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Atlas Waterfront / Riverstone Traffic Impact Study

SUBMITTED TO THE

CITY OF COEUR D'ALENE & IGNITECDA

JANUARY 2019

WELCH-COMER ENGINEERS | SURVEYORS

ATLAS WATERFRONT/RIVERSTONE TRAFFIC IMPACT STUDY

PROJECT NO. 41129.03

SUBMITTED TO THE:

CITY OF COEUR D'ALENE & IGNITECDA

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PREPARED BY:

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1. EXECUTIVE SUMMARY

The City of Coeur d'Alene (City) and igniteCDA procured the services of Welch Comer to perform a Traffic Impact Study (TIS) to identify impacts of and potential mitigations for the development of the Atlas Waterfront and other planned developments in the surrounding area. Data on the existing roadway system was collected in order to build and calibrate an existing conditions model. The existing model was then combined with future development information anticipated by the year 2028. Analysis of the future conditions traffic model allowed the team to determine the future impacts and possible solutions.

Streetlight, an internet service providing access to mobile geolocation data, was used to perform an Origin-Destination (O-D) Study to understand routes motorists in the area currently take. Video traffic counts were performed at 15 locations simultaneously in order to provide the most accurate traffic volumes possible. In addition, ITD was able to provide the existing signal timing on Northwest Boulevard.

The data collected was used to build and calibrate an existing model of the transportation system in a software called PTV Vistro. Once the model was validated, it was analyzed to determine the existing deficiencies in the system. It was clear that the existing system was operating poorly, specifically the Northwest Boulevard corridor. An "optimized" version of the signal corridor was used to conclude that the corridor could be improved significantly by updating the traffic signal timing, cycle length and coordination.

Once the existing model was finalized, it was combined with information regarding multiple developments known to be on the horizon, including Atlas Waterfront, River's Edge, and the remaining infill development in Riverstone. The Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition was used to estimate the number of trips created by the future developments. These developments were assumed to be completed by the year 2028, which was chosen to be the design year for the study.

The O-D information was used to assign routes to the various land uses and populate the future transportation model. Once this was complete, the team was able to analyze the impacts of the developments and determine the future deficiencies. The Atlas Waterfront and River's Edge Developments contribute traffic to intersections. However, the network will likely be congested even without the developments, as the developments each contribute between one and 10 percent of the total intersection volume to intersections within the study area.

By 2028, the network operation, specifically Northwest Boulevard, will be degraded significantly. This assumes the traffic signals continue to be optimized. Without continued optimization, operation will likely be even worse.

The team considered multiple mitigation solutions to the Northwest Boulevard corridor ranging from adding lanes to grade separations. However, most of the improvement options that can be applied directly to the corridor are neither feasible nor cost effective. This is due to the buildout surrounding the corridor, or simply the cost of the option itself (e.g. grade separation).

Fortunately, the growth contributing to the poor operation will not happen all at once. It's important the City and the surrounding metropolitan area continue to make improvements to the regional transportation system to keep up with the growth. To do this, it will be important to complete projects like the Huetter Bypass, I-90/US 95 Interchange Improvements, and the Health Corridor Overpass Bridge. These projects, as well as continued review and planning of the transportation system, will help keep the transportation system functioning as effectively as possible.

2. 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 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.
- Origin-Destination (O-D) study a study that determines the patterns of traffic during a time period on a typical day.
- Origin is the point where a trip begins.
- Destination is the point where a trip ends.
- KMPO is the Kootenai Metropolitan Planning Organization
- ITD is the Idaho Transportation Department

3. Purpose of Report and Study Objectives

3.1. Objectives of the Study

Figure 3-1: Northwest Boulevard/Lakewood intersection looking north.

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 47 acres into another mixed-use development with retail, housing, commercial properties and a public waterfront park. Another parcel, owned by Lanzce Douglass and known as the River's Edge, is adjacent to the City's property and is planned to include multi-family residential property. Because the transportation network surrounding the Riverstone development is already stressed, the City and igniteCDA decided to study the area prior to moving forward with the developments.

The objectives of the study are:

1. Gain an 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.

3.2. 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/I-90 WB ramps, Northwest Boulevard/Ironwood/Seltice Way, 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 3-2: Study Boundary.

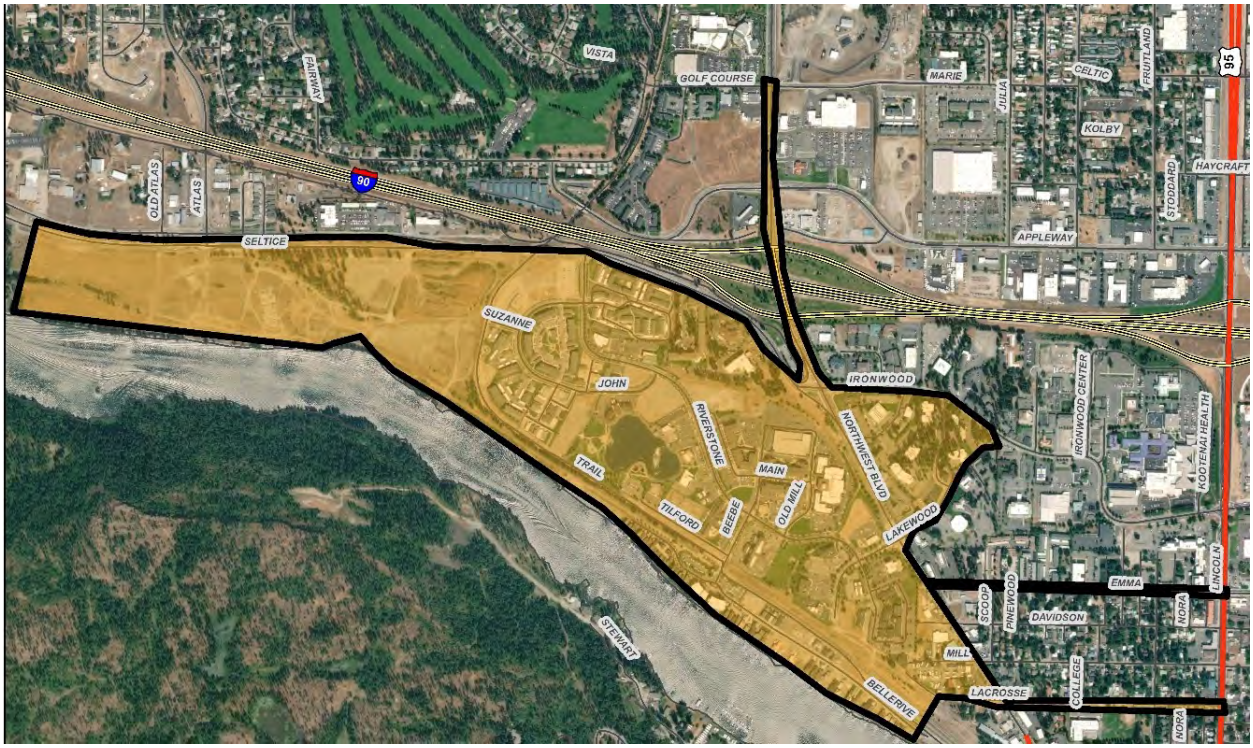


Figure 3-2: Study Boundary

3.3. STUDY PROCESS

The process for the study included first collecting data (traffic volumes, signal timings, etc.) to build an existing conditions traffic 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 currently take into and out of Riverstone. More information on the O-D study is located in Section 6.

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 3-3.

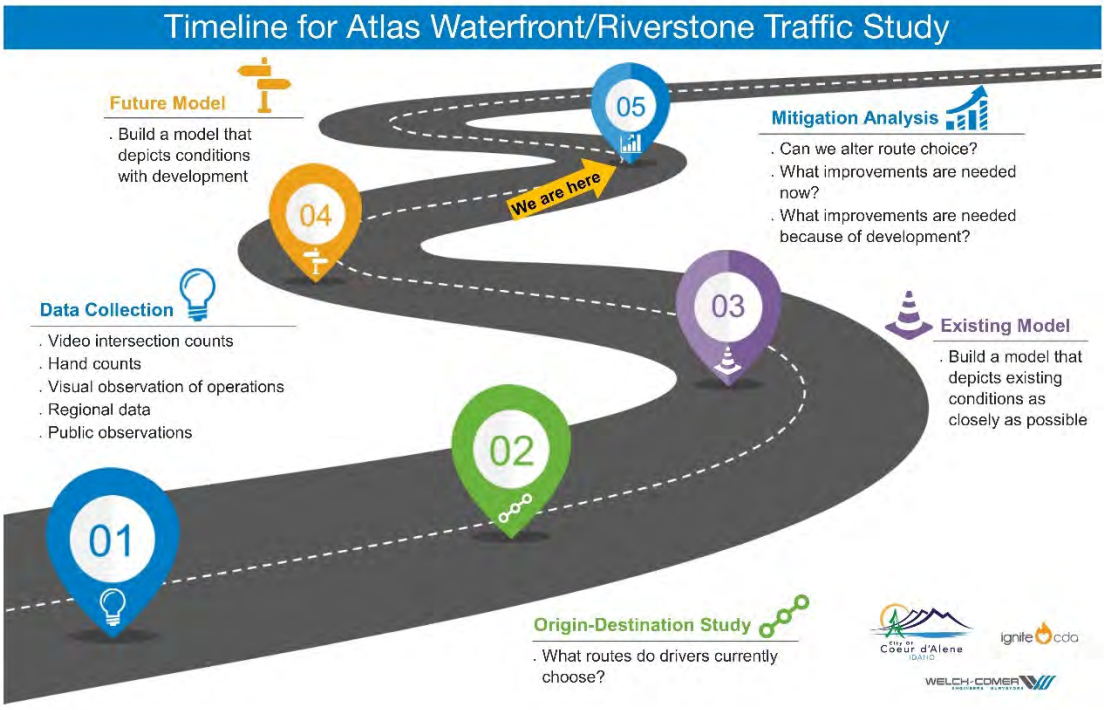


Figure 3-3: Signal head malfunction at Riverstone/Lakewood

4. Data Collection

4.1. Roadway Inventory

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

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 regional transportation system.

4.2. 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 4-1: 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 4-2 shows the locations of the video counts. The intersection traffic counts were processed to include counts for passenger cars, commercial trucks, pedestrians and bicyclists.

