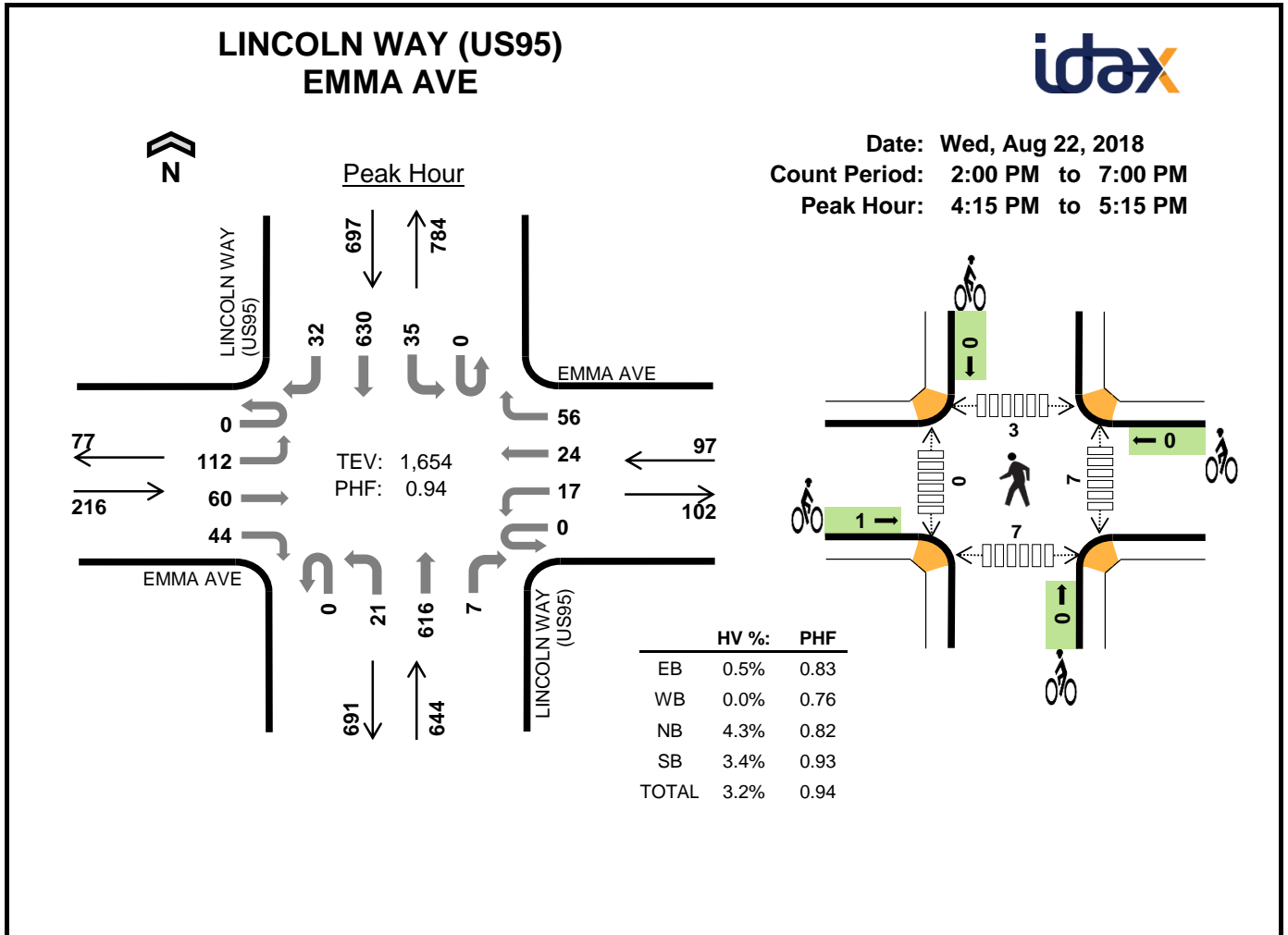
Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:30 PM	0	0	6	2	8	0	0	0	0	0	0	2	0	0	2
4:45 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	1	1	2	0	0	0	0	0	1	0	0	0	1
5:15 PM	0	0	5	1	6	0	0	0	0	0	1	1	0	0	2
Peak Hour	0	0	13	4	17	0	0	0	0	0	2	3	0	0	5

Five-Hour Count Summaries																		
Interval Start	W LACROSSE AVE				W LACROSSE AVE				NORTHWEST BLVD				NORTHWEST BLVD				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	2	1	6	0	0	0	2	0	2	259	2	0	7	227	3	511	0
2:15 PM	0	1	0	4	0	0	0	3	0	1	345	3	0	7	237	1	602	0
2:30 PM	0	4	0	6	0	1	0	9	0	2	283	2	0	13	242	4	566	0
2:45 PM	0	1	0	4	0	2	1	5	0	5	271	2	0	10	244	0	545	2,224
3:00 PM	0	3	2	3	0	0	0	4	0	6	255	4	0	8	224	4	513	2,226
3:15 PM	0	6	1	2	0	0	0	5	0	6	230	2	0	5	256	2	515	2,139
3:30 PM	0	5	0	3	0	1	0	3	0	6	291	1	0	5	257	1	573	2,146
3:45 PM	0	2	0	9	0	1	0	7	0	0	276	2	0	7	235	1	540	2,141
4:00 PM	0	2	0	8	0	2	1	11	0	5	320	3	0	12	277	3	644	2,272
4:15 PM	0	2	0	4	0	1	0	7	0	2	255	6	0	9	264	1	551	2,308
4:30 PM	0	2	0	5	0	0	0	9	0	1	243	3	0	13	285	1	562	2,297
4:45 PM	0	3	3	4	0	0	0	3	0	3	260	3	0	1	277	2	559	2,316
5:00 PM	0	4	1	6	0	0	1	3	0	5	328	3	0	5	296	2	654	2,326
5:15 PM	0	8	1	5	0	0	0	10	0	3	250	2	1	7	274	0	561	2,336
5:30 PM	0	2	0	7	0	0	0	2	0	3	201	2	0	5	294	2	518	2,292
5:45 PM	0	2	1	6	0	0	0	2	0	3	176	2	0	5	255	3	455	2,188
6:00 PM	0	5	1	6	0	0	1	3	0	5	170	3	0	4	215	1	414	1,948
6:15 PM	0	3	1	6	0	1	1	7	0	1	165	1	0	4	198	0	388	1,775
6:30 PM	0	1	0	1	0	0	0	4	0	4	128	4	0	6	182	2	332	1,589
6:45 PM	0	1	1	3	0	0	0	1	0	4	157	0	0	6	166	1	340	1,474
Count Total	0	59	13	98	0	9	5	100	0	67	4,863	50	1	139	4,905	34	10,343	0
Peak Hour	0	17	5	20	0	0	1	25	0	12	1,081	11	1	26	1,132	5	2,336	0

Note: Five-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:00 PM	0	0	8	4	12	0	0	0	0	0	2	2	0	0	4
2:15 PM	0	0	4	3	7	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	2	7	9	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	1	10	4	15	0	0	1	0	1	1	0	0	0	1
3:00 PM	0	0	4	5	9	0	0	0	0	0	1	2	0	0	3
3:15 PM	0	0	4	5	9	0	0	0	1	1	1	2	0	0	3
3:30 PM	0	0	5	6	11	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	5	4	9	0	0	0	0	0	3	0	0	0	3
4:00 PM	0	0	2	3	5	0	0	0	0	0	1	0	0	0	1
4:15 PM	0	0	0	2	2	0	0	0	0	0	1	0	0	0	1
4:30 PM	0	0	6	2	8	0	0	0	0	0	0	2	0	0	2
4:45 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	1	1	2	0	0	0	0	0	1	0	0	0	1
5:15 PM	0	0	5	1	6	0	0	0	0	0	1	1	0	0	2
5:30 PM	0	0	0	2	2	0	2	0	0	2	0	0	0	0	0
5:45 PM	0	0	1	0	1	0	0	0	0	0	0	2	0	0	2
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	1	1	0	0	0	0	0	6	0	0	0	6
6:30 PM	0	0	2	2	4	0	0	0	0	0	1	0	0	0	1
6:45 PM	0	0	4	0	4	0	0	0	0	0	0	0	0	0	0
Count Total	0	1	64	52	117	0	2	1	1	4	19	11	0	0	30
Peak Hour	0	0	13	4	17	0	0	0	0	0	2	3	0	0	5



Five-Hour Count Summaries

Interval Start	EMMA AVE Eastbound				EMMA AVE Westbound				LINCOLN WAY (US95) Northbound				LINCOLN WAY (US95) Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:15 PM	0	33	15	3	0	2	7	11	0	5	146	3	0	12	136	10	383	0
4:30 PM	0	31	18	16	0	2	4	19	0	4	146	2	0	9	166	7	424	0
4:45 PM	0	21	16	8	0	8	7	17	0	5	135	1	0	5	173	9	405	0
5:00 PM	0	27	11	17	0	5	6	9	0	7	189	1	0	9	155	6	442	1,654
Peak Hour	0	112	60	44	0	17	24	56	0	21	616	7	0	35	630	32	1,654	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:15 PM	0	0	6	5	11	0	0	0	0	0	0	0	2	0	2
4:30 PM	0	0	6	8	14	0	0	0	0	0	2	0	0	3	5
4:45 PM	0	0	7	6	13	0	0	0	0	0	1	0	0	0	1
5:00 PM	1	0	9	5	15	1	0	0	0	1	4	0	1	4	9
Peak Hour	1	0	28	24	53	1	0	0	0	1	7	0	3	7	17

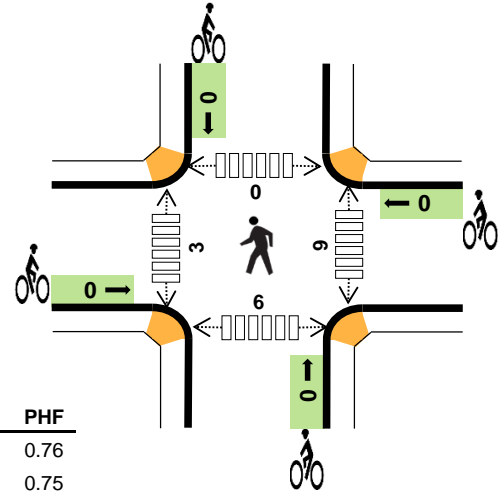
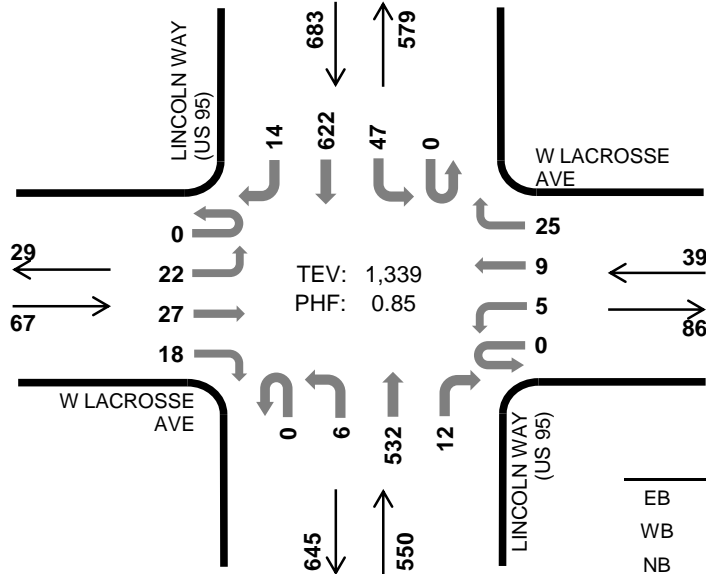
Five-Hour Count Summaries																		
Interval Start	EMMA AVE				EMMA AVE				LINCOLN WAY (US95)				LINCOLN WAY (US95)				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	20	13	8	0	1	8	12	0	5	129	4	0	19	140	8	367	0
2:15 PM	0	19	6	8	0	3	7	14	0	8	175	3	0	11	141	17	412	0
2:30 PM	0	18	10	6	0	2	8	8	0	9	140	0	0	12	138	15	366	0
2:45 PM	0	14	10	8	0	3	3	10	0	2	148	3	0	9	161	8	379	1,524
3:00 PM	0	30	10	15	0	3	9	8	0	11	127	4	0	9	149	5	380	1,537
3:15 PM	0	21	12	7	0	5	6	11	0	6	134	0	0	11	144	14	371	1,496
3:30 PM	0	23	14	4	0	4	8	6	0	8	151	3	0	8	140	14	383	1,513
3:45 PM	0	20	12	11	0	2	3	16	0	6	162	4	0	16	145	12	409	1,543
4:00 PM	0	18	10	16	0	1	6	10	0	7	202	2	0	6	143	10	431	1,594
4:15 PM	0	33	15	3	0	2	7	11	0	5	146	3	0	12	136	10	383	1,606
4:30 PM	0	31	18	16	0	2	4	19	0	4	146	2	0	9	166	7	424	1,647
4:45 PM	0	21	16	8	0	8	7	17	0	5	135	1	0	5	173	9	405	1,643
5:00 PM	0	27	11	17	0	5	6	9	0	7	189	1	0	9	155	6	442	1,654
5:15 PM	0	20	6	17	0	0	6	6	0	3	149	6	0	8	146	11	378	1,649
5:30 PM	0	13	11	15	0	0	5	8	0	1	112	3	0	9	134	4	315	1,540
5:45 PM	0	14	5	13	0	1	8	8	0	3	119	0	0	5	141	12	329	1,464
6:00 PM	0	15	5	8	0	0	4	6	0	1	109	1	0	1	123	10	283	1,305
6:15 PM	0	5	2	11	0	3	4	5	1	1	106	2	0	4	115	9	268	1,195
6:30 PM	0	8	1	6	0	2	3	0	0	4	94	0	0	2	104	4	228	1,108
6:45 PM	0	9	1	4	0	0	3	4	0	0	95	1	0	3	120	9	249	1,028
Count Total	0	379	188	201	0	47	115	188	1	96	2,768	43	0	168	2,814	194	7,202	0
Peak Hour	0	112	60	44	0	17	24	56	0	21	616	7	0	35	630	32	1,654	0
<i>Note: Five-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.</i>																		
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)							
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total			
2:00 PM	1	0	6	4	11	0	0	0	0	0	0	0	4	0	4			
2:15 PM	0	1	7	4	12	0	0	0	0	0	7	1	0	0	8			
2:30 PM	3	0	11	8	22	0	0	1	0	1	2	0	0	0	2			
2:45 PM	0	0	10	10	20	1	0	0	0	1	1	0	0	0	1			
3:00 PM	1	0	8	4	13	0	0	0	0	0	5	1	2	2	10			
3:15 PM	0	1	4	5	10	0	0	0	0	0	1	0	1	0	2			
3:30 PM	0	0	11	5	16	0	0	0	0	0	2	0	1	0	3			
3:45 PM	0	0	9	6	15	0	0	0	0	0	1	0	3	0	4			
4:00 PM	1	0	13	6	20	0	0	0	1	1	5	0	0	1	6			
4:15 PM	0	0	6	5	11	0	0	0	0	0	0	0	2	0	2			
4:30 PM	0	0	6	8	14	0	0	0	0	0	2	0	0	3	5			
4:45 PM	0	0	7	6	13	0	0	0	0	0	1	0	0	0	1			
5:00 PM	1	0	9	5	15	1	0	0	0	1	4	0	1	4	9			
5:15 PM	0	0	0	3	3	0	0	0	0	0	7	0	3	0	10			
5:30 PM	0	0	4	3	7	0	0	0	0	0	7	0	3	1	11			
5:45 PM	0	0	2	3	5	1	0	0	0	1	1	0	0	1	2			
6:00 PM	1	0	5	1	7	0	0	0	0	0	4	0	0	0	4			
6:15 PM	0	0	2	1	3	0	0	0	0	0	6	0	0	0	6			
6:30 PM	0	0	3	2	5	0	1	0	0	1	0	0	0	0	0			
6:45 PM	0	0	3	2	5	0	0	0	0	0	1	0	0	0	1			
Count Total	8	2	126	91	227	3	1	1	1	6	57	2	20	12	91			
Peak Hour	1	0	28	24	53	1	0	0	0	1	7	0	3	7	17			

LINCOLN WAY (US 95) W LACROSSE AVE



Peak Hour

Date: Wed, Aug 22, 2018
 Count Period: 2:00 PM to 7:00 PM
 Peak Hour: 4:30 PM to 5:30 PM



	HV %:	PHF
EB	0.0%	0.76
WB	0.0%	0.75
NB	4.4%	0.75
SB	3.5%	0.95
TOTAL	3.6%	0.85

Five-Hour Count Summaries

Interval Start	W LACROSSE AVE Eastbound				W LACROSSE AVE Westbound				LINCOLN WAY (US 95) Northbound				LINCOLN WAY (US 95) Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:30 PM	0	5	12	3	0	0	1	5	0	1	120	2	0	14	155	3	321	0
4:45 PM	0	3	4	2	0	2	2	6	0	1	110	2	0	12	153	1	298	0
5:00 PM	0	8	5	9	0	2	2	6	0	2	176	5	0	8	165	7	395	0
5:15 PM	0	6	6	4	0	1	4	8	0	2	126	3	0	13	149	3	325	1,339
Peak Hour	0	22	27	18	0	5	9	25	0	6	532	12	0	47	622	14	1,339	0

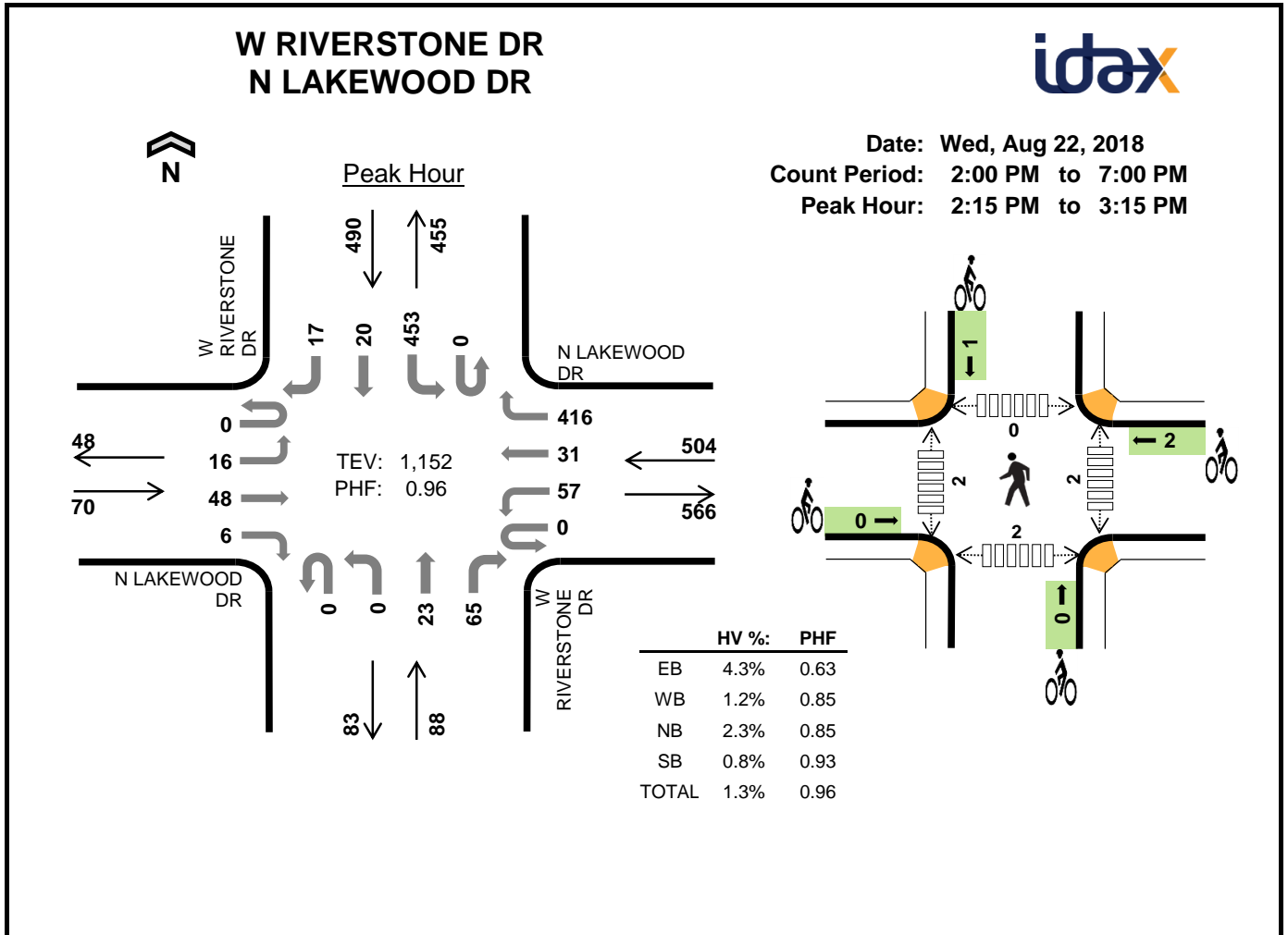
Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:30 PM	0	0	6	8	14	0	0	0	0	0	7	1	0	6	14
4:45 PM	0	0	7	6	13	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	11	6	17	0	0	0	0	0	1	1	0	0	2
5:15 PM	0	0	0	4	4	0	0	0	0	0	1	1	0	0	2
Peak Hour	0	0	24	24	48	0	0	0	0	0	9	3	0	6	18

Five-Hour Count Summaries														15-min Total	Rolling One Hour			
Interval Start	W LACROSSE AVE				W LACROSSE AVE				LINCOLN WAY (US 95)				LINCOLN WAY (US 95)					
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	1	6	5	0	1	1	4	0	2	130	1	0	5	132	3	291	0
2:15 PM	0	4	1	5	0	1	4	6	0	1	162	1	0	10	136	3	334	0
2:30 PM	0	3	5	10	0	2	3	10	0	0	121	3	0	12	120	3	292	0
2:45 PM	0	7	5	4	0	1	3	8	0	5	136	4	0	8	140	3	324	1,241
3:00 PM	0	2	6	3	0	0	2	6	0	1	128	2	0	10	149	2	311	1,261
3:15 PM	0	5	4	5	0	0	2	6	0	1	123	2	0	11	130	3	292	1,219
3:30 PM	0	5	0	1	0	0	3	8	0	1	139	2	0	8	131	2	300	1,227
3:45 PM	0	4	1	6	0	1	2	4	0	3	147	2	0	10	131	1	312	1,215
4:00 PM	0	4	4	10	0	3	5	4	0	1	198	2	0	13	144	2	390	1,294
4:15 PM	0	7	3	4	0	3	2	4	0	2	129	1	0	15	135	1	306	1,308
4:30 PM	0	5	12	3	0	0	1	5	0	1	120	2	0	14	155	3	321	1,329
4:45 PM	0	3	4	2	0	2	2	6	0	1	110	2	0	12	153	1	298	1,315
5:00 PM	0	8	5	9	0	2	2	6	0	2	176	5	0	8	165	7	395	1,320
5:15 PM	0	6	6	4	0	1	4	8	0	2	126	3	0	13	149	3	325	1,339
5:30 PM	0	2	2	3	0	1	0	2	0	1	103	3	0	10	126	0	253	1,271
5:45 PM	0	3	1	4	0	0	0	4	0	1	105	2	0	9	135	2	266	1,239
6:00 PM	0	3	4	0	0	2	3	4	0	0	93	3	0	7	111	4	234	1,078
6:15 PM	0	5	2	3	0	1	3	5	0	1	95	2	0	11	112	4	244	997
6:30 PM	0	6	3	1	0	0	1	1	0	0	86	1	0	1	109	1	210	954
6:45 PM	0	4	3	2	0	1	0	4	0	1	81	0	0	5	109	0	210	898
Count Total	0	87	77	84	0	22	43	105	0	27	2,508	43	0	192	2,672	48	5,908	0
Peak Hour	0	22	27	18	0	5	9	25	0	6	532	12	0	47	622	14	1,339	0

Note: Five-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:00 PM	0	0	6	4	10	0	0	1	0	1	1	1	0	0	2
2:15 PM	0	0	10	5	15	0	0	0	0	0	7	0	0	5	12
2:30 PM	0	0	10	11	21	0	0	1	0	1	2	0	2	3	7
2:45 PM	0	0	11	10	21	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	8	7	15	0	0	0	0	0	2	2	1	1	6
3:15 PM	0	0	4	6	10	0	0	0	0	0	2	2	0	2	6
3:30 PM	0	0	14	5	19	0	0	0	0	0	0	1	0	1	2
3:45 PM	0	0	11	7	18	0	0	0	0	0	0	0	1	1	2
4:00 PM	0	0	12	7	19	0	0	0	0	0	0	0	0	1	1
4:15 PM	0	0	5	5	10	0	0	0	0	0	5	0	0	4	9
4:30 PM	0	0	6	8	14	0	0	0	0	0	7	1	0	6	14
4:45 PM	0	0	7	6	13	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	11	6	17	0	0	0	0	0	1	1	0	0	2
5:15 PM	0	0	0	4	4	0	0	0	0	0	1	1	0	0	2
5:30 PM	0	0	4	2	6	0	2	0	0	2	3	0	0	1	4
5:45 PM	0	0	3	5	8	0	0	0	0	0	1	0	1	0	2
6:00 PM	0	0	4	2	6	1	0	0	0	1	0	0	0	1	1
6:15 PM	0	0	3	2	5	0	0	0	0	0	5	0	0	4	9
6:30 PM	0	0	3	2	5	0	0	0	0	0	1	0	0	0	1
6:45 PM	0	0	4	3	7	0	0	0	0	0	3	1	0	1	5
Count Total	0	0	136	107	243	1	2	2	0	5	41	10	5	31	87
Peak Hour	0	0	24	24	48	0	0	0	0	0	9	3	0	6	18



Five-Hour Count Summaries

Interval Start	N LAKEWOOD DR				N LAKEWOOD DR				W RIVERSTONE DR				W RIVERSTONE DR				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:15 PM	0	4	14	1	0	15	13	120	0	0	3	17	0	101	5	6	299	0
2:30 PM	0	3	5	3	0	24	7	95	0	0	4	17	0	124	6	2	290	0
2:45 PM	0	2	8	2	0	14	5	112	0	0	5	21	0	115	7	5	296	0
3:00 PM	0	7	21	0	0	4	6	89	0	0	11	10	0	113	2	4	267	1,152
Peak Hour	0	16	48	6	0	57	31	416	0	0	23	65	0	453	20	17	1,152	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:15 PM	1	0	0	1	2	0	0	0	0	0	2	0	0	0	2
2:30 PM	1	2	1	2	6	0	0	0	1	1	0	1	0	0	1
2:45 PM	1	3	0	0	4	0	1	0	0	1	0	1	0	1	2
3:00 PM	0	1	1	1	3	0	1	0	0	1	0	0	0	1	1
Peak Hour	3	6	2	4	15	0	2	0	1	3	2	2	0	2	6

Five-Hour Count Summaries																		
Interval Start	N LAKEWOOD DR				N LAKEWOOD DR				W RIVERSTONE DR				W RIVERSTONE DR				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	3	9	2	0	14	9	78	0	0	6	17	0	105	4	6	253	0
2:15 PM	0	4	14	1	0	15	13	120	0	0	3	17	0	101	5	6	299	0
2:30 PM	0	3	5	3	0	24	7	95	0	0	4	17	0	124	6	2	290	0
2:45 PM	0	2	8	2	0	14	5	112	0	0	5	21	0	115	7	5	296	1,138
3:00 PM	0	7	21	0	0	4	6	89	0	0	11	10	0	113	2	4	267	1,152
3:15 PM	0	5	13	2	0	13	6	100	0	0	8	11	0	117	4	1	280	1,133
3:30 PM	0	3	9	1	0	15	6	104	0	1	5	18	0	87	4	2	255	1,098
3:45 PM	0	2	15	0	0	15	7	103	0	0	3	17	0	88	7	5	262	1,064
4:00 PM	0	5	15	0	0	11	9	105	0	0	7	14	0	101	2	3	272	1,069
4:15 PM	0	3	7	1	0	13	2	80	0	0	4	17	0	86	2	2	217	1,006
4:30 PM	0	2	11	0	0	6	2	92	0	0	9	27	0	95	5	0	249	1,000
4:45 PM	0	4	8	0	0	6	2	105	0	0	9	13	0	96	10	1	254	992
5:00 PM	0	5	19	1	0	8	1	94	0	0	7	36	0	92	2	2	267	987
5:15 PM	0	2	10	1	0	7	1	123	0	0	4	15	0	108	1	0	272	1,042
5:30 PM	0	2	1	0	0	1	1	82	0	0	2	17	0	78	2	1	187	980
5:45 PM	0	3	5	0	0	8	0	87	0	1	4	9	0	87	1	0	205	931
6:00 PM	0	1	3	0	0	1	1	88	0	0	4	1	0	67	0	0	166	830
6:15 PM	0	1	4	0	0	6	2	65	0	1	3	4	0	72	1	0	159	717
6:30 PM	0	1	3	0	0	2	0	81	0	0	2	6	0	86	1	0	182	712
6:45 PM	0	0	1	0	0	3	0	83	0	0	3	9	0	73	0	0	172	679
Count Total	0	58	181	14	0	186	80	1,886	0	3	103	296	0	1,891	66	40	4,804	0
Peak Hour	0	16	48	6	0	57	31	416	0	0	23	65	0	453	20	17	1,152	0

Note: Five-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:00 PM	0	0	0	0	0	0	0	0	1	1	0	1	0	0	1
2:15 PM	1	0	0	1	2	0	0	0	0	0	2	0	0	0	2
2:30 PM	1	2	1	2	6	0	0	0	1	1	0	1	0	0	1
2:45 PM	1	3	0	0	4	0	1	0	0	1	0	1	0	1	2
3:00 PM	0	1	1	1	3	0	1	0	0	1	0	0	0	1	1
3:15 PM	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0
3:30 PM	0	1	0	1	2	0	0	0	0	0	2	0	0	0	2
3:45 PM	0	2	0	0	2	0	0	1	0	1	0	0	0	1	1
4:00 PM	0	2	1	2	5	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	1	0	0	1	0	2	0	0	2	0	1	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	1	0	1	2	0	0	0	0	0	0	1	1	0	2
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	2	1	0	3
5:15 PM	0	2	0	0	2	0	0	0	0	0	1	0	0	0	1
5:30 PM	0	0	0	1	1	0	0	0	0	0	0	2	1	0	3
5:45 PM	0	1	0	0	1	0	0	0	0	0	0	2	1	1	4
6:00 PM	0	0	0	0	0	0	0	0	0	0	6	0	0	0	6
6:15 PM	0	0	0	1	1	0	0	0	0	0	0	1	0	1	2
6:30 PM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0
6:45 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
Count Total	3	18	3	11	35	0	4	1	3	8	11	12	4	5	32
Peak Hour	3	6	2	4	15	0	2	0	1	3	2	2	0	2	6

Appendix B - Hand Count Data Summaries

APPENDIX B: TRAFFIC VOLUME COUNT INTERSECTION TALLY SHEET

Intersection Volume Count

Cars = passenger cars, station wagons, motorcycles, and pick-up trucks
 Trucks = other trucks and buses. (Record school buses with SB.)

N/S Street Riverstone Time 4:39 to _____
 Date 8/22/18
 EW Street McDonald's Approach Weather sunny
 Intersection Control TwSC Observer MC

Approach	Trucks	Cars
North (Riverstone)	1	10
South (Riverstone)	1	10
East (McDonald's)	1	1
West (McDonald's)	1	1
Other Approach (Left)	1	0

Riverstone
 McDonald's
 Other approach

APPENDIX B: TRAFFIC VOLUME COUNT INTERSECTION TALLY SHEET

Intersection Volume Count

Cars=passenger cars, station wagons, motorcycles, and pick-up trucks
 Trucks=other trucks and buses. (Record school buses with SB.)

N/S Street Starbucks Approach Time 4:23 to 4:39
 Date 8/22/18
 EW Street Riverstone DR Weather sonny
 Intersection Control TWSC Observer MC

Starbucks
 Riverstone
 Riverstone
 Bike ↓ 11

APPENDIX B: TRAFFIC VOLUME COUNT INTERSECTION TALLY SHEET

Intersection Volume Count

Cars=passenger cars, station wagons, motorcycles, and pick-up trucks
 Trucks=other trucks and buses. (Record school buses with SB.)

N/S Street Theater Approach/Old Mill Lp Date 4:06 to 4:21
8/22/18

E/W Street Riverstone Dr. Weather Sunny

Intersection Control TwSC Observer MC

old mill lp

Riverstone

Hotel Approach

APPENDIX B: TRAFFIC VOLUME COUNT INTERSECTION TALLY SHEET

Cars=passenger cars, station wagons, motorcycles, and pick-up trucks
 Trucks=other trucks and buses. (Record school buses with SB.)

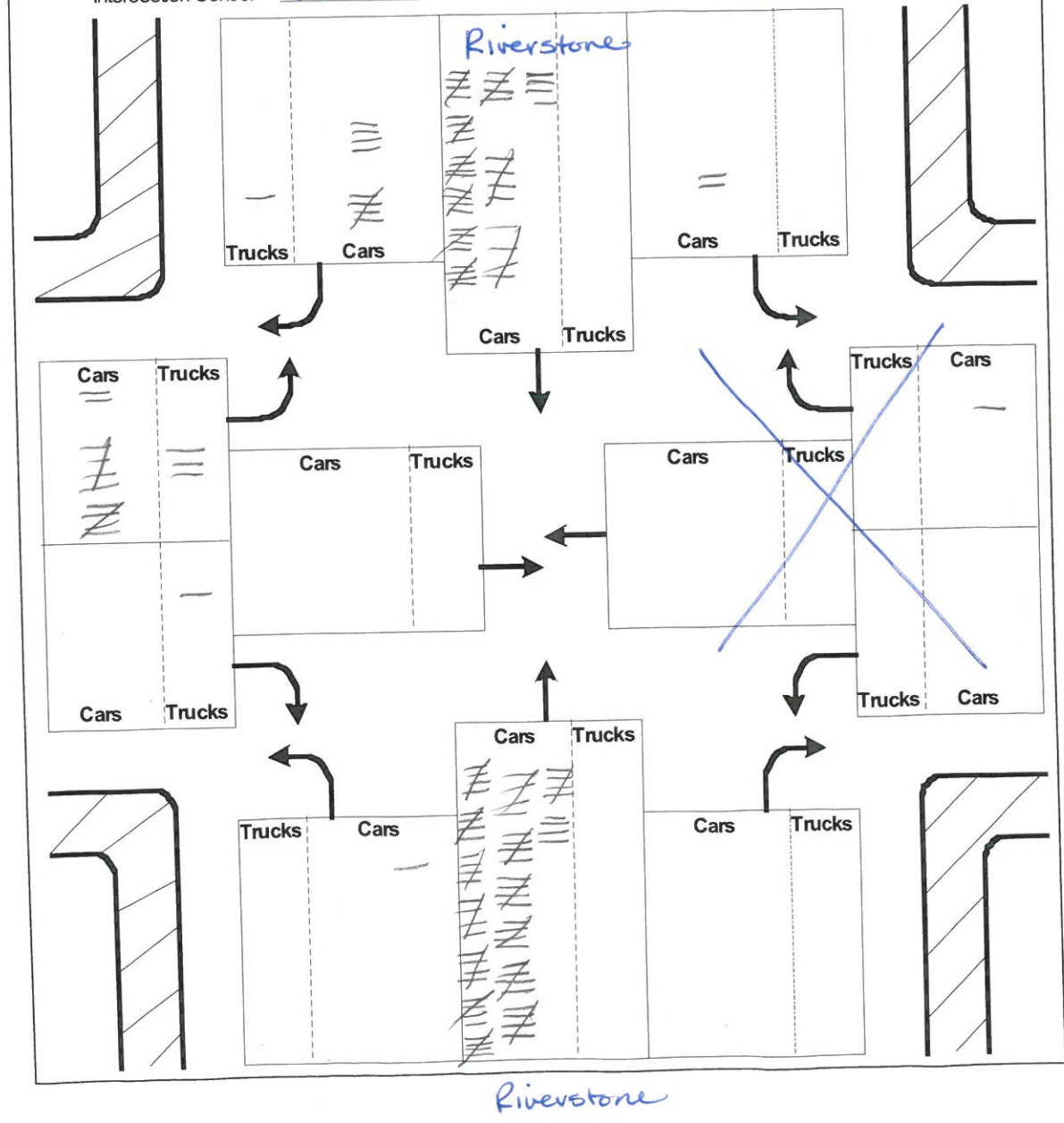
Intersection Volume Count

N/S Street Riverstone DR
 EW Street N. John Loop
 Intersection Control Twsc

Time 5:15 to _____
 Date 01/22/18
 Weather sunny
 Observer AD



N. John Loop



APPENDIX B: TRAFFIC VOLUME COUNT INTERSECTION TALLY SHEET

Intersection Volume Count

Cars=passenger cars, station wagons, motorcycles, and pick-up trucks
 Trucks=other trucks and buses. (Record school buses with SB.)

N/S Street Riverstone Dr Date 01/22/18 Time 4:24 to 4:29
 EW Street N. Approach by ugly fish Weather sunny
 Intersection Control TWSC Observer AD

Ugly Fish

Approach

Riverstone

Riverstone

APPENDIX B: TRAFFIC VOLUME COUNT INTERSECTION TALLY SHEET

Intersection Volume Count

Cars=passenger cars, station wagons, motorcycles, and pick-up trucks
 Trucks=other trucks and buses. (Record school buses with SB.)

N/S Street Riverstone Dr Date 8/22/18 Time 7:41 to 5:06
 EW Street S. John Loop Weather Sunny
 Intersection Control TWSC Observer AD

Trucks | **Cars** | **Cars** | **Trucks** | **Trucks** | **Cars** | **Trucks** | **Cars**

Trucks | **Cars** | **Trucks** | **Cars** | **Trucks** | **Cars** | **Trucks** | **Cars**

Trucks | **Cars** | **Trucks** | **Cars** | **Trucks** | **Cars** | **Trucks** | **Cars**

Trucks | **Cars** | **Trucks** | **Cars** | **Trucks** | **Cars** | **Trucks** | **Cars**

Appendix C - Public Comment

Appendix D - O-D Data

Riverstone Zones as Origins

	Riverstone/Seltice Intersection to:								
	1	2	3	4	5	6	7	8	
	W. Seltice	N. Atlas	Ironwood	EB I-90	WB I-90	E. Appleway	N. Ramsey	S. NW BLVD	SUM
John Loop	0.05	0.28	0.09	0.10	0.03	0.06	0.08	0.00	0.69
Riverstone Park	0.07	0.02	0.00	0.02	0.02	0	0.02	0.01	0.16
Village at Riverstone	0.13	0.06	0.00	0.00	0.00	0	0.01	0.00	0.20
Bellerive	0.14	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.41
Office/Medical Park	0.37	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.42

	Northwest Boulevard/Lakewood Intersection to:									
	9	10	11	12	13	14	15	16	17	
	WB I-90	N. Ramsey	E. Appleway	EB I-90	Ironwood	Lakewood	Emma	Lacrosse	S. NWBLVD	SUM
John Loop	0.00	0.06	0.00	0.00	0.02	0.06	0.00	0.00	0.11	0.25
Riverstone Park	0.14	0.07	0.05	0.09	0.00	0.17	0.00	0.04	0.28	0.84
Village at Riverstone	0.08	0.13	0.04	0.07	0.05	0.14	0.08	0.01	0.20	0.79
Bellerive	0.02	0.02	0.03	0.05	0.05	0.07	0.02	0.00	0.30	0.54
Office/Medical Park	0.10	0.18	0.06	0.02	0.02	0.04	0.00	0.00	0.11	0.53

	Stay in Riverstone	Total
John Loop	0.05	1.00
Riverstone Park	0	1.00
Village at Riverstone	0.01	1.00
Bellerive	0.04	1.00
Office/Medical Park	0.053	1.00

Riverstone Zones as Destinations

	Riverstone/Seltice Intersection from								Using Entrance
	1	2	3	4	5	6	7	8	
	W. Seltice	N. Atlas	Ironwood	WB I-90	EB I-90	E. Appleway	N. Ramsey	S. NW BLVD	
John Loop	0.09	0.09	0.06	0.12	0.04	0.10	0.10	0.00	0.61
Riverstone Park	0.14	0.04	0.00	0.00	0.05	0.01	0.12	0.00	0.36
Village at Riverstone	0.09	0.07	0.00	0.00	0.03	0.01	0.02	0.00	0.22
Bellerive	0.05	0.04	0.00	0.00	0.02	0.01	0.01	0.00	0.12
Office/Medical Park	0.00	0.00	0.00	0.06	0.03	0.02	0.06	0.00	0.17

	Northwest Boulevard/Lakewood Intersection from:									Using Entrance
	9	10	11	12	13	14	15	16	17	
	EB I-90	N. Ramsey	E. Appleway	WB I-90	Ironwood	Lakewood	Emma	Lacrosse	S. NWBLVD	
John Loop	0.00	0.00	0.00	0.00	0.00	0.14	0.05	0.00	0.14	0.33
Riverstone Park	0.06	0.15	0.01	0.02	0.02	0.10	0.00	0.00	0.23	0.58
Village at Riverstone	0.13	0.09	0.06	0.02	0.02	0.10	0.02	0.00	0.30	0.75
Bellerive	0.18	0.07	0.00	0.00	0.00	0.18	0.00	0.00	0.40	0.83
Office/Medical Park	0.10	0.20	0.07	0.21	0.00	0.13	0.00	0.00	0.13	0.83

	Orginated Within Riverstone	Total
John Loop	0.07	1.00
Riverstone Park	0.043	0.98
Village at Riverstone	0.028	1.00
Bellerive	0.057	1.01
Office/Medical Park	0	1.00

Appendix E - 2018 Existing Vistro Intersection Reports

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Atlas Waterfront TIS

Vistro File: X:\...\41292 Base Model 20181130 without Rt Turns.vistro

Scenario: Base Scenario

Report File: X:\...\20190102 2018 Base.pdf

1/2/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	N Atlas Rd / W Seltice Way	Roundabout	HCM 6th Edition	SB Right		9.5	A
2	W Riverstone Dr / W Seltice Way	Signalized	HCM 6th Edition	NB Left	0.423	8.1	A
4	Northwest Blvd / W Ironwood Dr	Signalized	HCM 6th Edition	WB Left	0.685	63.0	E
5	Northwest/I90 EB	Signalized	HCM 6th Edition	SB Left	0.521	43.0	D
7	Northwest/I90 WB	Signalized	HCM 6th Edition	WB Right	0.483	43.5	D
8	Northwest Blvd / W Appleway Ave	Signalized	HCM 6th Edition	EB Thru	0.600	54.8	D
9	N Ramsey Rd / W Golf Course Rd	Signalized	HCM 6th Edition	SB Left	0.480	46.7	D
10	Lakewood/Ironwood	Two-way stop	HCM 6th Edition	NEB Left	0.190	54.2	F
11	Northwest/Lakewood	Signalized	HCM 6th Edition	NWB Left	0.589	47.9	D
12	W Riverstone Dr / N Lakewood Dr	Signalized	HCM 6th Edition	SWB Left	0.668	22.7	C
13	N Beebe Blvd / W Riverstone Dr	Two-way stop	HCM 6th Edition	SWB Left	0.201	19.1	C
15	Riverstone/John's Loop South	Two-way stop	HCM 6th Edition	NEB Left	0.021	12.7	B
16	Riverstone/John's Loop North	Two-way stop	HCM 6th Edition	EB Left	0.107	12.9	B
17	John's Loop/Suzanne	Two-way stop	HCM 6th Edition	EB Left	0.000	8.5	A
18	Northwest & Emma	Two-way stop	HCM 6th Edition	NEB Thru	0.000	271.9	F
20	Northwest Blvd / W Lacrosse Ave	Two-way stop	HCM 6th Edition	EB Thru	0.195	242.6	F
21	Riverstone/Old Mill	Two-way stop	HCM 6th Edition	SWB Left	0.273	20.7	C

22	Lincoln Way/Lacrosse Ave.	Two-way stop	HCM 6th Edition	EB Thru	0.225	47.5	E
23	Lincoln Way / Emma Ave.	Signalized	HCM 6th Edition	WB Right	0.339	22.3	C
24	Riverstone/Village North	Two-way stop	HCM 6th Edition	EB Left	0.014	15.4	C
25	Riverstone/Starbucks	Two-way stop	HCM 6th Edition	SB Left	0.068	16.5	C
26	Riverstone/McDonald's	Two-way stop	HCM 6th Edition	SWB Left	0.234	23.0	C

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

Intersection Level Of Service Report
Intersection 1: N Atlas Rd / W Seltice Way

Control Type:	Roundabout	Delay (sec / veh):	9.5
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Atlas Rd.						Atlas Rd.					
Approach	Northbound						Southbound					
Lane Configuration												
Turning Movement	U-turn	Left	Left	Thru	Right	Right	U-turn	Left	Left	Thru	Right	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00						35.00					
Grade [%]	0.00						0.00					
Crosswalk	Yes						Yes					

Volumes

Name	Atlas Rd.						Atlas Rd.					
Base Volume Input [veh/h]	0	0	0	0	0	0	0	166	0	0	0	206
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	166	0	0	0	206
Peak Hour Factor	0.9200	0.9200	1.0000	0.9200	1.0000	0.9200	0.9200	0.9200	1.0000	0.9200	1.0000	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	45	0	0	0	56
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	180	0	0	0	224
Pedestrian Volume [ped/h]	0						1					

Intersection Settings

Number of Conflicting Circulating Lanes	2						2					
Circulating Flow Rate [veh/h]	1409						715					
Exiting Flow Rate [veh/h]	0						604					
Demand Flow Rate [veh/h]	0	0	0	0	0	0	0	166	0	0	0	206
Adjusted Demand Flow Rate [veh/h]	0	0	0	0	0	0	0	180	0	0	0	224

Lanes

Overwrite Calculated Critical Headway	No	No
User-Defined Critical Headway [s]	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No
User-Defined Follow-Up Time [s]	3.00	3.00
A (intercept)	1420.00	1420.00
B (coefficient)	0.00085	0.00085
HV Adjustment Factor	0.98	0.98
Entry Flow Rate [veh/h]	0	413
Capacity of Entry and Bypass Lanes [veh/h]	429	774
Pedestrian Impedance	1.00	1.00
Capacity per Entry Lane [veh/h]	421	759
X, volume / capacity	0.00	0.53

Movement, Approach, & Intersection Results

Lane LOS	A	B
95th-Percentile Queue Length [veh]	0.00	3.19
95th-Percentile Queue Length [ft]	0.00	79.83
Approach Delay [s/veh]	8.56	12.70
Approach LOS	A	B
Intersection Delay [s/veh]	9.47	
Intersection LOS	A	

Intersection Setup

Name	Eastbound					Westbound				
Approach										
Lane Configuration										
Turning Movement	Left2	Left	Thru	Thru	Right	Left2	Left	Thru	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
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	Yes					Yes				

Volumes

Name	Eastbound					Westbound				
Base Volume Input [veh/h]	7	283	0	808	0	6	0	631	0	261
Base Volume Adjustment Factor	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
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	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
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	283	0	808	0	6	0	631	0	261
Peak Hour Factor	0.9200	0.9200	1.0000	0.9200	0.9200	0.9200	0.9200	0.9200	1.0000	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	77	0	220	0	2	0	171	0	71
Total Analysis Volume [veh/h]	8	308	0	878	0	7	0	686	0	284
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Number of Conflicting Circulating Lanes	1					1				
Circulating Flow Rate [veh/h]	191					322				
Exiting Flow Rate [veh/h]	0					0				
Demand Flow Rate [veh/h]	7	283	0	808	0	6	0	631	0	261
Adjusted Demand Flow Rate [veh/h]	8	308	0	878	0	7	0	686	0	284

Lanes

Override Calculated Critical Headway	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00
Override Calculated Follow-Up Time	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00
A (intercept)	1420.00	1420.00	1420.00	1420.00
B (coefficient)	0.00091	0.00091	0.00091	0.00091
HV Adjustment Factor	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	573	646	469	529
Capacity of Entry and Bypass Lanes [veh/h]	1194	1194	1060	1060
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1171	1171	1039	1039
X, volume / capacity	0.48	0.54	0.44	0.50

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A
95th-Percentile Queue Length [veh]	2.67	3.36	2.31	2.86
95th-Percentile Queue Length [ft]	66.75	84.09	57.64	71.48
Approach Delay [s/veh]	8.84		8.91	
Approach LOS	A		A	
Intersection Delay [s/veh]	9.47			
Intersection LOS	A			

Version 6.00-01

Intersection Setup

Name	Northwestbound					Southeastbound				
Approach	Northwestbound					Southeastbound				
Lane Configuration	Northwestbound					Southeastbound				
Turning Movement	Left	Thru	Thru	Right	Right	Left	Thru	Thru	Right	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	Yes					Yes				

Volumes

Name	Northwestbound					Southeastbound				
Base Volume Input [veh/h]	0	0	0	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
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	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
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Number of Conflicting Circulating Lanes	1					1				
Circulating Flow Rate [veh/h]	322					191				
Exiting Flow Rate [veh/h]	1086					936				
Demand Flow Rate [veh/h]	0	0	0	0	0	0	0	0	0	0
Adjusted Demand Flow Rate [veh/h]	0	0	0	0	0	0	0	0	0	0

Lanes

Movement, Approach, & Intersection Results

Approach Delay [s/veh]	0.00	0.00
Approach LOS	A	A
Intersection Delay [s/veh]	9.47	
Intersection LOS	A	

Intersection Level Of Service Report
Intersection 2: W Riverstone Dr / W Seltice Way

Control Type:	Signalized	Delay (sec / veh):	8.1
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.423

Intersection Setup

Name	Riverstone Dr.		Seltice Way		Seltice Way	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐		⇐⇐		⇐⇐	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	1	0
Pocket Length [ft]	100.00	100.00	100.00	140.00	140.00	100.00
Speed [mph]	30.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		Yes		Yes	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Riverstone Dr.		Seltice Way		Seltice Way	
Base Volume Input [veh/h]	230	70	788	189	68	674
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
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	230	70	788	189	68	674
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	63	19	214	51	18	183
Total Analysis Volume [veh/h]	250	76	857	205	74	733
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]	2		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	1	0	4	0	0	8
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	5	0	0	5
Maximum Green [s]	30	0	30	0	0	30
Amber [s]	3.0	0.0	3.0	0.0	0.0	3.0
All red [s]	1.0	0.0	1.0	0.0	0.0	1.0
Split [s]	41	0	19	0	0	19
Vehicle Extension [s]	3.0	0.0	3.0	0.0	0.0	3.0
Walk [s]	5	0	5	0	0	5
Pedestrian Clearance [s]	10	0	10	0	0	10
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0
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	L	R	C	R	L	C
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	12	40	40	40	40
g / C, Green / Cycle	0.20	0.20	0.67	0.67	0.67	0.67
(v / s)_i Volume / Saturation Flow Rate	0.16	0.05	0.27	0.15	0.13	0.23
s, saturation flow rate [veh/h]	1603	1431	3204	1401	580	3204
c, Capacity [veh/h]	315	281	2148	939	409	2148
d1, Uniform Delay [s]	23.00	20.50	4.46	3.81	8.63	4.23
k, delay calibration	0.11	0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.53	0.51	0.55	0.53	0.97	0.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.27	0.40	0.22	0.18	0.34
d, Delay for Lane Group [s/veh]	27.53	21.01	5.01	4.35	9.59	4.67
Lane Group LOS	C	C	A	A	A	A
Critical Lane Group	Yes	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	3.52	0.89	1.55	0.71	0.55	1.26
50th-Percentile Queue Length [ft/ln]	87.96	22.15	38.80	17.67	13.83	31.39
95th-Percentile Queue Length [veh/ln]	6.33	1.59	2.79	1.27	1.00	2.26
95th-Percentile Queue Length [ft/ln]	158.33	39.87	69.85	31.80	24.89	56.51

Movement, Approach, & Intersection Results

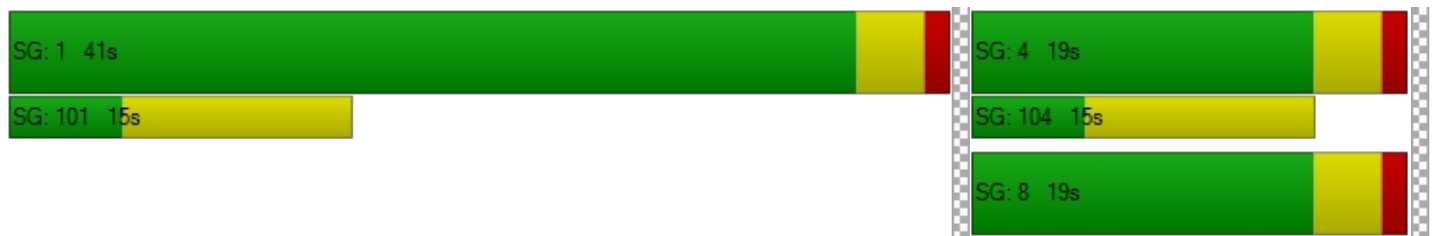
d_M, Delay for Movement [s/veh]	27.53	21.01	5.01	4.35	9.59	4.67
Movement LOS	C	C	A	A	A	A
d_A, Approach Delay [s/veh]	26.01		4.88		5.12	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	8.11					
Intersection LOS	A					
Intersection V/C	0.423					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0
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]	21.68	21.68	21.68
I_p,int, Pedestrian LOS Score for Intersection	2.223	2.746	2.676
Crosswalk LOS	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	30.00	30.00	30.00
I_b,int, Bicycle LOS Score for Intersection	4.132	3.937	3.726
Bicycle LOS	D	D	D

Sequence

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



Intersection Level Of Service Report
Intersection 4: Northwest Blvd / W Ironwood Dr

Control Type:	Signalized	Delay (sec / veh):	63.0
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.685

Intersection Setup

Name	Seltice Way			Ironwood Dr			Northwest Blvd.			Northwest Blvd.		
Approach	Eastbound			Westbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	2	0	1	2	0	0	1	0	1
Pocket Length [ft]	150.00	100.00	25.00	150.00	100.00	150.00	250.00	100.00	100.00	300.00	100.00	300.00
Speed [mph]	35.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Seltice Way			Ironwood Dr			Northwest Blvd.			Northwest Blvd.		
Base Volume Input [veh/h]	265	225	400	35	302	441	260	996	38	131	768	196
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	359	0	0	0	0	0	0
Total Hourly Volume [veh/h]	265	225	400	35	302	82	260	996	38	131	768	196
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
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]	72	61	109	10	82	22	71	271	10	36	209	53
Total Analysis Volume [veh/h]	288	245	435	38	328	89	283	1083	41	142	835	213
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]	4			1			4			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	70.0
Offset Reference	LeadGreen
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	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	18	35	0	21	38	0	25	49	0	35	49	0
Amber [s]	3.5	3.5	0.0	3.5	3.5	0.0	3.5	3.5	0.0	3.5	3.5	0.0
All red [s]	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0
Split [s]	23	40	0	26	43	0	30	54	0	40	54	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	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	18	0	0	18	0	0	18	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]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	Yes		No	Yes	
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]	150.0	150.0	0.0	150.0	150.0	0.0	150.0	150.0	0.0	150.0	150.0	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	C	L	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	0.00	3.00	3.00	0.00	3.00	3.00
g_i, Effective Green Time [s]	16	52	52	5	41	41	88	78	78	88	49	49
g / C, Green / Cycle	0.10	0.32	0.32	0.03	0.25	0.25	0.55	0.49	0.49	0.55	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.08	0.13	0.27	0.02	0.09	0.06	0.24	0.21	0.21	0.21	0.23	0.13
s, saturation flow rate [veh/h]	3459	1870	1589	1781	3560	1589	1184	3560	1835	675	3560	1589
c, Capacity [veh/h]	342	607	516	51	906	405	519	1745	899	296	1090	487
d1, Uniform Delay [s]	76.13	56.92	67.36	77.86	54.94	52.73	74.65	46.66	46.66	75.77	66.24	58.88
k, delay calibration	0.11	0.11	0.12	0.11	0.11	0.11	0.50	0.50	0.50	0.50	0.24	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]	5.64	0.43	4.38	18.42	0.24	0.27	4.08	0.76	1.47	5.47	2.54	2.84
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	0.33	0.33	0.33	0.67	0.67	0.67	0.33	0.33	0.33	0.33	0.33	0.33
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	0.84	0.40	0.84	0.74	0.36	0.22	0.55	0.43	0.43	0.48	0.77	0.44
d, Delay for Lane Group [s/veh]	81.77	57.35	71.74	96.27	55.18	53.00	78.73	47.42	48.13	81.24	68.79	61.73
Lane Group LOS	F	E	E	F	E	D	E	D	D	F	E	E
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.48	9.96	19.10	1.83	6.12	3.20	11.11	14.59	15.22	5.53	17.99	9.05
50th-Percentile Queue Length [ft/ln]	162.00	249.03	477.56	45.86	152.88	80.09	277.81	364.74	380.46	138.30	449.75	226.28
95th-Percentile Queue Length [veh/ln]	10.65	15.14	26.27	3.30	10.17	5.77	16.58	20.85	21.62	9.39	24.95	13.99
95th-Percentile Queue Length [ft/ln]	266.37	378.43	656.75	82.54	254.27	144.17	414.48	521.34	540.41	234.73	623.65	349.63

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	81.77	57.35	71.74	96.27	55.18	53.00	78.73	47.65	48.13	81.24	68.79	61.73
Movement LOS	F	E	E	F	E	D	E	D	D	F	E	E
d_A, Approach Delay [s/veh]	71.08			58.18			53.91			69.01		
Approach LOS	E			E			D			E		
d_I, Intersection Delay [s/veh]	63.00											
Intersection LOS	E											
Intersection V/C	0.685											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	3150.00	12600.00	3150.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	69.38	69.38	69.38	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.926	3.344	2.884	0.000
Crosswalk LOS	C	C	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	438	475	613	613
d_b, Bicycle Delay [s]	48.83	46.51	38.50	38.50
I_b,int, Bicycle LOS Score for Intersection	3.157	2.231	2.333	2.541
Bicycle LOS	C	B	B	B

Sequence

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



**Intersection Level Of Service Report
Intersection 5: Northwest/I90 EB**

Control Type: Signalized
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 43.0
 Level Of Service: D
 Volume to Capacity (v/c): 0.521

Intersection Setup

Name	Northwest Blvd.			Northwest Blvd.			I90 EB Off-Ramp			I90 EB On-Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T			TT			TT+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 Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	140.00	100.00	100.00	375.00	100.00	200.00	100.00	100.00	100.00
Speed [mph]	35.00			35.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			Yes		

Volumes

Name	Northwest Blvd.			Northwest Blvd.			I90 EB Off-Ramp			I90 EB On-Ramp		
Base Volume Input [veh/h]	0	1600	118	157	717	0	410	2	352	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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	19	0	0	0	0	0	287	0	0	0
Total Hourly Volume [veh/h]	0	1600	99	157	717	0	410	2	65	0	0	0
Peak Hour Factor	1.0000	0.9200	0.9200	0.9200	0.9200	1.0000	0.9200	0.9200	0.9200	1.0000	1.0000	1.0000
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	435	27	43	195	0	111	1	18	0	0	0
Total Analysis Volume [veh/h]	0	1739	108	171	779	0	446	2	71	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			2			5		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	55.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lag	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	10	0	0	0	0
Maximum Green [s]	0	76	0	26	106	0	0	46	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	80	0	30	110	0	0	50	0	0	0	0
Vehicle Extension [s]	0.0	5.0	0.0	5.0	5.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	7	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	15	0	0	16	0	0	0	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		Yes		No	Yes			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	150.0	0.0	150.0	150.0	0.0	0.0	150.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	C	L	C	L	C	R	
C, Cycle Length [s]	160	160	160	160	160	160	160	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	110	110	12	126	26	26	26	
g / C, Green / Cycle	0.69	0.69	0.07	0.79	0.16	0.16	0.16	
(v / s)_i Volume / Saturation Flow Rate	0.35	0.34	0.05	0.22	0.13	0.13	0.04	
s, saturation flow rate [veh/h]	3560	1814	3459	3560	1781	1782	1589	
c, Capacity [veh/h]	2450	1248	252	2799	292	292	261	
d1, Uniform Delay [s]	37.80	37.41	76.18	22.91	72.62	72.62	66.47	
k, delay calibration	0.50	0.50	0.23	0.50	0.11	0.11	0.11	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.74	1.40	6.62	0.25	4.22	4.22	0.56	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	0.33	0.33	0.33	0.33	0.33	0.33	0.33	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.50	0.49	0.68	0.28	0.77	0.77	0.27	
d, Delay for Lane Group [s/veh]	38.54	38.81	82.81	23.16	76.84	76.84	67.03	
Lane Group LOS	D	D	F	C	E	E	E	
Critical Lane Group	Yes	No	Yes	No	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	23.36	23.54	3.85	13.44	9.92	9.93	2.92	
50th-Percentile Queue Length [ft/ln]	584.03	588.44	96.20	335.99	248.04	248.15	72.99	
95th-Percentile Queue Length [veh/ln]	31.29	31.49	6.93	19.45	15.09	15.09	5.25	
95th-Percentile Queue Length [ft/ln]	782.19	787.35	173.17	486.30	377.19	377.32	131.37	

Movement, Approach, & Intersection Results

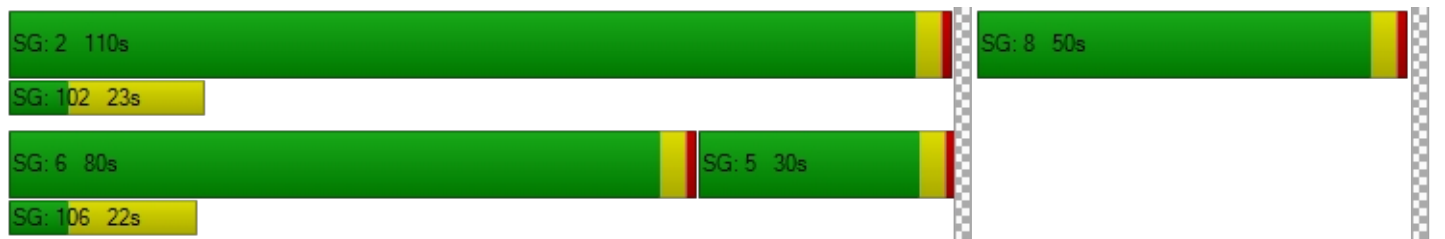
d_M, Delay for Movement [s/veh]	0.00	38.62	38.81	82.81	23.16	0.00	76.84	76.84	67.03	0.00	0.00	0.00
Movement LOS		D	D	F	C		E	E	E			
d_A, Approach Delay [s/veh]		38.63		33.90			75.50			0.00		
Approach LOS		D		C			E			A		
d_I, Intersection Delay [s/veh]	43.04											
Intersection LOS	D											
Intersection V/C	0.521											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0		0.0		11.0		11.0
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		69.38		69.38
I_p,int, Pedestrian LOS Score for Intersection	0.000		0.000		2.681		1.888
Crosswalk LOS	F		F		B		A
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000		2000
c_b, Capacity of the bicycle lane [bicycles/h]	950		1325		575		0
d_b, Bicycle Delay [s]	22.05		9.11		40.61		80.00
I_b,int, Bicycle LOS Score for Intersection	2.586		2.343		2.890		4.132
Bicycle LOS	B		B		C		D

Sequence

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



Intersection Level Of Service Report
Intersection 7: Northwest/I90 WB

Control Type:	Signalized	Delay (sec / veh):	43.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.483

Intersection Setup

Name	Northwest Blvd.			Northwest Blvd.			I90 WB On-Ramp			I90 WB Off-Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	140.00	100.00	100.00	100.00	100.00	100.00	230.00	100.00	100.00
Speed [mph]	35.00			35.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name	Northwest Blvd.			Northwest Blvd.			I90 WB On-Ramp			I90 WB Off-Ramp		
Base Volume Input [veh/h]	596	1374	0	0	775	525	0	0	0	97	1	264
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	285	0	0	0	0	0	172
Total Hourly Volume [veh/h]	596	1374	0	0	775	240	0	0	0	97	1	92
Peak Hour Factor	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200	1.0000	1.0000	1.0000	0.9200	0.9200	0.9200
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]	162	373	0	0	211	65	0	0	0	26	0	25
Total Analysis Volume [veh/h]	648	1493	0	0	842	261	0	0	0	105	1	100
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			5			5		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	60.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	1	6	0	0	2	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	4	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	32	110	0	0	74	0	0	0	0	0	42	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	36	114	0	0	78	0	0	0	0	0	46	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	12	0	0	15	0	0	0	0	0	0	0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	Yes			Yes						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	150.0	150.0	0.0	0.0	150.0	0.0	0.0	0.0	0.0	0.0	150.0	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	C		L	C
C, Cycle Length [s]	160	160	160	160		160	160
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	60	138	74	74		14	14
g / C, Green / Cycle	0.38	0.86	0.46	0.46		0.09	0.09
(v / s)_i Volume / Saturation Flow Rate	0.19	0.42	0.21	0.22		0.06	0.06
s, saturation flow rate [veh/h]	3459	3560	3560	1662		1781	1592
c, Capacity [veh/h]	1303	3077	1647	769		153	137
d1, Uniform Delay [s]	55.83	27.50	49.07	50.04		71.05	71.39
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.29	0.55	0.88	2.13		5.39	7.59
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	0.33	0.33	0.33	0.33		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.50	0.49	0.45	0.48		0.69	0.74
d, Delay for Lane Group [s/veh]	56.12	28.05	49.94	52.17		76.44	78.98
Lane Group LOS	E	C	D	D		E	E
Critical Lane Group	No	Yes	No	No		No	Yes
50th-Percentile Queue Length [veh/ln]	13.12	26.79	14.63	14.96		4.42	4.34
50th-Percentile Queue Length [ft/ln]	328.08	669.69	365.87	374.12		110.43	108.41
95th-Percentile Queue Length [veh/ln]	19.06	35.28	20.91	21.31		7.86	7.75
95th-Percentile Queue Length [ft/ln]	476.61	881.90	522.72	532.73		196.60	193.79

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	56.12	28.05	0.00	0.00	50.23	52.17	0.00	0.00	0.00	76.44	78.98	78.98
Movement LOS	E	C			D	D				E	E	E
d_A, Approach Delay [s/veh]	36.55				50.69		0.00		77.69			
Approach LOS	D				D		A		E			
d_I, Intersection Delay [s/veh]	43.52											
Intersection LOS	D											
Intersection V/C	0.483											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	71.25	71.25
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.326	2.203
Crosswalk LOS	F	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1375	925	0	525
d_b, Bicycle Delay [s]	7.81	23.11	80.00	43.51
I_b,int, Bicycle LOS Score for Intersection	3.326	2.323	4.132	2.183
Bicycle LOS	C	B	D	B

Sequence

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



Intersection Level Of Service Report
Intersection 8: Northwest Blvd / W Appleway Ave

Control Type:	Signalized	Delay (sec / veh):	54.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.600

Intersection Setup

Name	Northwest Blvd.			N Ramsey Rd.			Appleway Ave.			Appleway Ave.		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T 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 Pocket	1	0	1	2	0	0	1	0	1	2	0	0
Pocket Length [ft]	150.00	100.00	150.00	130.00	100.00	100.00	115.00	100.00	115.00	120.00	100.00	100.00
Speed [mph]	35.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Northwest Blvd.			N Ramsey Rd.			Appleway Ave.			Appleway Ave.		
Base Volume Input [veh/h]	85	1182	376	132	877	33	13	51	97	344	79	157
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	307	0	0	7	0	0	79	0	0	128
Total Hourly Volume [veh/h]	85	1182	69	132	877	26	13	51	18	344	79	29
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
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]	23	321	19	36	238	7	4	14	5	93	21	8
Total Analysis Volume [veh/h]	92	1285	75	143	953	28	14	55	20	374	86	32
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			7			5			3		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	65.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	1	6	0	5	2	0	3	3	0	4	4	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	14	81	0	20	87	0	17	17	0	26	26	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]	18	85	0	24	91	0	21	21	0	30	30	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	7	0	0	7	0	0	0	0	7	7	0
Pedestrian Clearance [s]	0	22	0	0	26	0	0	0	0	30	30	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	Yes		No	Yes		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]	150.0	150.0	0.0	150.0	150.0	0.0	150.0	150.0	0.0	150.0	150.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160	160
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	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	27	104	104	10	87	87	7	7	7	23	23	23
g / C, Green / Cycle	0.17	0.65	0.65	0.06	0.54	0.54	0.05	0.05	0.05	0.14	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.06	0.40	0.05	0.05	0.29	0.29	0.01	0.03	0.01	0.12	0.05	0.02
s, saturation flow rate [veh/h]	1603	3204	1431	3113	1683	1666	1603	1683	1431	3113	1683	1431
c, Capacity [veh/h]	269	2079	928	195	915	906	74	78	66	443	239	203
d1, Uniform Delay [s]	67.01	44.75	24.63	76.99	47.29	47.29	73.44	75.25	73.83	74.46	69.15	67.01
k, delay calibration	0.17	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.15	1.39	0.17	5.21	2.27	2.30	1.23	11.24	2.55	4.50	0.91	0.36
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	0.33	0.33	0.33	0.33	0.33	0.33	1.00	1.00	1.00	0.33	0.33	0.33
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	0.62	0.08	0.73	0.54	0.54	0.19	0.71	0.30	0.84	0.36	0.16
d, Delay for Lane Group [s/veh]	68.16	46.14	24.80	82.20	49.56	49.59	74.66	86.50	76.37	78.96	70.05	67.36
Lane Group LOS	E	D	C	F	D	D	E	F	E	E	E	E
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.87	25.46	2.41	3.17	19.89	19.70	0.58	2.48	0.84	8.32	3.61	1.30
50th-Percentile Queue Length [ft/ln]	96.67	636.45	60.29	79.14	497.20	492.50	14.50	61.91	21.09	208.06	90.14	32.40
95th-Percentile Queue Length [veh/ln]	6.96	33.73	4.34	5.70	27.20	26.98	1.04	4.46	1.52	13.05	6.49	2.33
95th-Percentile Queue Length [ft/ln]	174.01	843.32	108.52	142.46	680.04	674.47	26.11	111.44	37.96	326.34	162.25	58.33

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	68.16	46.14	24.80	82.20	49.58	49.59	74.66	86.50	76.37	78.96	70.05	67.36
Movement LOS	E	D	C	F	D	D	E	F	E	E	E	E
d_A, Approach Delay [s/veh]	46.43			53.73			82.36			76.65		
Approach LOS	D			D			F			E		
d_I, Intersection Delay [s/veh]	54.75											
Intersection LOS	D											
Intersection V/C	0.600											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
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	69.38	69.38	69.38
I_p,int, Pedestrian LOS Score for Intersection	0.000	2.981	2.379	2.890
Crosswalk LOS	F	C	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1013	1088	213	325
d_b, Bicycle Delay [s]	19.50	16.65	63.90	56.11
I_b,int, Bicycle LOS Score for Intersection	3.011	2.493	1.837	2.583
Bicycle LOS	C	B	A	B

Sequence

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



Intersection Level Of Service Report
Intersection 9: N Ramsey Rd / W Golf Course Rd

Control Type:	Signalized	Delay (sec / veh):	46.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.480

Intersection Setup

Name	N Ramsey Rd.			N Ramsey Rd.			W Golf Course Rd			W Marie Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	110.00	100.00	100.00	75.00	100.00	100.00	95.00	100.00	100.00
Speed [mph]	35.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	N Ramsey Rd.			N Ramsey Rd.			W Golf Course Rd			W Marie Ave		
Base Volume Input [veh/h]	132	1167	58	99	895	85	70	59	104	24	46	64
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	9	0	0	14	0	0	45	0	0	28
Total Hourly Volume [veh/h]	132	1167	49	99	895	71	70	59	59	24	46	36
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
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	317	13	27	243	19	19	16	16	7	13	10
Total Analysis Volume [veh/h]	143	1268	53	108	973	77	76	64	64	26	50	39
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	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	4			8			1			1		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	65.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	1	6	0	5	2	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	10	94	0	16	100	0	0	38	0	0	38	0
Amber [s]	3.0	3.5	0.0	3.5	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	1.0	1.5	0.0	1.5	1.5	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Split [s]	14	98	0	20	104	0	0	42	0	0	42	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
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
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	Yes		No	Yes			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	150.0	150.0	0.0	150.0	150.0	0.0	0.0	150.0	0.0	0.0	150.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	4.50	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	127	116	116	126	100	100	24	24	24	24
g / C, Green / Cycle	0.79	0.72	0.72	0.79	0.62	0.62	0.15	0.15	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.19	0.39	0.40	0.22	0.32	0.32	0.06	0.08	0.02	0.06
s, saturation flow rate [veh/h]	738	1683	1659	491	1683	1640	1177	1547	1136	1562
c, Capacity [veh/h]	469	1219	1202	278	1052	1025	143	233	111	235
d1, Uniform Delay [s]	67.05	37.63	37.72	76.58	41.45	41.47	71.87	62.92	72.68	61.20
k, delay calibration	0.50	0.50	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	1.00
d2, Incremental Delay [s]	1.67	1.75	1.79	4.04	1.73	1.78	3.04	2.01	1.08	1.00
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	0.33	0.33	0.33	0.33	0.33	0.33	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	0.30	0.54	0.55	0.39	0.51	0.51	0.53	0.55	0.23	0.38
d, Delay for Lane Group [s/veh]	68.73	39.38	39.51	80.61	43.19	43.25	74.90	64.93	73.76	62.20
Lane Group LOS	E	D	D	F	D	D	E	E	E	E
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.75	25.58	25.33	3.42	20.79	20.30	3.18	4.96	1.06	3.33
50th-Percentile Queue Length [ft/ln]	118.75	639.40	633.30	85.38	519.87	507.44	79.43	124.07	26.61	83.34
95th-Percentile Queue Length [veh/ln]	8.32	33.87	33.59	6.15	28.27	27.69	5.72	8.62	1.92	6.00
95th-Percentile Queue Length [ft/ln]	208.11	846.75	839.65	153.68	706.83	692.16	142.98	215.40	47.89	150.01

Movement, Approach, & Intersection Results

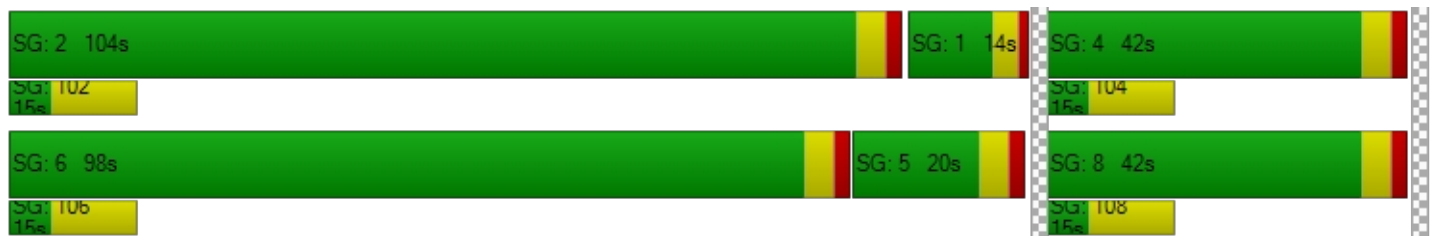
d_M, Delay for Movement [s/veh]	68.73	39.44	39.51	80.61	43.22	43.25	74.90	64.93	64.93	73.76	62.20	62.20
Movement LOS	E	D	D	F	D	D	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	42.30			46.71			68.65			64.81		
Approach LOS	D			D			E			E		
d_I, Intersection Delay [s/veh]	46.75											
Intersection LOS	D											
Intersection V/C	0.480											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	71.25	71.25	71.25	71.25
I_p,int, Pedestrian LOS Score for Intersection	2.965	3.044	2.426	2.301
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1163	1238	463	463
d_b, Bicycle Delay [s]	14.03	11.63	47.28	47.28
I_b,int, Bicycle LOS Score for Intersection	2.775	2.527	1.970	1.796
Bicycle LOS	C	B	A	A

Sequence

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



Intersection Level Of Service Report
Intersection 10: Lakewood/Ironwood

Control Type:	Two-way stop	Delay (sec / veh):	54.2
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.190

Intersection Setup

Name	Lakewood Dr.		Ironwood Dr.		Ironwood Dr	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	150.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	Lakewood Dr.		Ironwood Dr.		Ironwood Dr	
Base Volume Input [veh/h]	16	159	125	833	461	18
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
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	16	159	125	833	461	18
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	43	34	226	125	5
Total Analysis Volume [veh/h]	17	173	136	905	501	20
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.19	0.31	0.13	0.01	0.01	0.00
d_M, Delay for Movement [s/veh]	54.16	20.36	8.96	0.00	0.00	0.00
Movement LOS	F	C	A	A	A	A
95th-Percentile Queue Length [veh/ln]	2.67	2.67	0.45	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	66.76	66.76	11.17	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	23.39		1.17		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	3.23					
Intersection LOS	F					

**Intersection Level Of Service Report
Intersection 11: Northwest/Lakewood**

Control Type:	Signalized	Delay (sec / veh):	47.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.589

Intersection Setup

Name	N Lakewood Dr			Lakewood Dr.			Northwest Blvd.			Northwest Blvd.		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration	⇌⇌⇌			⇌			⇌⇌⇌			⇌⇌⇌		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	160.00	100.00	160.00	100.00	100.00	100.00	110.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	N Lakewood Dr			Lakewood Dr.			Northwest Blvd.			Northwest Blvd.		
Base Volume Input [veh/h]	204	86	261	54	97	44	191	1000	37	21	1021	150
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	213	0	0	19	0	0	6	0	0	122
Total Hourly Volume [veh/h]	204	86	48	54	97	25	191	1000	31	21	1021	28
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
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]	55	23	13	15	26	7	52	272	8	6	277	8
Total Analysis Volume [veh/h]	222	93	52	59	105	27	208	1087	34	23	1110	30
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]	1			2			0			5		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	90.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	8	8	0	4	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	20	20	0	20	20	0	10	20	0	10	20	0
Maximum Green [s]	20	20	0	23	23	0	25	72	0	25	72	0
Amber [s]	3.5	3.5	0.0	3.5	3.5	0.0	3.5	3.5	0.0	3.5	3.5	0.0
All red [s]	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0
Split [s]	25	25	0	28	28	0	30	77	0	30	77	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]	5	5	0	5	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	10	10	0	10	10	0	0	10	0	0	10	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]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	150.0	150.0	0.0	150.0	150.0	0.0	150.0	150.0	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	L	C	C	L	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
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
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	20	20	20	20	20	21	94	94	6	79	79
g / C, Green / Cycle	0.12	0.12	0.12	0.13	0.13	0.13	0.58	0.58	0.04	0.49	0.49
(v / s)_i Volume / Saturation Flow Rate	0.09	0.09	0.03	0.03	0.07	0.12	0.30	0.30	0.01	0.31	0.02
s, saturation flow rate [veh/h]	1781	1832	1589	1781	1805	1781	1870	1850	1781	3560	1589
c, Capacity [veh/h]	223	229	199	223	226	233	1092	1080	73	1759	785
d1, Uniform Delay [s]	67.11	67.10	63.32	63.33	66.06	68.42	19.81	19.83	76.69	53.24	34.88
k, delay calibration	0.19	0.19	0.11	0.11	0.11	0.24	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
d2, Incremental Delay [s]	6.83	6.59	0.69	0.63	2.39	21.27	1.74	1.76	2.44	1.73	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	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
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