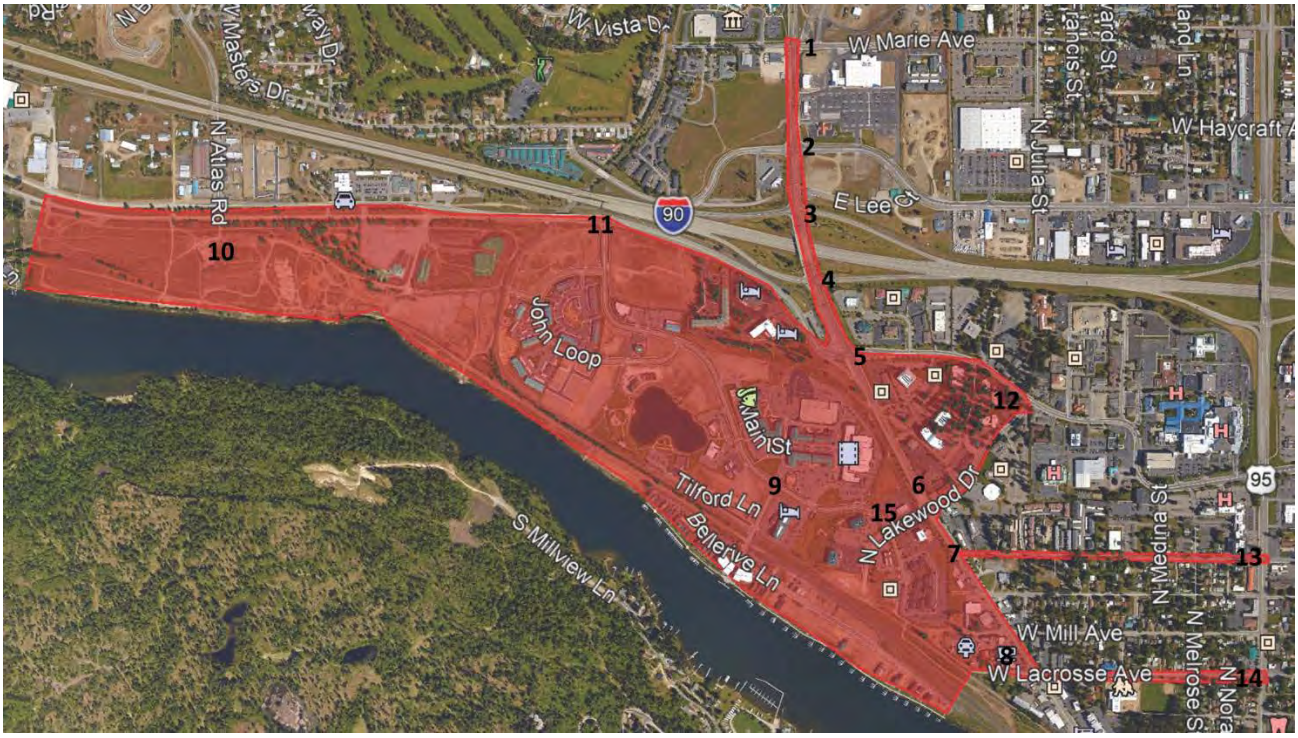


Figure 4-2: Video traffic counter at Riverstone/Lakewood

4.3. 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 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.

5. PUBLIC INVOLVEMENT

5.1. 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 5-1: Open House No. 1 was well attended.

5.1.1. *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.

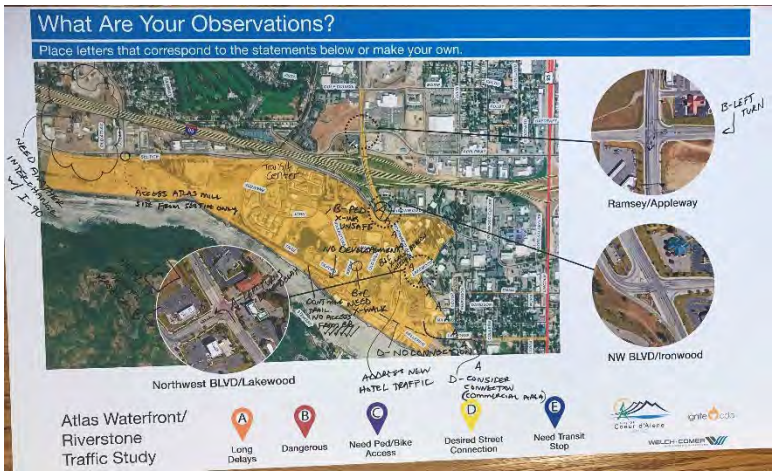


Figure 5-2: A board from Open House No. 1

- Desire for a permissive northbound left-turn at Northwest Boulevard/Lakewood.

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.

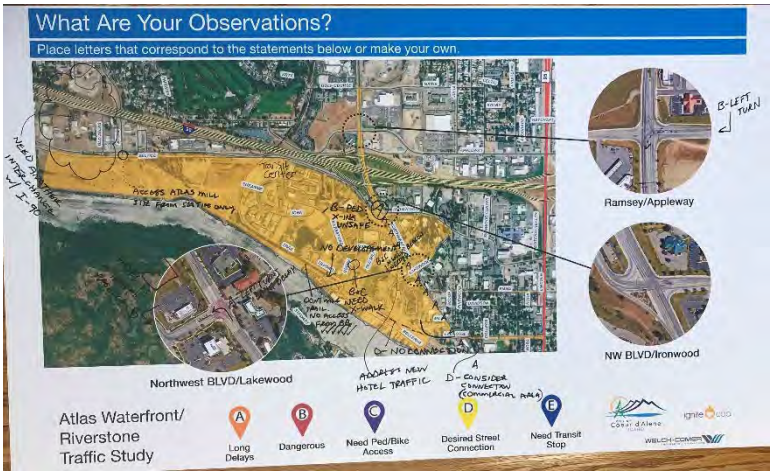


Figure 5-3: Another board from Open House No. 1

- 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.

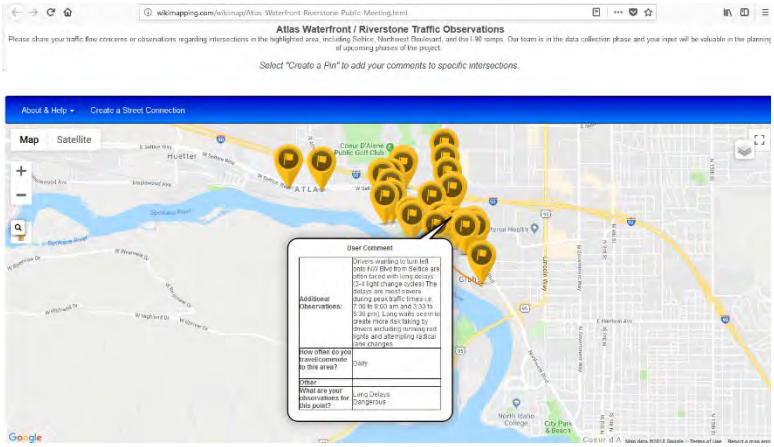


Figure 5-4: Website to gather public comment.

- 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 5-5.

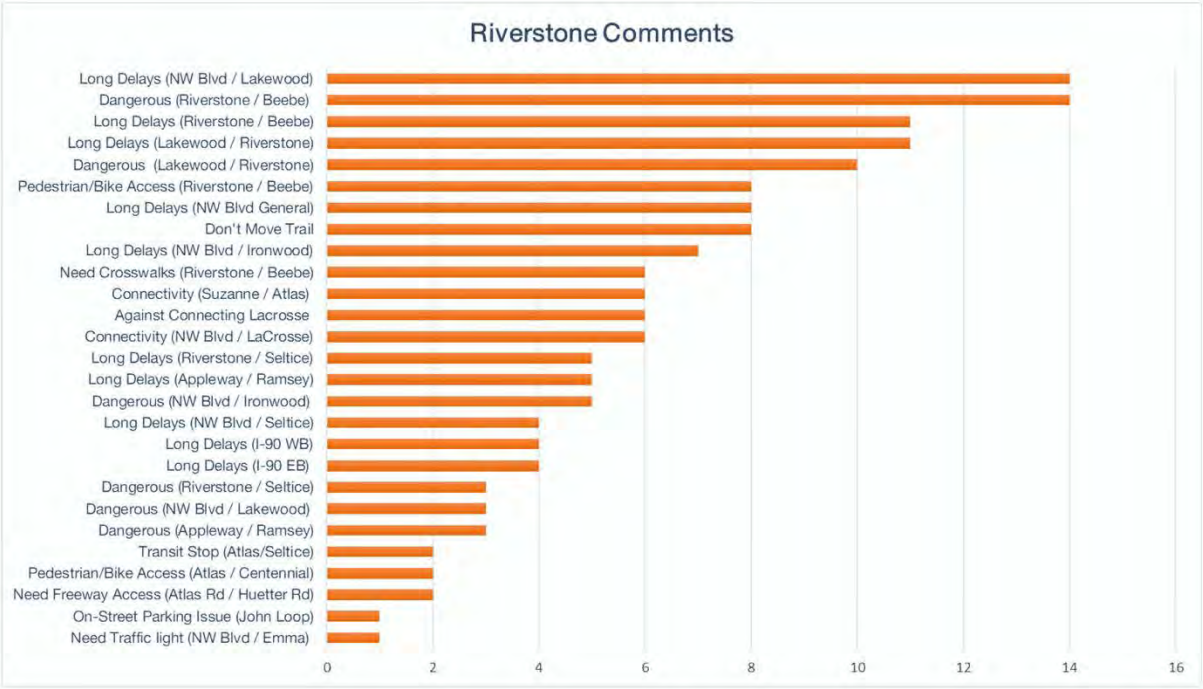


Figure 5-5: Open House No. 1 public comments

5.2. 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 5-6: 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.

5.2.1. *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.

Feedback after the second public meeting (and after the draft report was posted):

- Support for synchronizing the Northwest Boulevard signals.
- Support for the Lacrosse connection to Northwest Boulevard
- Comments both for and against the intersection of Northwest Boulevard/Lacrosse being signalized.
- Support for the City taking over control of the Northwest Boulevard signals
- Using lagging rather than leading lefts at signals with permissive left turn movements

Figure 5-7: Discussion after the presentation at Open House No. 2

- Thoughts that the study area and the days for which data was collected should have been expanded.
- Comments asked for more detail or a reconsideration of the background growth rates considered.
- There was concern that some of the larger mitigation measures depicted in the presentation are too speculative or too far into the future to be helpful to pressing traffic concerns.

6. ORIGIN - DESTINATION STUDY

6.1. THE IMPORTANCE OF AN ORIGIN-DESTINATION STUDY

An 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. Streetlight is an on-demand platform that transforms mobile device data into actionable transportation analytics. 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.