Lane Group Results

X, volume / capacity	0.70	0.70	0.26	0.26	0.58	0.89	0.52	0.52	0.32	0.63	0.04
d, Delay for Lane Group [s/veh]	73.94	73.69	64.01	63.96	68.46	89.69	21.55	21.59	79.13	54.97	34.97
Lane Group LOS	E	E	E	E	E	F	C	C	E	D	C
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	6.51	6.67	1.96	2.22	5.25	9.74	12.90	12.80	1.00	22.77	1.01
50th-Percentile Queue Length [ft/ln]	162.87	166.85	49.04	55.55	131.13	243.55	322.53	319.90	24.92	569.36	25.26
95th-Percentile Queue Length [veh/ln]	10.70	10.91	3.53	4.00	9.00	14.86	18.79	18.66	1.79	30.60	1.82
95th-Percentile Queue Length [ft/ln]	267.51	272.77	88.27	99.99	225.03	371.52	469.80	466.57	44.86	765.03	45.47

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	73.87	73.69	64.01	63.96	68.46	68.46	89.69	21.57	21.59	79.13	54.97	34.97
Movement LOS	E	E	E	E	E	E	F	C	C	E	D	C
d_A, Approach Delay [s/veh]	72.43			67.07			32.23			54.93		
Approach LOS	E			E			C			D		
d_I, Intersection Delay [s/veh]	47.91											
Intersection LOS	D											
Intersection V/C	0.589											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	71.25	71.25	71.25	71.25
I_p,int, Pedestrian LOS Score for Intersection	2.869	2.134	2.967	3.155
Crosswalk LOS	C	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	288	900	900
d_b, Bicycle Delay [s]	61.25	58.65	24.20	24.20
I_b,int, Bicycle LOS Score for Intersection	2.517	1.906	2.661	2.620
Bicycle LOS	B	A	B	B

Sequence

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



Intersection Level Of Service Report
Intersection 12: W Riverstone Dr / N Lakewood Dr

Control Type:	Signalized	Delay (sec / veh):	22.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.668

Intersection Setup

Name	N Lakewood Dr			N Lakewood Dr			W Riverstone Dr			W Riverstone Dr		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration	↵↵			↵↵↵			↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	75.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	N Lakewood Dr			N Lakewood Dr			W Riverstone Dr			W Riverstone Dr		
Base Volume Input [veh/h]	13	48	2	27	6	414	0	29	91	391	18	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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	13	48	2	27	6	414	0	29	91	391	18	3
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
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	13	1	7	2	113	0	8	25	106	5	1
Total Analysis Volume [veh/h]	14	52	2	29	7	450	0	32	99	425	20	3
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]	3			1			0			2		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	4	0	3	8	0	0	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	5	5	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	19	0	9	28	0	0	19	0	23	42	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	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
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No		No	No			No		No	No	
Maximum Recall		No		No	No			No		No	No	
Pedestrian Recall		No		No	No			No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	L	C
C, Cycle Length [s]	53	53	53	53	53	53	53	53	53
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	13	2	19	19	6	6	16	26
g / C, Green / Cycle	0.25	0.25	0.03	0.36	0.36	0.11	0.11	0.31	0.49
(v / s)_i Volume / Saturation Flow Rate	0.01	0.03	0.02	0.00	0.31	0.00	0.09	0.27	0.01
s, saturation flow rate [veh/h]	1267	1672	1603	1683	1431	1249	1485	1603	1645
c, Capacity [veh/h]	401	415	53	600	510	220	166	492	812
d1, Uniform Delay [s]	16.81	15.56	25.38	11.09	16.11	0.00	23.08	17.41	6.93
k, delay calibration	0.11	0.11	0.11	0.11	0.13	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]	0.04	0.14	8.54	0.01	6.05	0.00	8.20	4.65	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
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	0.03	0.13	0.55	0.01	0.88	0.00	0.79	0.86	0.03
d, Delay for Lane Group [s/veh]	16.85	15.70	33.92	11.09	22.16	0.00	31.28	22.06	6.95
Lane Group LOS	B	B	C	B	C	A	C	C	A
Critical Lane Group	No	No	No	No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.13	0.47	0.46	0.05	5.20	0.00	1.85	4.88	0.11
50th-Percentile Queue Length [ft/ln]	3.21	11.87	11.55	1.20	130.06	0.00	46.19	122.11	2.76
95th-Percentile Queue Length [veh/ln]	0.23	0.85	0.83	0.09	8.94	0.00	3.33	8.51	0.20
95th-Percentile Queue Length [ft/ln]	5.77	21.36	20.79	2.15	223.58	0.00	83.14	212.72	4.96

Movement, Approach, & Intersection Results

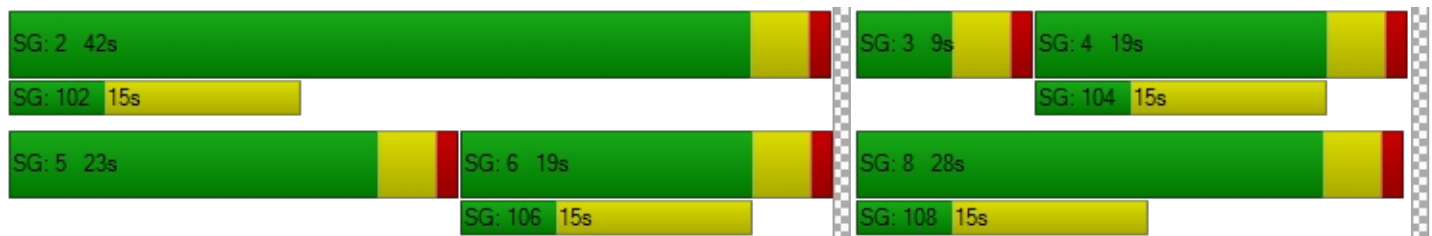
d_M, Delay for Movement [s/veh]	16.85	15.70	15.70	33.92	11.09	22.16	0.00	31.28	31.28	22.06	6.95	6.95
Movement LOS	B	B	B	C	B	C	A	C	C	C	A	A
d_A, Approach Delay [s/veh]	15.94			22.70			31.28			21.28		
Approach LOS	B			C			C			C		
d_I, Intersection Delay [s/veh]	22.73											
Intersection LOS	C											
Intersection V/C	0.668											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0			9.0			9.0			9.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	26.58			26.58			26.58			26.58		
I_p,int, Pedestrian LOS Score for Intersection	1.954			2.379			1.988			2.256		
Crosswalk LOS	A			B			A			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	429			686			429			1086		
d_b, Bicycle Delay [s]	21.61			15.11			21.61			7.31		
I_b,int, Bicycle LOS Score for Intersection	1.672			2.362			1.776			2.299		
Bicycle LOS	A			B			A			B		

Sequence

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



Intersection Level Of Service Report
Intersection 13: N Beebe Blvd / W Riverstone Dr

Control Type:	Two-way stop	Delay (sec / veh):	19.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.201

Intersection Setup

Name	N Beebe Blvd			N Beebe Blvd			W Riverstone Dr			W Riverstone Dr		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration	+			← ↑ →			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	N Beebe Blvd			N Beebe Blvd			W Riverstone Dr			W Riverstone Dr		
Base Volume Input [veh/h]	18	4	53	59	4	19	41	237	57	20	173	16
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	4	53	59	4	19	41	237	57	20	173	16
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	1	14	16	1	5	11	64	15	5	47	4
Total Analysis Volume [veh/h]	20	4	58	64	4	21	45	258	62	22	188	17
Pedestrian Volume [ped/h]	4			5			15			6		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.01	0.07	0.20	0.01	0.03	0.03	0.00	0.00	0.02	0.00	0.00
d_M, Delay for Movement [s/veh]	16.21	16.07	10.44	19.09	14.89	10.06	7.74	0.00	0.00	7.98	0.00	0.00
Movement LOS	C	C	B	C	B	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.48	0.48	0.48	0.74	0.03	0.09	0.09	0.09	0.09	0.05	0.05	0.05
95th-Percentile Queue Length [ft/ln]	12.08	12.08	12.08	18.39	0.82	2.21	2.34	2.34	2.34	1.24	1.24	1.24
d_A, Approach Delay [s/veh]	12.12			16.77			0.95			0.77		
Approach LOS	B			C			A			A		
d_I, Intersection Delay [s/veh]	3.95											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 15: Riverstone/John's Loop South

Control Type:	Two-way stop	Delay (sec / veh):	12.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.021

Intersection Setup

Name	John's Loop		W Riverstone Dr	
Approach	Eastbound		Northwestbound	
Lane Configuration				
Turning Movement	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00	
Grade [%]	0.00		0.00	
Crosswalk	Yes		Yes	

Volumes

Name	John's Loop		W Riverstone Dr	
Base Volume Input [veh/h]	202	7	9	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0
Other Volume [veh/h]	0	0	0	0
Total Hourly Volume [veh/h]	202	7	9	18
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	55	2	2	5
Total Analysis Volume [veh/h]	220	8	10	20
Pedestrian Volume [ped/h]	0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.02	0.02	0.02	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	12.69	9.67	7.74	0.00
Movement LOS	A	A	B	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.14	0.14	0.05	0.05
95th-Percentile Queue Length [ft/ln]	0.00	0.00	3.54	3.54	1.37	1.37
d_A, Approach Delay [s/veh]	0.00		10.68		0.67	
Approach LOS	A		B		A	
d_I, Intersection Delay [s/veh]	0.93					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 16: Riverstone/John's Loop North

Control Type:	Two-way stop	Delay (sec / veh):	12.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.107

Intersection Setup

Name	Riverstone Dr.		John's Loop			
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↰		↳		↰	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Riverstone Dr.		John's Loop			
Base Volume Input [veh/h]	3	249	206	42	51	3
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
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	249	206	42	51	3
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	68	56	11	14	1
Total Analysis Volume [veh/h]	3	271	224	46	55	3
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.11	0.00
d_M, Delay for Movement [s/veh]	7.79	0.00	0.00	0.00	12.89	10.41
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.00	0.00	0.37	0.37
95th-Percentile Queue Length [ft/ln]	0.17	0.17	0.00	0.00	9.32	9.32
d_A, Approach Delay [s/veh]	0.09		0.00		12.76	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	1.27					
Intersection LOS	B					

**Intersection Level Of Service Report
Intersection 17: John's Loop/Suzanne**

Control Type:	Two-way stop	Delay (sec / veh):	8.5
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	John's Loop		Suzanne		John's Loop	
Approach	Northbound		Eastbound		Southwestbound	
Lane Configuration	T		T		Y	
Turning Movement	Left	Thru	Left	Right	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	John's Loop		Suzanne		John's Loop	
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.22	0.00	8.52	8.32	0.00	0.00
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
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	3.61		8.42		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	4.01					
Intersection LOS	A					

**Intersection Level Of Service Report
Intersection 18: Northwest & Emma**

Control Type:	Two-way stop	Delay (sec / veh):	271.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Emma Ave.			Gas Station Parking			Northwest Blvd.			Northwest Blvd.		
Approach	Westbound			Northeastbound			Northwestbound			Southeastbound		
Lane Configuration	Y			T			TT			TTT		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Emma Ave.			Gas Station Parking			Northwest Blvd.			Northwest Blvd.		
Base Volume Input [veh/h]	6	0	71	5	0	1	4	1148	26	49	1291	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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	0	71	5	0	1	4	1148	26	49	1291	3
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	0	19	1	0	0	1	312	7	13	351	1
Total Analysis Volume [veh/h]	7	0	77	5	0	1	4	1248	28	53	1403	3
Pedestrian Volume [ped/h]	0			3			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.25	0.00	0.18	0.25	0.00	0.00	0.01	0.01	0.00	0.10	0.01	0.00
d_M, Delay for Movement [s/veh]	146.29	237.61	26.99	225.12	271.86	58.02	12.58	0.00	0.00	12.39	0.00	0.00
Movement LOS	F	F	D	F	F	F	B	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	2.00	2.00	2.00	0.75	0.75	0.75	0.03	0.01	0.00	0.32	0.00	0.00
95th-Percentile Queue Length [ft/ln]	49.89	49.89	49.89	18.63	18.63	18.63	0.63	0.32	0.00	8.12	0.00	0.00
d_A, Approach Delay [s/veh]	36.93			197.27			0.04			0.45		
Approach LOS	E			F			A			A		
d_I, Intersection Delay [s/veh]	1.76											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 20: Northwest Blvd / W Lacrosse Ave

Control Type:	Two-way stop	Delay (sec / veh):	242.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.195

Intersection Setup

Name	Lacrosse Ave.			Lacrosse Ave.			Northwest Blvd.			Northwest Blvd.		
Approach	Eastbound			Westbound			Northwestbound			Southeastbound		
Lane Configuration	↑			↑			↑↑			↑↑↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Lacrosse Ave.			Lacrosse Ave.			Northwest Blvd.			Northwest Blvd.		
Base Volume Input [veh/h]	17	5	20	0	1	25	12	1081	11	26	1132	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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	17	5	20	0	1	25	12	1081	11	26	1132	5
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	1	5	0	0	7	3	294	3	7	308	1
Total Analysis Volume [veh/h]	18	5	22	0	1	27	13	1175	12	28	1230	5
Pedestrian Volume [ped/h]	3			2			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.51	0.19	0.05	0.00	0.04	0.06	0.02	0.01	0.00	0.05	0.01	0.00
d_M, Delay for Movement [s/veh]	203.74	242.60	110.86	116.03	145.80	14.47	11.62	0.00	0.00	11.50	0.00	0.00
Movement LOS	F	F	F	F	F	B	B	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	3.28	3.28	3.28	0.33	0.33	0.33	0.07	0.03	0.00	0.15	0.00	0.00
95th-Percentile Queue Length [ft/ln]	82.12	82.12	82.12	8.18	8.18	8.18	1.65	0.83	0.00	3.78	0.00	0.00
d_A, Approach Delay [s/veh]	162.65			19.16			0.13			0.25		
Approach LOS	F			C			A			A		
d_I, Intersection Delay [s/veh]	3.28											
Intersection LOS	F											

**Intersection Level Of Service Report
Intersection 21: Riverstone/Old Mill**

Control Type: Two-way stop
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 20.7
 Level Of Service: C
 Volume to Capacity (v/c): 0.273

Intersection Setup

Name	W Riverstone Dr									W Riverstone Dr		
Approach	Westbound			Northeastbound			Southwestbound			Southeastbound		
Lane Configuration	Y			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	W Riverstone Dr									W Riverstone Dr		
Base Volume Input [veh/h]	13	305	85	5	0	10	80	0	25	18	263	4
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	13	305	85	5	0	10	80	0	25	18	263	4
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
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	83	23	1	0	3	22	0	7	5	71	1
Total Analysis Volume [veh/h]	14	332	92	5	0	11	87	0	27	20	286	4
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Stop	Stop	Free
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	0.00	0.00	0.02	0.00	0.01	0.27	0.00	0.04	0.02	0.00	0.00
d_M, Delay for Movement [s/veh]	7.86	0.00	0.00	16.95	16.64	10.02	20.72	20.21	14.82	8.23	0.00	0.00
Movement LOS	A	A	A	C	C	B	C	C	B	A	A	A
95th-Percentile Queue Length [veh/ln]	0.03	0.03	0.03	0.10	0.10	0.10	1.31	1.31	1.31	0.05	0.05	0.05
95th-Percentile Queue Length [ft/ln]	0.77	0.77	0.77	2.39	2.39	2.39	32.79	32.79	32.79	1.21	1.21	1.21
d_A, Approach Delay [s/veh]	0.25			12.18			19.32			0.53		
Approach LOS	A			B			C			A		
d_I, Intersection Delay [s/veh]	3.04											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 22: Lincoln Way/Lacrosse Ave.

Control Type:	Two-way stop	Delay (sec / veh):	47.5
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.225

Intersection Setup

Name	Lincoln Way			Lincoln Way			Lacrosse Ave.			Lacrosse Ave.		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇌⇌			⇌⇌			⊕			⊕		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00			35.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Lincoln Way			Lincoln Way			Lacrosse Ave.			Lacrosse Ave.		
Base Volume Input [veh/h]	6	532	12	47	622	14	22	27	18	5	9	25
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	532	12	47	622	14	22	27	18	5	9	25
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	145	3	13	169	4	6	7	5	1	2	7
Total Analysis Volume [veh/h]	7	578	13	51	676	15	24	29	20	5	10	27
Pedestrian Volume [ped/h]	6			0			3			9		

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	0.05	0.01	0.00	0.17	0.23	0.03	0.04	0.08	0.04
d_M, Delay for Movement [s/veh]	9.06	0.00	0.00	8.94	0.00	0.00	44.52	47.51	25.18	34.58	35.44	12.67
Movement LOS	A	A	A	A	A	A	E	E	D	D	E	B
95th-Percentile Queue Length [veh/ln]	0.02	0.01	0.00	0.17	0.00	0.00	1.91	1.91	1.91	0.54	0.54	0.54
95th-Percentile Queue Length [ft/ln]	0.51	0.25	0.00	4.18	0.00	0.00	47.75	47.75	47.75	13.50	13.50	13.50
d_A, Approach Delay [s/veh]	0.11			0.61			40.41			20.70		
Approach LOS	A			A			E			C		
d_I, Intersection Delay [s/veh]	2.98											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 23: Lincoln Way / Emma Ave.

Control Type:	Signalized	Delay (sec / veh):	22.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.339

Intersection Setup

Name	Lincoln Way						Emma Ave.					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00			35.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Lincoln Way						Emma Ave.					
Base Volume Input [veh/h]	19	619	10	31	640	33	99	51	58	15	23	51
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	19	619	10	31	640	33	99	51	58	15	23	51
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
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	168	3	8	174	9	27	14	16	4	6	14
Total Analysis Volume [veh/h]	21	673	11	34	696	36	108	55	63	16	25	55
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	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	7			4			0			14		
Bicycle Volume [bicycles/h]	0			0			1			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	174
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	129.0
Offset Reference	LeadGreen
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	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	10	60	0	10	60	0	8	12	0	8	12	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [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
Split [s]	16	114	0	16	114	0	16	28	0	16	28	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	11	0	0	11	0	0	16	0	0	17	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]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	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	C	L	C	L	C
C, Cycle Length [s]	174	174	174	174	174	174	174	174	174	174
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
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	4.00	4.00	0.00	4.00	4.00	0.00	4.00	0.00	4.00
g_i, Effective Green Time [s]	135	125	125	135	126	126	27	18	27	11
g / C, Green / Cycle	0.78	0.72	0.72	0.78	0.72	0.72	0.16	0.11	0.16	0.06
(v / s)_i Volume / Saturation Flow Rate	0.03	0.20	0.20	0.05	0.22	0.22	0.08	0.08	0.01	0.05
s, saturation flow rate [veh/h]	702	1683	1673	736	1683	1654	1402	1526	1260	1501
c, Capacity [veh/h]	551	1208	1201	579	1216	1196	215	160	169	95
d1, Uniform Delay [s]	5.03	8.68	8.68	5.00	8.55	8.55	66.75	75.40	63.13	80.54
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.50	0.47	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.03	0.59	0.59	0.19	0.64	0.66	7.58	6.40	0.24	17.69
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	0.04	0.28	0.28	0.06	0.30	0.30	0.50	0.74	0.09	0.84
d, Delay for Lane Group [s/veh]	5.06	9.27	9.27	5.19	9.19	9.21	74.33	81.80	63.37	98.23
Lane Group LOS	A	A	A	A	A	A	E	F	E	F
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.17	4.73	4.70	0.30	5.08	5.00	4.84	5.44	0.62	4.05
50th-Percentile Queue Length [ft/ln]	4.22	118.13	117.55	7.49	126.90	124.93	121.10	136.07	15.60	101.13
95th-Percentile Queue Length [veh/ln]	0.30	8.29	8.26	0.54	8.77	8.66	8.45	9.27	1.12	7.28
95th-Percentile Queue Length [ft/ln]	7.59	207.25	206.46	13.48	219.27	216.58	211.33	231.72	28.08	182.04

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	5.06	9.27	9.27	5.19	9.20	9.21	74.33	81.80	81.80	63.37	98.23	98.23
Movement LOS	A	A	A	A	A	A	E	F	F	E	F	F
d_A, Approach Delay [s/veh]	9.15			9.02			78.23			92.42		
Approach LOS	A			A			E			F		
d_I, Intersection Delay [s/veh]	22.26											
Intersection LOS	C											
Intersection V/C	0.339											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	78.23	78.23	78.23	78.23
I_p,int, Pedestrian LOS Score for Intersection	2.671	2.708	2.094	2.071
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1241	1241	253	253
d_b, Bicycle Delay [s]	12.52	12.52	66.42	66.39
I_b,int, Bicycle LOS Score for Intersection	2.141	2.192	1.933	1.718
Bicycle LOS	B	B	A	A

Sequence

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



**Intersection Level Of Service Report
Intersection 24: Riverstone/Village North**

Control Type:	Two-way stop	Delay (sec / veh):	15.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.014

Intersection Setup

Name	W Riverstone Dr			Approach			Village North			W Riverstone Dr		
Approach	Northbound			Eastbound			Westbound			Southeastbound		
Lane Configuration	←			←			←			←		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	W Riverstone Dr			Approach			Village North			W Riverstone Dr		
Base Volume Input [veh/h]	8	234	8	5	0	9	19	0	78	39	180	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
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	8	234	8	5	0	9	19	0	78	39	180	11
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	64	2	1	0	2	5	0	21	11	49	3
Total Analysis Volume [veh/h]	9	254	9	5	0	10	21	0	85	42	196	12
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Stop	Stop	Free
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	0.00	0.00	0.01	0.00	0.01	0.05	0.00	0.11	0.03	0.00	0.00
d_M, Delay for Movement [s/veh]	7.66	0.00	0.00	15.37	13.86	9.46	14.72	14.74	10.64	7.86	0.00	0.00
Movement LOS	A	A	A	C	B	A	B	B	B	A	A	A
95th-Percentile Queue Length [veh/ln]	0.02	0.02	0.02	0.08	0.08	0.08	0.57	0.57	0.57	0.09	0.09	0.09
95th-Percentile Queue Length [ft/ln]	0.44	0.44	0.44	2.01	2.01	2.01	14.13	14.13	14.13	2.32	2.32	2.32
d_A, Approach Delay [s/veh]	0.25			11.43			11.45			1.32		
Approach LOS	A			B			B			A		
d_I, Intersection Delay [s/veh]	2.77											
Intersection LOS	C											

**Intersection Level Of Service Report
Intersection 25: Riverstone/Starbucks**

Control Type:	Two-way stop	Delay (sec / veh):	16.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.068

Intersection Setup

Name	Southbound		W Riverstone Dr Eastbound		W Riverstone Dr Northwestbound	
Approach	Southbound		Eastbound		Northwestbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Southbound		W Riverstone Dr Eastbound		W Riverstone Dr Northwestbound	
Base Volume Input [veh/h]	21	19	8	345	384	23
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
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	19	8	345	384	23
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	5	2	94	104	6
Total Analysis Volume [veh/h]	23	21	9	375	417	25
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.03	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	16.52	11.69	8.25	0.00	0.00	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.34	0.34	0.02	0.02	0.00	0.00
95th-Percentile Queue Length [ft/ln]	8.39	8.39	0.54	0.54	0.00	0.00
d_A, Approach Delay [s/veh]	14.21		0.19		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.80					
Intersection LOS	C					

**Intersection Level Of Service Report
Intersection 26: Riverstone/McDonald's**

Control Type:	Two-way stop	Delay (sec / veh):	23.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.234

Intersection Setup

Name	Approach			McDonald's			W Riverstone Dr			W Riverstone Dr		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Approach			McDonald's			W Riverstone Dr			W Riverstone Dr		
Base Volume Input [veh/h]	4	0	4	56	0	8	5	395	56	12	352	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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	0	4	56	0	8	5	395	56	12	352	2
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	0	1	15	0	2	1	107	15	3	96	1
Total Analysis Volume [veh/h]	4	0	4	61	0	9	5	429	61	13	383	2
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

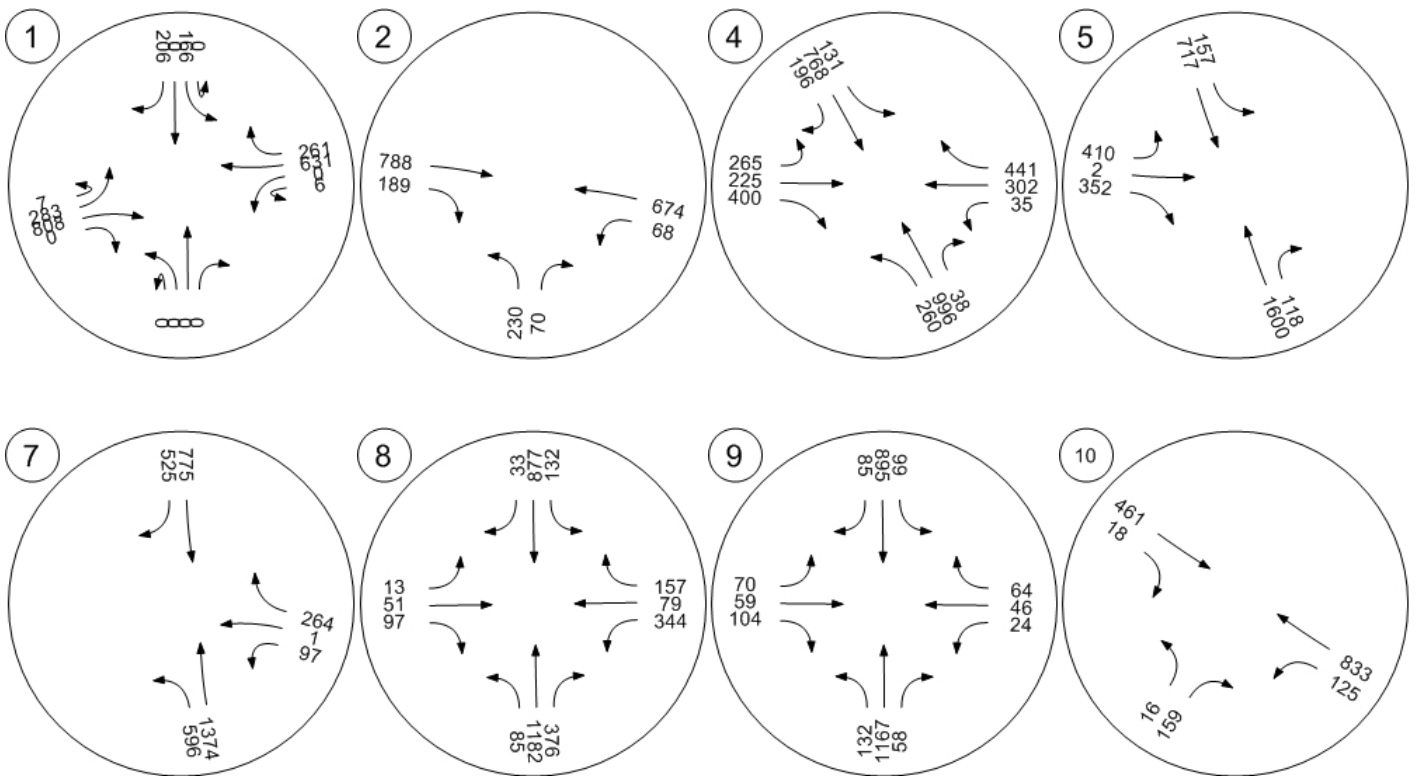
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.00	0.01	0.23	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	19.18	18.61	10.64	22.96	22.05	15.16	8.08	0.00	0.00	8.40	0.00	0.00
Movement LOS	C	C	B	C	C	C	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.07	0.07	0.07	0.96	0.96	0.96	0.01	0.01	0.01	0.03	0.03	0.03
95th-Percentile Queue Length [ft/ln]	1.65	1.65	1.65	23.94	23.94	23.94	0.32	0.32	0.32	0.85	0.85	0.85
d_A, Approach Delay [s/veh]	14.91			21.96			0.08			0.27		
Approach LOS	B			C			A			A		
d_I, Intersection Delay [s/veh]	1.86											
Intersection LOS	C											

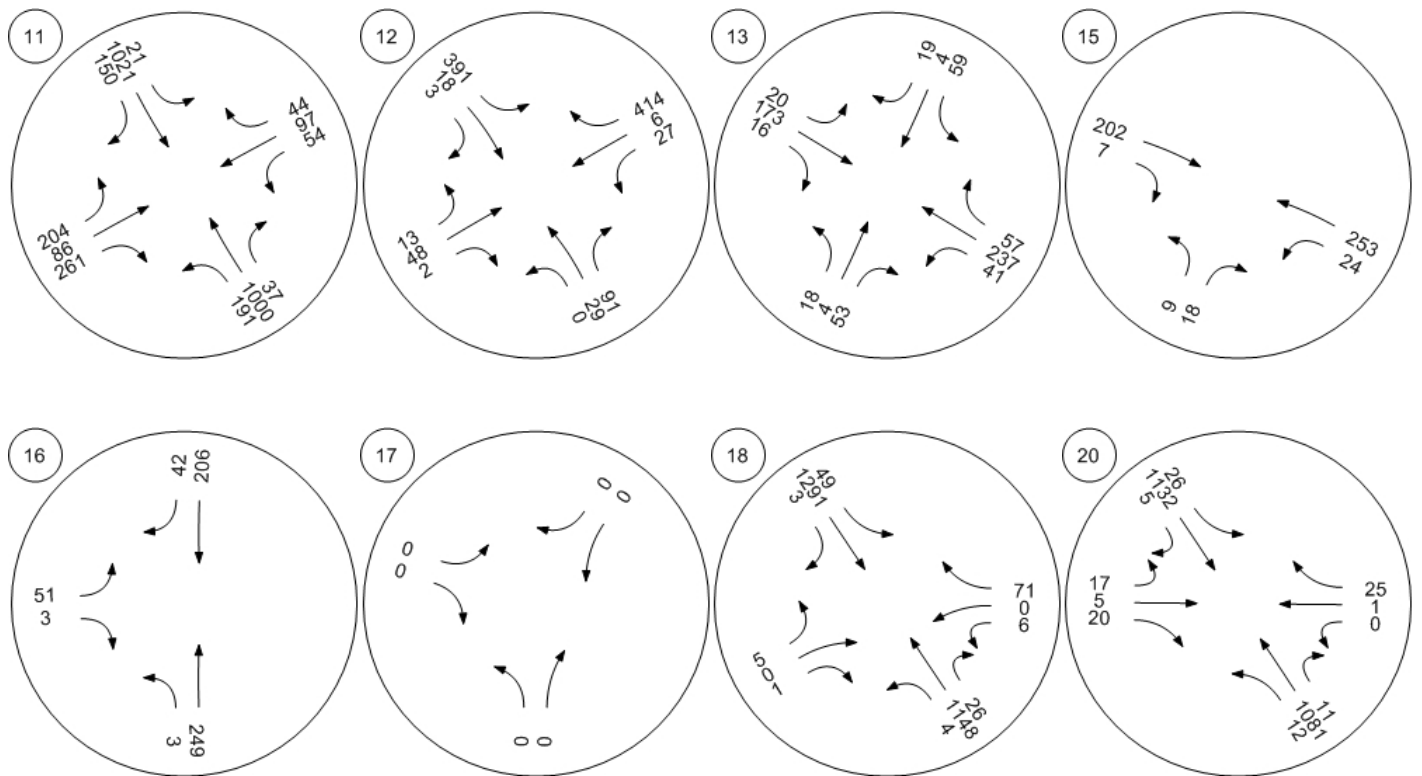
Study Intersections



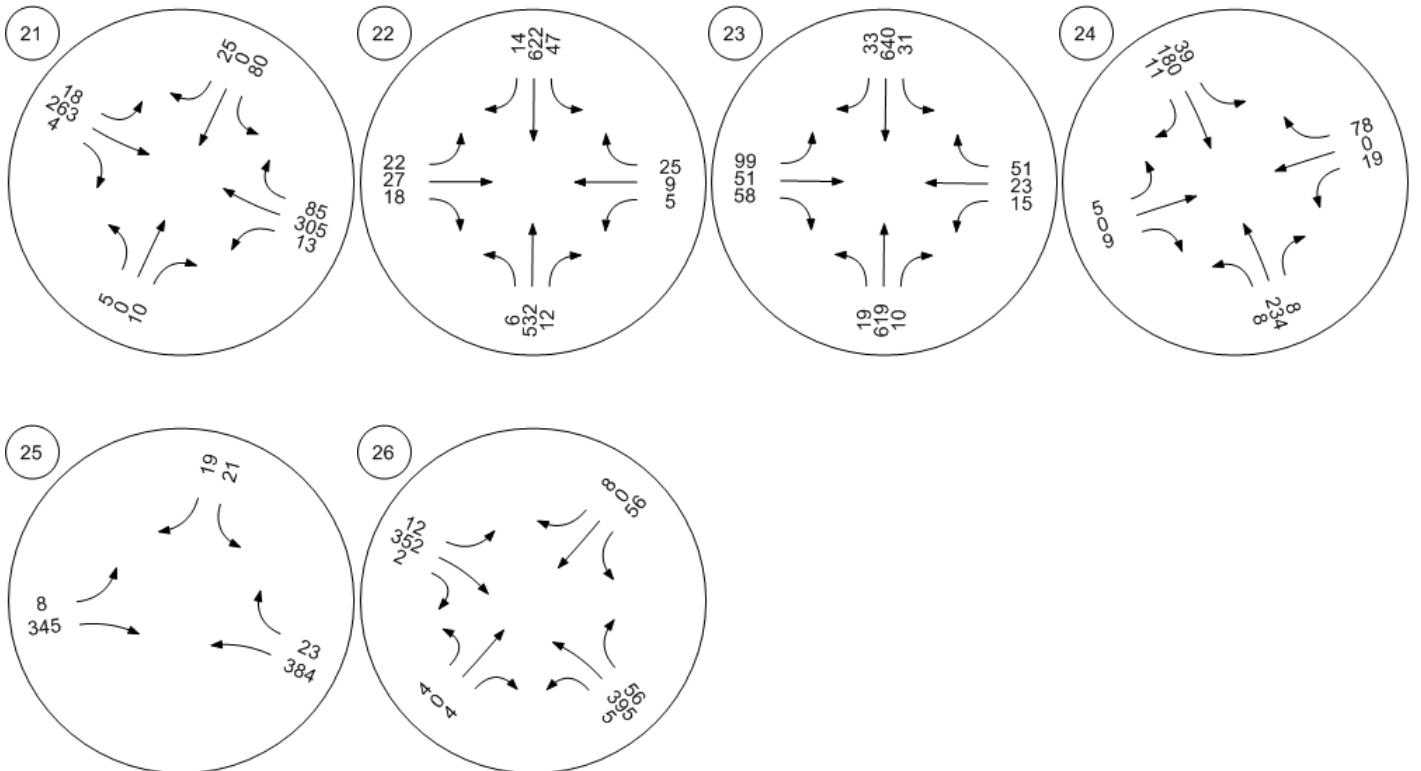
Traffic Volume - Base Volume



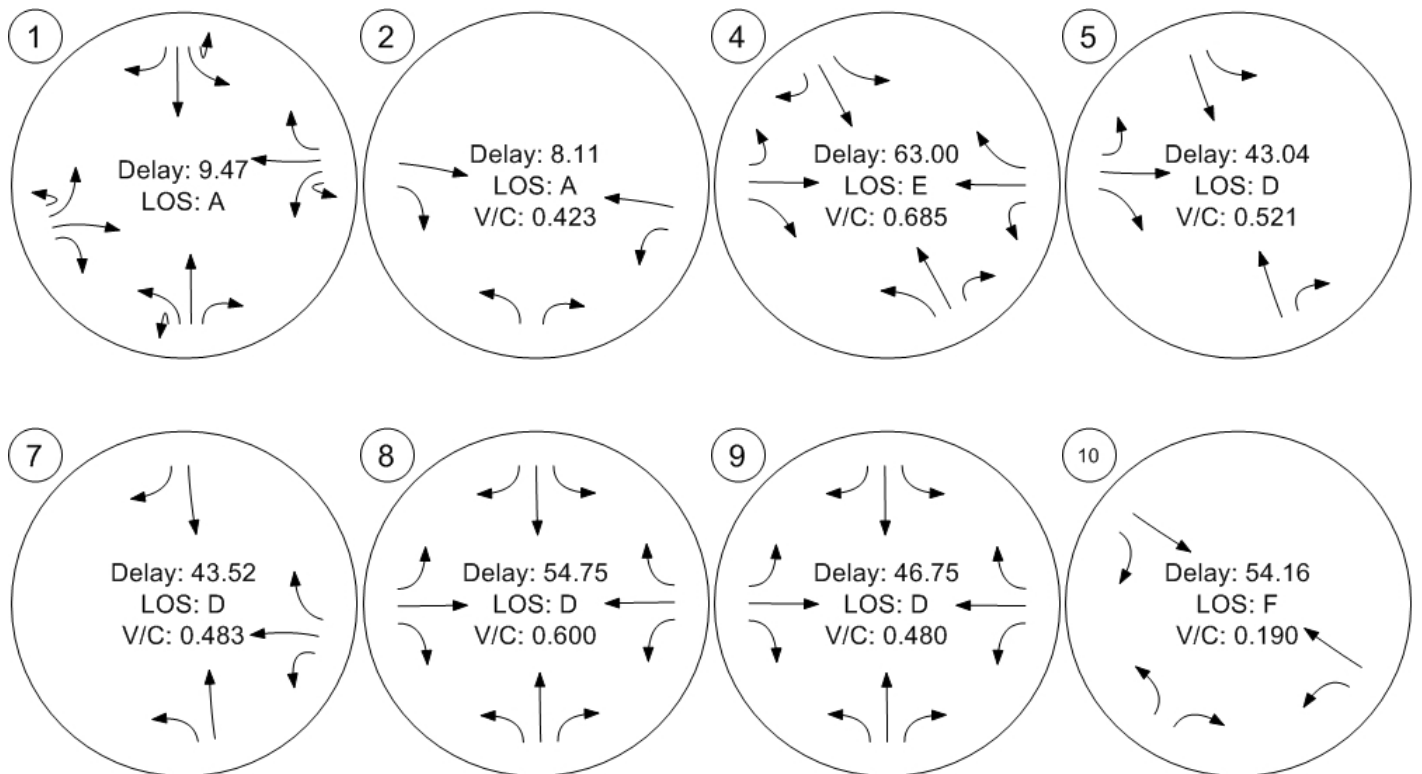
Traffic Volume - Base Volume



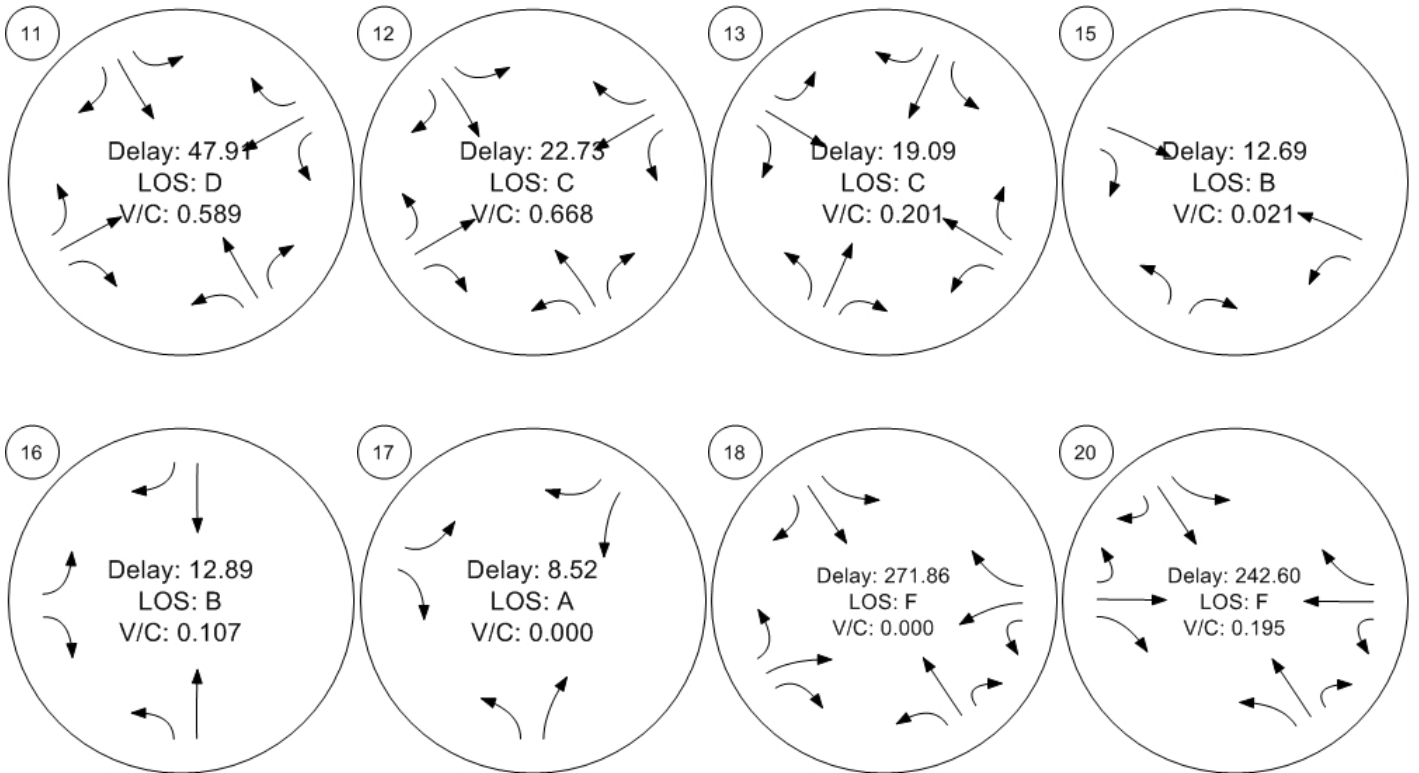
Traffic Volume - Base Volume



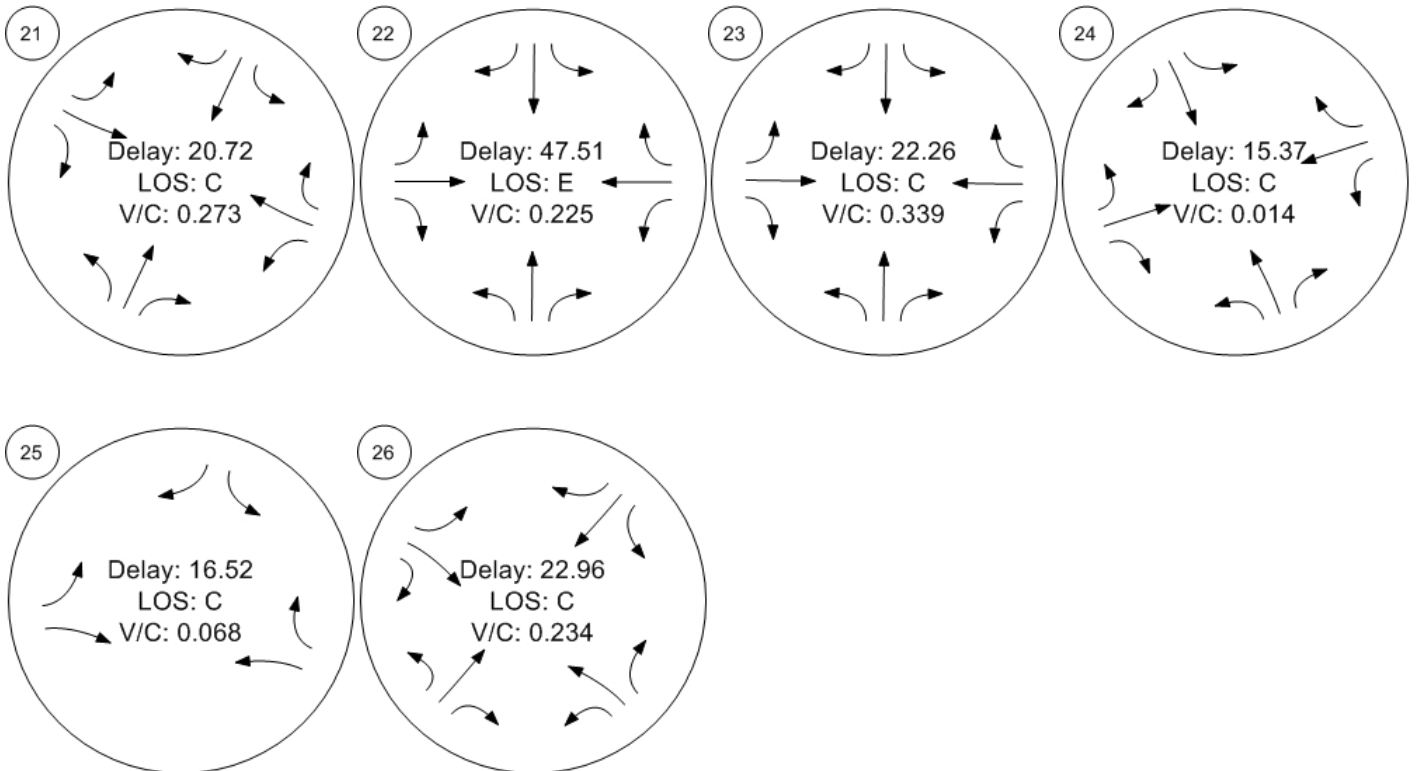
Traffic Conditions



Traffic Conditions



Traffic Conditions

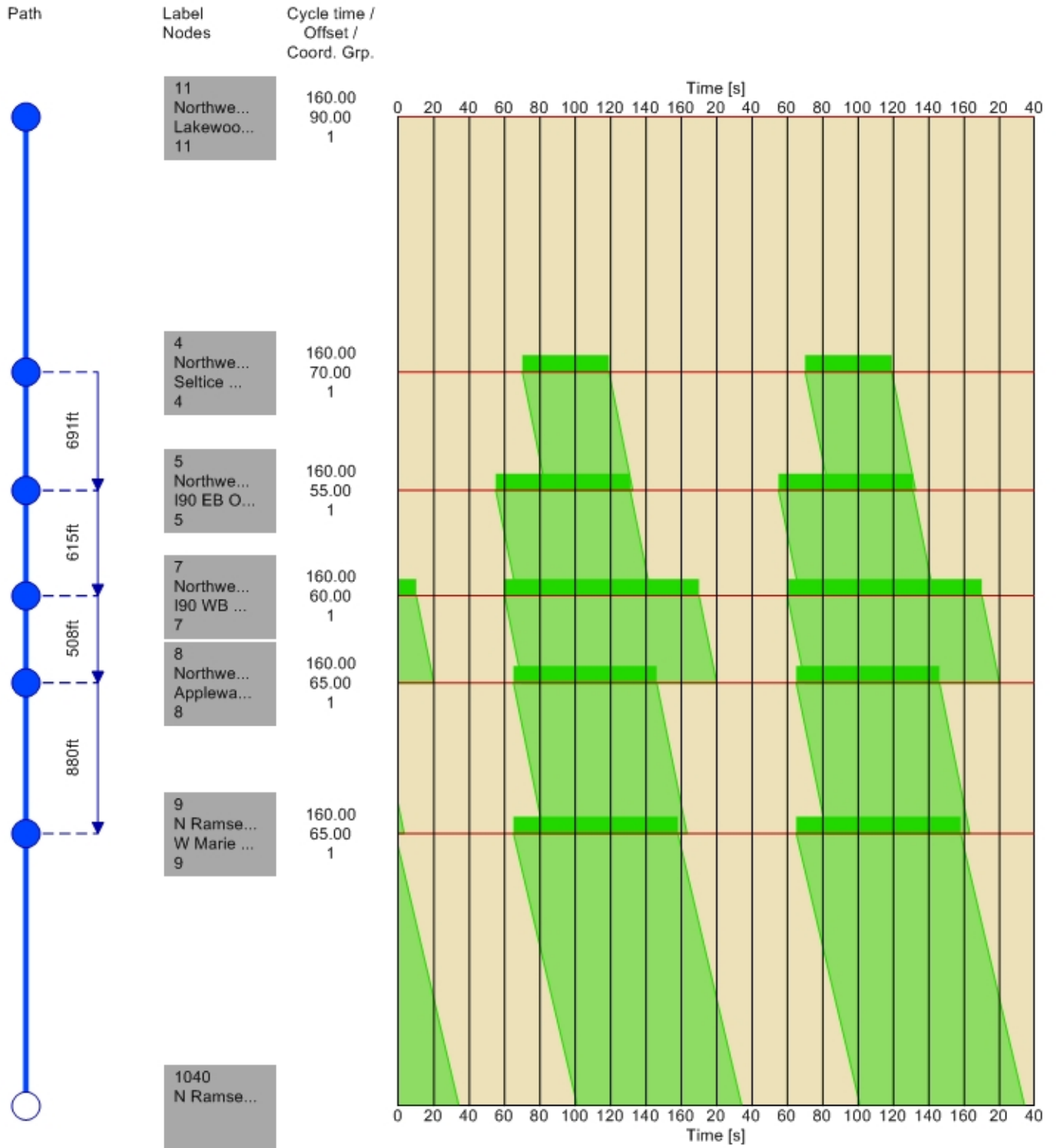


Time Space Diagram - Flowing Off

Route 11: NW Blvd NB



Route 11: NW Blvd NB

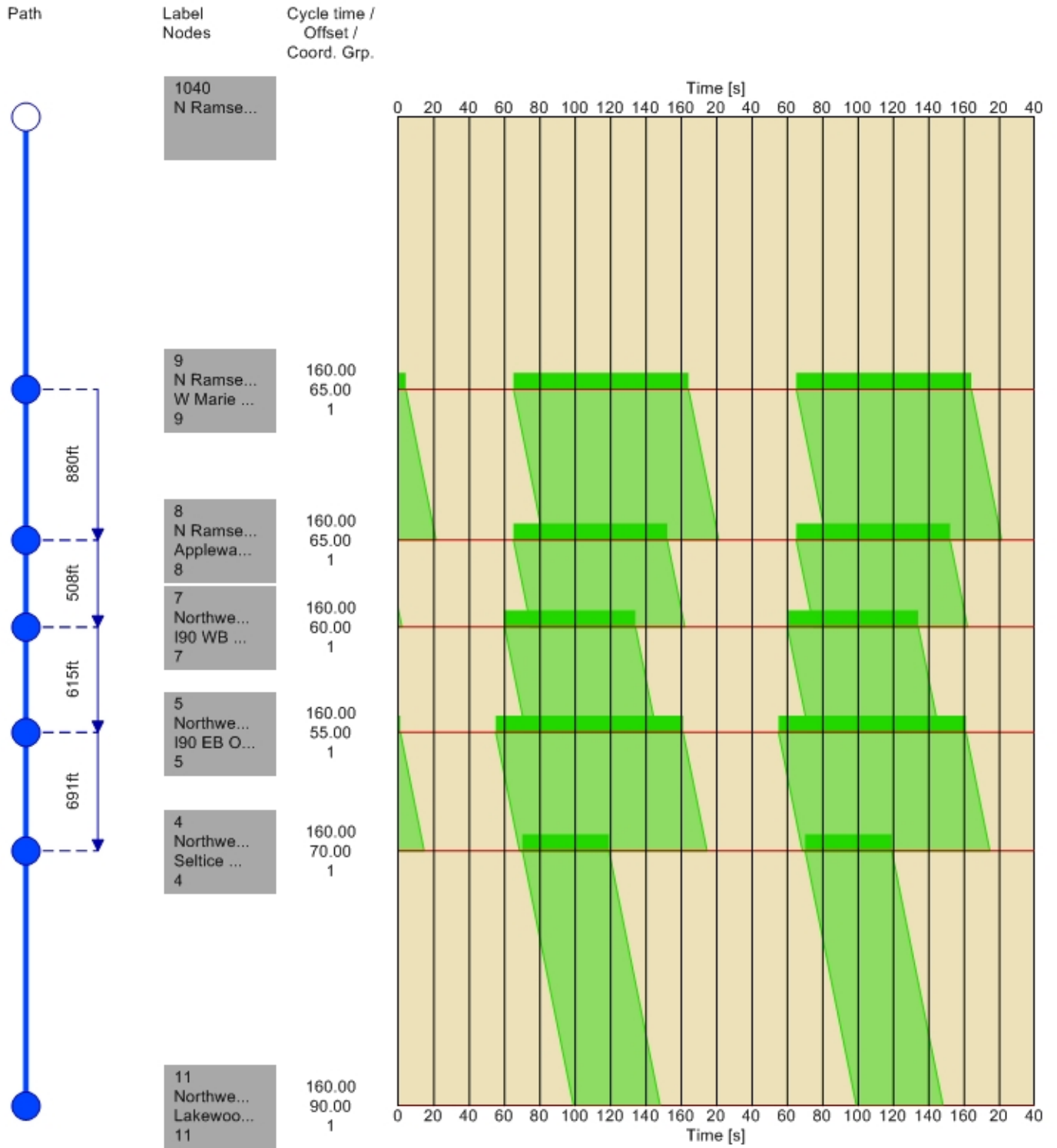


Time Space Diagram - Flowing Off

Route 12: NW Blvd SB



Route 12: NW Blvd SB



Appendix F - 2018 Existing with Signal Optimization Vistro Intersection Reports

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Atlas Waterfront TIS

Vistro File: X:\...41292 Base Model 20181130 without Rt Turns.vistro

Scenario 1 2018 Base with Signal Improvements

Report File: X:\...20181204 Base with Signal Optimization.pdf

1/2/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	N Atlas Rd / W Seltice Way	Roundabout	HCM 6th Edition	SB Right		9.5	A
2	W Riverstone Dr / W Seltice Way	Signalized	HCM 6th Edition	NB Left	0.423	8.1	A
4	Northwest Blvd / W Ironwood Dr	Signalized	HCM 6th Edition	NWB Left	0.708	46.3	D
5	Northwest/I90 EB	Signalized	HCM 6th Edition	SB Left	0.473	28.8	C
7	Northwest/I90 WB	Signalized	HCM 6th Edition	WB Right	0.483	28.1	C
8	Northwest Blvd / W Appleway Ave	Signalized	HCM 6th Edition	SB Left	0.600	41.1	D
9	N Ramsey Rd / W Golf Course Rd	Signalized	HCM 6th Edition	SB Left	0.481	34.3	C
10	Lakewood/Ironwood	Two-way stop	HCM 6th Edition	NEB Left	0.190	54.2	F
11	Northwest/Lakewood	Signalized	HCM 6th Edition	SEB Thru	0.544	41.7	D
12	W Riverstone Dr / N Lakewood Dr	Signalized	HCM 6th Edition	SWB Left	0.668	22.7	C
13	N Beebe Blvd / W Riverstone Dr	Two-way stop	HCM 6th Edition	SWB Left	0.201	19.1	C
15	Riverstone/John's Loop South	Two-way stop	HCM 6th Edition	NEB Left	0.021	12.7	B
16	Riverstone/John's Loop North	Two-way stop	HCM 6th Edition	EB Left	0.107	12.9	B
17	John's Loop/Suzanne	Two-way stop	HCM 6th Edition	EB Left	0.000	8.5	A
18	Northwest & Emma	Two-way stop	HCM 6th Edition	NEB Thru	0.000	271.9	F
20	Northwest Blvd / W Lacrosse Ave	Two-way stop	HCM 6th Edition	EB Thru	0.195	242.6	F
21	Riverstone/Old Mill	Two-way stop	HCM 6th	SWB Left	0.273	20.7	C

ID	Location	Control Type	Edition	Movement	V/C	Delay (s)	LOS
22	Lincoln Way/Lacrosse Ave.	Two-way stop	HCM 6th Edition	EB Thru	0.225	47.5	E
23	Lincoln Way / Emma Ave.	Signalized	HCM 6th Edition	WB Right	0.339	17.0	B
24	Riverstone/Village North	Two-way stop	HCM 6th Edition	EB Left	0.014	15.4	C
25	Riverstone/Starbucks	Two-way stop	HCM 6th Edition	SB Left	0.068	16.5	C
26	Riverstone/McDonald's	Two-way stop	HCM 6th Edition	SWB Left	0.234	23.0	C

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

Intersection Level Of Service Report
Intersection 1: N Atlas Rd / W Seltice Way

Control Type:	Roundabout	Delay (sec / veh):	9.5
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Atlas Rd.						Atlas Rd.					
Approach	Northbound						Southbound					
Lane Configuration												
Turning Movement	U-turn	Left	Left	Thru	Right	Right	U-turn	Left	Left	Thru	Right	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00						35.00					
Grade [%]	0.00						0.00					
Crosswalk	Yes						Yes					

Volumes

Name	Atlas Rd.						Atlas Rd.					
Base Volume Input [veh/h]	0	0	0	0	0	0	0	166	0	0	0	206
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	166	0	0	0	206
Peak Hour Factor	0.9200	0.9200	1.0000	0.9200	1.0000	0.9200	0.9200	0.9200	1.0000	0.9200	1.0000	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	45	0	0	0	56
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	180	0	0	0	224
Pedestrian Volume [ped/h]	0						1					

Intersection Settings

Number of Conflicting Circulating Lanes	2						2					
Circulating Flow Rate [veh/h]	1409						715					
Exiting Flow Rate [veh/h]	0						604					
Demand Flow Rate [veh/h]	0	0	0	0	0	0	0	166	0	0	0	206
Adjusted Demand Flow Rate [veh/h]	0	0	0	0	0	0	0	180	0	0	0	224

Lanes

Overwrite Calculated Critical Headway	No	No
User-Defined Critical Headway [s]	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No
User-Defined Follow-Up Time [s]	3.00	3.00
A (intercept)	1420.00	1420.00
B (coefficient)	0.00085	0.00085
HV Adjustment Factor	0.98	0.98
Entry Flow Rate [veh/h]	0	413
Capacity of Entry and Bypass Lanes [veh/h]	429	774
Pedestrian Impedance	1.00	1.00
Capacity per Entry Lane [veh/h]	421	759
X, volume / capacity	0.00	0.53

Movement, Approach, & Intersection Results

Lane LOS	A	B
95th-Percentile Queue Length [veh]	0.00	3.19
95th-Percentile Queue Length [ft]	0.00	79.83
Approach Delay [s/veh]	8.56	12.70
Approach LOS	A	B
Intersection Delay [s/veh]	9.47	
Intersection LOS	A	

Intersection Setup

Name	Eastbound					Westbound				
Approach										
Lane Configuration										
Turning Movement	Left2	Left	Thru	Thru	Right	Left2	Left	Thru	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
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	Yes					Yes				

Volumes

Name	Eastbound					Westbound				
Base Volume Input [veh/h]	7	283	0	808	0	6	0	631	0	261
Base Volume Adjustment Factor	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
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	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
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	283	0	808	0	6	0	631	0	261
Peak Hour Factor	0.9200	0.9200	1.0000	0.9200	0.9200	0.9200	0.9200	0.9200	1.0000	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	77	0	220	0	2	0	171	0	71
Total Analysis Volume [veh/h]	8	308	0	878	0	7	0	686	0	284
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Number of Conflicting Circulating Lanes	1					1				
Circulating Flow Rate [veh/h]	191					322				
Exiting Flow Rate [veh/h]	0					0				
Demand Flow Rate [veh/h]	7	283	0	808	0	6	0	631	0	261
Adjusted Demand Flow Rate [veh/h]	8	308	0	878	0	7	0	686	0	284

Lanes

Overwrite Calculated Critical Headway	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00
A (intercept)	1420.00	1420.00	1420.00	1420.00
B (coefficient)	0.00091	0.00091	0.00091	0.00091
HV Adjustment Factor	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	573	646	469	529
Capacity of Entry and Bypass Lanes [veh/h]	1194	1194	1060	1060
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1171	1171	1039	1039
X, volume / capacity	0.48	0.54	0.44	0.50

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A
95th-Percentile Queue Length [veh]	2.67	3.36	2.31	2.86
95th-Percentile Queue Length [ft]	66.75	84.09	57.64	71.48
Approach Delay [s/veh]	8.84		8.91	
Approach LOS	A		A	
Intersection Delay [s/veh]	9.47			
Intersection LOS	A			

Intersection Setup

Name	Northwestbound					Southeastbound				
Approach	Northwestbound					Southeastbound				
Lane Configuration										
Turning Movement	Left	Thru	Thru	Right	Right	Left	Thru	Thru	Right	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	Yes					Yes				

Volumes

Name	Northwestbound					Southeastbound				
Base Volume Input [veh/h]	0	0	0	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
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	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
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Number of Conflicting Circulating Lanes	1					1				
Circulating Flow Rate [veh/h]	322					191				
Exiting Flow Rate [veh/h]	1086					936				
Demand Flow Rate [veh/h]	0	0	0	0	0	0	0	0	0	0
Adjusted Demand Flow Rate [veh/h]	0	0	0	0	0	0	0	0	0	0

Lanes

Movement, Approach, & Intersection Results

Approach Delay [s/veh]	0.00	0.00
Approach LOS	A	A
Intersection Delay [s/veh]	9.47	
Intersection LOS	A	

Intersection Level Of Service Report
Intersection 2: W Riverstone Dr / W Seltice Way

Control Type:	Signalized	Delay (sec / veh):	8.1
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.423

Intersection Setup

Name	Riverstone Dr.		Seltice Way		Seltice Way	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐		⇐⇐		⇐⇐	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	1	0
Pocket Length [ft]	100.00	100.00	100.00	140.00	140.00	100.00
Speed [mph]	30.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		Yes		Yes	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Riverstone Dr.		Seltice Way		Seltice Way	
Base Volume Input [veh/h]	230	70	788	189	68	674
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
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	230	70	788	189	68	674
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	63	19	214	51	18	183
Total Analysis Volume [veh/h]	250	76	857	205	74	733
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	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	2		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	1	0	4	0	0	8
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	5	0	0	5
Maximum Green [s]	30	0	30	0	0	30
Amber [s]	3.0	0.0	3.0	0.0	0.0	3.0
All red [s]	1.0	0.0	1.0	0.0	0.0	1.0
Split [s]	41	0	19	0	0	19
Vehicle Extension [s]	3.0	0.0	3.0	0.0	0.0	3.0
Walk [s]	5	0	5	0	0	5
Pedestrian Clearance [s]	10	0	10	0	0	10
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0
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	L	R	C	R	L	C
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	12	40	40	40	40
g / C, Green / Cycle	0.20	0.20	0.67	0.67	0.67	0.67
(v / s)_i Volume / Saturation Flow Rate	0.16	0.05	0.27	0.15	0.13	0.23
s, saturation flow rate [veh/h]	1603	1431	3204	1401	580	3204
c, Capacity [veh/h]	315	281	2148	939	409	2148
d1, Uniform Delay [s]	23.00	20.50	4.46	3.81	8.63	4.23
k, delay calibration	0.11	0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.53	0.51	0.55	0.53	0.97	0.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.27	0.40	0.22	0.18	0.34
d, Delay for Lane Group [s/veh]	27.53	21.01	5.01	4.35	9.59	4.67
Lane Group LOS	C	C	A	A	A	A
Critical Lane Group	Yes	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	3.52	0.89	1.55	0.71	0.55	1.26
50th-Percentile Queue Length [ft/ln]	87.96	22.15	38.80	17.67	13.83	31.39
95th-Percentile Queue Length [veh/ln]	6.33	1.59	2.79	1.27	1.00	2.26
95th-Percentile Queue Length [ft/ln]	158.33	39.87	69.85	31.80	24.89	56.51

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	27.53	21.01	5.01	4.35	9.59	4.67
Movement LOS	C	C	A	A	A	A
d_A, Approach Delay [s/veh]	26.01		4.88		5.12	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	8.11					
Intersection LOS	A					
Intersection V/C	0.423					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0
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]	21.68	21.68	21.68
I_p,int, Pedestrian LOS Score for Intersection	2.223	2.746	2.676
Crosswalk LOS	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	30.00	30.00	30.00
I_b,int, Bicycle LOS Score for Intersection	4.132	3.937	3.726
Bicycle LOS	D	D	D

Sequence

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



Intersection Level Of Service Report
Intersection 4: Northwest Blvd / W Ironwood Dr

Control Type:	Signalized	Delay (sec / veh):	46.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.708

Intersection Setup

Name	Seltice Way			Ironwood Dr			Northwest Blvd.			Northwest Blvd.		
Approach	Eastbound			Westbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	2	0	1	2	0	0	1	0	1
Pocket Length [ft]	150.00	100.00	25.00	150.00	100.00	150.00	250.00	100.00	100.00	300.00	100.00	300.00
Speed [mph]	35.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Seltice Way			Ironwood Dr			Northwest Blvd.			Northwest Blvd.		
Base Volume Input [veh/h]	265	225	400	35	302	441	260	996	38	131	768	196
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 Rate	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
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	359	0	0	0	0	0	0
Total Hourly Volume [veh/h]	281	239	424	37	320	108	276	1056	40	139	814	208
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
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]	76	65	115	10	87	29	75	287	11	38	221	57
Total Analysis Volume [veh/h]	305	260	461	40	348	117	300	1148	43	151	885	226
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	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	4			1			4			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
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	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	10	20	0	21	34	0	10	28	0	10	28	0
Amber [s]	3.5	3.5	0.0	3.5	3.5	0.0	3.5	3.5	0.0	3.5	3.5	0.0
All red [s]	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0
Split [s]	15	44	0	10	39	0	14	32	0	14	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	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	18	0	0	18	0	0	18	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]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	Yes		No	Yes	
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]	150.0	150.0	0.0	150.0	150.0	0.0	150.0	150.0	0.0	150.0	150.0	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	C	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	0.00	3.00	3.00	0.00	3.00	3.00
g_i, Effective Green Time [s]	24	36	36	3	15	15	46	36	36	46	28	28
g / C, Green / Cycle	0.24	0.36	0.36	0.03	0.15	0.15	0.46	0.36	0.36	0.46	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.09	0.14	0.29	0.02	0.10	0.07	0.27	0.22	0.22	0.19	0.25	0.14
s, saturation flow rate [veh/h]	3459	1870	1589	1781	3560	1589	1131	3560	1836	809	3560	1589
c, Capacity [veh/h]	819	663	564	60	540	241	395	1290	665	303	997	445
d1, Uniform Delay [s]	39.00	34.13	40.94	48.31	42.36	41.26	50.19	37.25	37.25	51.71	43.78	38.78
k, delay calibration	0.11	0.11	0.19	0.11	0.11	0.11	0.50	0.50	0.50	0.50	0.47	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]	0.28	0.38	5.22	11.75	1.30	1.51	12.81	2.15	4.13	5.76	10.93	4.10
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	0.33	0.33	0.33	0.67	0.67	0.67	0.33	0.33	0.33	0.33	0.33	0.33
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	0.37	0.39	0.82	0.66	0.64	0.49	0.76	0.61	0.61	0.50	0.89	0.51
d, Delay for Lane Group [s/veh]	39.28	34.51	46.17	60.06	43.65	42.77	63.00	39.40	41.38	57.47	54.71	42.87
Lane Group LOS	D	C	D	E	D	D	E	D	D	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.76	6.46	12.79	1.18	4.30	2.85	8.55	10.31	10.99	3.73	13.16	6.24
50th-Percentile Queue Length [ft/ln]	93.92	161.60	319.67	29.49	107.62	71.30	213.73	257.65	274.78	93.21	329.12	155.89
95th-Percentile Queue Length [veh/ln]	6.76	10.63	18.65	2.12	7.71	5.13	13.34	15.57	16.43	6.71	19.12	10.33
95th-Percentile Queue Length [ft/ln]	169.06	265.83	466.27	53.08	192.68	128.34	333.61	389.27	410.71	167.79	477.88	258.27

Movement, Approach, & Intersection Results

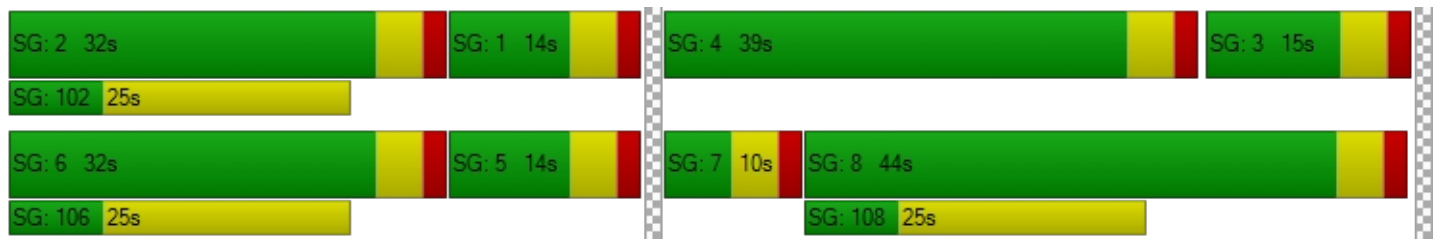
d_M, Delay for Movement [s/veh]	39.28	34.51	46.17	60.06	43.65	42.77	63.00	40.02	41.38	57.47	54.71	42.87
Movement LOS	D	C	D	E	D	D	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	41.17			44.75			44.69			52.92		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	46.28											
Intersection LOS	D											
Intersection V/C	0.708											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	3150.00	12600.00	3150.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	39.61	39.61	39.61	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.901	3.311	2.874	0.000
Crosswalk LOS	C	C	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	780	680	540	540
d_b, Bicycle Delay [s]	18.61	21.78	26.65	26.65
I_b,int, Bicycle LOS Score for Intersection	3.253	2.272	2.380	2.601
Bicycle LOS	C	B	B	B

Sequence

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



**Intersection Level Of Service Report
Intersection 5: Northwest/I90 EB**

Control Type:	Signalized	Delay (sec / veh):	28.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.473

Intersection Setup

Name	Northwest Blvd.			Northwest Blvd.			I90 EB Off-Ramp			I90 EB On-Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration							+ + +					
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	140.00	100.00	100.00	375.00	100.00	200.00	100.00	100.00	100.00
Speed [mph]	35.00			35.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			Yes		

Volumes

Name	Northwest Blvd.			Northwest Blvd.			I90 EB Off-Ramp			I90 EB On-Ramp		
Base Volume Input [veh/h]	0	1600	118	157	717	0	410	2	352	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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	19	0	0	0	0	0	287	0	0	0
Total Hourly Volume [veh/h]	0	1600	99	157	717	0	410	2	65	0	0	0
Peak Hour Factor	1.0000	0.9200	0.9200	0.9200	0.9200	1.0000	0.9200	0.9200	0.9200	1.0000	1.0000	1.0000
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	435	27	43	195	0	111	1	18	0	0	0
Total Analysis Volume [veh/h]	0	1739	108	171	779	0	446	2	71	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			2			5		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	84.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lag	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	10	0	0	0	0
Maximum Green [s]	0	56	0	10	65	0	0	27	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	60	0	9	69	0	0	31	0	0	0	0
Vehicle Extension [s]	0.0	5.0	0.0	5.0	5.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	7	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	15	0	0	16	0	0	0	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		Yes		No	Yes			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	150.0	0.0	150.0	150.0	0.0	0.0	150.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	C	L	C	L	C	R	
C, Cycle Length [s]	100	100	100	100	100	100	100	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	65	65	74	74	18	18	18	
g / C, Green / Cycle	0.65	0.65	0.74	0.74	0.18	0.18	0.18	
(v / s)_i Volume / Saturation Flow Rate	0.35	0.34	0.18	0.22	0.13	0.13	0.04	
s, saturation flow rate [veh/h]	3560	1814	927	3560	1781	1782	1589	
c, Capacity [veh/h]	2323	1183	531	2644	316	316	282	
d1, Uniform Delay [s]	25.59	25.34	51.08	16.38	44.54	44.54	40.74	
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	0.11	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.87	1.64	1.61	0.28	2.93	2.93	0.46	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	0.33	0.33	0.33	0.33	0.33	0.33	0.33	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.53	0.52	0.32	0.29	0.71	0.71	0.25	
d, Delay for Lane Group [s/veh]	26.46	26.98	52.69	16.66	47.47	47.47	41.20	
Lane Group LOS	C	C	D	B	D	D	D	
Critical Lane Group	Yes	No	Yes	No	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	14.69	14.91	1.30	8.45	6.13	6.13	1.73	
50th-Percentile Queue Length [ft/ln]	367.14	372.70	32.42	211.28	153.19	153.26	43.17	
95th-Percentile Queue Length [veh/ln]	20.97	21.24	2.33	13.22	10.19	10.19	3.11	
95th-Percentile Queue Length [ft/ln]	524.26	531.01	58.36	330.47	254.69	254.77	77.71	

Movement, Approach, & Intersection Results

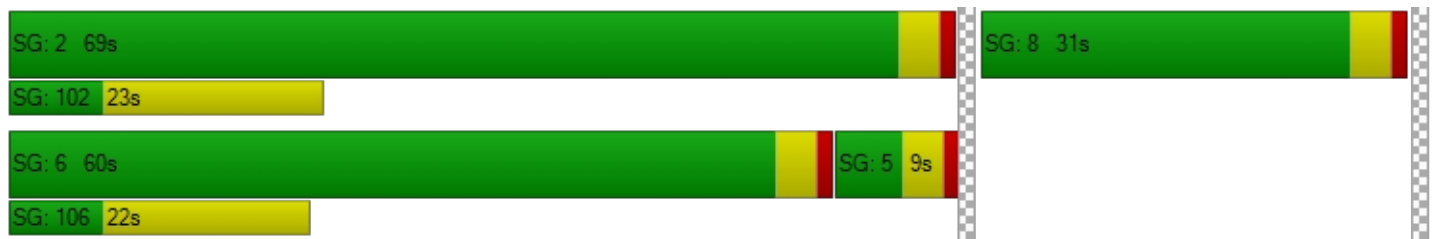
d_M, Delay for Movement [s/veh]	0.00	26.61	26.98	52.69	16.66	0.00	47.47	47.47	41.20	0.00	0.00	0.00
Movement LOS		C	C	D	B		D	D	D			
d_A, Approach Delay [s/veh]		26.63		23.15			46.61			0.00		
Approach LOS		C		C			D			A		
d_I, Intersection Delay [s/veh]		28.76										
Intersection LOS		C										
Intersection V/C		0.473										

Other Modes

g_Walk,mi, Effective Walk Time [s]		0.0		0.0		11.0		11.0
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		39.61		39.61
I_p,int, Pedestrian LOS Score for Intersection		0.000		0.000		2.659		2.100
Crosswalk LOS		F		F		B		B
s_b, Saturation Flow Rate of the bicycle lane		2000		2000		2000		2000
c_b, Capacity of the bicycle lane [bicycles/h]		1120		1300		540		0
d_b, Bicycle Delay [s]		9.68		6.13		26.65		50.00
I_b,int, Bicycle LOS Score for Intersection		2.586		2.343		2.890		4.132
Bicycle LOS		B		B		C		D

Sequence

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



Intersection Level Of Service Report
Intersection 7: Northwest/I90 WB

Control Type:	Signalized	Delay (sec / veh):	28.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.483

Intersection Setup

Name	Northwest Blvd.			Northwest Blvd.			I90 WB On-Ramp			I90 WB Off-Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	140.00	100.00	100.00	100.00	100.00	100.00	230.00	100.00	100.00
Speed [mph]	35.00			35.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name	Northwest Blvd.			Northwest Blvd.			I90 WB On-Ramp			I90 WB Off-Ramp		
Base Volume Input [veh/h]	596	1374	0	0	775	525	0	0	0	97	1	264
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	285	0	0	0	0	0	172
Total Hourly Volume [veh/h]	596	1374	0	0	775	240	0	0	0	97	1	92
Peak Hour Factor	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200	1.0000	1.0000	1.0000	0.9200	0.9200	0.9200
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]	162	373	0	0	211	65	0	0	0	26	0	25
Total Analysis Volume [veh/h]	648	1493	0	0	842	261	0	0	0	105	1	100
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			5			5		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	83.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	1	6	0	0	2	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	4	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	10	50	0	0	55	0	0	0	0	0	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	20	72	0	0	52	0	0	0	0	0	28	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	12	0	0	15	0	0	0	0	0	0	0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	Yes			Yes						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	150.0	150.0	0.0	0.0	150.0	0.0	0.0	0.0	0.0	0.0	150.0	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	C		L	C
C, Cycle Length [s]	100	100	100	100		100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	82	82	55	55		10	10
g / C, Green / Cycle	0.82	0.82	0.55	0.55		0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.35	0.42	0.21	0.22		0.06	0.06
s, saturation flow rate [veh/h]	1869	3560	3560	1662		1781	1592
c, Capacity [veh/h]	1329	2931	1960	915		172	154
d1, Uniform Delay [s]	42.27	19.23	25.72	26.29		43.31	43.52
k, delay calibration	0.50	0.50	0.39	0.50		0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	1.28	0.64	0.43	1.32		3.45	4.67
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	0.33	0.33	0.33	0.33		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.49	0.51	0.38	0.40		0.61	0.66
d, Delay for Lane Group [s/veh]	43.55	19.87	26.15	27.60		46.76	48.19
Lane Group LOS	D	B	C	C		D	D
Critical Lane Group	No	Yes	No	No		No	Yes
50th-Percentile Queue Length [veh/ln]	6.84	16.84	8.66	8.92		2.62	2.57
50th-Percentile Queue Length [ft/ln]	170.97	420.95	216.49	223.06		65.45	64.26
95th-Percentile Queue Length [veh/ln]	11.13	23.57	13.49	13.82		4.71	4.63
95th-Percentile Queue Length [ft/ln]	278.19	589.19	337.14	345.52		117.81	115.66