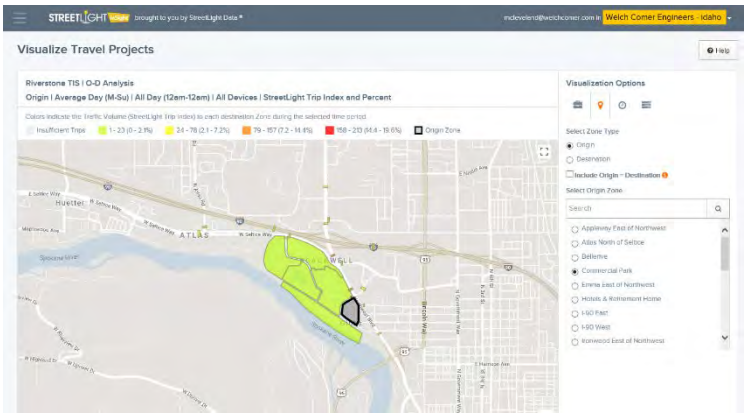


Figure 6-1: Screen shot from Streetlight Data O-D Study showing zones and gates.

Figure 6-2: Traffic Analysis Zones

The data allows for the 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 conditions are shown in Appendix D. The data from Streetlight Data is summarized in a table in Appendix D.

6.2. 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 7 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 4 percent of traffic that originates within Riverstone, stays in Riverstone and just moves between zones.

7. Existing Conditions

7.1. Existing Conditions Model

7.1.1. *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. 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.

7.1.2. *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 4:30 P.M. to 5:30 P.M. 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 model. Providing balanced flows is another way that a model is calibrated.

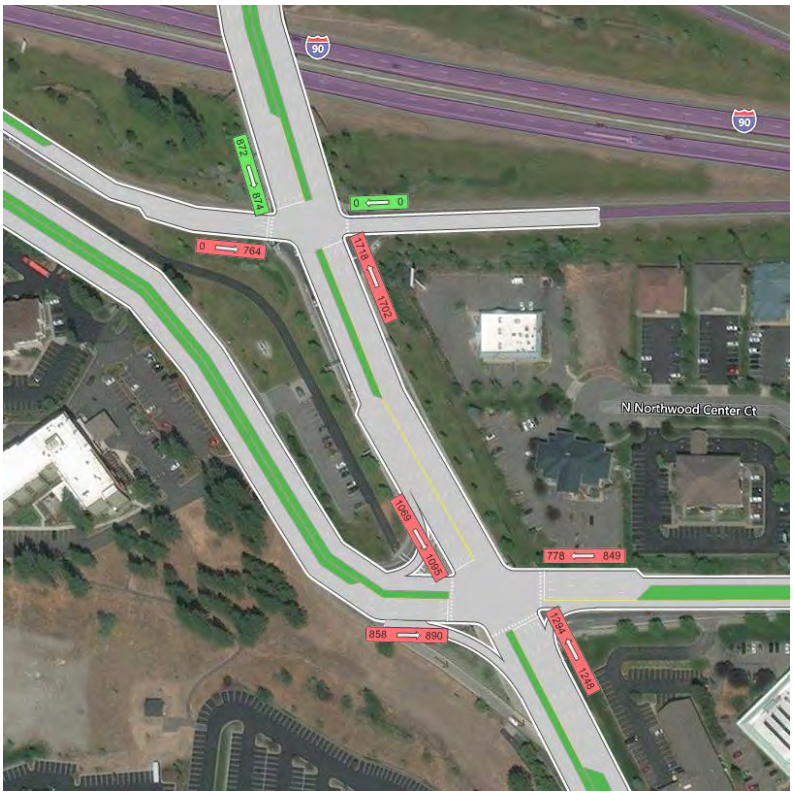


Figure 7-1: Screenshot of the Vistro model demonstrating relatively balanced flows.

7.1.3. *Level of Service*

The Level of Service of an intersection describes a range of operating conditions based on the movement of the intersection. The figure below demonstrates what the various levels of service might look like. The City believes that in this particular area, a level of service D is acceptable, which is consistent with federal guidance (AASHTO A Policy on Geometric Design of Highways and Streets).

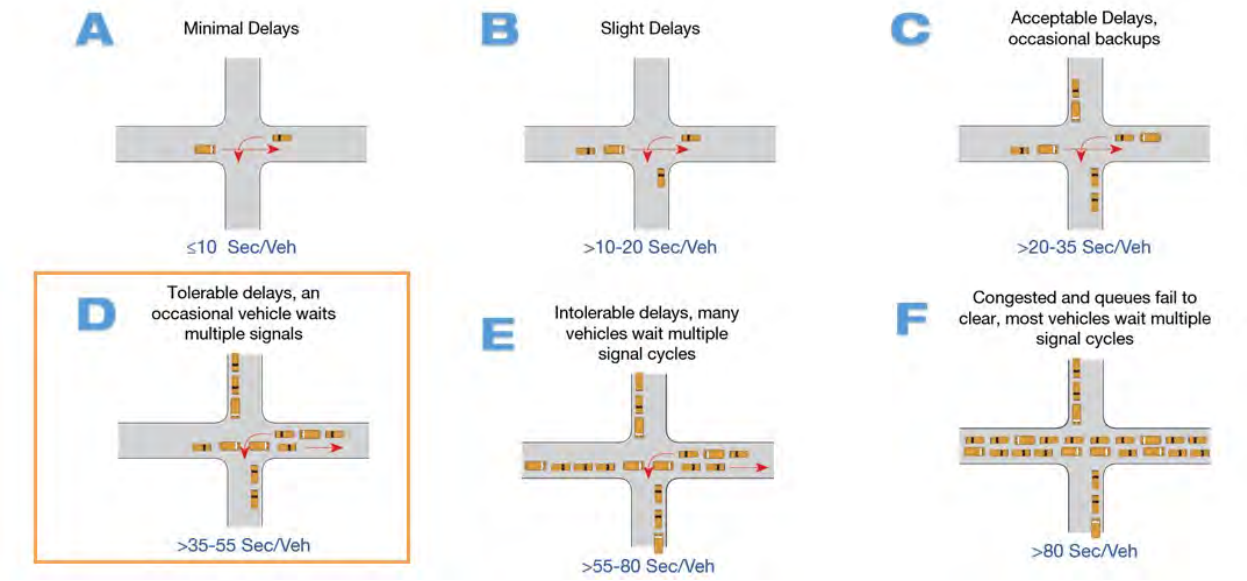


Figure 7-2 Descriptions of Levels of Service

7.2. Existing Intersection Performance

This area of Coeur d'Alene is one of the most congested areas in the City for multiple reasons. It includes an interstate interchange, three major arterials, provides access to the City Center, major developments, and the health corridor. Table 7-1 and Figure 7-3 summarize the level of service of the major intersections within the study. Data regarding minor intersections can be found in the appendix.

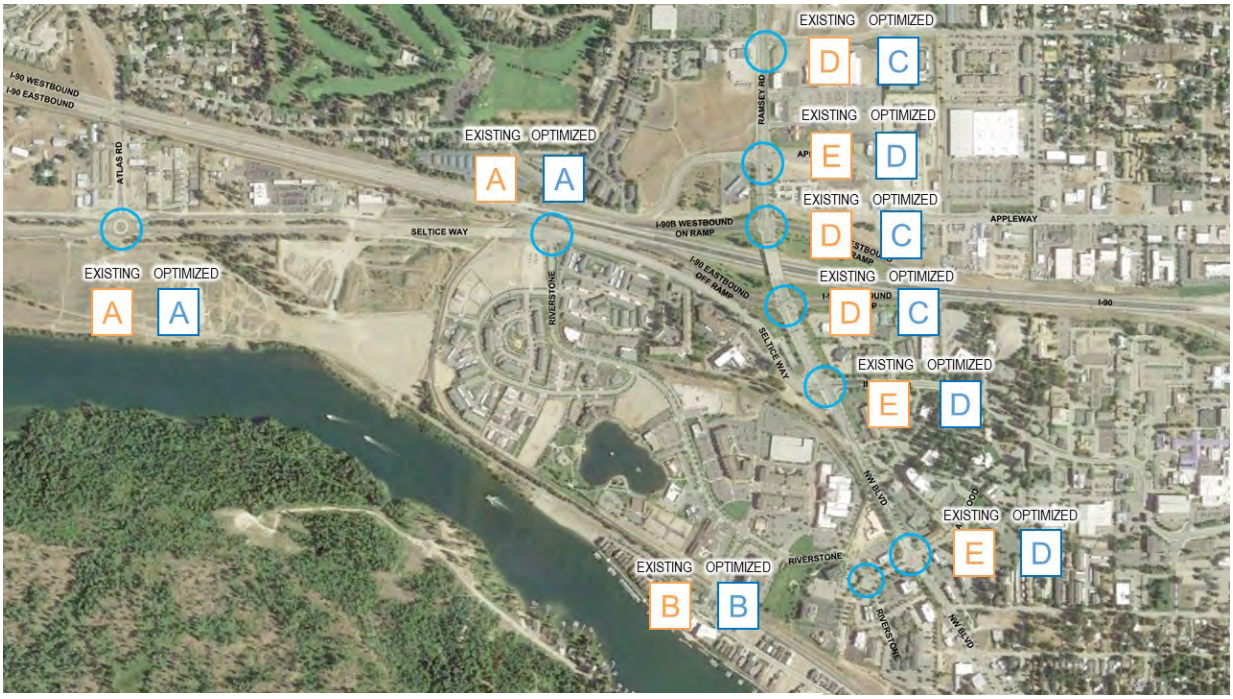


Figure 7-3: Level of Service Overview

Table 7-1: Level of Service Summary

Intersections	2018 Existing		2018 Optimized	
	LOS	Average Intersection Delay, s/veh	LOS	Average Intersection Delay, s/veh
Golf Course/Ramsey	D	47	C	34
Appleway/Ramsey	E	55	D	41
I90 WB/NW	D	44	C	28
I90 EB/NW	D	43	C	29
Seltice/NW	E	60	D	43
Lakewood/NW	D	48	D	42
Riverstone/Lakewood	B	20	B	18
Riverstone/Seltice	A	8	A	8
Atlas/Seltice	A	8	N/A	N/A
Emma/US 95	C	22	B	17

*Stop-controlled intersections not shown. See Appendix.

Under the current conditions, it can be seen from the table that multiple intersections on Northwest Boulevard are nearing capacity. Based on our analysis and conversations with ITD, the Northwest Boulevard corridor could be optimized in terms of signal timing, cycle length, and coordination. The results of optimizing the signals can be seen in Table 7-1.

7.2.1. *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. Table 7-2 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 safety issues 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 a 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.

As mentioned previously, it was noted that the signals along this corridor have not been re-evaluated for several 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.

Table 7-2: 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
	L	69	210	68	170	56	480		
N	T	39	850	46	840	28	880	39	780
	R	40	840	25	110			39	790
	L	81	150	82	140			83	170
S	T	43	710	50	680	50	520	23	490
	R			50	670	52	530		
	L	75	140	75	30			77	380
E	T	65	220	87	110			77	380
	R			76	40			67	130
	L	74	50	79	80	76	200		
W	T	62	150	70	70	79	190		
				67	70				

Table 7-3: Lane Group Results

		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
	L	65	390	90	370	0	0	28	150
N	T	37	500	22	470	29	70	22	40
	R	37	510	22	470				
	L	61	210	79	45	19	160		
S	T	69	620	55	770	6	0		
	R	52	70	35	45				
	L	87	270	74	270	16	0		
E	T	71	400	74	270	14	20	4	60
	R	64	150	64	90			4	30
	L	83	80	64	100	29	20	8	20
W	T	74	240	68	230	10	0	4	50
	R	70	950			18	170		

A major factor in the congestion of the Northwest Boulevard corridor is simply the proximity of the intersections to one another, combined with long cycle lengths. FHWA guidance indicates that long cycle lengths will increase congestion due to upstream throughput exceeding

downstream link capacity, turn bay storage being exceeded, and increase variability in side street actuated green times.

7.2.2. *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, showing a red arrow and green arrow simultaneously. The City is working through this issue with the manufacturer.

Figure 7-4: Signal head malfunction at Riverstone/Lakewood

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/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 and other generators in Riverstone that peak during lunch.

7.3. 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 7-5 and 7-6 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 crash was the "rear-end" crash 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 Road, Golf Course Road/Ramsey Road, Seltice Way and Atlas Road, and Northwest Boulevard between Seltice Way and Lakewood Drive.

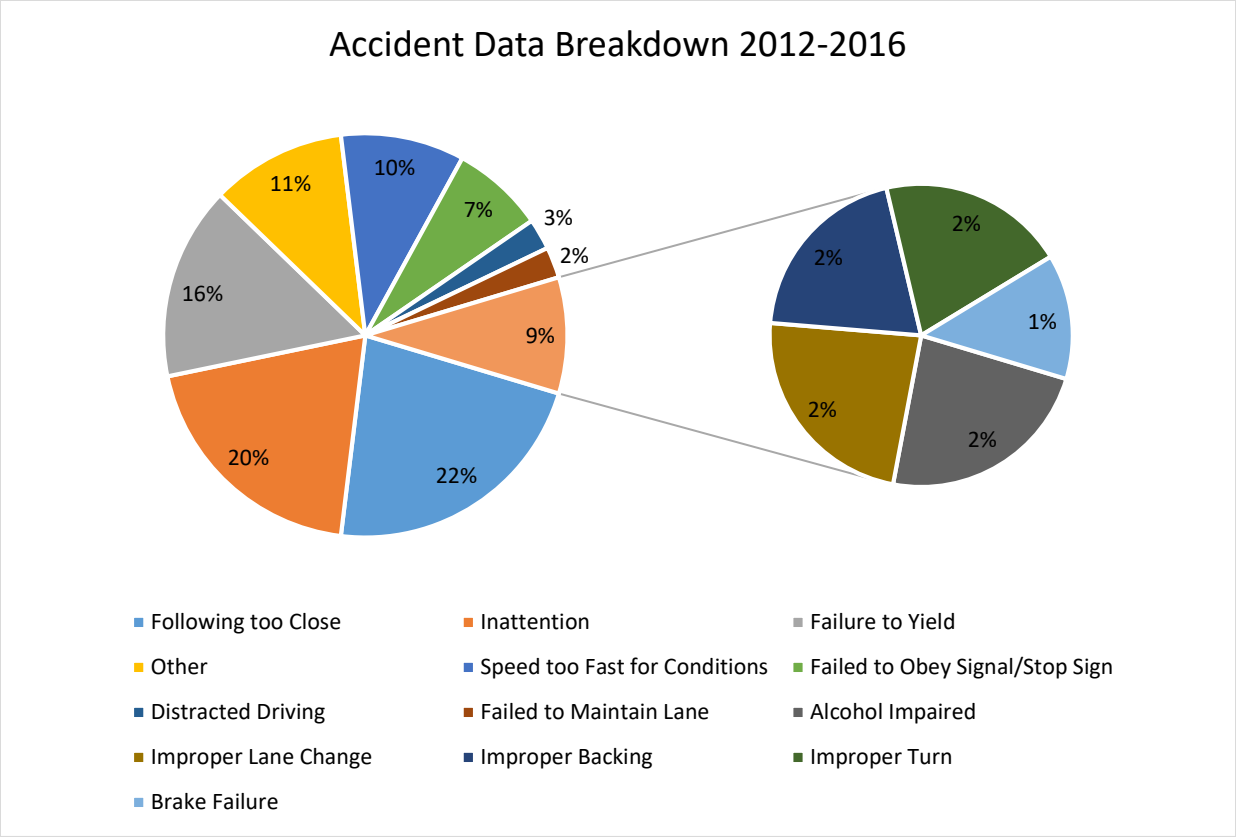


Figure 7-5: Causes of Crashes

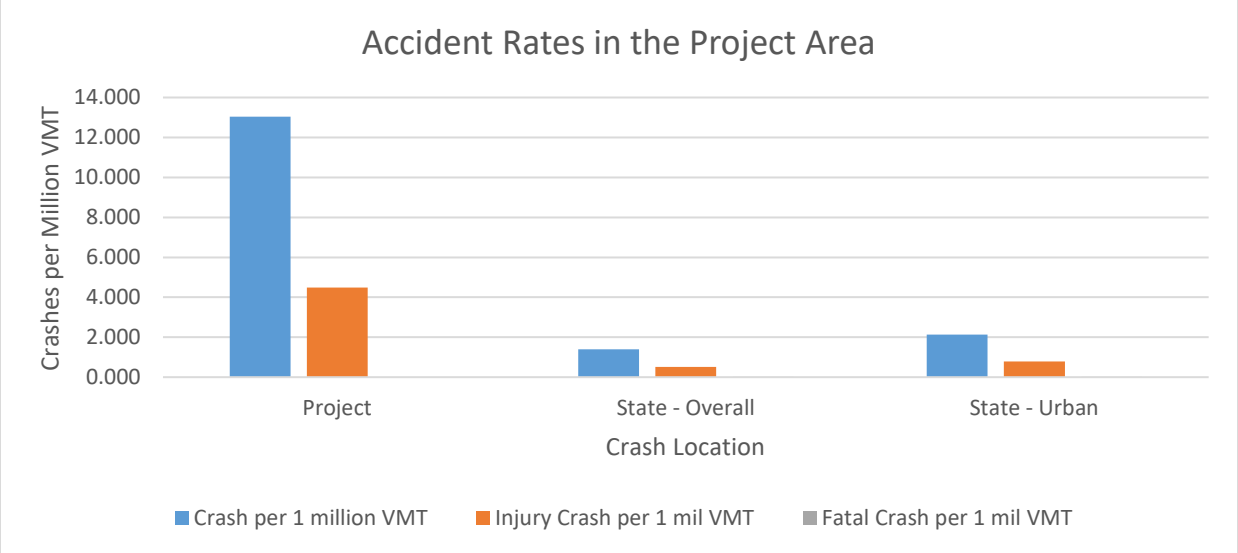


Figure 7-6: Crash Rates per Million Vehicle Miles Traveled for study area and the state of Idaho

This area will inherently have a high crash rate due to the high volumes. The table above shows that this area has a high crash rate relative to the state average. Although it is also shown that this area is higher than urban areas, this might be somewhat misleading. The urban areas shown in this graph are city-wide areas throughout the state. If you were to focus on one small congested area of a city, as we are doing here, you would likely see a higher crash rate, such as the one shown for this project.

7.4. 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 Boulevard and Ironwood.

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

8. Trip Generation

8.1. 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.

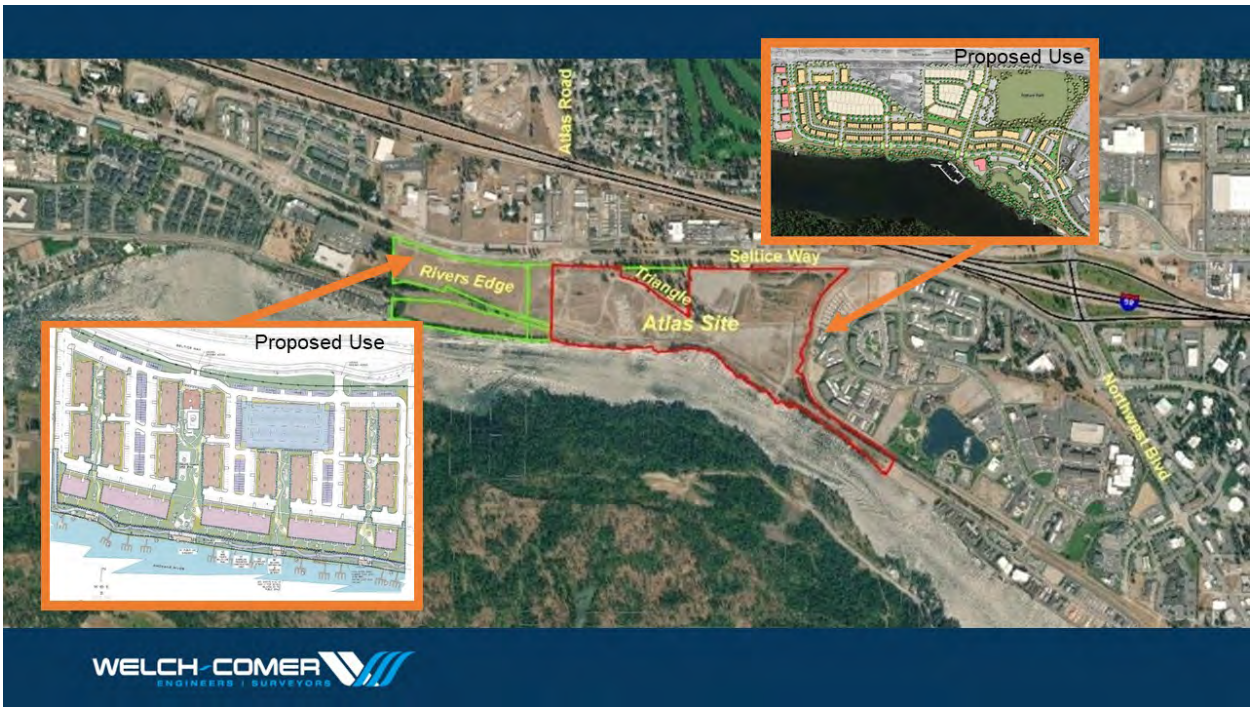


Figure 8-1 Proposed Land Use

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 being considered.