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	43.55	19.87	0.00	0.00	26.33	27.60	0.00	0.00	0.00	46.76	48.19	48.19
Movement LOS	D	B			C	C				D	D	D
d_A, Approach Delay [s/veh]	27.03				26.63		0.00		47.46			
Approach LOS	C				C		A		D			
d_I, Intersection Delay [s/veh]	28.13											
Intersection LOS	C											
Intersection V/C	0.483											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	41.41	41.41
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.853	2.181
Crosswalk LOS	F	F	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1360	960	0	480
d_b, Bicycle Delay [s]	5.12	13.52	50.00	28.88
I_b,int, Bicycle LOS Score for Intersection	3.326	2.323	4.132	2.183
Bicycle LOS	C	B	D	B

Sequence

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



Intersection Level Of Service Report
Intersection 8: Northwest Blvd / W Appleway Ave

Control Type:	Signalized	Delay (sec / veh):	41.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.600

Intersection Setup

Name	Northwest Blvd.			N Ramsey Rd.			Appleway Ave.			Appleway Ave.		
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 Pocket	1	0	1	2	0	0	1	0	1	2	0	0
Pocket Length [ft]	150.00	100.00	150.00	130.00	100.00	100.00	115.00	100.00	115.00	120.00	100.00	100.00
Speed [mph]	35.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Northwest Blvd.			N Ramsey Rd.			Appleway Ave.			Appleway Ave.		
Base Volume Input [veh/h]	85	1182	376	132	877	33	13	51	97	344	79	157
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	307	0	0	7	0	0	79	0	0	128
Total Hourly Volume [veh/h]	85	1182	69	132	877	26	13	51	18	344	79	29
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
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]	23	321	19	36	238	7	4	14	5	93	21	8
Total Analysis Volume [veh/h]	92	1285	75	143	953	28	14	55	20	374	86	32
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	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			7			5			3		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	89.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	1	6	0	5	2	0	3	3	0	4	4	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	10	39	0	5	40	0	10	10	0	20	20	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]	11	39	0	9	37	0	11	11	0	41	41	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	7	0	0	7	0	0	0	0	7	7	0
Pedestrian Clearance [s]	0	22	0	0	26	0	0	0	0	30	30	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	Yes		No	Yes		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]	150.0	150.0	0.0	150.0	150.0	0.0	150.0	150.0	0.0	150.0	150.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	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	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	23	58	58	5	40	40	5	5	5	16	16	16
g / C, Green / Cycle	0.23	0.58	0.58	0.05	0.40	0.40	0.05	0.05	0.05	0.16	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.06	0.40	0.05	0.05	0.29	0.29	0.01	0.03	0.01	0.12	0.05	0.02
s, saturation flow rate [veh/h]	1603	3204	1431	3113	1683	1666	1603	1683	1431	3113	1683	1431
c, Capacity [veh/h]	371	1864	832	156	674	667	80	84	71	493	266	226
d1, Uniform Delay [s]	37.91	31.85	18.56	48.88	38.09	38.09	45.48	46.61	45.73	45.41	42.13	40.82
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.35	2.11	0.21	18.50	6.87	6.94	1.04	8.48	2.13	2.44	0.69	0.28
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	0.33	0.33	0.33	0.33	0.33	0.33	1.00	1.00	1.00	0.33	0.33	0.33
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	0.25	0.69	0.09	0.92	0.73	0.73	0.18	0.66	0.28	0.76	0.32	0.14
d, Delay for Lane Group [s/veh]	38.26	33.96	18.78	67.38	44.96	45.03	46.52	55.09	47.86	47.85	42.83	41.10
Lane Group LOS	D	C	B	E	D	D	D	E	D	D	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.20	16.37	1.42	2.21	13.86	13.74	0.35	1.52	0.51	5.09	2.13	0.77
50th-Percentile Queue Length [ft/ln]	54.92	409.17	35.38	55.19	346.45	343.39	8.79	38.01	12.85	127.16	53.28	19.15
95th-Percentile Queue Length [veh/ln]	3.95	23.00	2.55	3.97	19.96	19.81	0.63	2.74	0.93	8.79	3.84	1.38
95th-Percentile Queue Length [ft/ln]	98.86	575.04	63.68	99.34	499.08	495.35	15.83	68.41	23.14	219.63	95.90	34.47

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.26	33.96	18.78	67.38	44.99	45.03	46.52	55.09	47.86	47.85	42.83	41.10
Movement LOS	D	C	B	E	D	D	D	E	D	D	D	D
d_A, Approach Delay [s/veh]	33.44			47.84			52.12			46.53		
Approach LOS	C			D			D			D		
d_I, Intersection Delay [s/veh]	41.14											
Intersection LOS	D											
Intersection V/C	0.600											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
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	39.61	39.61	39.61
I_p,int, Pedestrian LOS Score for Intersection	0.000	2.959	2.357	2.867
Crosswalk LOS	F	C	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	700	660	140	740
d_b, Bicycle Delay [s]	21.13	22.45	43.25	19.85
I_b,int, Bicycle LOS Score for Intersection	3.011	2.493	1.837	2.583
Bicycle LOS	C	B	A	B

Sequence

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



Intersection Level Of Service Report
Intersection 9: N Ramsey Rd / W Golf Course Rd

Control Type:	Signalized	Delay (sec / veh):	34.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.481

Intersection Setup

Name	N Ramsey Rd.			N Ramsey Rd.			W Golf Course Rd			W Marie Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	110.00	100.00	100.00	75.00	100.00	100.00	95.00	100.00	100.00
Speed [mph]	35.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	N Ramsey Rd.			N Ramsey Rd.			W Golf Course Rd			W Marie Ave		
Base Volume Input [veh/h]	132	1167	58	99	895	85	70	59	104	24	46	64
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	9	0	0	14	0	0	45	0	0	28
Total Hourly Volume [veh/h]	132	1167	49	99	895	71	70	59	59	24	46	36
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
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	317	13	27	243	19	19	16	16	7	13	10
Total Analysis Volume [veh/h]	143	1268	53	108	973	77	76	64	64	26	50	39
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	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	4			8			1			1		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	79.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	1	6	0	5	2	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	13	62	0	5	55	0	0	18	0	0	18	0
Amber [s]	3.0	3.5	0.0	3.5	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	1.0	1.5	0.0	1.5	1.5	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Split [s]	17	67	0	10	60	0	0	23	0	0	23	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
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
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	Yes		No	Yes			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	150.0	150.0	0.0	150.0	150.0	0.0	0.0	150.0	0.0	0.0	150.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.50	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	75	64	64	74	55	55	16	16	16	16
g / C, Green / Cycle	0.75	0.64	0.64	0.74	0.55	0.55	0.16	0.16	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.18	0.39	0.40	0.19	0.32	0.32	0.06	0.08	0.02	0.06
s, saturation flow rate [veh/h]	815	1683	1659	568	1683	1640	1177	1547	1136	1562
c, Capacity [veh/h]	504	1086	1070	321	926	902	172	244	140	246
d1, Uniform Delay [s]	45.34	27.93	27.99	52.48	30.15	30.16	44.75	38.69	45.23	37.64
k, delay calibration	0.50	0.50	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	1.00
d2, Incremental Delay [s]	1.41	2.57	2.63	2.81	2.59	2.66	1.78	1.75	0.63	0.89
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	0.33	0.33	0.33	0.33	0.33	0.33	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	0.28	0.61	0.61	0.34	0.57	0.57	0.44	0.53	0.19	0.36
d, Delay for Lane Group [s/veh]	46.75	30.51	30.62	55.28	32.73	32.82	46.53	40.45	45.87	38.53
Lane Group LOS	D	C	C	E	C	C	D	D	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.43	16.66	16.51	1.84	13.53	13.21	1.90	2.95	0.64	1.98
50th-Percentile Queue Length [ft/ln]	60.79	416.43	412.65	46.02	338.16	330.30	47.41	73.73	15.91	49.38
95th-Percentile Queue Length [veh/ln]	4.38	23.35	23.17	3.31	19.56	19.17	3.41	5.31	1.15	3.56
95th-Percentile Queue Length [ft/ln]	109.42	583.76	579.22	82.83	488.95	479.33	85.34	132.71	28.64	88.88

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	46.75	30.56	30.62	55.28	32.77	32.82	46.53	40.45	40.45	45.87	38.53	38.53
Movement LOS	D	C	C	E	C	C	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	32.14			34.88			42.71			40.19		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	34.27											
Intersection LOS	C											
Intersection V/C	0.481											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.41	41.41	41.41	41.41
I_p,int, Pedestrian LOS Score for Intersection	2.943	3.022	2.401	2.277
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1240	1100	360	360
d_b, Bicycle Delay [s]	7.22	10.13	33.62	33.62
I_b,int, Bicycle LOS Score for Intersection	2.775	2.527	1.970	1.796
Bicycle LOS	C	B	A	A

Sequence

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



Intersection Level Of Service Report
Intersection 10: Lakewood/Ironwood

Control Type:	Two-way stop	Delay (sec / veh):	54.2
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.190

Intersection Setup

Name	Lakewood Dr.		Ironwood Dr.		Ironwood Dr	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	150.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	Lakewood Dr.		Ironwood Dr.		Ironwood Dr	
Base Volume Input [veh/h]	16	159	125	833	461	18
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
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	16	159	125	833	461	18
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	43	34	226	125	5
Total Analysis Volume [veh/h]	17	173	136	905	501	20
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.19	0.31	0.13	0.01	0.01	0.00
d_M, Delay for Movement [s/veh]	54.16	20.36	8.96	0.00	0.00	0.00
Movement LOS	F	C	A	A	A	A
95th-Percentile Queue Length [veh/ln]	2.67	2.67	0.45	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	66.76	66.76	11.17	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	23.39		1.17		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	3.23					
Intersection LOS	F					

**Intersection Level Of Service Report
Intersection 11: Northwest/Lakewood**

Control Type:	Signalized	Delay (sec / veh):	41.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.544

Intersection Setup

Name	N Lakewood Dr			Lakewood Dr.			Northwest Blvd.			Northwest Blvd.		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration	⇌⇌⇌			⇌			⇌⇌⇌			⇌⇌⇌		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	160.00	100.00	160.00	100.00	100.00	100.00	110.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	N Lakewood Dr			Lakewood Dr.			Northwest Blvd.			Northwest Blvd.		
Base Volume Input [veh/h]	204	86	261	54	97	44	191	1000	37	21	1021	150
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	213	0	0	19	0	0	6	0	0	122
Total Hourly Volume [veh/h]	204	86	48	54	97	25	191	1000	31	21	1021	28
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
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]	55	23	13	15	26	7	52	272	8	6	277	8
Total Analysis Volume [veh/h]	222	93	52	59	105	27	208	1087	34	23	1110	30
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]	1			2			0			5		
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	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal group	8	8	0	4	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	20	20	0	20	20	0	10	20	0	10	20	0
Maximum Green [s]	20	20	0	20	20	0	10	20	0	10	40	0
Amber [s]	3.5	3.5	0.0	3.5	3.5	0.0	3.5	3.5	0.0	3.5	3.5	0.0
All red [s]	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0
Split [s]	25	25	0	25	25	0	15	25	0	15	25	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]	5	5	0	5	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	10	10	0	10	10	0	0	10	0	0	10	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]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	150.0	150.0	0.0	150.0	150.0	0.0	150.0	150.0	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	L	C	C	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
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
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	0.00	3.00	3.00	0.00	3.00	3.00
g_i, Effective Green Time [s]	20	20	20	20	20	55	45	45	55	40	40
g / C, Green / Cycle	0.18	0.18	0.18	0.18	0.18	0.50	0.41	0.41	0.50	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.09	0.09	0.03	0.03	0.07	0.26	0.30	0.30	0.03	0.31	0.02
s, saturation flow rate [veh/h]	1781	1832	1589	1781	1805	808	1870	1850	690	3560	1589
c, Capacity [veh/h]	324	333	289	323	327	347	764	756	314	1296	578
d1, Uniform Delay [s]	40.30	40.29	38.03	38.09	39.74	22.78	27.51	27.53	24.62	45.49	31.53
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.50	0.50	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
d2, Incremental Delay [s]	1.10	1.07	0.29	0.27	0.80	7.44	6.28	6.37	0.45	7.45	0.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
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

Lane Group Results

X, volume / capacity	0.48	0.48	0.18	0.18	0.40	0.60	0.74	0.74	0.07	0.86	0.05
d, Delay for Lane Group [s/veh]	41.40	41.36	38.32	38.36	40.54	30.22	33.79	33.90	25.07	52.93	31.70
Lane Group LOS	D	D	D	D	D	C	C	C	C	D	C
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.82	3.92	1.20	1.36	3.19	3.58	13.37	13.28	0.52	17.32	0.72
50th-Percentile Queue Length [ft/ln]	95.57	98.04	29.98	33.99	79.74	89.48	334.34	331.89	12.89	432.90	18.04
95th-Percentile Queue Length [veh/ln]	6.88	7.06	2.16	2.45	5.74	6.44	19.37	19.25	0.93	24.14	1.30
95th-Percentile Queue Length [ft/ln]	172.02	176.48	53.97	61.18	143.52	161.06	484.28	481.28	23.21	603.51	32.46

Movement, Approach, & Intersection Results

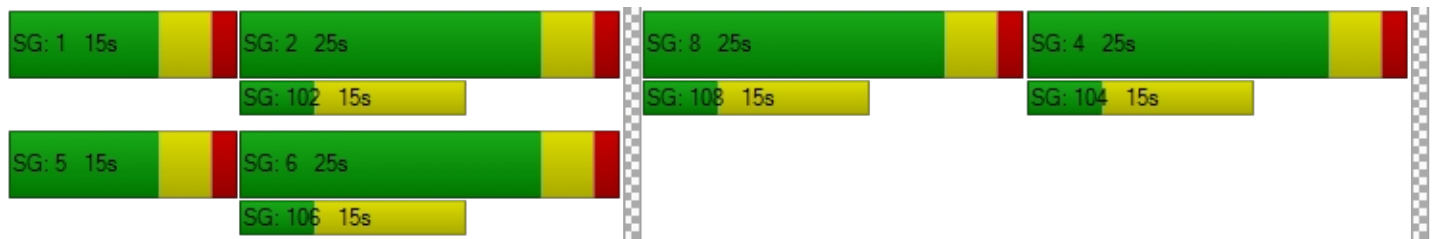
d_M, Delay for Movement [s/veh]	41.39	41.36	38.32	38.36	40.54	40.54	30.22	33.84	33.90	25.07	52.93	31.70
Movement LOS	D	D	D	D	D	D	C	C	C	C	D	C
d_A, Approach Delay [s/veh]	40.95			39.86			33.28			51.83		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	41.69											
Intersection LOS	D											
Intersection V/C	0.544											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.45	36.45	36.45	36.45
I_p,int, Pedestrian LOS Score for Intersection	2.955	2.112	2.940	3.128
Crosswalk LOS	C	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	444	444	444	444
d_b, Bicycle Delay [s]	27.22	27.22	27.22	27.22
I_b,int, Bicycle LOS Score for Intersection	2.517	1.906	2.661	2.620
Bicycle LOS	B	A	B	B

Sequence

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



Intersection Level Of Service Report
Intersection 12: W Riverstone Dr / N Lakewood Dr

Control Type:	Signalized	Delay (sec / veh):	22.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.668

Intersection Setup

Name	N Lakewood Dr			N Lakewood Dr			W Riverstone Dr			W Riverstone Dr		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration	↵			↵↵			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	75.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	N Lakewood Dr			N Lakewood Dr			W Riverstone Dr			W Riverstone Dr		
Base Volume Input [veh/h]	13	48	2	27	6	414	0	29	91	391	18	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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	13	48	2	27	6	414	0	29	91	391	18	3
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
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	13	1	7	2	113	0	8	25	106	5	1
Total Analysis Volume [veh/h]	14	52	2	29	7	450	0	32	99	425	20	3
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]	3			1			0			2		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	4	0	3	8	0	0	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	5	5	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	19	0	9	28	0	0	19	0	23	42	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	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
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No		No	No			No		No	No	
Maximum Recall		No		No	No			No		No	No	
Pedestrian Recall		No		No	No			No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	L	C
C, Cycle Length [s]	53	53	53	53	53	53	53	53	53
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	13	2	19	19	6	6	16	26
g / C, Green / Cycle	0.25	0.25	0.03	0.36	0.36	0.11	0.11	0.31	0.49
(v / s)_i Volume / Saturation Flow Rate	0.01	0.03	0.02	0.00	0.31	0.00	0.09	0.27	0.01
s, saturation flow rate [veh/h]	1267	1672	1603	1683	1431	1249	1485	1603	1645
c, Capacity [veh/h]	401	415	53	600	510	220	166	492	812
d1, Uniform Delay [s]	16.81	15.56	25.38	11.09	16.11	0.00	23.08	17.41	6.93
k, delay calibration	0.11	0.11	0.11	0.11	0.13	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]	0.04	0.14	8.54	0.01	6.05	0.00	8.20	4.65	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
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	0.03	0.13	0.55	0.01	0.88	0.00	0.79	0.86	0.03
d, Delay for Lane Group [s/veh]	16.85	15.70	33.92	11.09	22.16	0.00	31.28	22.06	6.95
Lane Group LOS	B	B	C	B	C	A	C	C	A
Critical Lane Group	No	No	No	No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.13	0.47	0.46	0.05	5.20	0.00	1.85	4.88	0.11
50th-Percentile Queue Length [ft/ln]	3.21	11.87	11.55	1.20	130.06	0.00	46.19	122.11	2.76
95th-Percentile Queue Length [veh/ln]	0.23	0.85	0.83	0.09	8.94	0.00	3.33	8.51	0.20
95th-Percentile Queue Length [ft/ln]	5.77	21.36	20.79	2.15	223.58	0.00	83.14	212.72	4.96

Movement, Approach, & Intersection Results

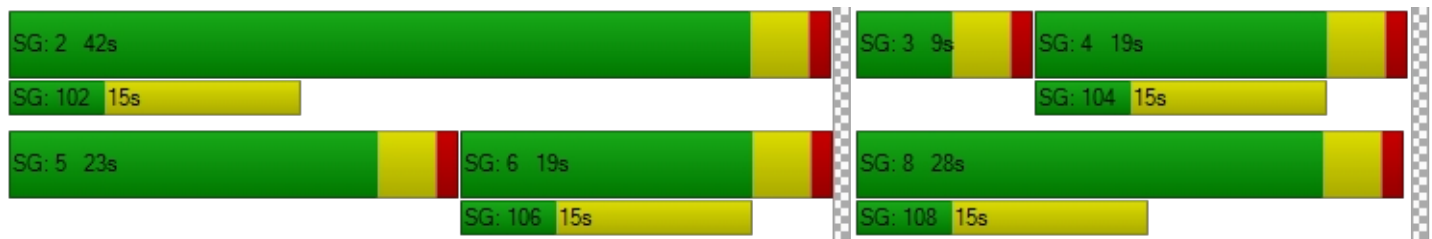
d_M, Delay for Movement [s/veh]	16.85	15.70	15.70	33.92	11.09	22.16	0.00	31.28	31.28	22.06	6.95	6.95
Movement LOS	B	B	B	C	B	C	A	C	C	C	A	A
d_A, Approach Delay [s/veh]	15.94			22.70			31.28			21.28		
Approach LOS	B			C			C			C		
d_I, Intersection Delay [s/veh]	22.73											
Intersection LOS	C											
Intersection V/C	0.668											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	26.58	26.58	26.58	26.58
I_p,int, Pedestrian LOS Score for Intersection	1.954	2.379	1.988	2.256
Crosswalk LOS	A	B	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	429	686	429	1086
d_b, Bicycle Delay [s]	21.61	15.11	21.61	7.31
I_b,int, Bicycle LOS Score for Intersection	1.672	2.362	1.776	2.299
Bicycle LOS	A	B	A	B

Sequence

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



Intersection Level Of Service Report
Intersection 13: N Beebe Blvd / W Riverstone Dr

Control Type:	Two-way stop	Delay (sec / veh):	19.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.201

Intersection Setup

Name	N Beebe Blvd			N Beebe Blvd			W Riverstone Dr			W Riverstone Dr		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	N Beebe Blvd			N Beebe Blvd			W Riverstone Dr			W Riverstone Dr		
Base Volume Input [veh/h]	18	4	53	59	4	19	41	237	57	20	173	16
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	4	53	59	4	19	41	237	57	20	173	16
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	1	14	16	1	5	11	64	15	5	47	4
Total Analysis Volume [veh/h]	20	4	58	64	4	21	45	258	62	22	188	17
Pedestrian Volume [ped/h]	4			5			15			6		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.01	0.07	0.20	0.01	0.03	0.03	0.00	0.00	0.02	0.00	0.00
d_M, Delay for Movement [s/veh]	16.21	16.07	10.44	19.09	14.89	10.06	7.74	0.00	0.00	7.98	0.00	0.00
Movement LOS	C	C	B	C	B	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.48	0.48	0.48	0.74	0.03	0.09	0.09	0.09	0.09	0.05	0.05	0.05
95th-Percentile Queue Length [ft/ln]	12.08	12.08	12.08	18.39	0.82	2.21	2.34	2.34	2.34	1.24	1.24	1.24
d_A, Approach Delay [s/veh]	12.12			16.77			0.95			0.77		
Approach LOS	B			C			A			A		
d_I, Intersection Delay [s/veh]	3.95											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 15: Riverstone/John's Loop South

Control Type:	Two-way stop	Delay (sec / veh):	12.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.021

Intersection Setup

Name	John's Loop		W Riverstone Dr	
Approach	Eastbound		Northwestbound	
Lane Configuration	↵		↶	
Turning Movement	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00	
Grade [%]	0.00		0.00	
Crosswalk	Yes		Yes	

Volumes

Name	John's Loop		W Riverstone Dr	
Base Volume Input [veh/h]	202	7	9	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0
Other Volume [veh/h]	0	0	0	0
Total Hourly Volume [veh/h]	202	7	9	18
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	55	2	2	5
Total Analysis Volume [veh/h]	220	8	10	20
Pedestrian Volume [ped/h]	0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.02	0.02	0.02	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	12.69	9.67	7.74	0.00
Movement LOS	A	A	B	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.14	0.14	0.05	0.05
95th-Percentile Queue Length [ft/ln]	0.00	0.00	3.54	3.54	1.37	1.37
d_A, Approach Delay [s/veh]	0.00		10.68		0.67	
Approach LOS	A		B		A	
d_I, Intersection Delay [s/veh]	0.93					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 16: Riverstone/John's Loop North

Control Type:	Two-way stop	Delay (sec / veh):	12.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.107

Intersection Setup

Name	Riverstone Dr.		John's Loop			
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↰		↳		↰	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Riverstone Dr.		John's Loop			
Base Volume Input [veh/h]	3	249	206	42	51	3
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
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	249	206	42	51	3
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	68	56	11	14	1
Total Analysis Volume [veh/h]	3	271	224	46	55	3
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.11	0.00
d_M, Delay for Movement [s/veh]	7.79	0.00	0.00	0.00	12.89	10.41
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.00	0.00	0.37	0.37
95th-Percentile Queue Length [ft/ln]	0.17	0.17	0.00	0.00	9.32	9.32
d_A, Approach Delay [s/veh]	0.09		0.00		12.76	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	1.27					
Intersection LOS	B					

**Intersection Level Of Service Report
Intersection 17: John's Loop/Suzanne**

Control Type:	Two-way stop	Delay (sec / veh):	8.5
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	John's Loop		Suzanne		John's Loop	
Approach	Northbound		Eastbound		Southwestbound	
Lane Configuration	T		T		Y	
Turning Movement	Left	Thru	Left	Right	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	John's Loop		Suzanne		John's Loop	
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.22	0.00	8.52	8.32	0.00	0.00
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
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	3.61		8.42		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	4.01					
Intersection LOS	A					

**Intersection Level Of Service Report
Intersection 18: Northwest & Emma**

Control Type:	Two-way stop	Delay (sec / veh):	271.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Emma Ave.			Gas Station Parking			Northwest Blvd.			Northwest Blvd.		
Approach	Westbound			Northeastbound			Northwestbound			Southeastbound		
Lane Configuration	Y			T			TT			TTT		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Emma Ave.			Gas Station Parking			Northwest Blvd.			Northwest Blvd.		
Base Volume Input [veh/h]	6	0	71	5	0	1	4	1148	26	49	1291	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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	0	71	5	0	1	4	1148	26	49	1291	3
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	0	19	1	0	0	1	312	7	13	351	1
Total Analysis Volume [veh/h]	7	0	77	5	0	1	4	1248	28	53	1403	3
Pedestrian Volume [ped/h]	0			3			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.25	0.00	0.18	0.25	0.00	0.00	0.01	0.01	0.00	0.10	0.01	0.00
d_M, Delay for Movement [s/veh]	146.29	237.61	26.99	225.12	271.86	58.02	12.58	0.00	0.00	12.39	0.00	0.00
Movement LOS	F	F	D	F	F	F	B	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	2.00	2.00	2.00	0.75	0.75	0.75	0.03	0.01	0.00	0.32	0.00	0.00
95th-Percentile Queue Length [ft/ln]	49.89	49.89	49.89	18.63	18.63	18.63	0.63	0.32	0.00	8.12	0.00	0.00
d_A, Approach Delay [s/veh]	36.93			197.27			0.04			0.45		
Approach LOS	E			F			A			A		
d_I, Intersection Delay [s/veh]	1.76											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 20: Northwest Blvd / W Lacrosse Ave

Control Type:	Two-way stop	Delay (sec / veh):	242.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.195

Intersection Setup

Name	Lacrosse Ave.			Lacrosse Ave.			Northwest Blvd.			Northwest Blvd.		
Approach	Eastbound			Westbound			Northwestbound			Southeastbound		
Lane Configuration	↑			↑			↑↑			↑↑↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Lacrosse Ave.			Lacrosse Ave.			Northwest Blvd.			Northwest Blvd.		
Base Volume Input [veh/h]	17	5	20	0	1	25	12	1081	11	26	1132	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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	17	5	20	0	1	25	12	1081	11	26	1132	5
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	1	5	0	0	7	3	294	3	7	308	1
Total Analysis Volume [veh/h]	18	5	22	0	1	27	13	1175	12	28	1230	5
Pedestrian Volume [ped/h]	3			2			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.51	0.19	0.05	0.00	0.04	0.06	0.02	0.01	0.00	0.05	0.01	0.00
d_M, Delay for Movement [s/veh]	203.74	242.60	110.86	116.03	145.80	14.47	11.62	0.00	0.00	11.50	0.00	0.00
Movement LOS	F	F	F	F	F	B	B	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	3.28	3.28	3.28	0.33	0.33	0.33	0.07	0.03	0.00	0.15	0.00	0.00
95th-Percentile Queue Length [ft/ln]	82.12	82.12	82.12	8.18	8.18	8.18	1.65	0.83	0.00	3.78	0.00	0.00
d_A, Approach Delay [s/veh]	162.65			19.16			0.13			0.25		
Approach LOS	F			C			A			A		
d_I, Intersection Delay [s/veh]	3.28											
Intersection LOS	F											

**Intersection Level Of Service Report
Intersection 21: Riverstone/Old Mill**

Control Type:	Two-way stop	Delay (sec / veh):	20.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.273

Intersection Setup

Name	W Riverstone Dr									W Riverstone Dr		
Approach	Westbound			Northeastbound			Southwestbound			Southeastbound		
Lane Configuration	Y			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	W Riverstone Dr									W Riverstone Dr		
Base Volume Input [veh/h]	13	305	85	5	0	10	80	0	25	18	263	4
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	13	305	85	5	0	10	80	0	25	18	263	4
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
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	83	23	1	0	3	22	0	7	5	71	1
Total Analysis Volume [veh/h]	14	332	92	5	0	11	87	0	27	20	286	4
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Stop	Stop	Free
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	0.00	0.00	0.02	0.00	0.01	0.27	0.00	0.04	0.02	0.00	0.00
d_M, Delay for Movement [s/veh]	7.86	0.00	0.00	16.95	16.64	10.02	20.72	20.21	14.82	8.23	0.00	0.00
Movement LOS	A	A	A	C	C	B	C	C	B	A	A	A
95th-Percentile Queue Length [veh/ln]	0.03	0.03	0.03	0.10	0.10	0.10	1.31	1.31	1.31	0.05	0.05	0.05
95th-Percentile Queue Length [ft/ln]	0.77	0.77	0.77	2.39	2.39	2.39	32.79	32.79	32.79	1.21	1.21	1.21
d_A, Approach Delay [s/veh]	0.25			12.18			19.32			0.53		
Approach LOS	A			B			C			A		
d_I, Intersection Delay [s/veh]	3.04											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 22: Lincoln Way/Lacrosse Ave.

Control Type:	Two-way stop	Delay (sec / veh):	47.5
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.225

Intersection Setup

Name	Lincoln Way			Lincoln Way			Lacrosse Ave.			Lacrosse Ave.		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇌⇌			⇌⇌			⊕			⊕		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00			35.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Lincoln Way			Lincoln Way			Lacrosse Ave.			Lacrosse Ave.		
Base Volume Input [veh/h]	6	532	12	47	622	14	22	27	18	5	9	25
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	532	12	47	622	14	22	27	18	5	9	25
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	145	3	13	169	4	6	7	5	1	2	7
Total Analysis Volume [veh/h]	7	578	13	51	676	15	24	29	20	5	10	27
Pedestrian Volume [ped/h]	6			0			3			9		

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	0.05	0.01	0.00	0.17	0.23	0.03	0.04	0.08	0.04
d_M, Delay for Movement [s/veh]	9.06	0.00	0.00	8.94	0.00	0.00	44.52	47.51	25.18	34.58	35.44	12.67
Movement LOS	A	A	A	A	A	A	E	E	D	D	E	B
95th-Percentile Queue Length [veh/ln]	0.02	0.01	0.00	0.17	0.00	0.00	1.91	1.91	1.91	0.54	0.54	0.54
95th-Percentile Queue Length [ft/ln]	0.51	0.25	0.00	4.18	0.00	0.00	47.75	47.75	47.75	13.50	13.50	13.50
d_A, Approach Delay [s/veh]	0.11			0.61			40.41			20.70		
Approach LOS	A			A			E			C		
d_I, Intersection Delay [s/veh]	2.98											
Intersection LOS	E											

**Intersection Level Of Service Report
Intersection 23: Lincoln Way / Emma Ave.**

Control Type:	Signalized	Delay (sec / veh):	17.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.339

Intersection Setup

Name	Lincoln Way						Emma Ave.					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00			35.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Lincoln Way						Emma Ave.					
Base Volume Input [veh/h]	19	619	10	31	640	33	99	51	58	15	23	51
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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	19	619	10	31	640	33	99	51	58	15	23	51
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
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	168	3	8	174	9	27	14	16	4	6	14
Total Analysis Volume [veh/h]	21	673	11	34	696	36	108	55	63	16	25	55
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]	7			4			0			14		
Bicycle Volume [bicycles/h]	0			0			1			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	129.0
Offset Reference	LeadGreen
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	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	10	60	0	10	60	0	8	12	0	8	12	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [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
Split [s]	11	33	0	11	33	0	15	35	0	11	31	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	11	0	0	11	0	0	16	0	0	17	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]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	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	C	L	C	L	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
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	4.00	4.00	0.00	4.00	4.00	0.00	4.00	0.00	4.00
g_i, Effective Green Time [s]	59	50	50	59	51	51	19	11	19	6
g / C, Green / Cycle	0.66	0.56	0.56	0.66	0.57	0.57	0.21	0.12	0.21	0.07
(v / s)_i Volume / Saturation Flow Rate	0.03	0.20	0.20	0.04	0.22	0.22	0.08	0.08	0.01	0.05
s, saturation flow rate [veh/h]	751	1683	1673	790	1683	1654	1424	1526	1285	1501
c, Capacity [veh/h]	525	939	934	553	954	938	356	189	302	102
d1, Uniform Delay [s]	6.15	11.09	11.10	6.09	10.86	10.86	30.38	37.61	28.75	41.45
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.50	0.13	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.03	1.10	1.11	0.21	1.19	1.21	0.57	3.38	0.07	12.21
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	0.04	0.37	0.37	0.06	0.39	0.39	0.30	0.63	0.05	0.78
d, Delay for Lane Group [s/veh]	6.18	12.19	12.20	6.31	12.05	12.07	30.95	40.99	28.82	53.66
Lane Group LOS	A	B	B	A	B	B	C	D	C	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.12	3.70	3.69	0.22	3.96	3.90	2.02	2.62	0.28	2.08
50th-Percentile Queue Length [ft/ln]	3.01	92.60	92.17	5.55	98.95	97.48	50.45	65.43	6.99	51.93
95th-Percentile Queue Length [veh/ln]	0.22	6.67	6.64	0.40	7.12	7.02	3.63	4.71	0.50	3.74
95th-Percentile Queue Length [ft/ln]	5.42	166.68	165.90	10.00	178.11	175.46	90.80	117.77	12.59	93.48

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	6.18	12.20	12.20	6.31	12.06	12.07	30.95	40.99	40.99	28.82	53.66	53.66
Movement LOS	A	B	B	A	B	B	C	D	D	C	D	D
d_A, Approach Delay [s/veh]	12.02			11.80			36.19			49.52		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	16.98											
Intersection LOS	B											
Intersection V/C	0.339											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.45	36.45	36.45	36.45
I_p,int, Pedestrian LOS Score for Intersection	2.641	2.680	2.059	2.034
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	600	644	556
d_b, Bicycle Delay [s]	22.05	22.05	20.68	23.47
I_b,int, Bicycle LOS Score for Intersection	2.141	2.192	1.933	1.718
Bicycle LOS	B	B	A	A

Sequence

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



**Intersection Level Of Service Report
Intersection 24: Riverstone/Village North**

Control Type:	Two-way stop	Delay (sec / veh):	15.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.014

Intersection Setup

Name	W Riverstone Dr			Approach			Village North			W Riverstone Dr		
Approach	Northbound			Eastbound			Westbound			Southeastbound		
Lane Configuration	←			←			↑			↘		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	W Riverstone Dr			Approach			Village North			W Riverstone Dr		
Base Volume Input [veh/h]	8	234	8	5	0	9	19	0	78	39	180	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
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	8	234	8	5	0	9	19	0	78	39	180	11
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	64	2	1	0	2	5	0	21	11	49	3
Total Analysis Volume [veh/h]	9	254	9	5	0	10	21	0	85	42	196	12
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Stop	Stop	Free
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	0.00	0.00	0.01	0.00	0.01	0.05	0.00	0.11	0.03	0.00	0.00
d_M, Delay for Movement [s/veh]	7.66	0.00	0.00	15.37	13.86	9.46	14.72	14.74	10.64	7.86	0.00	0.00
Movement LOS	A	A	A	C	B	A	B	B	B	A	A	A
95th-Percentile Queue Length [veh/ln]	0.02	0.02	0.02	0.08	0.08	0.08	0.57	0.57	0.57	0.09	0.09	0.09
95th-Percentile Queue Length [ft/ln]	0.44	0.44	0.44	2.01	2.01	2.01	14.13	14.13	14.13	2.32	2.32	2.32
d_A, Approach Delay [s/veh]	0.25			11.43			11.45			1.32		
Approach LOS	A			B			B			A		
d_I, Intersection Delay [s/veh]	2.77											
Intersection LOS	C											

**Intersection Level Of Service Report
Intersection 25: Riverstone/Starbucks**

Control Type:	Two-way stop	Delay (sec / veh):	16.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.068

Intersection Setup

Name	Southbound		Eastbound		Northwestbound	
Approach	Southbound		Eastbound		Northwestbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Southbound		Eastbound		Northwestbound	
Base Volume Input [veh/h]	21	19	8	345	384	23
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
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	19	8	345	384	23
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	5	2	94	104	6
Total Analysis Volume [veh/h]	23	21	9	375	417	25
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.03	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	16.52	11.69	8.25	0.00	0.00	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.34	0.34	0.02	0.02	0.00	0.00
95th-Percentile Queue Length [ft/ln]	8.39	8.39	0.54	0.54	0.00	0.00
d_A, Approach Delay [s/veh]	14.21		0.19		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.80					
Intersection LOS	C					

**Intersection Level Of Service Report
Intersection 26: Riverstone/McDonald's**

Control Type:	Two-way stop	Delay (sec / veh):	23.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.234

Intersection Setup

Name	Approach			McDonald's			W Riverstone Dr			W Riverstone Dr		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Approach			McDonald's			W Riverstone Dr			W Riverstone Dr		
Base Volume Input [veh/h]	4	0	4	56	0	8	5	395	56	12	352	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 Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	0	4	56	0	8	5	395	56	12	352	2
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	0	1	15	0	2	1	107	15	3	96	1
Total Analysis Volume [veh/h]	4	0	4	61	0	9	5	429	61	13	383	2
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

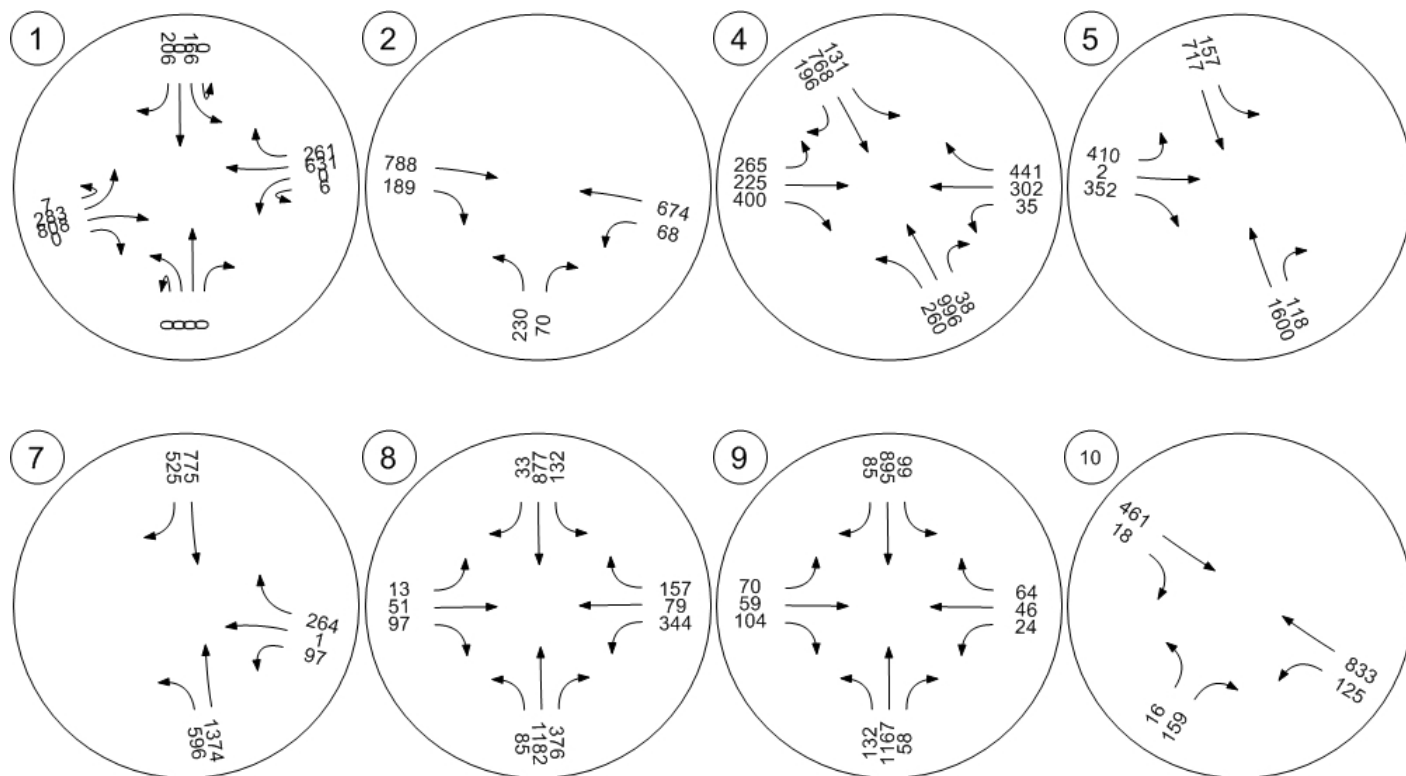
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.00	0.01	0.23	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	19.18	18.61	10.64	22.96	22.05	15.16	8.08	0.00	0.00	8.40	0.00	0.00
Movement LOS	C	C	B	C	C	C	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.07	0.07	0.07	0.96	0.96	0.96	0.01	0.01	0.01	0.03	0.03	0.03
95th-Percentile Queue Length [ft/ln]	1.65	1.65	1.65	23.94	23.94	23.94	0.32	0.32	0.32	0.85	0.85	0.85
d_A, Approach Delay [s/veh]	14.91			21.96			0.08			0.27		
Approach LOS	B			C			A			A		
d_I, Intersection Delay [s/veh]	1.86											
Intersection LOS	C											