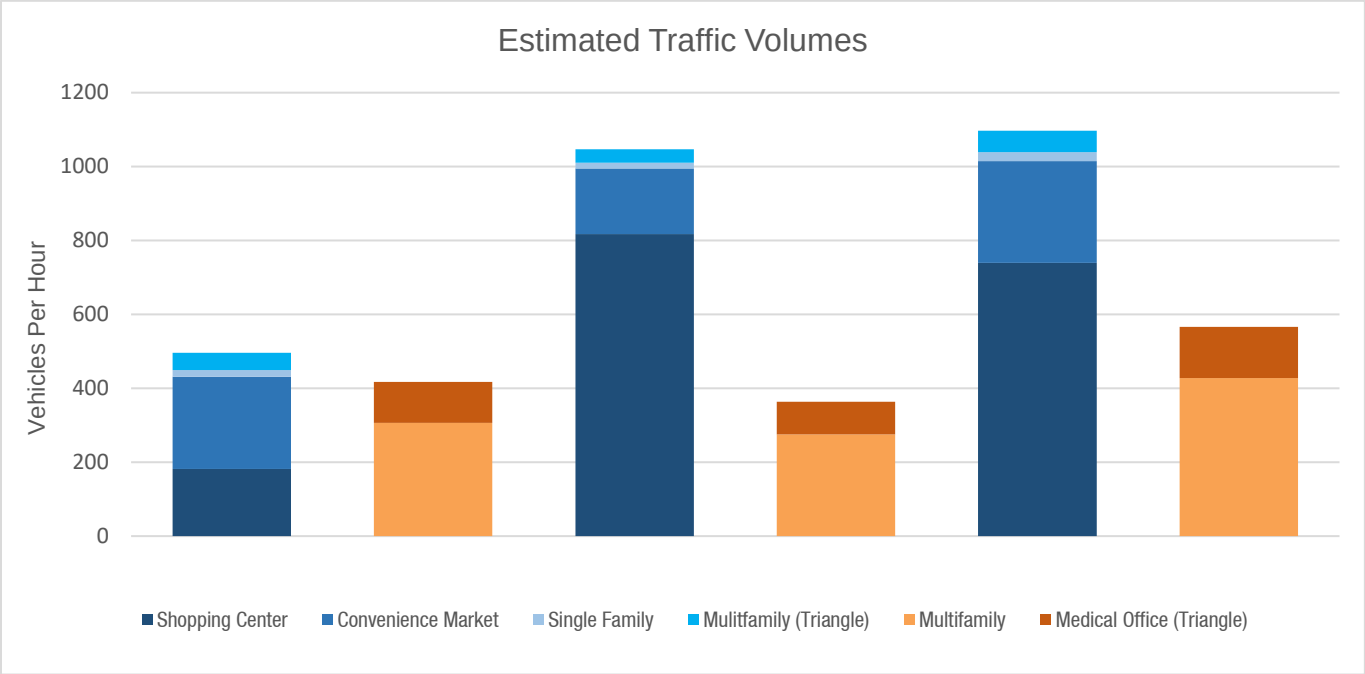


Figure 8-2: Estimated Development Traffic Volumes

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 P.M. and 6 P.M. was used, which is consistent with the methodology for developing the traffic model.

8.2. Trip Generation

Table 8-1 summarizes the trip generation for the multiple developments within the study area.

Table 8-1: Trip Generation

PUD/Development Name	Description	Land Use Code	Land Use Description	# of X	Unit	Average Trip Ends	Total Entering	Total Exiting
Unknown	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
Unknown	Empty lots within Bellerive	210	Single Family Detached Housing	20	du	20	13	7
Riviera Walk 2nd Add.	W of Riverstone Park	210	Single Family Detached Housing	24	du	24	15	9
Unknown	Corner of John Lp/Riverstone	221	Multifamily Housing (Mid-Rise)	49	du	22	13	9
Unknown	3.4 acres NW of Village at Riverstone	710	General Office Building	60	1000 SF GFA	69	11	58
Staybridge Hotel	Hotel next to McDonalds	310	Hotel	96	rooms	52	27	25
Tillford Place	Off of Tillford Lane	210	Single Family Detached Housing	13	du	13	8	5
Riviera Place	NW corner of Suzanne/John Lp	210	Single Family Detached Housing	14	du	14	9	5
Atlas Waterfront	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
Rivers Edge	450 units W of Atlas	221	Multifamily Housing (Mid-Rise)	450	du	188	115	73
	400 units W of Atlas	221	Multifamily Housing (Mid-Rise)	400	du	168	102	66
Transit Center	Park and Ride	90	Park and Ride with Bus	50	parking space	22	6	17

8.3. ROUTE CHOICE

Route choice was determined by using the information collected by the O-D 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. The figures below show the impact of the new site trips on the surrounding intersections.

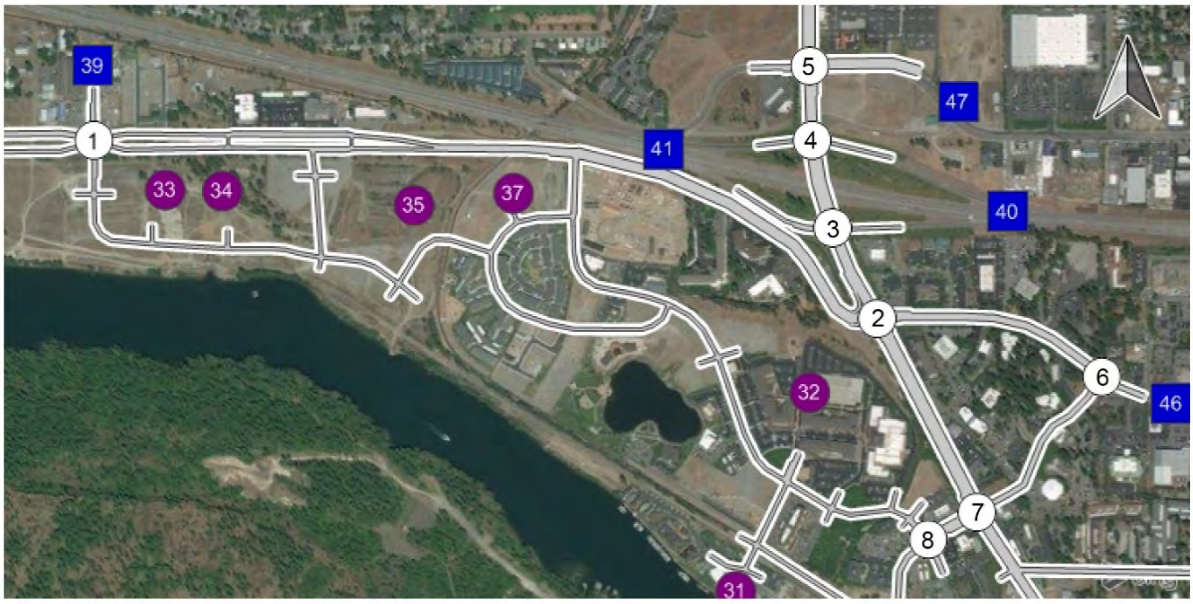


Figure 8-4 Model Overview

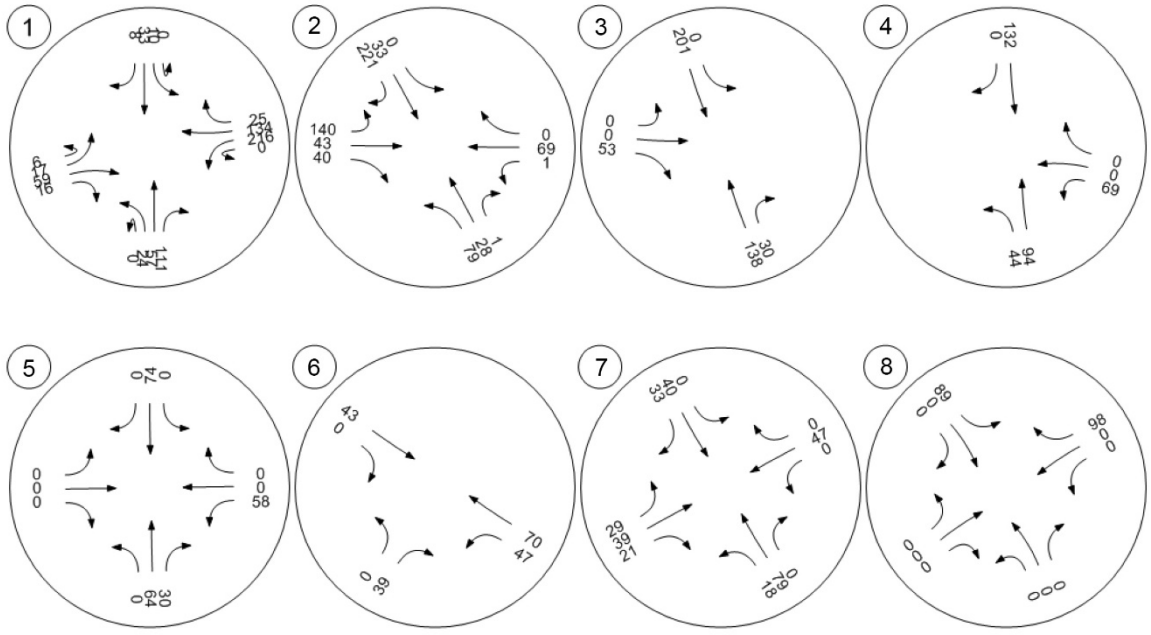


Figure 8-3 Net New Trips Generated by Developments

9. Future Conditions

9.1. 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.

KMPO was able to provide outputs from their regional traffic model. They provided a variety of scenarios (with/without our development, with/without Huetter Bypass, etc.) for the 2016, 2018, 2028, and 2040 models. From these model outputs, the team was able to make educated assumptions about the background growth the area could experience in the next 10 years. Though KMPO was helpful in providing the team data and insight, KMPO staff is in no responsible for the assumptions used in this study.

Table 9-1: Peak Hour Intersection Vehicle Volumes

Intersection	2018 Total Intersection Traffic	Attributed to Background Growth	Attributed to Development	2028 Total Intersection Traffic	Annual Growth Rate
Seltice/Atlas	2574	2986	778	3764	3.87%
Northwest/Seltice	4410	5115	712	5827	2.83%
EB I90/Northwest	3648	4232	459	4690	2.55%
WB I90/Northwest	3948	4579	368	4948	2.28%
Appleway/Northwest	3724	4320	246	4565	2.06%
Lakewood/Northwest	3441	3942	333	4275	2.19%

9.2. Future Traffic Attributed to Development

Although much of the network within the study area is congested, the Atlas Waterfront and River's Edge developments contribute only a portion of the total intersection traffic. The developments contribution to the total 2028 traffic is shown in the table below.