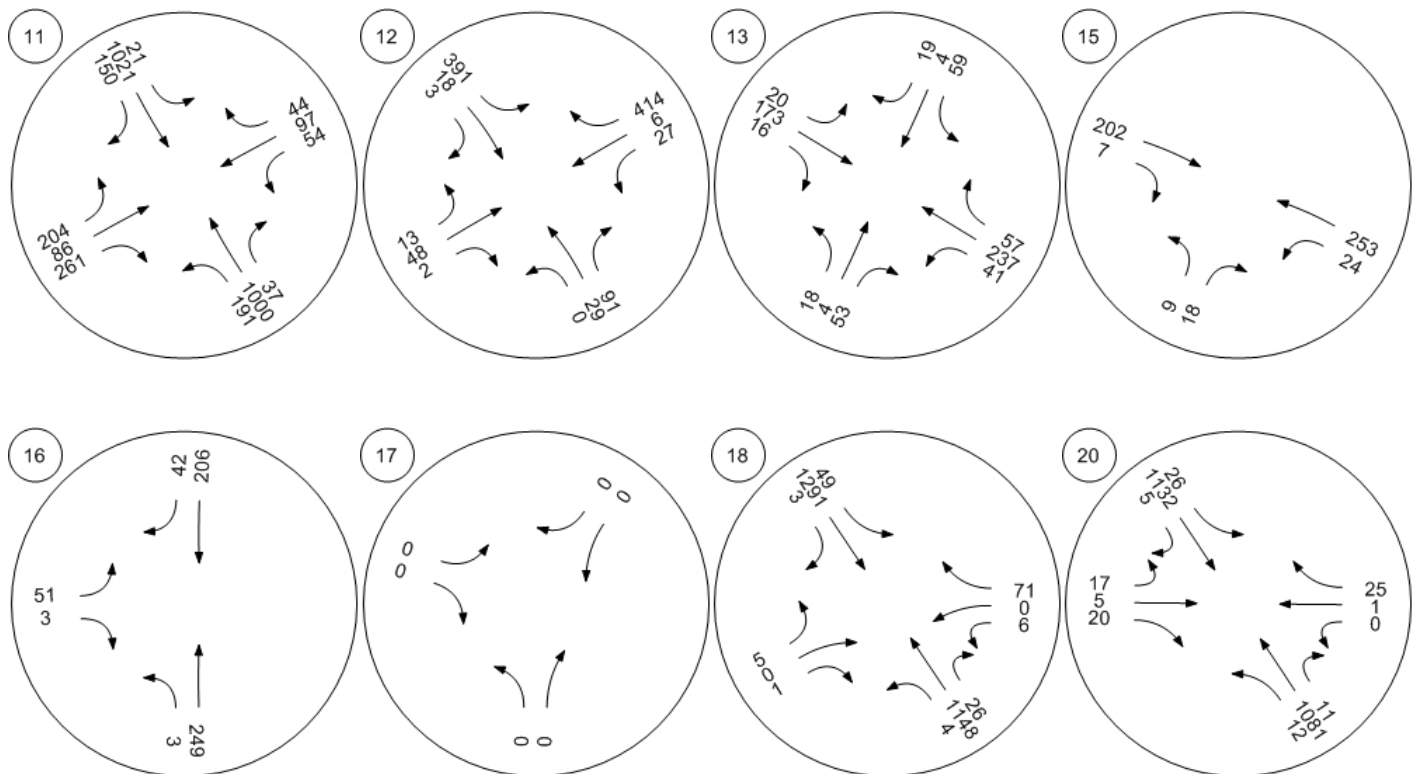
Study Intersections



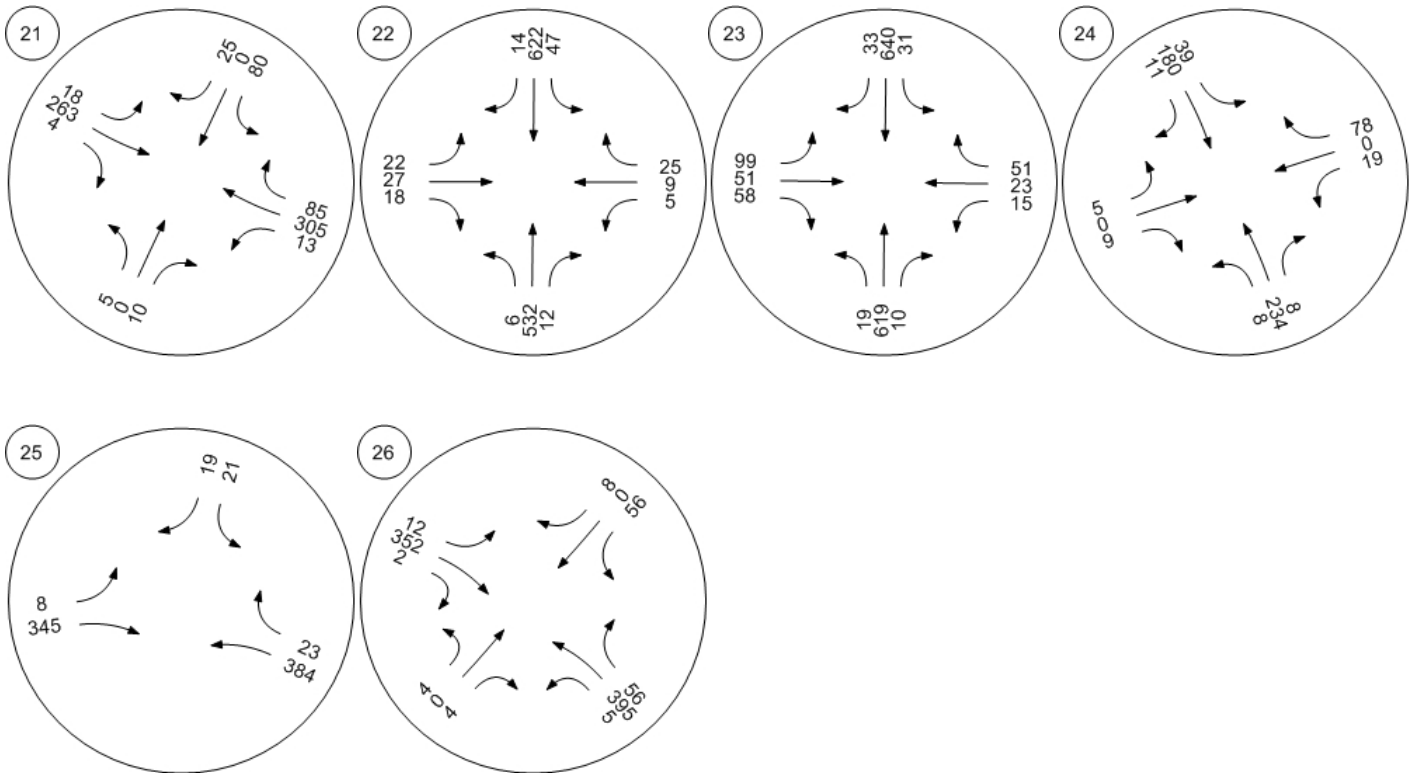
Traffic Volume - Base Volume



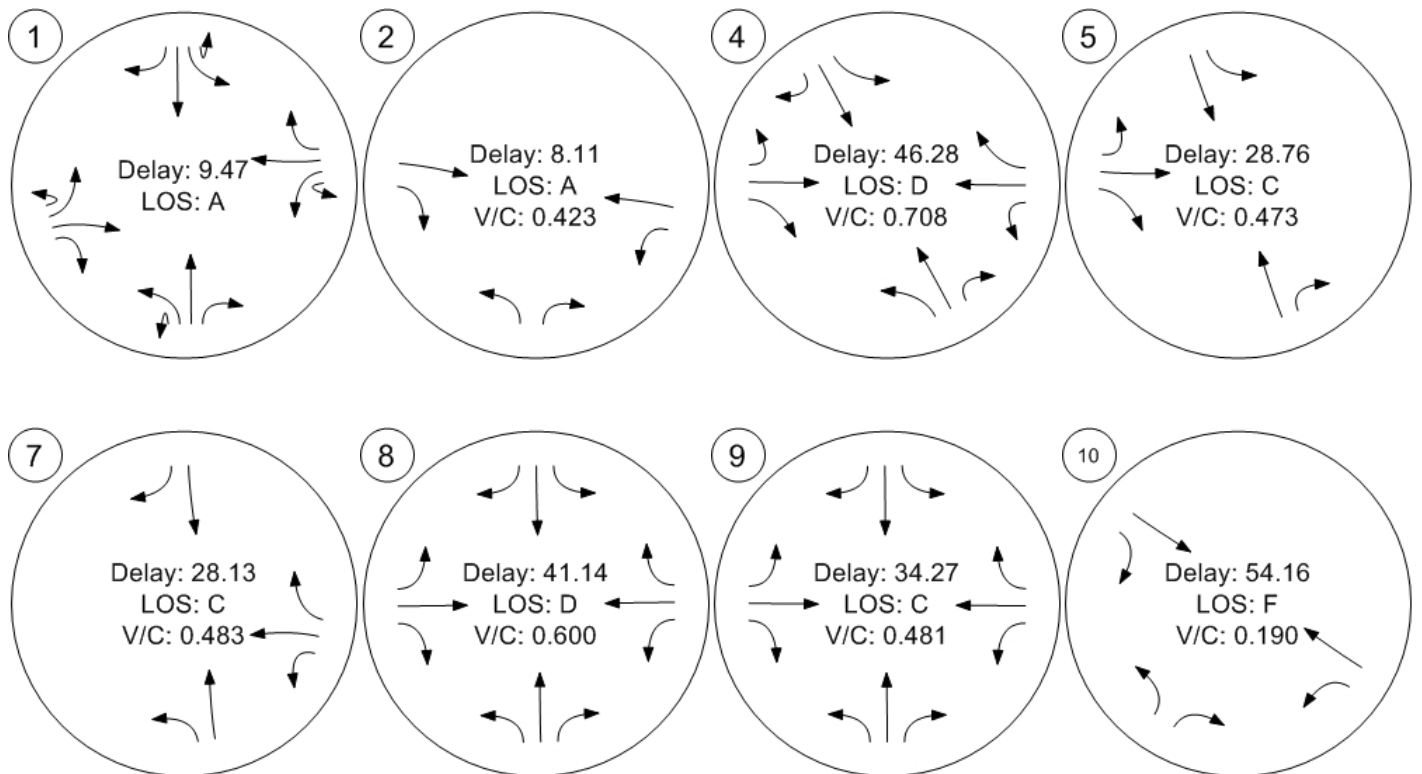
Traffic Volume - Base Volume



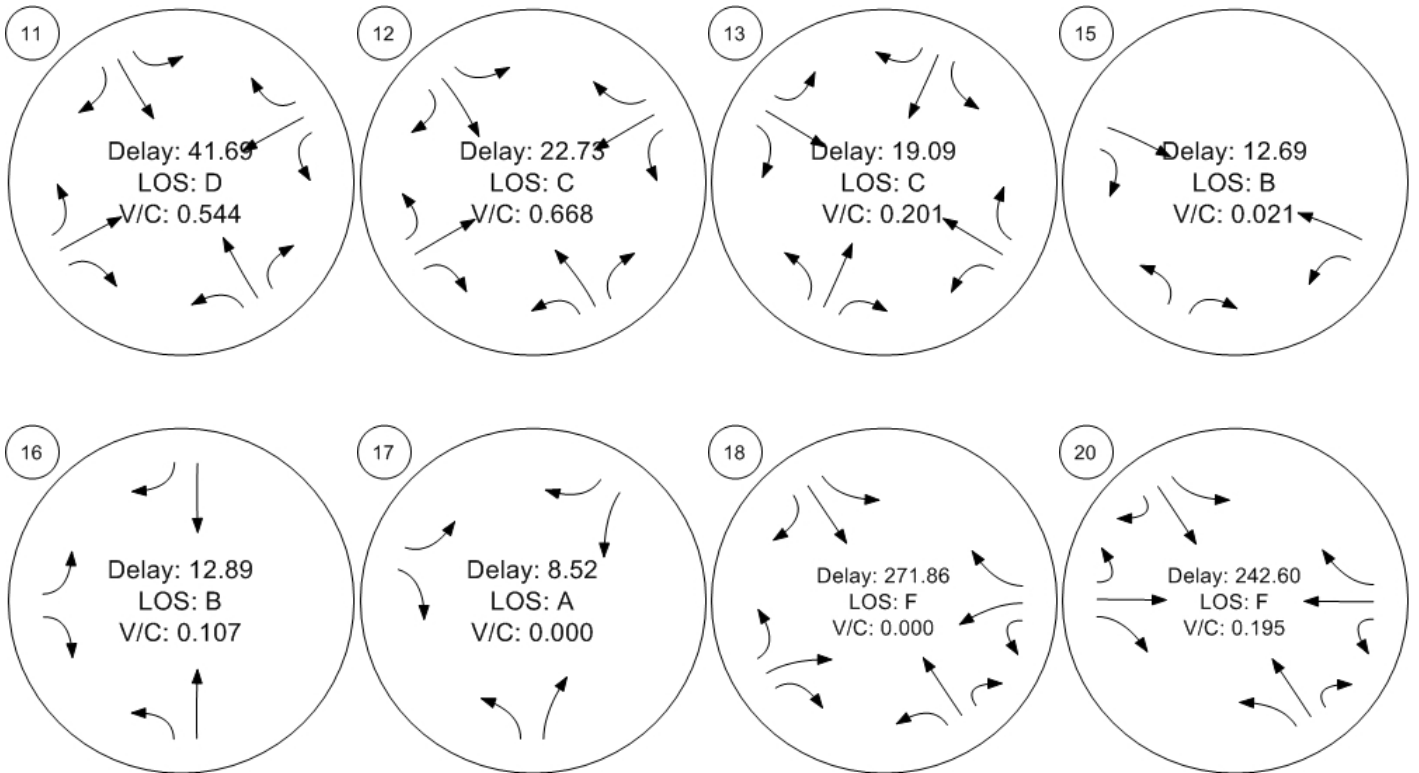
Traffic Volume - Base Volume



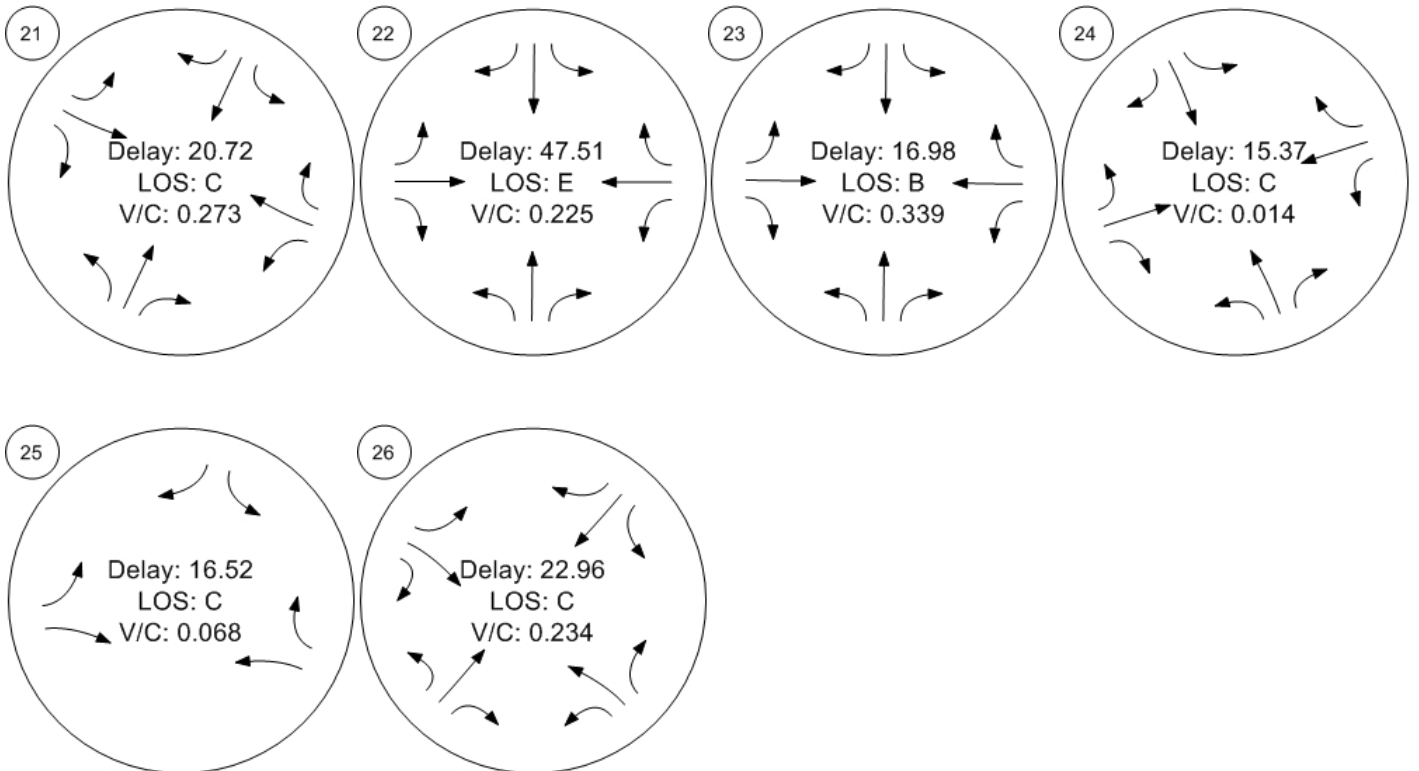
Traffic Conditions



Traffic Conditions



Traffic Conditions

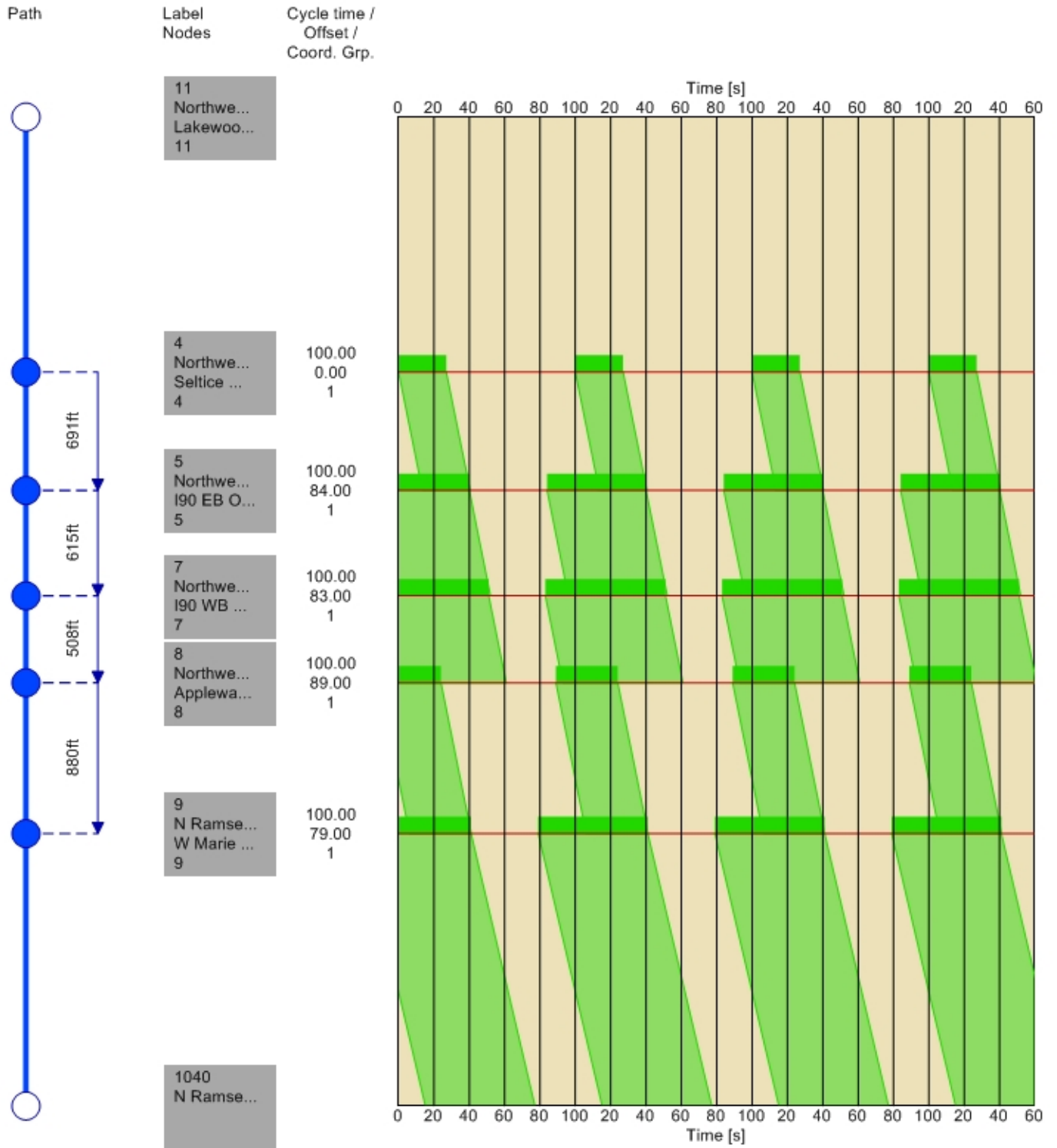


Time Space Diagram - Flowing Off

Route 11: NW Blvd NB



Route 11: NW Blvd NB



Appendix G - 2028 Buildout Vistro Intersection Reports

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Atlas Waterfront TIS

Vistro File: X:\...41292 Base Model 20181130 without Rt
Turns.vistro

Scenario 9 2028 Buildout w/ SE Lacrosse

Report File: X:\...20190102 Buildout with NW-Beebe
Connection.pdf

1/2/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	N Atlas Rd / W Seltice Way	Roundabout	HCM 6th Edition	SB Right		25.9	D
2	W Riverstone Dr / W Seltice Way	Signalized	HCM 6th Edition	NB Left	0.551	10.8	B
4	Northwest Blvd / W Ironwood Dr	Signalized	HCM 6th Edition	NWB Left	0.804	59.4	E
5	Northwest/I90 EB	Signalized	HCM 6th Edition	SB Left	0.573	33.1	C
7	Northwest/I90 WB	Signalized	HCM 6th Edition	NB Left	0.578	35.7	D
8	Northwest Blvd / W Appleway Ave	Signalized	HCM 6th Edition	SB Left	0.679	46.9	D
9	N Ramsey Rd / W Golf Course Rd	Signalized	HCM 6th Edition	SB Left	0.530	37.1	D
10	Lakewood/Ironwood	Two-way stop	HCM 6th Edition	NEB Left	0.350	108.5	F
11	Northwest/Lakewood	Signalized	HCM 6th Edition	SWB Thru	0.637	34.6	C
12	W Riverstone Dr / N Lakewood Dr	Signalized	HCM 6th Edition	SWB Right	0.812	51.8	D
13	N Beebe Blvd / W Riverstone Dr	Two-way stop	HCM 6th Edition	SWB Left	0.575	46.2	E
15	Riverstone/John's Loop South	Two-way stop	HCM 6th Edition	NEB Left	0.037	18.3	C
16	Riverstone/John's Loop North	Two-way stop	HCM 6th Edition	EB Left	0.218	16.3	C
17	John's Loop/Suzanne	Two-way stop	HCM 6th Edition	EB Left	0.023	10.0	B
18	Northwest & Emma	Two-way stop	HCM 6th Edition	NEB Thru	0.000	496.5	F
20	Northwest Blvd / W Lacrosse Ave	Signalized	HCM 6th Edition	NEB Right	0.468	12.1	B
21	Riverstone/Old Mill	Two-way stop	HCM 6th	SWB Left	0.308	31.0	D

ID	Location	Control Type	Edition	Movement	V/C	Delay	LOS
22	Lincoln Way/Lacrosse Ave.	Two-way stop	HCM 6th Edition	EB Thru	0.281	59.1	F
23	Lincoln Way / Emma Ave.	Signalized	HCM 6th Edition	WB Right	0.376	17.9	B
24	Riverstone/Village North	Two-way stop	HCM 6th Edition	EB Left	0.024	22.9	C
25	Riverstone/Starbucks	Two-way stop	HCM 6th Edition	SB Left	0.094	20.7	C
26	Riverstone/McDonald's	Two-way stop	HCM 6th Edition	SWB Left	0.341	33.8	D

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

Intersection Level Of Service Report
Intersection 1: N Atlas Rd / W Seltice Way

Control Type: Roundabout
Analysis Method: HCM 6th Edition
Analysis Period: 15 minutes

Delay (sec / veh): 25.9
Level Of Service: D

Intersection Setup

Name							Atlas Rd.					
Approach	Northbound						Southbound					
Lane Configuration												
Turning Movement	U-turn	Left	Left	Thru	Right	Right	U-turn	Left	Left	Thru	Right	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00						25.00					
Grade [%]	0.00						0.00					
Crosswalk	Yes						Yes					

Volumes

Name							Atlas Rd.					
Base Volume Input [veh/h]	0	0	0	0	0	0	0	166	0	0	0	206
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 Rate	1.06	1.06	1.00	1.06	1.00	1.06	1.06	1.06	1.00	1.06	1.00	1.06
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	24	0	57	0	111	0	10	0	33	0	8
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	24	0	57	0	111	0	186	0	33	0	226
Peak Hour Factor	0.9200	0.9200	1.0000	0.9200	1.0000	0.9200	0.9200	0.9200	1.0000	0.9200	1.0000	0.9200
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	7	0	15	0	30	0	51	0	9	0	61
Total Analysis Volume [veh/h]	0	26	0	62	0	121	0	202	0	36	0	246
Pedestrian Volume [ped/h]	0						1					

Intersection Settings

Number of Conflicting Circulating Lanes	2						2					
Circulating Flow Rate [veh/h]	1594						1178					
Exiting Flow Rate [veh/h]	294						750					
Demand Flow Rate [veh/h]	0	24	0	57	0	111	0	186	0	33	0	226
Adjusted Demand Flow Rate [veh/h]	0	26	0	62	0	121	0	202	0	36	0	246

Lanes

Overwrite Calculated Critical Headway	No	No
User-Defined Critical Headway [s]	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No
User-Defined Follow-Up Time [s]	3.00	3.00
A (intercept)	1420.00	1420.00
B (coefficient)	0.00085	0.00085
HV Adjustment Factor	0.98	0.98
Entry Flow Rate [veh/h]	214	494
Capacity of Entry and Bypass Lanes [veh/h]	367	522
Pedestrian Impedance	1.00	1.00
Capacity per Entry Lane [veh/h]	360	512
X, volume / capacity	0.58	0.95

Movement, Approach, & Intersection Results

Lane LOS	D	F
95th-Percentile Queue Length [veh]	3.52	11.87
95th-Percentile Queue Length [ft]	87.96	296.65
Approach Delay [s/veh]	25.99	55.77
Approach LOS	D	F
Intersection Delay [s/veh]	25.92	
Intersection LOS	D	

Intersection Setup

Name	Eastbound					Westbound				
Approach										
Lane Configuration										
Turning Movement	Left2	Left	Thru	Thru	Right	Left2	Left	Thru	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
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	Yes					Yes				

Volumes

Name	Eastbound					Westbound				
Base Volume Input [veh/h]	7	283	0	808	0	6	0	631	0	261
Base Volume Adjustment Factor	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
Growth Rate	1.06	1.06	1.00	1.06	1.06	1.06	1.06	1.06	1.00	1.06
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	6	17	0	59	16	0	216	134	0	25
Diverted Trips [veh/h]	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
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	13	317	0	915	16	6	216	803	0	302
Peak Hour Factor	0.9200	0.9200	1.0000	0.9200	0.9200	0.9200	0.9200	0.9200	1.0000	0.9200
Other Adjustment Factor	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	86	0	249	4	2	59	218	0	82
Total Analysis Volume [veh/h]	14	345	0	995	17	7	235	873	0	328
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Number of Conflicting Circulating Lanes	1					1				
Circulating Flow Rate [veh/h]	490					456				
Exiting Flow Rate [veh/h]	0					0				
Demand Flow Rate [veh/h]	13	317	0	915	16	6	216	803	0	302
Adjusted Demand Flow Rate [veh/h]	14	345	0	995	17	7	235	873	0	328

Lanes

Override Calculated Critical Headway	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00
Override Calculated Follow-Up Time	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00
A (intercept)	1420.00	1420.00	1420.00	1420.00
B (coefficient)	0.00091	0.00091	0.00091	0.00091
HV Adjustment Factor	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	658	742	692	781
Capacity of Entry and Bypass Lanes [veh/h]	910	910	938	938
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	892	892	920	920
X, volume / capacity	0.72	0.81	0.74	0.83

Movement, Approach, & Intersection Results

Lane LOS	C	C	C	C
95th-Percentile Queue Length [veh]	6.47	9.15	6.87	9.84
95th-Percentile Queue Length [ft]	161.63	228.76	171.76	245.88
Approach Delay [s/veh]	20.46		21.10	
Approach LOS	C		C	
Intersection Delay [s/veh]	25.92			
Intersection LOS	D			

Intersection Setup

Name										
Approach	Northwestbound					Southeastbound				
Lane Configuration										
Turning Movement	Left	Thru	Thru	Right	Right	Left	Thru	Thru	Right	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00					30.00				
Grade [%]	0.00					0.00				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	0	0	0	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
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	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
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Number of Conflicting Circulating Lanes	1					1				
Circulating Flow Rate [veh/h]	456					490				
Exiting Flow Rate [veh/h]	1352					1182				
Demand Flow Rate [veh/h]	0	0	0	0	0	0	0	0	0	0
Adjusted Demand Flow Rate [veh/h]	0	0	0	0	0	0	0	0	0	0

Lanes

Movement, Approach, & Intersection Results

Approach Delay [s/veh]	0.00	0.00
Approach LOS	A	A
Intersection Delay [s/veh]		25.92
Intersection LOS		D



Intersection Level Of Service Report
Intersection 2: W Riverstone Dr / W Seltice Way

Control Type:	Signalized	Delay (sec / veh):	10.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.551

Intersection Setup

Name	Riverstone Dr.		Seltice Way		Seltice Way	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐		⇐⇐		⇐⇐	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	1	0
Pocket Length [ft]	100.00	100.00	100.00	140.00	140.00	100.00
Speed [mph]	30.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		Yes		Yes	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Riverstone Dr.		Seltice Way		Seltice Way	
Base Volume Input [veh/h]	230	70	788	189	68	674
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
Growth Rate	1.06	1.06	1.06	1.06	1.06	1.06
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	58	43	179	9	63	307
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]	302	117	1014	209	135	1021
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	82	32	276	57	37	277
Total Analysis Volume [veh/h]	328	127	1102	227	147	1110
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	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	2		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	1	0	4	0	0	8
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	5	0	0	5
Maximum Green [s]	30	0	30	0	0	30
Amber [s]	3.0	0.0	3.0	0.0	0.0	3.0
All red [s]	1.0	0.0	1.0	0.0	0.0	1.0
Split [s]	41	0	19	0	0	19
Vehicle Extension [s]	3.0	0.0	3.0	0.0	0.0	3.0
Walk [s]	5	0	5	0	0	5
Pedestrian Clearance [s]	10	0	10	0	0	10
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0
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	L	R	C	R	L	C
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	15	37	37	37	37
g / C, Green / Cycle	0.25	0.25	0.62	0.62	0.62	0.62
(v / s)_i Volume / Saturation Flow Rate	0.20	0.09	0.34	0.16	0.32	0.35
s, saturation flow rate [veh/h]	1603	1431	3204	1401	460	3204
c, Capacity [veh/h]	397	354	1985	868	292	1985
d1, Uniform Delay [s]	21.40	18.68	6.64	5.17	17.29	6.66
k, delay calibration	0.11	0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.43	0.61	1.13	0.73	6.08	1.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.36	0.56	0.26	0.50	0.56
d, Delay for Lane Group [s/veh]	25.83	19.30	7.76	5.91	23.37	7.80
Lane Group LOS	C	B	A	A	C	A
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.48	1.41	3.02	1.05	2.07	3.06
50th-Percentile Queue Length [ft/ln]	112.05	35.25	75.50	26.18	51.85	76.38
95th-Percentile Queue Length [veh/ln]	7.95	2.54	5.44	1.89	3.73	5.50
95th-Percentile Queue Length [ft/ln]	198.85	63.45	135.90	47.13	93.33	137.48

Movement, Approach, & Intersection Results

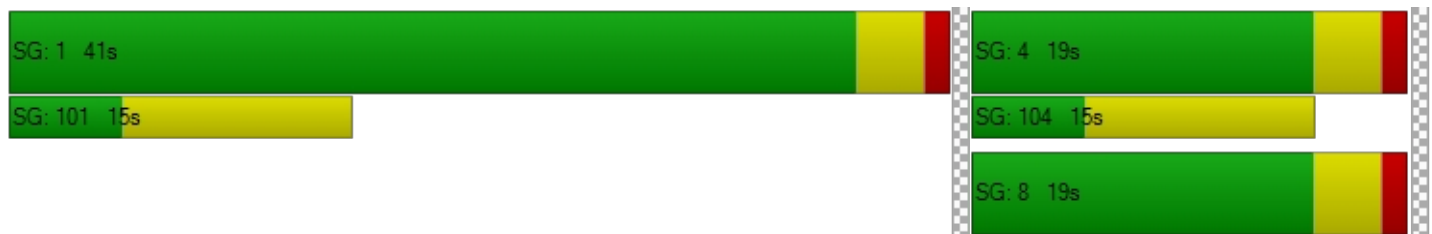
d_M, Delay for Movement [s/veh]	25.83	19.30	7.76	5.91	23.37	7.80
Movement LOS	C	B	A	A	C	A
d_A, Approach Delay [s/veh]	24.01		7.44		9.62	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	10.82					
Intersection LOS	B					
Intersection V/C	0.551					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0
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]	21.68	21.68	21.68
I_p,int, Pedestrian LOS Score for Intersection	2.399	2.910	2.846
Crosswalk LOS	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	30.00	30.00	30.00
I_b,int, Bicycle LOS Score for Intersection	4.132	4.157	4.097
Bicycle LOS	D	D	D

Sequence

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



Intersection Level Of Service Report
Intersection 4: Northwest Blvd / W Ironwood Dr

Control Type:	Signalized	Delay (sec / veh):	59.4
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.804

Intersection Setup

Name	Seltice Way			Ironwood Dr			Northwest Blvd.			Northwest Blvd.		
Approach	Eastbound			Westbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	2	0	1	2	0	0	1	0	1
Pocket Length [ft]	150.00	100.00	25.00	150.00	100.00	150.00	250.00	100.00	100.00	300.00	100.00	300.00
Speed [mph]	35.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Seltice Way			Ironwood Dr			Northwest Blvd.			Northwest Blvd.		
Base Volume Input [veh/h]	265	225	400	35	302	441	260	996	38	131	768	196
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 Rate	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	140	43	40	1	69	0	79	28	1	0	33	221
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	381	0	0	0	0	0	0
Total Hourly Volume [veh/h]	421	282	464	38	389	86	355	1084	41	139	847	429
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
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	77	126	10	106	23	96	295	11	38	230	117
Total Analysis Volume [veh/h]	458	307	504	41	423	93	386	1178	45	151	921	466
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	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	4			1			4			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
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	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	17	30	0	10	35	0	10	35	0	10	35	0
Amber [s]	3.5	3.5	0.0	3.5	3.5	0.0	3.5	3.5	0.0	3.5	3.5	0.0
All red [s]	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0
Split [s]	19	47	0	10	38	0	18	39	0	14	35	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	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	18	0	0	18	0	0	18	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]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	Yes		No	Yes	
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]	150.0	150.0	0.0	150.0	150.0	0.0	150.0	150.0	0.0	150.0	150.0	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	C	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	0.00	3.00	3.00	0.00	3.00	3.00
g_i, Effective Green Time [s]	26	41	41	4	19	19	50	40	40	50	35	35
g / C, Green / Cycle	0.24	0.37	0.37	0.03	0.17	0.17	0.46	0.37	0.37	0.46	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.13	0.16	0.32	0.02	0.12	0.06	0.38	0.23	0.23	0.20	0.26	0.29
s, saturation flow rate [veh/h]	3459	1870	1589	1781	3560	1589	1010	3560	1835	772	3560	1589
c, Capacity [veh/h]	816	699	594	59	608	272	330	1304	672	279	1132	505
d1, Uniform Delay [s]	45.21	37.49	45.11	53.28	46.00	43.06	60.17	41.02	41.03	58.01	46.00	47.84
k, delay calibration	0.11	0.11	0.26	0.11	0.11	0.11	0.50	0.50	0.50	0.50	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]	0.61	0.43	7.89	13.93	1.44	0.74	104.63	2.22	4.25	7.33	6.44	24.68
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	0.33	0.33	0.33	0.67	0.67	0.67	0.33	0.33	0.33	0.33	0.33	0.33
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	0.56	0.44	0.85	0.70	0.70	0.34	1.17	0.62	0.62	0.54	0.81	0.92
d, Delay for Lane Group [s/veh]	45.82	37.92	53.00	67.20	47.45	43.80	164.80	43.24	45.28	65.34	52.43	72.52
Lane Group LOS	D	D	D	E	D	D	F	D	D	E	D	E
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	6.57	8.44	15.79	1.35	5.87	2.41	18.31	11.66	12.40	4.23	14.26	17.04
50th-Percentile Queue Length [ft/ln]	164.13	210.88	394.82	33.75	146.70	60.35	457.83	291.54	310.06	105.83	356.47	426.05
95th-Percentile Queue Length [veh/ln]	10.77	13.20	22.31	2.43	9.84	4.34	28.10	17.26	18.18	7.61	20.45	23.81
95th-Percentile Queue Length [ft/ln]	269.18	329.95	557.76	60.75	246.02	108.62	702.57	431.55	454.45	190.19	511.29	595.30