Table 9-2: Future Traffic Attributed to Development

Intersection	Percentage (Atlas)	Percentage (River's Edge)	Total Percentage
Atlas/Seltice	10	8	18
Seltice/Riverstone	10	8	18
NW BLVD/Seltice	6	4	10
NW BLVD/I-90 EB	3	2	5
NW BLVD/I-90 WB	3	3	6
Ramsey/Appleway	2	2	4
Ramsey/Golf Course	2	1	3
Lakewood/Ironwood	4	3	7
NW Blvd/Lakewood	4	1	5

The Atlas Waterfront and River's Edge developments contribute ten and eight percent of the 2028 total intersection traffic at the Atlas/Seltice and Seltice/Riverstone intersections, respectively. These developments contribute six and four percent of the total intersection traffic at the Northwest Boulevard/Seltice intersection, respectively. Beyond that, the developments contribute less than five percent of the total intersection traffic at intersections within the study area. Though the development will certainly add traffic volume to the traffic network, the influence of these developments on the network (particularly at the intersections on Northwest Boulevard) may not be significant.

9.3. 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
- 1.5% 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
- Right turn on red is allowed
- 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 9-1 shows the Level of Service Summary. Once again, multiple intersections are beginning to reach their capacity.

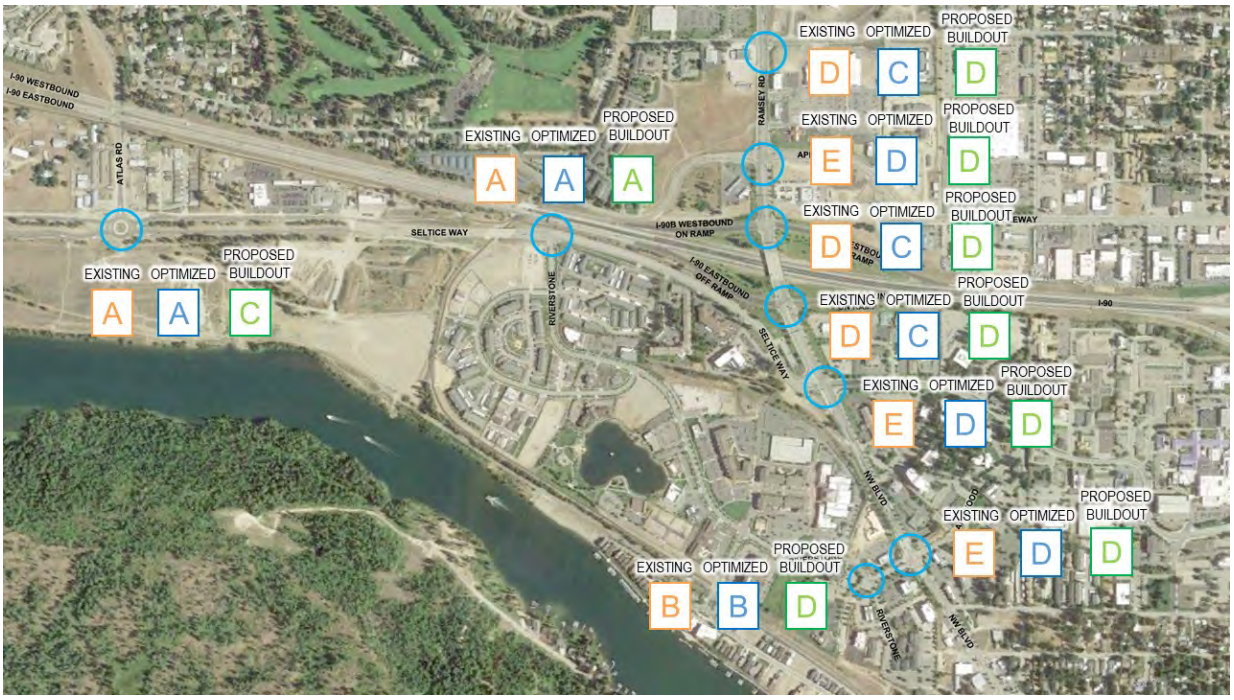


Figure 9-1: Project Overview. See Table 8-1 for corresponding level of service values.

Table 9-3: Level of Service Summary

Intersections	2018 Existing		2018 Optimized		2028 Buildout	
	LOS	Average Intersection Delay, s/veh	LOS	Average Intersection Delay, s/veh	LOS	Average Intersection Delay, s/veh
Golf Course/Ramsey	D	47	C	34	D	41
Appleway/Ramsey	E	55	D	41	D	52
I90 WB/NW	D	44	C	28	D	38
I90 EB/NW	D	43	C	29	D	36
Seltice/NW	E	60	D	43	D	52
Lakewood/NW	D	48	D	42	D	43
Lacrosse/NW	N/A	N/A	N/A	N/A	B	13
Riverstone/Lakewood	B	20	B	18	D	44
Riverstone/Seltice	A	8	A	8	B	12
Atlas/Seltice	A	8	N/A	N/A	C	27
Emma/US 95	C	22	B	17	B	19

*Two-way stop-controlled intersections not shown. See Appendix.

9.3.1. *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.

9.3.2. *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.

9.4. Summary of Future Deficiencies

As shown in Table 9-2 and 9-3, 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.

Table 9-4: Level of Service Summary

		1		2		3		4	
		Golf Course/ Ramsey		Appleway/Ramsey		I90 WB/NW		I90 EB/NW	
		Signalized		Signalized		Signalized		Signalized	
	LOS	D		D		D		D	
	Avg. Intx. Delay, s/v	41		52		38		36	
		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
	L	71	180	63	160	58	375		
N	T	40	800	56	850	29	810	34	720
	R	40	800	26	140			35	730
	L	77	130	84	140			70	90
S	T	33	640	46	650	35	480	23	500
	R	33	630	46	640	38	500		
	L	52	110	51	20			51	310
E	T	45	180	59	90			51	310
	R			54	40			46	160
	L	52	40	50	300	49	230		
W	T	43	120	44	120	46	160		
	R			42	60				

		5		6		9		10	
		Seltice/NW		Lakewood/NW		Riverstone/ Lakewood		Riverstone/Seltice	
		Signalized		Signalized		Signalized		Signalized	
	LOS	D		D		D		B	
	Avg. Intx. Delay, s/v	52		43		44		12	
		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
	L	92	530	27	140	0	0	26	210
N	T	39	450	30	500	42	140		
	R	40	470	30	500			19	70
	L	66	200	20	20	47	480		
S	T	58	570	60	680	8	10		
	R	38	130	26	50				
	L	58	300	43	220	23	10		
E	T	44	360	43	220	23	40	9	170
	R	39	160	36	80			7	60
	L	70	70	35	60	50	40	31	120
W	T	47	260	50	230	17	0	9	170
	R	45	170			47	410		

Numerous intersections will be nearing their capacity, including Atlas/Seltice, Northwest/Seltice, and Northwest/I-90. This is not only due to the Atlas Waterfront and Douglass property, but also the future development on the Rathdrum Prairie. The KMPO model

indicates that a significant amount of traffic will begin to use Atlas to access downtown and I-90.

As they do today, queues will begin to back up into upstream signals. As mentioned in the Existing Intersection Performance section, a major contributor to the congestion along the Northwest Boulevard corridor is the proximity of the intersections. This is a very difficult issue to correct because attempting to relocate any of the intersections would be extremely expensive.

Additionally, the 2028 analysis was performed with right turn lanes on southbound and northbound Atlas at the Seltice roundabout. Without these right turn lanes, the intersection would be operating at LOS E.

10. Mitigation Recommendations

10.1. Congestion Mitigation Options Nationwide

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

10.1.1. *Signal Optimization/Modifications*

This type of solution is relatively 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.

10.1.2. *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.

Figure 10-1: Example of Median U-Turn intersections.

10.1.3. *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.

10.1.4. *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.

10.1.5. *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.

Figure 10-2: Toll lanes are one example of congestion pricing.

10.1.6. *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.

10.1.7. *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.

10.2. 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.

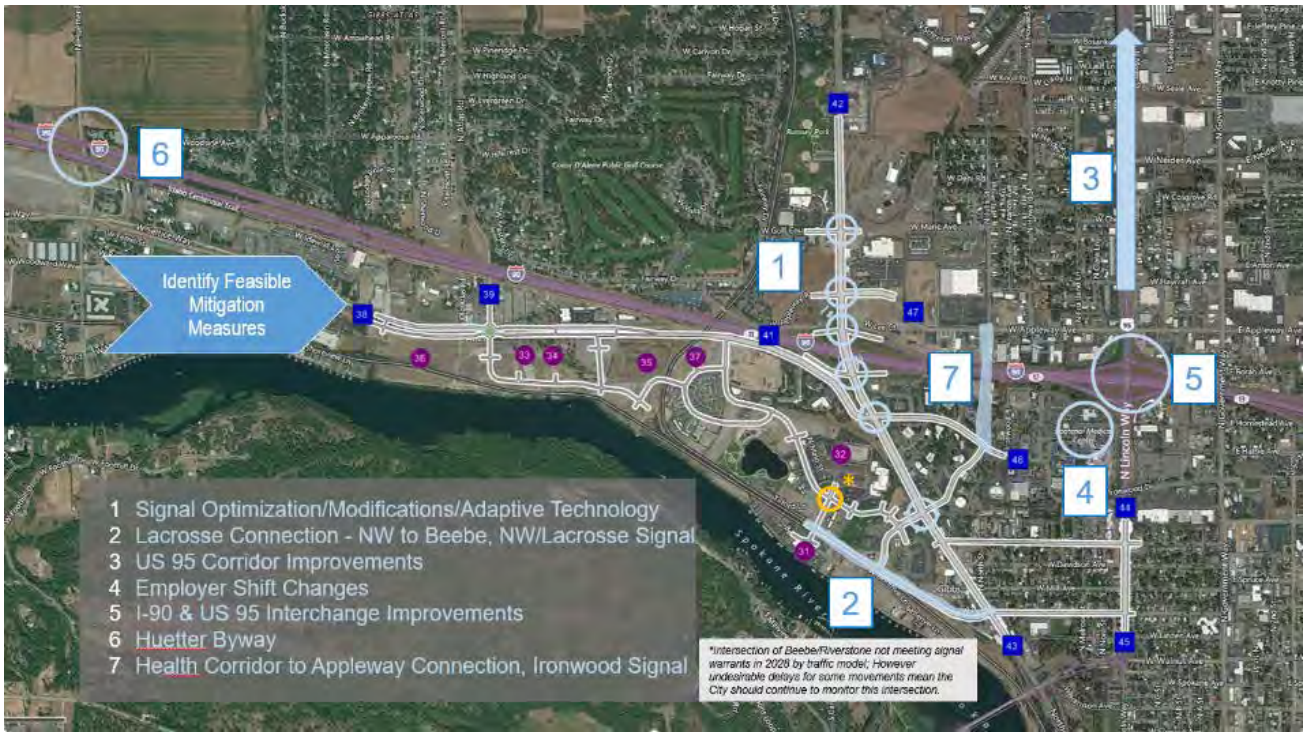


Figure 10-3: Mitigation recommendations

10.2.1. *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.

10.2.2. *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.

10.2.3. *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 "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. If 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 could likely go back to choosing US 95. This shift in route choice could alleviate some of the demand on Ramsey Road and Northwest Boulevard.

10.2.4. *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.

10.2.5. *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.

10.2.6. *RIGHT TURN LANES AT ATLAS/SELTICE*

As development continues, right turn lanes on southbound and northbound Atlas will help keep the roundabout functioning properly. The Atlas Waterfront should plan to build the northbound right turn lane when the northbound leg of the intersection is constructed. The southbound right turn lane, which will likely require right-of-way, should be planned to be constructed when enough development has dropped the intersection into a Level-of-Service D.

10.2.7. *HUETTER BYPASS*

ITD and KMPO have been working together on the Huetter Bypass 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 Bypass is no longer just a hope but is greatly needed. The Huetter Bypass will be an access-controlled facility similar to a freeway. The Huetter Bypass 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.

10.2.8. *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 congested 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.

10.2.9. *Riverstone/Beebe Roundabout*

The intersection of Riverstone and Beebe does not currently meet signal warrants. However, the City should continue to review the volumes and operations of this intersection, as it may be prone to volume fluctuations outside of normal peak times due to the varied types of development surrounding it (i.e. restaurants, movie theater, residential, etc.). Engineering judgment may find that this intersection deserves a roundabout, although signal warrants may currently show otherwise.

10.2.10. *Transportation Master Plan*

The City of Coeur d'Alene should pursue the development of a Transportation Master Plan. This would enable them to identify problem areas, including the ones in this study, as well as budget and prioritize mitigations. Creating a Transportation Master Plan will help the City be more prepared for future growth and development.

10.2.11. *Improvements to I90/Northwest Boulevard Interchange*

The team considered improvements to the I90/Northwest Boulevard interchange, such as converting it to a Single Point Urban Interchange or a Diverging Diamond Interchange. However, reconstruction of this interchange would likely not be considered by ITD prior to 2028, as it would not be near its design life. The bridge was originally constructed in 2001 and likely has a design life of at least 50 years. Nevertheless, this project should certainly be considered in the future.

Additionally, the City could pursue studying the feasibility of making improvements to the interchange that do not impact the bridge. Projects such as a northbound dedicated right turn lane onto eastbound I90 or a southbound dedicated right turn lane onto westbound I90 may help improve operations at their respective intersections. Modelling shows these projects would improve operations nominally.

Lastly, based on a brief analysis, it appears that a "cloverleaf" on-ramp could replace the northbound left onto westbound I90. Modeling shows this could improve the level of service in 2028 from a D (38 s/v Delay) to C (28 s/v Delay). This would require realignment of the westbound off-ramp to make room for the "cloverleaf" on-ramp. Also, a disadvantage of the "cloverleaf" on-ramp is that they can make pedestrian travel more difficult, as vehicles do not stop.

Further study stay can determine the cost-effectiveness. These options would likely require approval from ITD and FHWA prior to being incorporated.

11. IMPLEMENTATION

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

11.1. LOCAL EFFORT

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

- The City and ITD should 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. Both entities should make sure the detection components are working and updated and installed, replaced, or updated, as necessary. The City is currently working with ITD to take control of these signals in an effort to move forward with these improvements.

- The City and ITD should work together on signal upgrades and updates to allow permissive lefts at the I-90 off and on ramps and at the Northwest Boulevard/Lakewood intersection. These entities should also consider permissive lefts at Ramsey Road/Appleway 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 should 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 11-2: Intersection of Lakewood/Northwest Boulevard

11.2. Regional Effort

The regional effort in implementing the mitigation items 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 time 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 should support the medical corridor in their efforts to provide an I-90 overpass to connect the medical center to areas north of I-90.

12. CONCLUSION

The City and Lanzce Douglas are primed to develop their properties located on the Spokane River. These properties are currently the last available riverfront properties in the City. Welch Comer performed a Traffic Impact Study to determine the impacts of, not only these two developments, but also the remaining development in Riverstone.

It is clear that the existing transportation system is currently operating very poorly. Based on Welch Comer's analysis of the existing system, it appears a significant improvement could be made by optimizing the timing, cycle length, and coordination of the traffic signals on Northwest Boulevard. The City and ITD have taken the first steps in this process and should continue to work toward this goal moving forward.

Other short-term solutions include staggering shift changes in the health corridor and 2020 improvements to US 95. These solutions combined can help take some of the burden off the Northwest Boulevard corridor and allow for development to continue.

There is no doubt that the Atlas Waterfront and River's Edge Developments contribute traffic to intersections within the study area. However, the transportation network on Seltice, Ironwood, and Northwest Boulevard will likely be congested even without the developments, as the developments each contribute between one and 10 percent of the total intersection volume to intersections within the study area.

Fortunately, the growth studied in this report will not happen all at once. It will gradually occur over approximately the next 10 years. It's important the City and the surrounding metropolitan area continue to make improvements to the regional transportation system in order to keep up with the growth. To do this, it will be important to complete projects like the Huetter Bypass, I-90/US 95 Interchange Improvements and the Health Corridor Bridge. These projects, as well as continued review and planning of the transportation system will help keep the transportation system functioning properly.

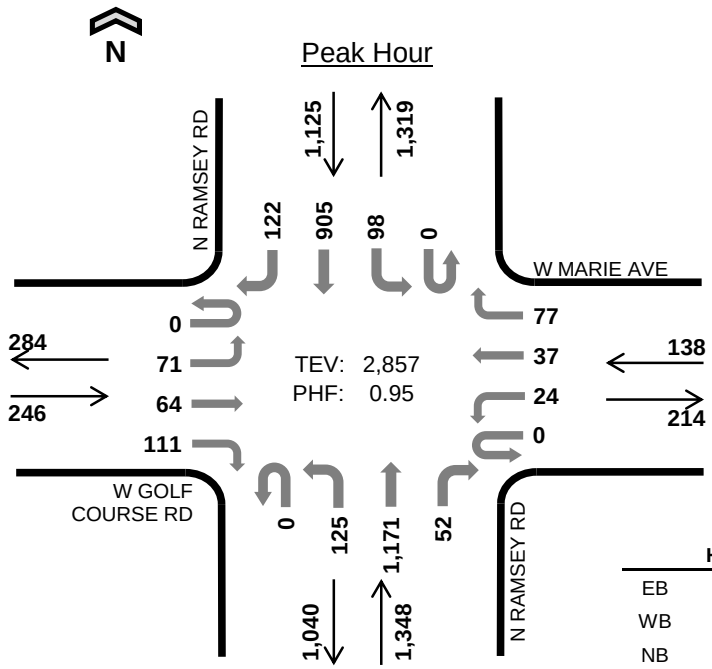
APPENDIX A:

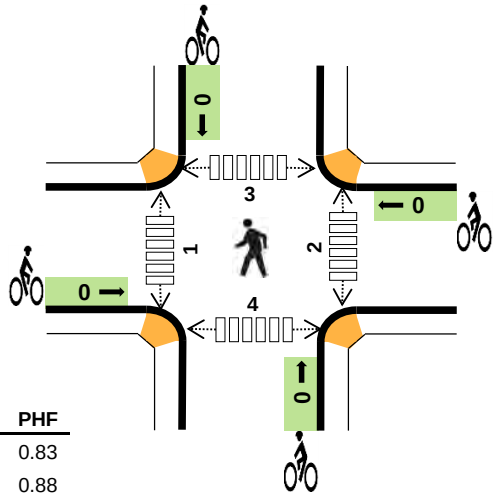
Intersection Count Data

WELCH-COMER
ENGINEERS | SURVEYORS

N RAMSEY RD
W GOLF COURSE RD

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	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**

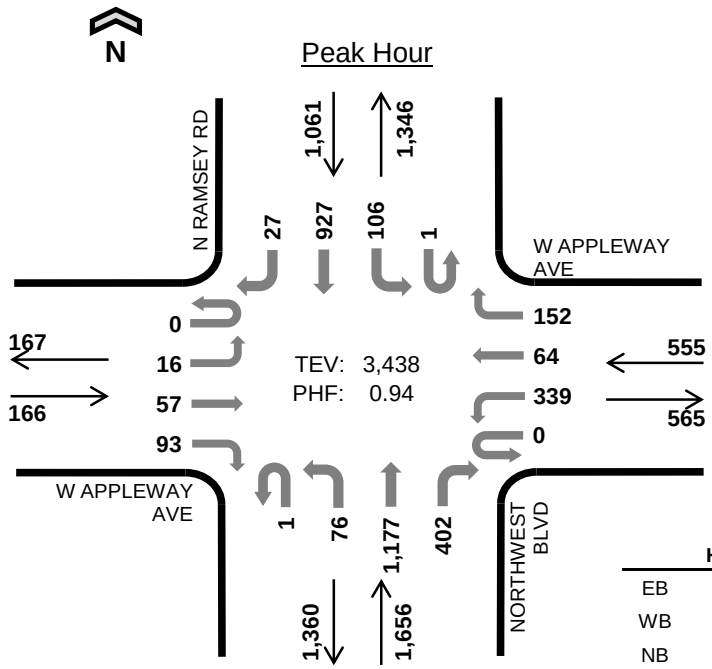
Note: Five-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

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***

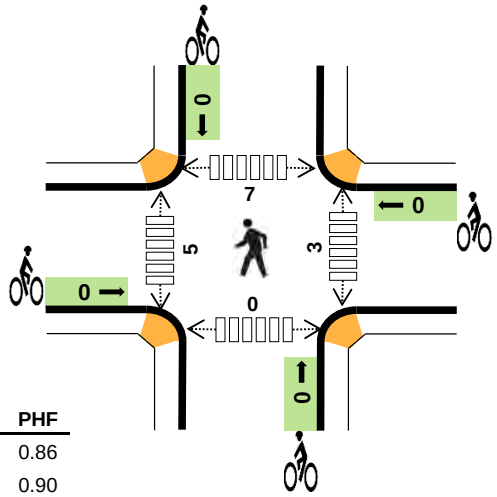
Mark Skaggs: (425) 250-0777 mark.skaggs@idaxdata.com