Movement, Approach, & Intersection Results

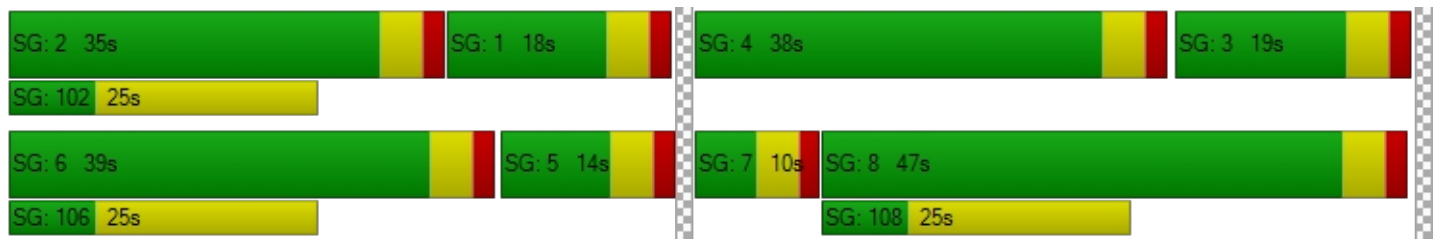
d_M, Delay for Movement [s/veh]	45.82	37.92	53.00	67.20	47.45	43.80	164.80	43.88	45.28	65.34	52.43	72.52
Movement LOS	D	D	D	E	D	D	F	D	D	E	D	E
d_A, Approach Delay [s/veh]	46.76			48.29			72.93			59.79		
Approach LOS	D			D			E			E		
d_I, Intersection Delay [s/veh]	59.43											
Intersection LOS	E											
Intersection V/C	0.804											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	3150.00	12600.00	3150.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	44.55	44.55	44.55	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.970	3.346	2.894	0.000
Crosswalk LOS	C	C	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	764	600	618	545
d_b, Bicycle Delay [s]	21.02	26.95	26.25	29.09
I_b,int, Bicycle LOS Score for Intersection	3.653	2.333	2.445	2.828
Bicycle LOS	D	B	B	C

Sequence

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



**Intersection Level Of Service Report
Intersection 5: Northwest/I90 EB**

Control Type:	Signalized	Delay (sec / veh):	33.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.573

Intersection Setup

Name	Northwest Blvd.			Northwest Blvd.			I90 EB Off-Ramp			I90 EB On-Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T			TT			TT+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 Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	140.00	100.00	100.00	375.00	100.00	200.00	100.00	100.00	100.00
Speed [mph]	35.00			35.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			Yes		

Volumes

Name	Northwest Blvd.			Northwest Blvd.			I90 EB Off-Ramp			I90 EB On-Ramp		
Base Volume Input [veh/h]	0	1600	118	157	717	0	410	2	352	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 Rate	1.00	1.06	1.06	1.06	1.06	1.00	1.06	1.06	1.06	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	138	30	0	201	0	0	0	53	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	25	0	0	0	0	0	347	0	0	0
Total Hourly Volume [veh/h]	0	1834	130	166	961	0	435	2	79	0	0	0
Peak Hour Factor	1.0000	0.9200	0.9200	0.9200	0.9200	1.0000	0.9200	0.9200	0.9200	1.0000	1.0000	1.0000
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	498	35	45	261	0	118	1	21	0	0	0
Total Analysis Volume [veh/h]	0	1993	141	180	1045	0	473	2	86	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			2			5		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	94.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lag	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	10	0	0	0	0
Maximum Green [s]	0	67	0	9	70	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	67	0	9	76	0	0	34	0	0	0	0
Vehicle Extension [s]	0.0	5.0	0.0	5.0	5.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	7	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	15	0	0	16	0	0	0	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		Yes		No	Yes			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	150.0	0.0	150.0	150.0	0.0	0.0	150.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	C	L	C	L	C	R	
C, Cycle Length [s]	110	110	110	110	110	110	110	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	73	73	82	82	20	20	20	
g / C, Green / Cycle	0.66	0.66	0.74	0.74	0.18	0.18	0.18	
(v / s)_i Volume / Saturation Flow Rate	0.40	0.39	0.23	0.29	0.13	0.13	0.05	
s, saturation flow rate [veh/h]	3560	1807	784	3560	1781	1782	1589	
c, Capacity [veh/h]	2354	1194	445	2646	328	328	293	
d1, Uniform Delay [s]	29.98	29.72	63.86	20.77	48.93	48.93	44.84	
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	0.11	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	1.16	2.19	2.72	0.44	3.04	3.04	0.55	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	0.33	0.33	0.33	0.33	0.33	0.33	0.33	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.60	0.60	0.40	0.39	0.72	0.72	0.29	
d, Delay for Lane Group [s/veh]	31.14	31.91	66.58	21.22	51.97	51.97	45.39	
Lane Group LOS	C	C	E	C	D	D	D	
Critical Lane Group	No	No	Yes	No	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	19.08	19.39	1.64	12.88	7.15	7.15	2.35	
50th-Percentile Queue Length [ft/ln]	477.03	484.68	41.01	321.96	178.80	178.86	58.73	
95th-Percentile Queue Length [veh/ln]	26.25	26.61	2.95	18.76	11.54	11.54	4.23	
95th-Percentile Queue Length [ft/ln]	656.13	665.20	73.81	469.09	288.44	288.53	105.71	

Movement, Approach, & Intersection Results

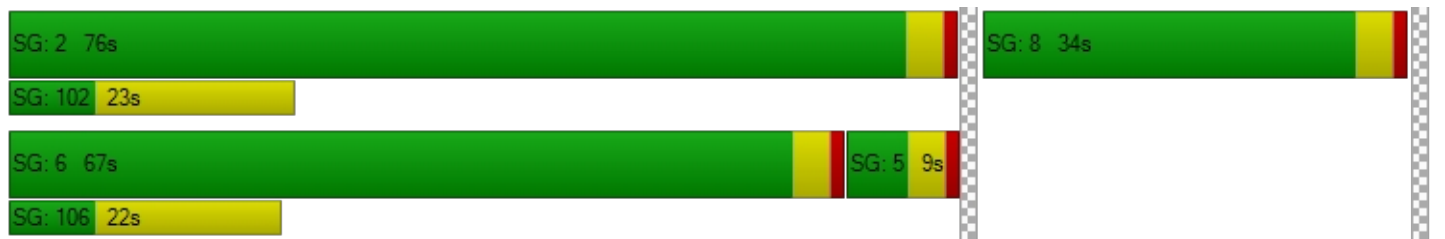
d_M, Delay for Movement [s/veh]	0.00	31.36	31.91	66.58	21.22	0.00	51.97	51.97	45.39	0.00	0.00	0.00
Movement LOS		C	C	E	C		D	D	D			
d_A, Approach Delay [s/veh]		31.39		27.88			50.96			0.00		
Approach LOS		C		C			D			A		
d_I, Intersection Delay [s/veh]	33.10											
Intersection LOS	C											
Intersection V/C	0.573											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0		0.0		11.0		11.0
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		44.55		44.55
I_p,int, Pedestrian LOS Score for Intersection	0.000		0.000		2.788		2.123
Crosswalk LOS	F		F		C		B
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000		2000
c_b, Capacity of the bicycle lane [bicycles/h]	1145		1309		545		0
d_b, Bicycle Delay [s]	10.04		6.56		29.09		55.00
I_b,int, Bicycle LOS Score for Intersection	2.747		2.570		3.058		4.132
Bicycle LOS	B		B		C		D

Sequence

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



**Intersection Level Of Service Report
Intersection 7: Northwest/I90 WB**

Control Type:	Signalized	Delay (sec / veh):	35.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.578

Intersection Setup

Name	Northwest Blvd.			Northwest Blvd.			I90 WB On-Ramp			I90 WB Off-Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	140.00	100.00	100.00	100.00	100.00	100.00	230.00	100.00	100.00
Speed [mph]	35.00			35.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name	Northwest Blvd.			Northwest Blvd.			I90 WB On-Ramp			I90 WB Off-Ramp		
Base Volume Input [veh/h]	596	1374	0	0	775	525	0	0	0	97	1	264
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 Rate	1.06	1.06	1.00	1.00	1.06	1.06	1.00	1.00	1.00	1.06	1.06	1.06
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	44	94	0	0	132	0	0	0	0	69	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	302	0	0	0	0	0	182
Total Hourly Volume [veh/h]	676	1550	0	0	954	255	0	0	0	172	1	98
Peak Hour Factor	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200	1.0000	1.0000	1.0000	0.9200	0.9200	0.9200
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]	184	421	0	0	259	69	0	0	0	47	0	27
Total Analysis Volume [veh/h]	735	1685	0	0	1037	277	0	0	0	187	1	107
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			5			5		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	91.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	1	6	0	0	2	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	4	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	15	80	0	0	55	0	0	0	0	0	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	25	80	0	0	55	0	0	0	0	0	30	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	12	0	0	15	0	0	0	0	0	0	0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No			No						No	
Maximum Recall	No	Yes			Yes						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	150.0	150.0	0.0	0.0	150.0	0.0	0.0	0.0	0.0	0.0	150.0	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	C		L	C
C, Cycle Length [s]	110	110	110	110		110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	87	87	55	55		15	15
g / C, Green / Cycle	0.79	0.79	0.50	0.50		0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.40	0.47	0.25	0.26		0.11	0.07
s, saturation flow rate [veh/h]	1842	3560	3560	1682		1781	1592
c, Capacity [veh/h]	1246	2806	1778	840		248	222
d1, Uniform Delay [s]	51.65	25.42	33.23	33.88		45.58	43.77
k, delay calibration	0.50	0.50	0.34	0.50		0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	2.05	0.96	0.67	2.31		4.62	1.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	0.33	0.33	0.33	0.33		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.59	0.60	0.49	0.52		0.75	0.49
d, Delay for Lane Group [s/veh]	53.71	26.38	33.89	36.19		50.20	45.42
Lane Group LOS	D	C	C	D		D	D
Critical Lane Group	No	Yes	No	No		Yes	No
50th-Percentile Queue Length [veh/ln]	8.86	21.88	11.83	12.26		5.17	2.79
50th-Percentile Queue Length [ft/ln]	221.45	546.94	295.69	306.56		129.28	69.83
95th-Percentile Queue Length [veh/ln]	13.74	29.55	17.47	18.01		8.90	5.03
95th-Percentile Queue Length [ft/ln]	343.47	738.71	436.70	450.14		222.52	125.69

Movement, Approach, & Intersection Results

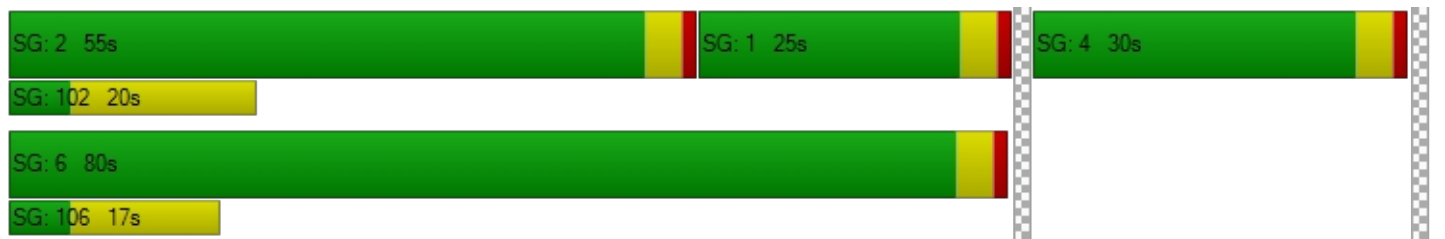
d_M, Delay for Movement [s/veh]	53.71	26.38	0.00	0.00	34.25	36.19	0.00	0.00	0.00	50.20	45.42	45.42
Movement LOS	D	C			C	D				D	D	D
d_A, Approach Delay [s/veh]	34.68				34.66		0.00				48.45	
Approach LOS	C				C		A				D	
d_I, Intersection Delay [s/veh]	35.68											
Intersection LOS	D											
Intersection V/C	0.578											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	46.37	46.37
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.720	2.256
Crosswalk LOS	F	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1382	927	0	473
d_b, Bicycle Delay [s]	5.25	15.82	55.00	32.07
I_b,int, Bicycle LOS Score for Intersection	3.556	2.448	4.132	2.347
Bicycle LOS	D	B	D	B

Sequence

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



Intersection Level Of Service Report
Intersection 8: Northwest Blvd / W Appleway Ave

Control Type:	Signalized	Delay (sec / veh):	46.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.679

Intersection Setup

Name	Northwest Blvd.			N Ramsey Rd.			Appleway Ave.			Appleway Ave.		
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 Pocket	1	0	1	2	0	0	1	0	1	2	0	0
Pocket Length [ft]	150.00	100.00	150.00	130.00	100.00	100.00	115.00	100.00	115.00	120.00	100.00	100.00
Speed [mph]	35.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Northwest Blvd.			N Ramsey Rd.			Appleway Ave.			Appleway Ave.		
Base Volume Input [veh/h]	85	1182	376	132	877	33	13	51	97	344	79	157
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 Rate	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	64	30	0	74	0	0	0	0	58	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	349	0	0	8	0	0	84	0	0	135
Total Hourly Volume [veh/h]	90	1317	80	140	1004	27	14	54	19	423	84	31
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
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	358	22	38	273	7	4	15	5	115	23	8
Total Analysis Volume [veh/h]	98	1432	87	152	1091	29	15	59	21	460	91	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	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			7			5			3		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	91.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	1	6	0	5	2	0	3	3	0	4	4	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	15	45	0	15	55	0	15	15	0	40	40	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]	11	48	0	9	46	0	12	12	0	41	41	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	7	0	0	7	0	0	0	0	7	7	0
Pedestrian Clearance [s]	0	22	0	0	26	0	0	0	0	30	30	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	Yes		No	Yes		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]	150.0	150.0	0.0	150.0	150.0	0.0	150.0	150.0	0.0	150.0	150.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
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	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	60	60	5	55	55	6	6	6	23	23	23
g / C, Green / Cycle	0.09	0.55	0.55	0.05	0.50	0.50	0.05	0.05	0.05	0.21	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.06	0.45	0.06	0.05	0.33	0.33	0.01	0.04	0.01	0.15	0.05	0.02
s, saturation flow rate [veh/h]	1603	3204	1431	3113	1683	1668	1603	1683	1431	3113	1683	1431
c, Capacity [veh/h]	148	1749	781	142	841	833	85	89	76	654	354	301
d1, Uniform Delay [s]	51.67	39.79	22.73	54.21	37.34	37.35	49.85	51.17	50.12	47.83	43.06	41.58
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.03	4.40	0.29	54.25	4.20	4.25	0.99	8.17	1.97	1.40	0.38	0.16
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	0.33	0.33	0.33	0.33	0.33	0.33	1.00	1.00	1.00	0.33	0.33	0.33
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	0.66	0.82	0.11	1.07	0.67	0.67	0.18	0.66	0.28	0.70	0.26	0.11
d, Delay for Lane Group [s/veh]	56.70	44.19	23.02	108.45	41.54	41.60	50.83	59.35	52.08	49.23	43.44	41.74
Lane Group LOS	E	D	C	F	D	D	D	E	D	D	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.96	21.23	1.96	3.08	16.45	16.32	0.41	1.78	0.59	6.75	2.44	0.88
50th-Percentile Queue Length [ft/ln]	74.10	530.72	48.92	77.11	411.17	408.08	10.36	44.56	14.81	168.85	61.12	22.01
95th-Percentile Queue Length [veh/ln]	5.34	28.78	3.52	5.55	23.10	22.95	0.75	3.21	1.07	11.02	4.40	1.58
95th-Percentile Queue Length [ft/ln]	133.39	719.62	88.06	138.79	577.44	573.72	18.66	80.21	26.65	275.41	110.02	39.61

Movement, Approach, & Intersection Results

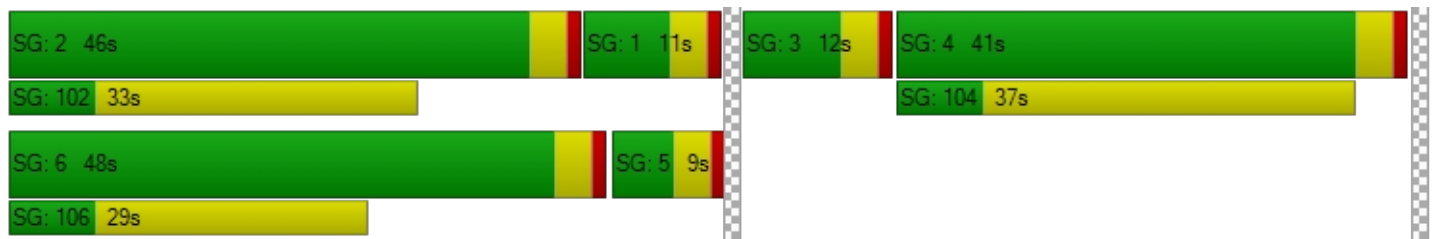
d_M, Delay for Movement [s/veh]	56.70	44.19	23.02	108.45	41.57	41.60	50.83	59.35	52.08	49.23	43.44	41.74
Movement LOS	E	D	C	F	D	D	D	E	D	D	D	D
d_A, Approach Delay [s/veh]	43.81			49.56			56.40			47.89		
Approach LOS	D			D			E			D		
d_I, Intersection Delay [s/veh]	46.87											
Intersection LOS	D											
Intersection V/C	0.679											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
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	44.55	44.55	44.55
I_p,int, Pedestrian LOS Score for Intersection	0.000	3.023	2.375	2.914
Crosswalk LOS	F	C	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	800	764	145	673
d_b, Bicycle Delay [s]	19.80	21.02	47.29	24.22
I_b,int, Bicycle LOS Score for Intersection	3.182	2.616	1.855	2.748
Bicycle LOS	C	B	A	B

Sequence

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



Intersection Level Of Service Report
Intersection 9: N Ramsey Rd / W Golf Course Rd

Control Type:	Signalized	Delay (sec / veh):	37.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.530

Intersection Setup

Name	N Ramsey Rd.			N Ramsey Rd.			W Golf Course Rd			W Marie Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	110.00	100.00	100.00	75.00	100.00	100.00	95.00	100.00	100.00
Speed [mph]	35.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	N Ramsey Rd.			N Ramsey Rd.			W Golf Course Rd			W Marie Ave		
Base Volume Input [veh/h]	132	1167	58	99	895	85	70	59	104	24	46	64
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 Rate	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	64	0	0	74	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	10	0	0	15	0	0	48	0	0	30
Total Hourly Volume [veh/h]	140	1301	51	105	1023	75	74	63	62	25	49	38
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
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	354	14	29	278	20	20	17	17	7	13	10
Total Analysis Volume [veh/h]	152	1414	55	114	1112	82	80	68	67	27	53	41
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	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	4			8			1			1		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	82.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	1	6	0	5	2	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	10	75	0	15	75	0	0	25	0	0	25	0
Amber [s]	3.0	3.5	0.0	3.5	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	1.0	1.5	0.0	1.5	1.5	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Split [s]	19	75	0	10	66	0	0	25	0	0	25	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
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
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	Yes		No	Yes			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	150.0	150.0	0.0	150.0	150.0	0.0	0.0	150.0	0.0	0.0	150.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	112	112	112	112	112	112	112	112	112	112
L, Total Lost Time per Cycle [s]	4.50	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	85	74	74	84	75	75	18	18	18	18
g / C, Green / Cycle	0.76	0.66	0.66	0.75	0.67	0.67	0.16	0.16	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.26	0.44	0.44	0.22	0.36	0.36	0.07	0.09	0.02	0.06
s, saturation flow rate [veh/h]	590	1683	1661	507	1683	1643	1172	1547	1129	1563
c, Capacity [veh/h]	340	1112	1098	279	1125	1099	170	249	136	251
d1, Uniform Delay [s]	57.46	32.32	32.44	64.60	28.23	28.27	49.79	43.28	50.34	42.03
k, delay calibration	0.50	0.50	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	1.00
d2, Incremental Delay [s]	4.20	3.12	3.21	4.40	1.83	1.89	2.01	1.84	0.70	0.92
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	0.33	0.33	0.33	0.33	0.33	0.33	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	0.45	0.66	0.67	0.41	0.54	0.54	0.47	0.54	0.20	0.37
d, Delay for Lane Group [s/veh]	61.65	35.44	35.65	69.00	30.06	30.16	51.80	45.12	51.04	42.95
Lane Group LOS	E	D	D	E	C	C	D	D	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.34	21.04	20.93	2.38	16.45	16.13	2.26	3.53	0.75	2.37
50th-Percentile Queue Length [ft/ln]	83.39	526.00	523.22	59.43	411.34	403.18	56.47	88.27	18.66	59.15
95th-Percentile Queue Length [veh/ln]	6.00	28.56	28.43	4.28	23.11	22.71	4.07	6.36	1.34	4.26
95th-Percentile Queue Length [ft/ln]	150.10	714.06	710.79	106.98	577.65	567.83	101.65	158.88	33.59	106.47

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	61.65	35.54	35.65	69.00	30.10	30.16	51.80	45.12	45.12	51.04	42.95	42.95
Movement LOS	E	D	D	E	C	C	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	37.99			33.50			47.60			44.76		
Approach LOS	D			C			D			D		
d_I, Intersection Delay [s/veh]	37.08											
Intersection LOS	D											
Intersection V/C	0.530											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	46.37	46.37	46.37	46.37
I_p,int, Pedestrian LOS Score for Intersection	3.020	3.103	2.442	2.301
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1273	1109	364	364
d_b, Bicycle Delay [s]	7.27	10.91	36.82	36.82
I_b,int, Bicycle LOS Score for Intersection	2.905	2.651	1.994	1.809
Bicycle LOS	C	B	A	A

Sequence

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



Intersection Level Of Service Report
Intersection 10: Lakewood/Ironwood

Control Type:	Two-way stop	Delay (sec / veh):	108.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.350

Intersection Setup

Name	Lakewood Dr.		Ironwood Dr.		Ironwood Dr	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	150.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	Lakewood Dr.		Ironwood Dr.		Ironwood Dr	
Base Volume Input [veh/h]	16	159	125	833	461	18
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
Growth Rate	1.06	1.06	1.06	1.06	1.06	1.06
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	39	47	70	43	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	17	208	180	953	532	19
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	57	49	259	145	5
Total Analysis Volume [veh/h]	18	226	196	1036	578	21
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.35	0.44	0.20	0.01	0.01	0.00
d_M, Delay for Movement [s/veh]	108.47	45.46	9.60	0.00	0.00	0.00
Movement LOS	F	E	A	A	A	A
95th-Percentile Queue Length [veh/ln]	6.41	6.41	0.75	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	160.21	160.21	18.66	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	50.11		1.53		0.00	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	6.80					
Intersection LOS	F					

**Intersection Level Of Service Report
Intersection 11: Northwest/Lakewood**

Control Type:	Signalized	Delay (sec / veh):	34.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.637

Intersection Setup

Name	N Lakewood Dr			Lakewood Dr.			Northwest Blvd.			Northwest Blvd.		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration	⇌⇌⇌			⇌			⇌⇌			⇌⇌⇌		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	160.00	100.00	160.00	100.00	100.00	100.00	110.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	N Lakewood Dr			Lakewood Dr.			Northwest Blvd.			Northwest Blvd.		
Base Volume Input [veh/h]	204	86	242	54	97	44	170	1000	37	21	1021	150
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 Rate	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	29	39	21	0	47	0	18	79	0	0	40	33
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	226	0	0	10	0	0	6	0	0	157
Total Hourly Volume [veh/h]	245	130	52	57	150	37	198	1139	33	22	1122	35
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
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]	67	35	14	15	41	10	54	310	9	6	305	10
Total Analysis Volume [veh/h]	266	141	57	62	163	40	215	1238	36	24	1220	38
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	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	1			2			0			5		
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	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal group	8	8	0	4	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	25	25	0	15	15	0	15	25	0	15	35	0
Amber [s]	3.5	3.5	0.0	3.5	3.5	0.0	3.5	3.5	0.0	3.5	3.5	0.0
All red [s]	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0
Split [s]	25	25	0	25	25	0	15	25	0	15	25	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]	5	5	0	5	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	10	10	0	10	10	0	0	10	0	0	10	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]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	150.0	150.0	0.0	150.0	150.0	0.0	150.0	150.0	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	L	C	C	L	C	R
C, Cycle Length [s]	88	88	88	88	88	88	88	88	88	88	88
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
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
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	0.00	3.00	3.00	0.00	3.00	3.00
g_i, Effective Green Time [s]	13	13	13	12	12	48	41	41	48	35	35
g / C, Green / Cycle	0.14	0.14	0.14	0.14	0.14	0.55	0.47	0.47	0.55	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.11	0.11	0.04	0.03	0.11	0.28	0.34	0.34	0.04	0.34	0.02
s, saturation flow rate [veh/h]	1781	1841	1589	1781	1807	770	1870	1851	583	3560	1589
c, Capacity [veh/h]	256	264	228	248	251	387	869	860	316	1408	629
d1, Uniform Delay [s]	36.55	36.55	33.65	33.97	36.94	17.47	19.27	19.30	18.01	36.11	24.02
k, delay calibration	0.11	0.11	0.11	0.11	0.15	0.50	0.50	0.50	0.50	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
d2, Incremental Delay [s]	5.19	5.02	0.57	0.52	8.18	5.63	5.51	5.62	0.47	7.37	0.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
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

Lane Group Results

X, volume / capacity	0.78	0.78	0.25	0.25	0.81	0.55	0.74	0.74	0.08	0.87	0.06
d, Delay for Lane Group [s/veh]	41.74	41.57	34.21	34.49	45.11	23.11	24.78	24.92	18.48	43.49	24.20
Lane Group LOS	D	D	C	C	D	C	C	C	B	D	C
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.40	4.54	1.09	1.19	4.69	2.55	11.03	10.99	0.40	15.38	0.69
50th-Percentile Queue Length [ft/ln]	110.09	113.48	27.34	29.80	117.18	63.83	275.81	274.74	9.89	384.40	17.33
95th-Percentile Queue Length [veh/ln]	7.85	8.03	1.97	2.15	8.24	4.60	16.48	16.43	0.71	21.81	1.25
95th-Percentile Queue Length [ft/ln]	196.13	200.83	49.22	53.65	205.94	114.90	411.99	410.65	17.80	545.17	31.19

Movement, Approach, & Intersection Results

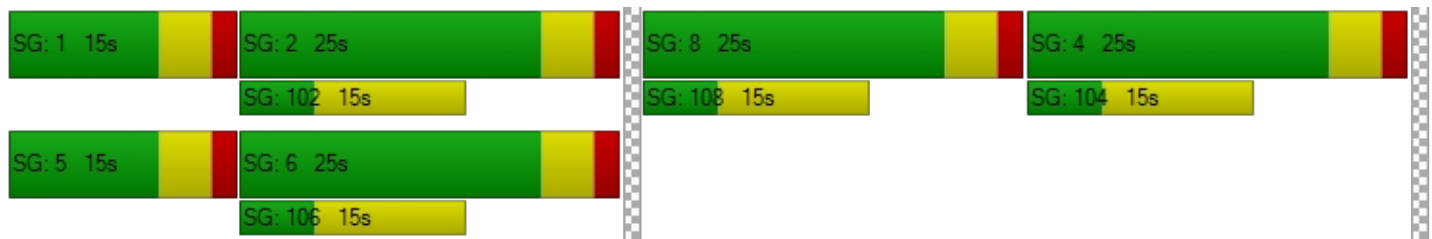
d_M, Delay for Movement [s/veh]	41.70	41.57	34.21	34.49	45.11	45.11	23.11	24.85	24.92	18.48	43.49	24.20
Movement LOS	D	D	C	C	D	D	C	C	C	B	D	C
d_A, Approach Delay [s/veh]	40.74			42.63			24.60			42.45		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	34.64											
Intersection LOS	C											
Intersection V/C	0.637											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.45	36.45	36.45	36.45
I_p,int, Pedestrian LOS Score for Intersection	3.038	2.144	3.006	3.245
Crosswalk LOS	C	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	444	444	444	444
d_b, Bicycle Delay [s]	27.22	27.22	27.22	27.22
I_b,int, Bicycle LOS Score for Intersection	2.698	2.013	2.793	2.747
Bicycle LOS	B	B	C	B

Sequence

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



Intersection Level Of Service Report
Intersection 12: W Riverstone Dr / N Lakewood Dr

Control Type:	Signalized	Delay (sec / veh):	51.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.812

Intersection Setup

Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration	↵↵			↵↵↵			↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	75.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Base Volume Input [veh/h]	13	48	2	27	6	393	0	29	91	372	18	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 Rate	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
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	98	0	0	0	89	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	51	2	29	6	515	0	31	96	483	19	3
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
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	14	1	8	2	140	0	8	26	131	5	1
Total Analysis Volume [veh/h]	15	55	2	32	7	560	0	34	104	525	21	3
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	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	3			1			0			2		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	4	0	3	8	0	0	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	5	5	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	19	0	9	28	0	0	19	0	23	42	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	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
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No		No	No			No		No	No	
Maximum Recall		No		No	No			No		No	No	
Pedestrian Recall		No		No	No			No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	L	C
C, Cycle Length [s]	78	78	78	78	78	78	78	78	78
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	23	23	3	30	30	9	9	27	40
g / C, Green / Cycle	0.30	0.30	0.03	0.38	0.38	0.11	0.11	0.35	0.52
(v / s)_i Volume / Saturation Flow Rate	0.01	0.03	0.02	0.00	0.39	0.00	0.09	0.33	0.01
s, saturation flow rate [veh/h]	1267	1673	1603	1683	1431	1248	1485	1603	1647
c, Capacity [veh/h]	435	500	52	643	547	196	170	561	849
d1, Uniform Delay [s]	21.13	19.97	37.51	15.04	24.25	0.00	33.92	24.65	9.34
k, delay calibration	0.11	0.11	0.11	0.11	0.47	0.11	0.11	0.35	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]	0.03	0.10	11.36	0.01	43.52	0.00	8.80	19.32	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
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	0.03	0.11	0.62	0.01	1.02	0.00	0.81	0.94	0.03
d, Delay for Lane Group [s/veh]	21.16	20.07	48.87	15.05	67.77	0.00	42.72	43.97	9.35
Lane Group LOS	C	C	D	B	F	A	D	D	A
Critical Lane Group	No	No	No	No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.20	0.74	0.76	0.08	15.96	0.00	2.91	11.82	0.19
50th-Percentile Queue Length [ft/ln]	5.03	18.61	18.94	1.89	399.06	0.00	72.81	295.43	4.75
95th-Percentile Queue Length [veh/ln]	0.36	1.34	1.36	0.14	22.88	0.00	5.24	17.45	0.34
95th-Percentile Queue Length [ft/ln]	9.05	33.49	34.10	3.39	572.09	0.00	131.06	436.37	8.55

Movement, Approach, & Intersection Results

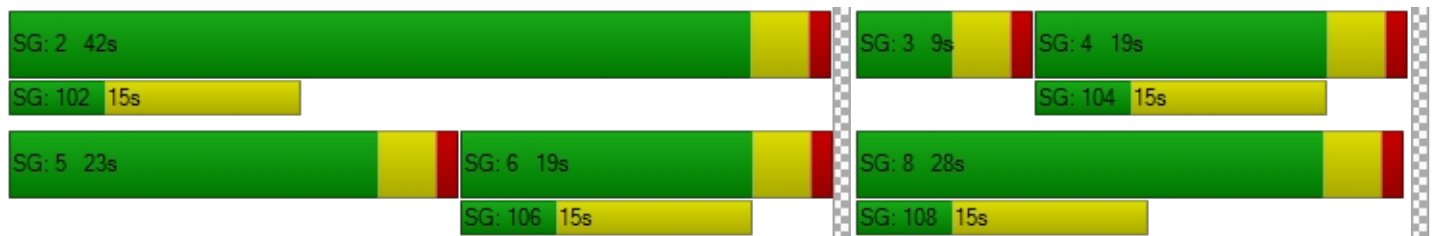
d_M, Delay for Movement [s/veh]	21.16	20.07	20.07	48.87	15.05	67.77	0.00	42.72	42.72	43.97	9.35	9.35
Movement LOS	C	C	C	D	B	F	A	D	D	D	A	A
d_A, Approach Delay [s/veh]	20.30			66.15			42.72			42.46		
Approach LOS	C			E			D			D		
d_I, Intersection Delay [s/veh]	51.76											
Intersection LOS	D											
Intersection V/C	0.812											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	26.58	26.58	26.58	26.58
I_p,int, Pedestrian LOS Score for Intersection	1.956	2.433	1.992	2.327
Crosswalk LOS	A	B	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	429	686	429	1086
d_b, Bicycle Delay [s]	21.61	15.11	21.61	7.31
I_b,int, Bicycle LOS Score for Intersection	1.678	2.548	1.787	2.465
Bicycle LOS	A	B	A	B

Sequence

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



Intersection Level Of Service Report
Intersection 13: N Beebe Blvd / W Riverstone Dr

Control Type:	Two-way stop	Delay (sec / veh):	46.2
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.575

Intersection Setup

Name	N Beebe Blvd			N Beebe Blvd			W Riverstone Dr			W Riverstone Dr		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	N Beebe Blvd			N Beebe Blvd			W Riverstone Dr			W Riverstone Dr		
Base Volume Input [veh/h]	39	4	53	59	4	19	41	216	57	20	154	35
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 Rate	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	42	8	6	39	6	49	21	42	36	31	43	33
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]	83	12	62	102	10	69	64	271	96	52	206	70
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
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]	23	3	17	28	3	19	17	74	26	14	56	19
Total Analysis Volume [veh/h]	90	13	67	111	11	75	70	295	104	57	224	76
Pedestrian Volume [ped/h]	4			5			15			6		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.46	0.06	0.09	0.58	0.05	0.11	0.06	0.00	0.00	0.05	0.00	0.00
d_M, Delay for Movement [s/veh]	41.84	38.75	28.12	46.25	20.92	10.96	8.05	0.00	0.00	8.30	0.00	0.00
Movement LOS	E	E	D	E	C	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	3.69	3.69	3.69	3.12	0.15	0.37	0.16	0.16	0.16	0.14	0.14	0.14
95th-Percentile Queue Length [ft/ln]	92.21	92.21	92.21	77.88	3.63	9.27	4.04	4.04	4.04	3.55	3.55	3.55
d_A, Approach Delay [s/veh]	36.19			31.40			1.20			1.32		
Approach LOS	E			D			A			A		
d_I, Intersection Delay [s/veh]	11.21											
Intersection LOS	E											

**Intersection Level Of Service Report
Intersection 15: Riverstone/John's Loop South**

Control Type:	Two-way stop	Delay (sec / veh):	18.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.037

Intersection Setup

Name	John's Loop		W Riverstone Dr	
Approach	Eastbound		Northwestbound	
Lane Configuration	↵		↶	
Turning Movement	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00	
Grade [%]	0.00		0.00	
Crosswalk	Yes		Yes	

Volumes

Name	John's Loop		W Riverstone Dr	
Base Volume Input [veh/h]	202	7	9	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00
Growth Rate	1.06	1.06	1.06	1.06
In-Process Volume [veh/h]	0	0	0	0
Site-Generated Trips [veh/h]	34	0	0	74
Diverted Trips [veh/h]	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0
Other Volume [veh/h]	0	0	0	0
Total Hourly Volume [veh/h]	248	7	10	93
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	67	2	3	25
Total Analysis Volume [veh/h]	270	8	11	101
Pedestrian Volume [ped/h]	0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.04	0.13	0.08	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	18.29	10.81	8.05	0.00
Movement LOS	A	A	C	B	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.61	0.61	0.24	0.24
95th-Percentile Queue Length [ft/ln]	0.00	0.00	15.15	15.15	6.05	6.05
d_A, Approach Delay [s/veh]	0.00		11.55		1.76	
Approach LOS	A		B		A	
d_I, Intersection Delay [s/veh]	2.46					
Intersection LOS	C					

**Intersection Level Of Service Report
Intersection 16: Riverstone/John's Loop North**

Control Type:	Two-way stop	Delay (sec / veh):	16.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.218

Intersection Setup

Name	Riverstone Dr.		John's Loop			
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Riverstone Dr.		John's Loop			
Base Volume Input [veh/h]	3	249	206	42	51	3
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
Growth Rate	1.06	1.06	1.06	1.06	1.06	1.06
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	73	32	40	28	2
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	337	250	85	82	5
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	92	68	23	22	1
Total Analysis Volume [veh/h]	4	366	272	92	89	5
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.22	0.01
d_M, Delay for Movement [s/veh]	8.02	0.00	0.00	0.00	16.30	12.47
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.00	0.00	0.85	0.85
95th-Percentile Queue Length [ft/ln]	0.25	0.25	0.00	0.00	21.32	21.32
d_A, Approach Delay [s/veh]	0.09		0.00		16.10	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	1.87					
Intersection LOS	C					

**Intersection Level Of Service Report
Intersection 17: John's Loop/Suzanne**

Control Type:	Two-way stop	Delay (sec / veh):	10.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.023

Intersection Setup

Name	John's Loop		John's Loop		John's Loop	
Approach	Northbound		Eastbound		Southwestbound	
Lane Configuration						
Turning Movement	Left	Thru	Left	Right	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	John's Loop		John's Loop		John's Loop	
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.06	1.06	1.06	1.06	1.06	1.06
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	71	0	17	74	0	38
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	71	0	17	74	0	38
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	0	5	20	0	10
Total Analysis Volume [veh/h]	77	0	18	80	0	41
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.00	0.02	0.08	0.00	0.00
d_M, Delay for Movement [s/veh]	7.41	0.00	10.04	8.80	0.00	0.00
Movement LOS	A	A	B	A	A	A
95th-Percentile Queue Length [veh/ln]	0.14	0.14	0.33	0.33	0.00	0.00
95th-Percentile Queue Length [ft/ln]	3.55	3.55	8.21	8.21	0.00	0.00
d_A, Approach Delay [s/veh]	7.41		9.03		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	6.74					
Intersection LOS	B					

**Intersection Level Of Service Report
Intersection 18: Northwest & Emma**

Control Type:	Two-way stop	Delay (sec / veh):	496.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Emma Ave.			Gas Station Parking			Northwest Blvd.			Northwest Blvd.		
Approach	Westbound			Northeastbound			Northwestbound			Southeastbound		
Lane Configuration	Y			T			TT			TTT		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Emma Ave.			Gas Station Parking			Northwest Blvd.			Northwest Blvd.		
Base Volume Input [veh/h]	6	0	71	5	0	1	4	1127	26	49	1272	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 Rate	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	25	0	0	0	0	72	0	12	49	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]	6	0	100	5	0	1	4	1267	28	64	1397	3
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	0	27	1	0	0	1	344	8	17	380	1
Total Analysis Volume [veh/h]	7	0	109	5	0	1	4	1377	30	70	1518	3
Pedestrian Volume [ped/h]	0			3			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.38	0.00	0.29	0.43	0.00	0.00	0.01	0.01	0.00	0.15	0.02	0.00
d_M, Delay for Movement [s/veh]	236.79	393.77	48.90	442.68	496.46	145.13	13.41	0.00	0.00	13.76	0.00	0.00
Movement LOS	F	F	E	F	F	F	B	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	3.94	3.94	3.94	1.08	1.08	1.08	0.03	0.01	0.00	0.51	0.00	0.00
95th-Percentile Queue Length [ft/ln]	98.40	98.40	98.40	27.10	27.10	27.10	0.70	0.35	0.00	12.65	0.00	0.00
d_A, Approach Delay [s/veh]	60.24			393.09			0.04			0.61		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	3.32											
Intersection LOS	F											

**Intersection Level Of Service Report
Intersection 20: Northwest Blvd / W Lacrosse Ave**

Control Type:	Signalized	Delay (sec / veh):	12.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.468

Intersection Setup

Name	Lacrosse Ave.						Northwest Blvd.			Northwest Blvd.		
Approach	Westbound			Northeastbound			Northwestbound			Southeastbound		
Lane Configuration	1Y			7R			711			111		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			25.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Lacrosse Ave.						Northwest Blvd.			Northwest Blvd.		
Base Volume Input [veh/h]	0	1	25	17	5	39	33	1060	11	26	1113	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 Rate	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
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	46	52	72	0	1	48	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]	0	1	27	18	5	87	87	1196	12	29	1228	5
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	7	5	1	24	24	325	3	8	334	1
Total Analysis Volume [veh/h]	0	1	29	20	5	95	95	1300	13	32	1335	5
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	1			2			1			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			1			1			2		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	230
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal group	0	4	0	0	8	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	37	0	0	37	0	120	193	0	42	193	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	L	C	L	C	C	L	C	C
C, Cycle Length [s]	230	230	230	230	230	230	230	230	230	230
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]	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	33	33	33	33	189	189	189	189	189	189
g / C, Green / Cycle	0.14	0.14	0.14	0.14	0.82	0.82	0.82	0.82	0.82	0.82
(v / s)_i Volume / Saturation Flow Rate	0.00	0.02	0.02	0.07	0.26	0.39	0.39	0.08	0.40	0.40
s, saturation flow rate [veh/h]	1165	1438	1241	1441	367	1683	1677	377	1683	1681
c, Capacity [veh/h]	114	206	176	207	286	1383	1378	294	1383	1381
d1, Uniform Delay [s]	0.00	86.17	91.23	90.66	14.44	6.00	6.00	11.41	6.07	6.07
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	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]	0.00	1.48	1.31	7.88	3.09	1.17	1.18	0.74	1.22	1.22
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	0.00	0.15	0.11	0.48	0.33	0.48	0.48	0.11	0.48	0.48
d, Delay for Lane Group [s/veh]	0.00	87.64	92.54	98.54	17.53	7.17	7.18	12.16	7.29	7.29
Lane Group LOS	A	F	F	F	B	A	A	B	A	A
Critical Lane Group	No	No	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.00	1.68	1.16	6.05	2.34	9.38	9.36	0.63	9.69	9.68
50th-Percentile Queue Length [ft/ln]	0.00	42.00	28.93	151.18	58.62	234.54	234.04	15.64	242.28	242.07
95th-Percentile Queue Length [veh/ln]	0.00	3.02	2.08	10.08	4.22	14.40	14.38	1.13	14.80	14.79
95th-Percentile Queue Length [ft/ln]	0.00	75.60	52.08	252.01	105.52	360.12	359.48	28.14	369.91	369.65

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	87.64	87.64	92.54	98.54	98.54	17.53	7.17	7.18	12.16	7.29	7.29
Movement LOS	A	F	F	F	F	F	B	A	A	B	A	A
d_A, Approach Delay [s/veh]	87.64			97.54			7.87			7.41		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	12.14											
Intersection LOS	B											
Intersection V/C	0.468											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	1071.10	233.64	0.00	0.00
d_p, Pedestrian Delay [s]	106.18	106.18	106.18	106.18
I_p,int, Pedestrian LOS Score for Intersection	2.052	2.180	2.990	2.992
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	287	287	1643	1643
d_b, Bicycle Delay [s]	84.37	84.37	3.65	3.65
I_b,int, Bicycle LOS Score for Intersection	1.609	1.758	2.721	2.692
Bicycle LOS	A	A	B	B

Sequence

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



**Intersection Level Of Service Report
Intersection 21: Riverstone/Old Mill**

Control Type: Two-way stop
Analysis Method: HCM 6th Edition
Analysis Period: 15 minutes

Delay (sec / veh): 31.0
Level Of Service: D
Volume to Capacity (v/c): 0.398

Intersection Setup

Name	W Riverstone Dr									W Riverstone Dr		
Approach	Westbound			Northeastbound			Southwestbound			Southeastbound		
Lane Configuration	Y			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	W Riverstone Dr									W Riverstone Dr		
Base Volume Input [veh/h]	13	284	85	5	0	10	80	0	25	18	244	4
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 Rate	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	98	0	0	0	0	0	0	0	0	89	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	399	90	5	0	11	85	0	27	19	348	4
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
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	108	24	1	0	3	23	0	7	5	95	1
Total Analysis Volume [veh/h]	15	434	98	5	0	12	92	0	29	21	378	4
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Stop	Stop	Free
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	0.00	0.00	0.02	0.00	0.02	0.40	0.00	0.05	0.02	0.00	0.00
d_M, Delay for Movement [s/veh]	8.10	0.00	0.00	21.68	20.52	10.76	30.97	29.60	21.55	8.55	0.00	0.00
Movement LOS	A	A	A	C	C	B	D	D	C	A	A	A
95th-Percentile Queue Length [veh/ln]	0.04	0.04	0.04	0.13	0.13	0.13	2.18	2.18	2.18	0.06	0.06	0.06
95th-Percentile Queue Length [ft/ln]	0.90	0.90	0.90	3.17	3.17	3.17	54.49	54.49	54.49	1.40	1.40	1.40
d_A, Approach Delay [s/veh]	0.22			13.97			28.71			0.45		
Approach LOS	A			B			D			A		
d_I, Intersection Delay [s/veh]	3.69											
Intersection LOS	D											

**Intersection Level Of Service Report
Intersection 22: Lincoln Way/Lacrosse Ave.**

Control Type:	Two-way stop	Delay (sec / veh):	59.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.281

Intersection Setup

Name	Lincoln Way			Lincoln Way			Lacrosse Ave.			Lacrosse Ave.		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇌⇌			⇌⇌			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00			35.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Lincoln Way			Lincoln Way			Lacrosse Ave.			Lacrosse Ave.		
Base Volume Input [veh/h]	6	532	12	47	622	14	22	27	18	5	9	25
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 Rate	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
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	1	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]	6	564	13	50	659	15	23	29	20	5	10	27
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	153	4	14	179	4	6	8	5	1	3	7
Total Analysis Volume [veh/h]	7	613	14	54	716	16	25	32	22	5	11	29
Pedestrian Volume [ped/h]	6			0			3			9		

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	0.06	0.01	0.00	0.20	0.28	0.04	0.04	0.10	0.04
d_M, Delay for Movement [s/veh]	9.20	0.00	0.00	9.08	0.00	0.00	56.09	59.14	33.38	40.46	39.95	13.71
Movement LOS	A	A	A	A	A	A	F	F	D	E	E	B
95th-Percentile Queue Length [veh/ln]	0.02	0.01	0.00	0.18	0.00	0.00	2.51	2.51	2.51	0.66	0.66	0.66
95th-Percentile Queue Length [ft/ln]	0.52	0.26	0.00	4.59	0.00	0.00	62.67	62.67	62.67	16.55	16.55	16.55
d_A, Approach Delay [s/veh]	0.10			0.62			51.00			23.10		
Approach LOS	A			A			F			C		
d_I, Intersection Delay [s/veh]	3.64											
Intersection LOS	F											

**Intersection Level Of Service Report
Intersection 23: Lincoln Way / Emma Ave.**

Control Type:	Signalized	Delay (sec / veh):	17.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.376

Intersection Setup

Name	Lincoln Way						Emma Ave.					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00			35.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Lincoln Way						Emma Ave.					
Base Volume Input [veh/h]	19	619	10	31	640	33	99	51	58	15	23	51
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 Rate	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
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	25	12	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]	20	656	11	33	678	60	117	54	61	16	24	54
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
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	178	3	9	184	16	32	15	17	4	7	15
Total Analysis Volume [veh/h]	22	713	12	36	737	65	127	59	66	17	26	59
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	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	7			4			0			14		
Bicycle Volume [bicycles/h]	0			0			1			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	129.0
Offset Reference	LeadGreen
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	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	10	60	0	10	60	0	8	12	0	8	12	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [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
Split [s]	11	33	0	11	33	0	15	35	0	11	31	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	11	0	0	11	0	0	16	0	0	17	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]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	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	C	L	C	L	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
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	4.00	4.00	0.00	4.00	4.00	0.00	4.00	0.00	4.00
g_i, Effective Green Time [s]	58	49	49	58	50	50	20	12	20	6
g / C, Green / Cycle	0.64	0.54	0.54	0.64	0.55	0.55	0.22	0.14	0.22	0.07
(v / s)_i Volume / Saturation Flow Rate	0.03	0.22	0.22	0.05	0.24	0.24	0.09	0.08	0.01	0.06
s, saturation flow rate [veh/h]	718	1683	1673	772	1683	1636	1426	1528	1273	1499
c, Capacity [veh/h]	484	911	906	524	927	901	374	211	315	108
d1, Uniform Delay [s]	6.92	12.12	12.12	6.75	12.02	12.03	29.62	36.57	27.70	41.23
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.50	0.20	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.04	1.30	1.31	0.25	1.51	1.55	0.99	2.65	0.07	11.67
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	0.05	0.40	0.40	0.07	0.44	0.44	0.34	0.59	0.05	0.78
d, Delay for Lane Group [s/veh]	6.96	13.42	13.43	7.00	13.53	13.58	30.61	39.22	27.77	52.90
Lane Group LOS	A	B	B	A	B	B	C	D	C	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.14	4.20	4.18	0.25	4.74	4.62	2.39	2.70	0.29	2.19
50th-Percentile Queue Length [ft/ln]	3.38	105.02	104.50	6.29	118.45	115.47	59.66	67.60	7.27	54.68
95th-Percentile Queue Length [veh/ln]	0.24	7.56	7.52	0.45	8.31	8.14	4.30	4.87	0.52	3.94
95th-Percentile Queue Length [ft/ln]	6.09	189.04	188.10	11.33	207.70	203.59	107.39	121.67	13.08	98.43

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	6.96	13.43	13.43	7.00	13.55	13.58	30.61	39.22	39.22	27.77	52.90	52.90
Movement LOS	A	B	B	A	B	B	C	D	D	C	D	D
d_A, Approach Delay [s/veh]	13.24			13.27			34.88			48.72		
Approach LOS	B			B			C			D		
d_I, Intersection Delay [s/veh]	17.93											
Intersection LOS	B											
Intersection V/C	0.376											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.45	36.45	36.45	36.45
I_p,int, Pedestrian LOS Score for Intersection	2.662	2.713	2.078	2.039
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	600	644	556
d_b, Bicycle Delay [s]	22.05	22.05	20.68	23.47
I_b,int, Bicycle LOS Score for Intersection	2.176	2.251	1.975	1.728
Bicycle LOS	B	B	A	A

Sequence

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



**Intersection Level Of Service Report
Intersection 24: Riverstone/Village North**

Control Type:	Two-way stop	Delay (sec / veh):	22.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.024

Intersection Setup

Name	W Riverstone Dr			Approach			Village North			W Riverstone Dr		
Approach	Northbound			Eastbound			Westbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	W Riverstone Dr			Approach			Village North			W Riverstone Dr		
Base Volume Input [veh/h]	8	234	8	5	0	9	19	0	78	39	180	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
Growth Rate	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	133	0	0	0	0	0	0	12	0	107	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	8	381	8	5	0	10	20	0	95	41	298	12
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	104	2	1	0	3	5	0	26	11	81	3
Total Analysis Volume [veh/h]	9	414	9	5	0	11	22	0	103	45	324	13
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Stop	Stop	Free
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	0.00	0.00	0.02	0.00	0.02	0.09	0.00	0.16	0.04	0.00	0.00
d_M, Delay for Movement [s/veh]	7.97	0.00	0.00	22.94	18.42	10.44	21.24	20.40	13.00	8.30	0.00	0.00
Movement LOS	A	A	A	C	C	B	C	C	B	A	A	A
95th-Percentile Queue Length [veh/ln]	0.02	0.02	0.02	0.12	0.12	0.12	0.97	0.97	0.97	0.11	0.11	0.11
95th-Percentile Queue Length [ft/ln]	0.49	0.49	0.49	3.11	3.11	3.11	24.15	24.15	24.15	2.81	2.81	2.81
d_A, Approach Delay [s/veh]	0.17			14.34			14.45			0.98		
Approach LOS	A			B			B			A		
d_I, Intersection Delay [s/veh]	2.60											
Intersection LOS	C											

**Intersection Level Of Service Report
Intersection 25: Riverstone/Starbucks**

Control Type:	Two-way stop	Delay (sec / veh):	20.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.094

Intersection Setup

Name	Southbound		Eastbound		Northwestbound	
Approach	Southbound		Eastbound		Northwestbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Southbound		Eastbound		Northwestbound	
Base Volume Input [veh/h]	21	19	8	326	363	23
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
Growth Rate	1.06	1.06	1.06	1.06	1.06	1.06
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	89	98	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	20	8	435	483	24
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	5	2	118	131	7
Total Analysis Volume [veh/h]	24	22	9	473	525	26
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.04	0.01	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	20.69	13.25	8.56	0.00	0.00	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.46	0.46	0.02	0.02	0.00	0.00
95th-Percentile Queue Length [ft/ln]	11.49	11.49	0.59	0.59	0.00	0.00
d_A, Approach Delay [s/veh]	17.13		0.16		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	0.80					
Intersection LOS	C					

**Intersection Level Of Service Report
Intersection 26: Riverstone/McDonald's**

Control Type:	Two-way stop	Delay (sec / veh):	33.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.341

Intersection Setup

Name	Approach			McDonald's			W Riverstone Dr			W Riverstone Dr		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Approach			McDonald's			W Riverstone Dr			W Riverstone Dr		
Base Volume Input [veh/h]	4	0	4	56	0	8	5	374	56	12	333	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 Rate	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
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	98	0	0	89	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]	4	0	4	59	0	8	5	494	59	13	442	2
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	0	1	16	0	2	1	134	16	4	120	1
Total Analysis Volume [veh/h]	4	0	4	64	0	9	5	537	64	14	480	2
Pedestrian Volume [ped/h]	0			0			0			0		

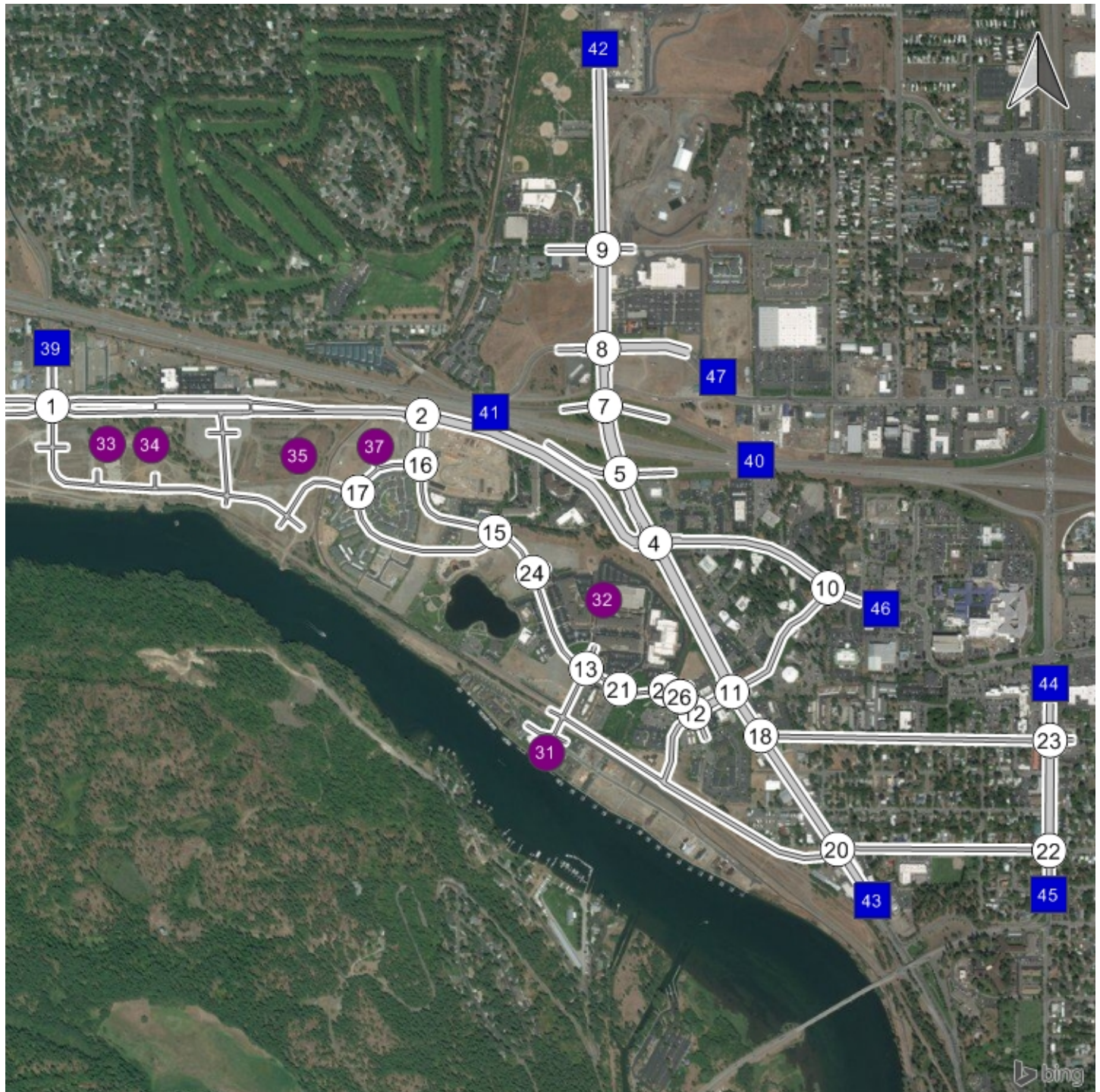
Intersection Settings

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

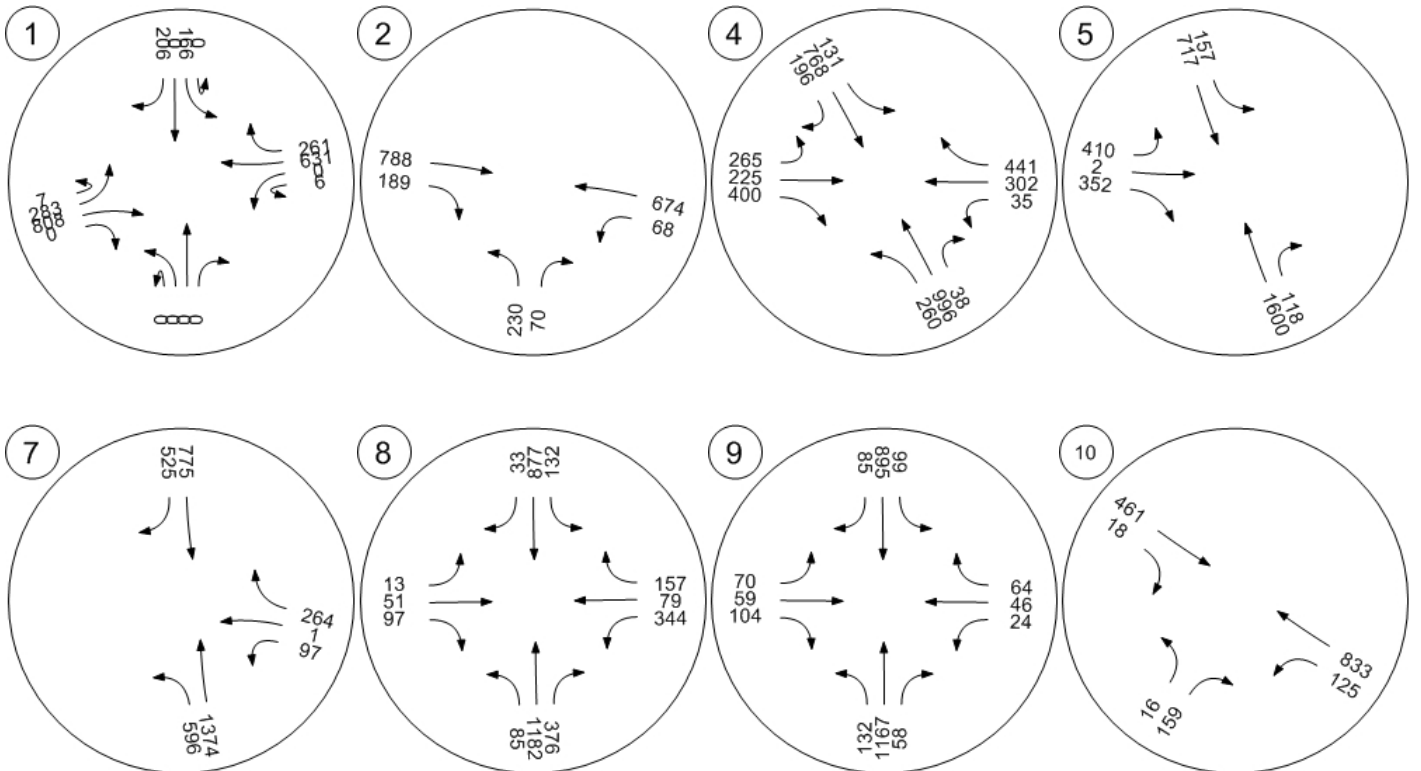
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.00	0.01	0.34	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	24.86	23.28	11.53	33.78	31.74	21.48	8.35	0.00	0.00	8.74	0.00	0.00
Movement LOS	C	C	B	D	D	C	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.09	0.09	0.09	1.53	1.53	1.53	0.01	0.01	0.01	0.04	0.04	0.04
95th-Percentile Queue Length [ft/ln]	2.19	2.19	2.19	38.34	38.34	38.34	0.35	0.35	0.35	1.01	1.01	1.01
d_A, Approach Delay [s/veh]	18.19			32.26			0.07			0.25		
Approach LOS	C			D			A			A		
d_I, Intersection Delay [s/veh]	2.25											
Intersection LOS	D											

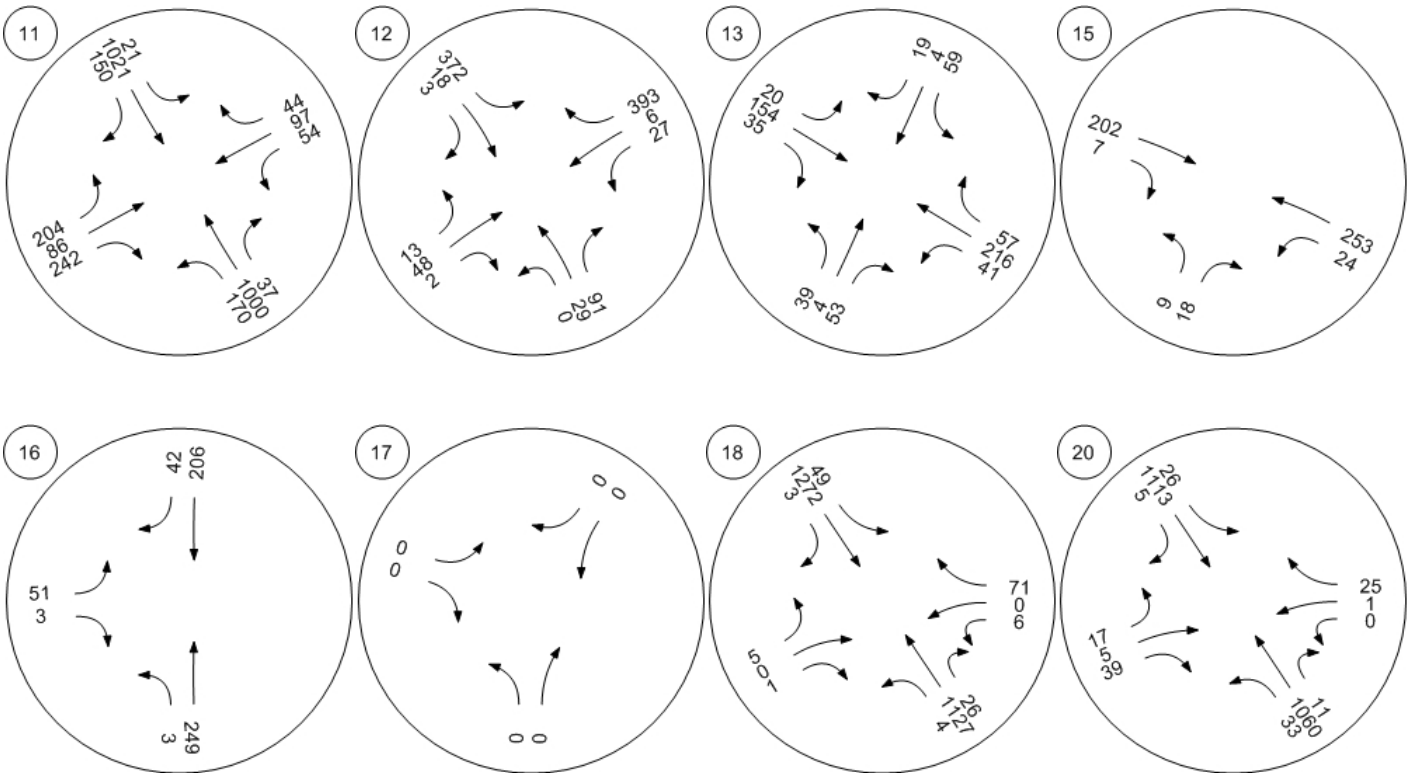
Study Intersections



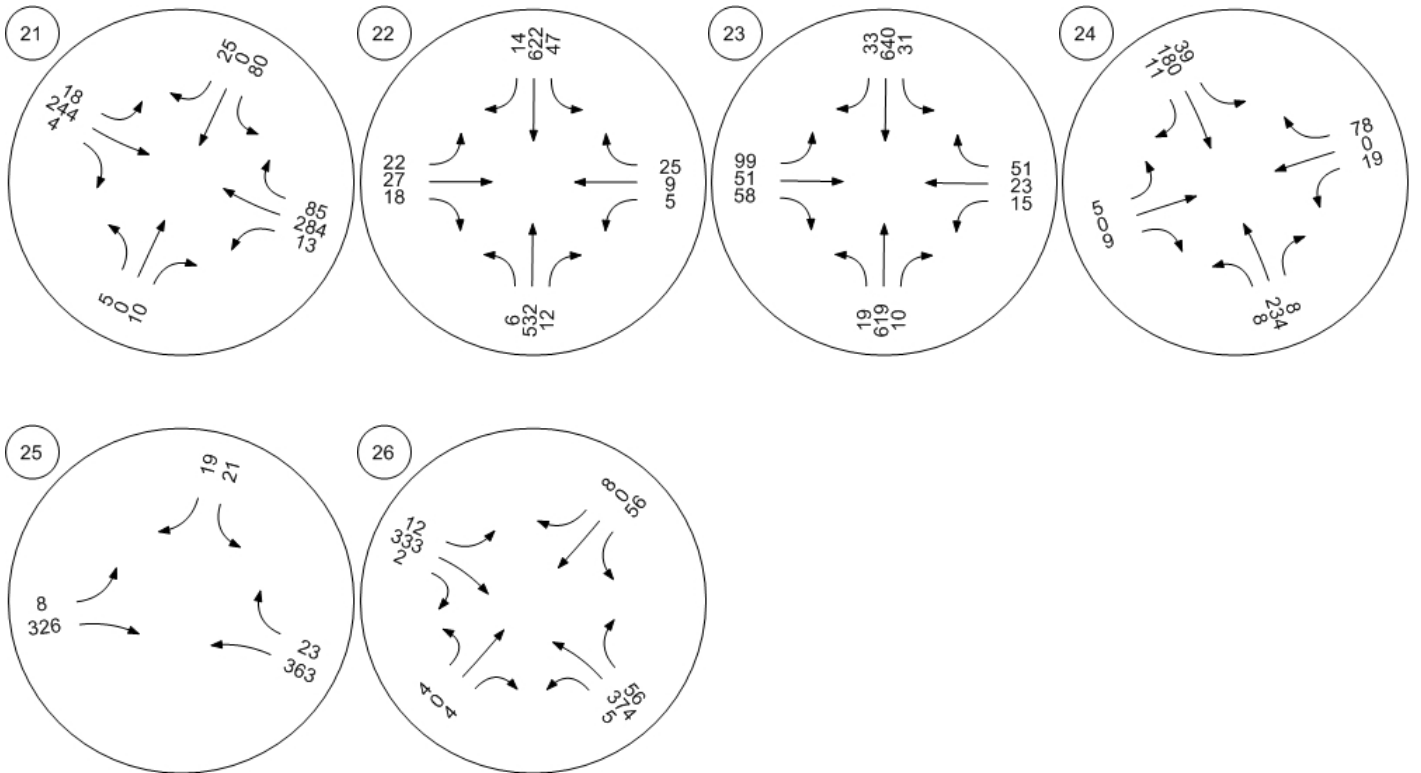
Traffic Volume - Base Volume



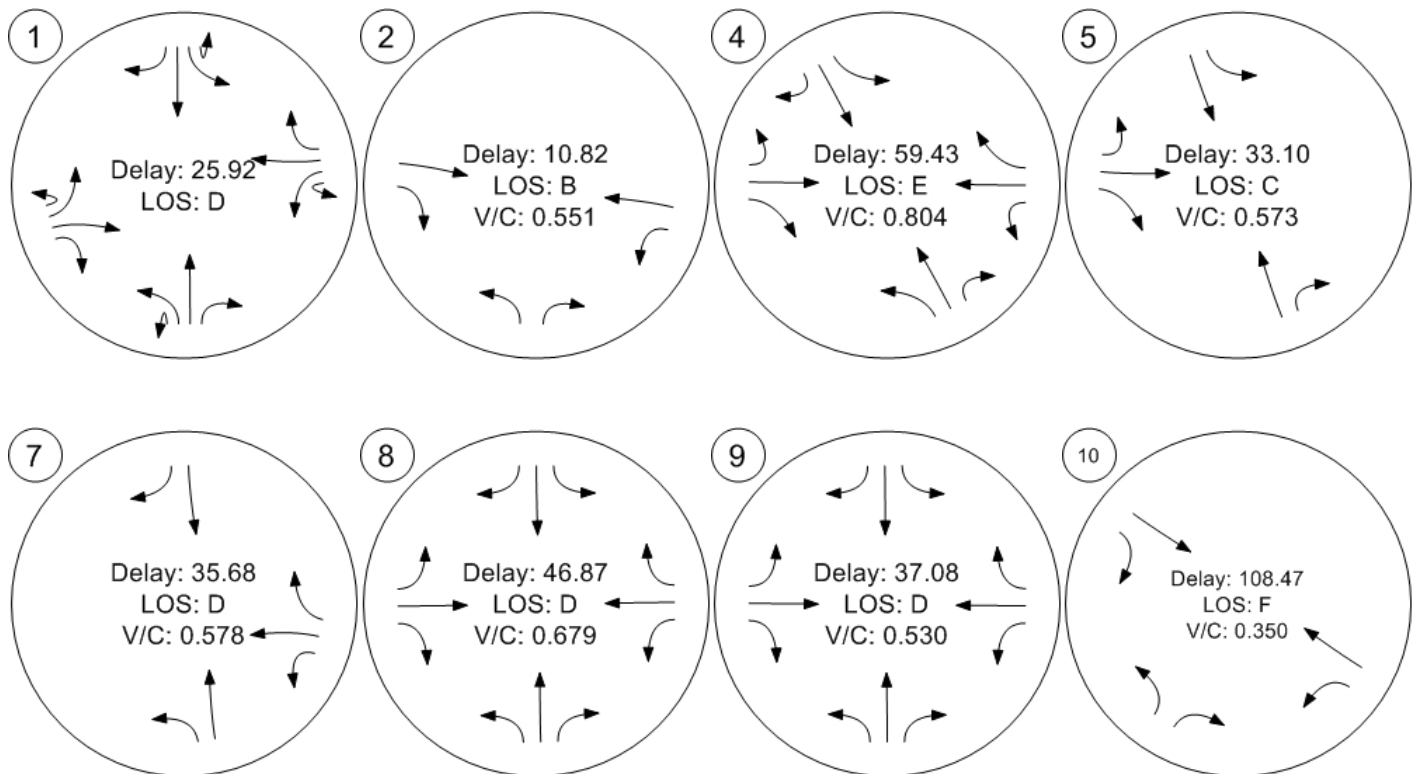
Traffic Volume - Base Volume



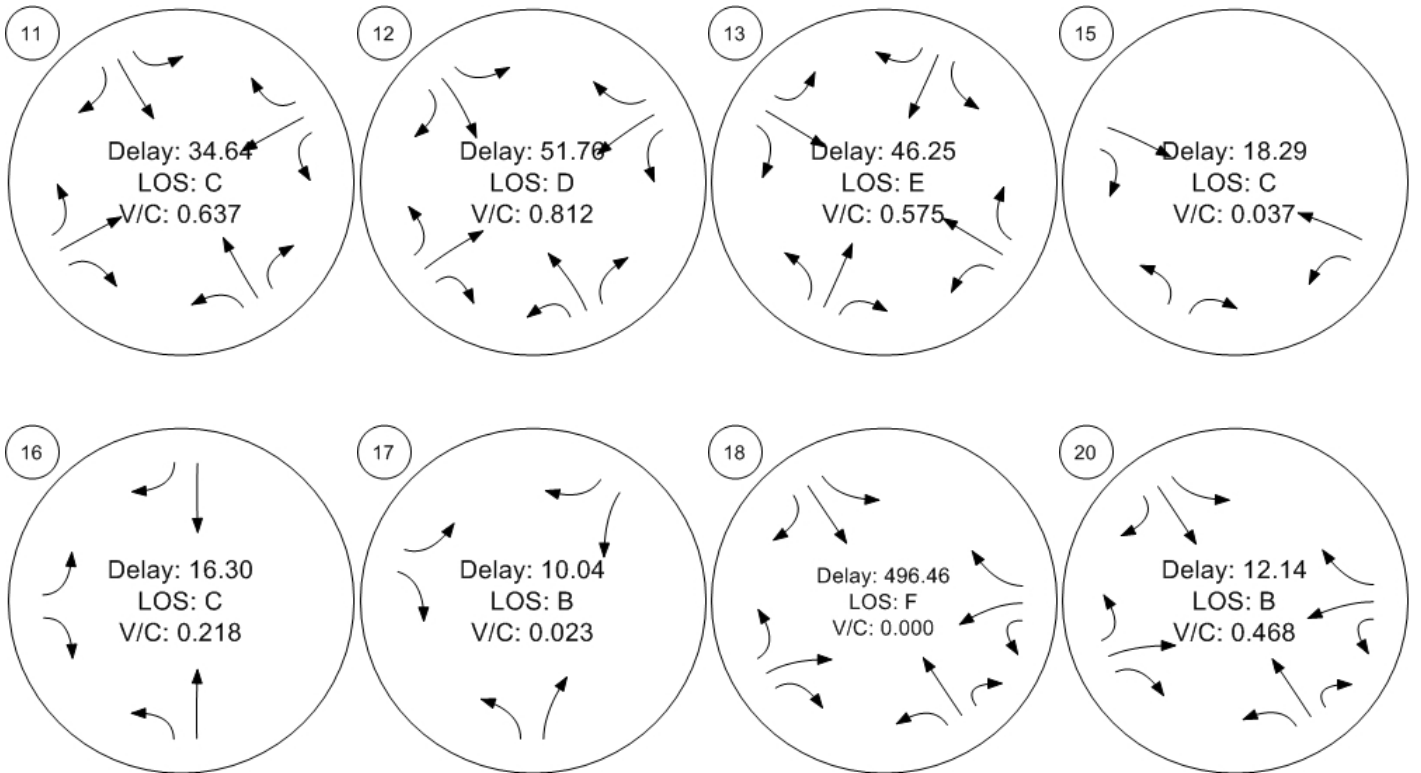
Traffic Volume - Base Volume



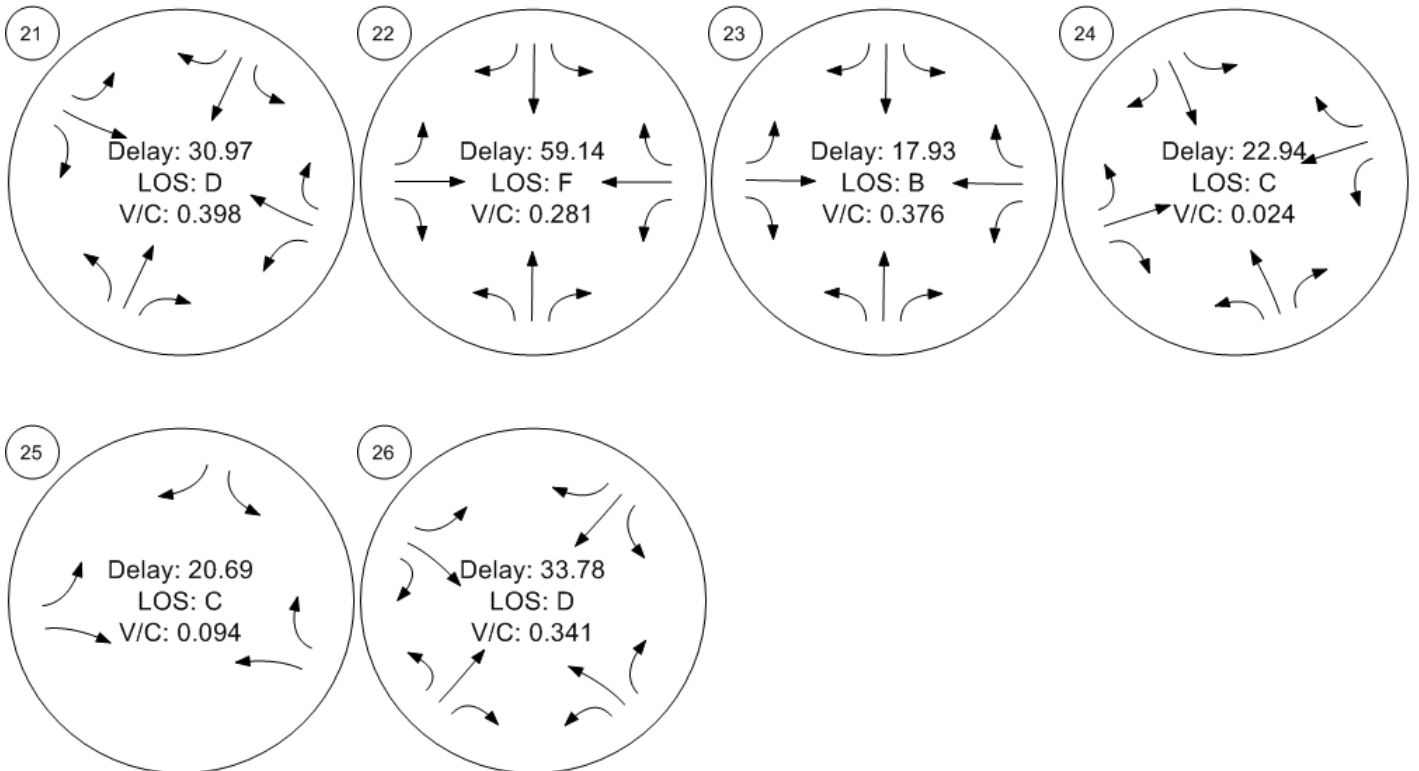
Traffic Conditions



Traffic Conditions



Traffic Conditions



Time Space Diagram - Flowing Off

Route 11: NW Blvd NB



Route 11: NW Blvd NB