NORTHWEST BLVD
W APPLEWAY AVE

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	0.0%	0.86
WB	1.3%	0.90
NB	1.5%	0.97
SB	1.5%	0.91
TOTAL	1.4%	0.94



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

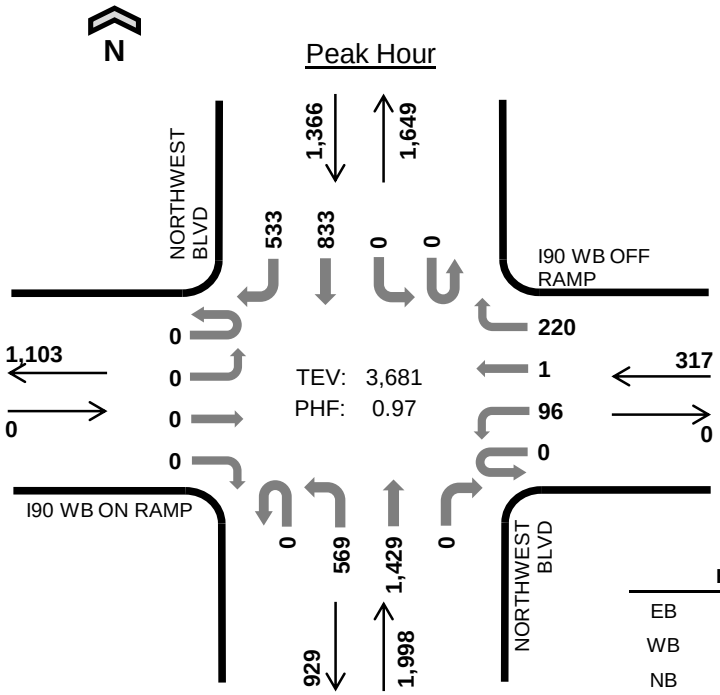
Interval Start	W APPLEWAY AVE				W APPLEWAY AVE				NORTHWEST BLVD				N RAMSEY RD				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	4	10	21	0	100	14	42	0	17	253	108	0	33	189	2	793	0
2:15 PM	0	3	14	22	0	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**

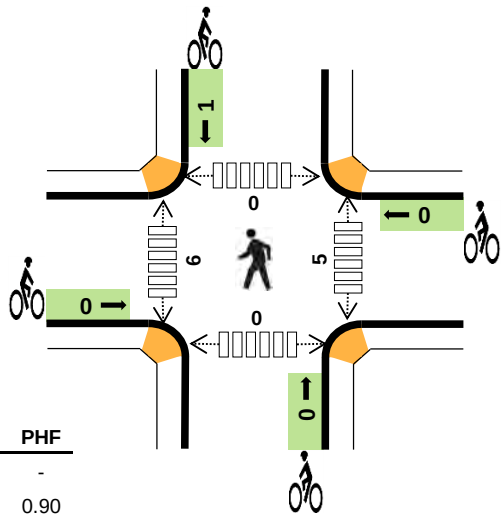
Note: Five-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

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 Eastbound				I90 WB OFF RAMP 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		
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

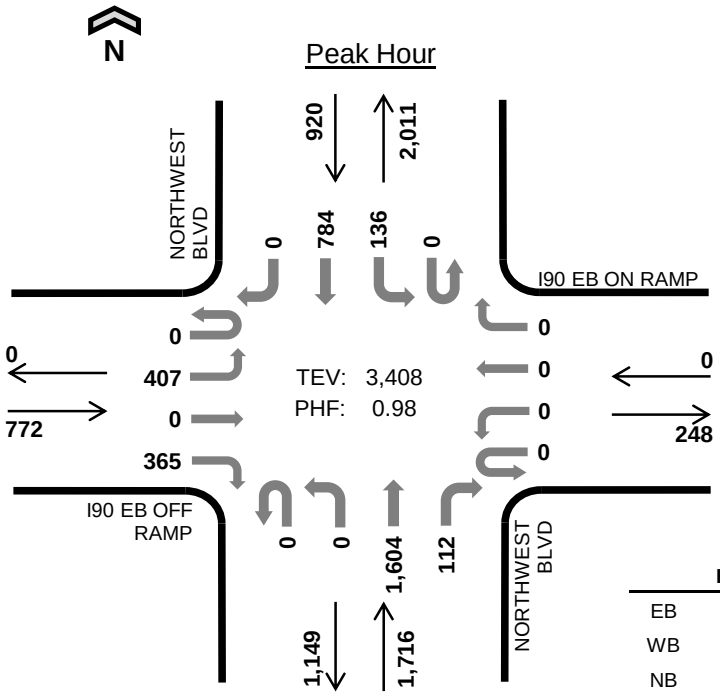
Interval Start	I90 WB ON RAMP				I90 WB OFF RAMP				NORTHWEST BLVD				NORTHWEST BLVD				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	0	0	0	0	25	0	60	0	111	332	0	0	0	200	110	838	0
2:15 PM	0	0	0	0	0	30	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.

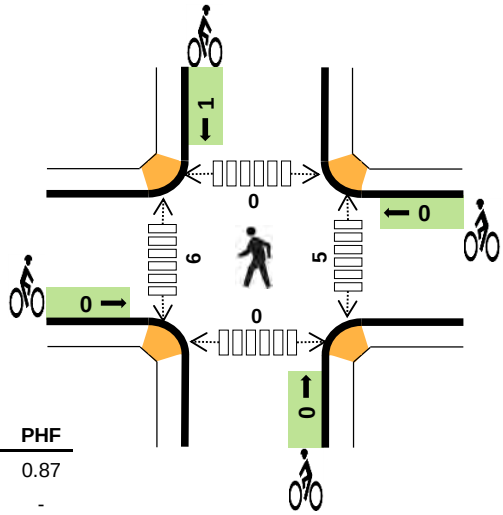
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:00 PM	0	2	15	12	*29*	0	0	0	0	*0*	1	1	0	0	*2*
2:15 PM	0	3	7	6	*16*	0	0	0	0	*0*	0	0	0	0	*0*
2:30 PM	0	0	3	5	*8*	0	0	0	0	*0*	1	2	0	0	*3*
2:45 PM	0	1	13	7	*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*

Mark Skaggs: (425) 250-0777 mark.skaggs@idaxdata.com

Five-Hour Count Summaries

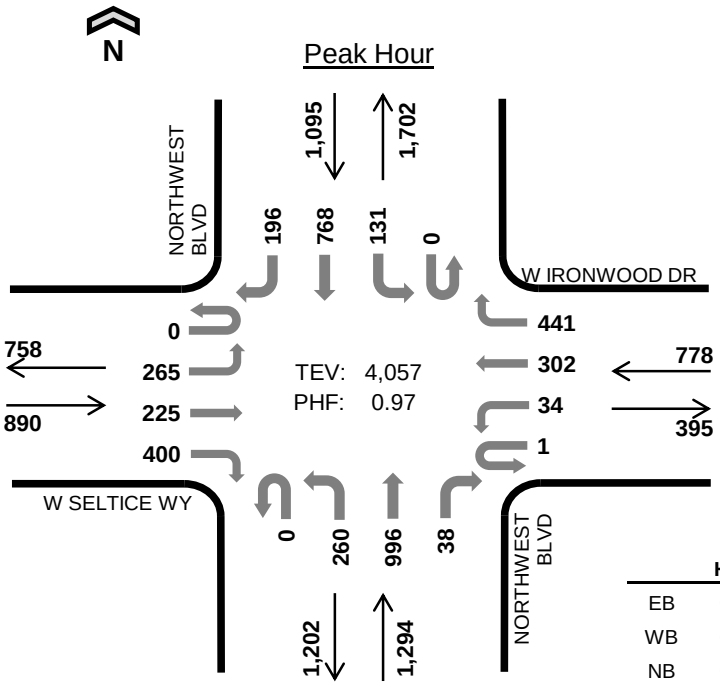
Interval Start	I90 EB OFF RAMP				I90 EB ON RAMP				NORTHWEST BLVD				NORTHWEST BLVD				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	108	1	97	0	0	0	0	0	0	321	14	0	34	182	0	757	0
2:15 PM	0	92	0	115	0	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**

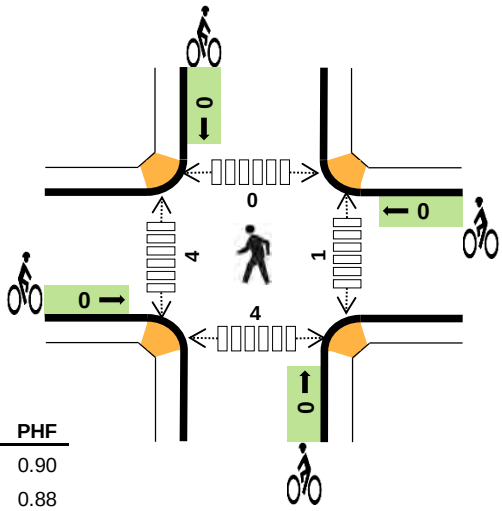
Note: Five-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

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

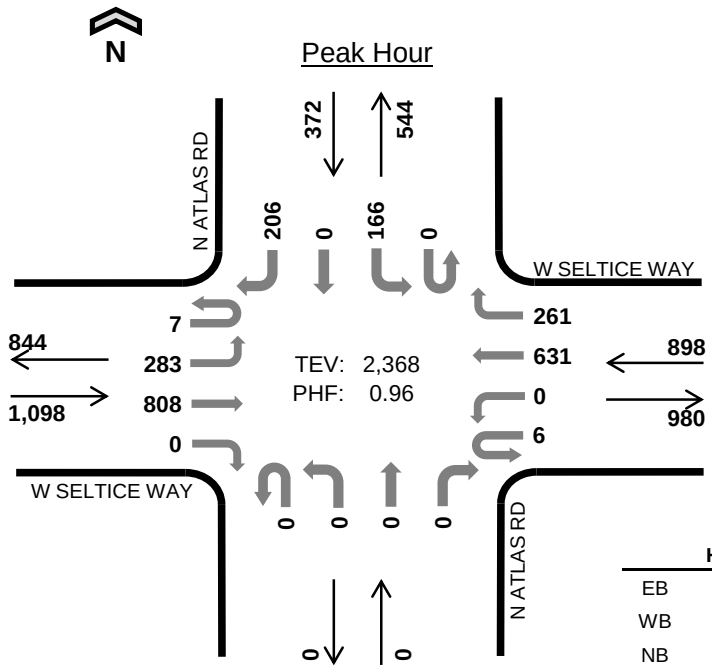
Interval Start	W SELTICE WY				W IRONWOOD DR				NORTHWEST BLVD				NORTHWEST BLVD				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	62	61	64	0	17	47	80	0	46	223	14	0	65	168	38	885	0
2:15 PM	0	65	51	63	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**

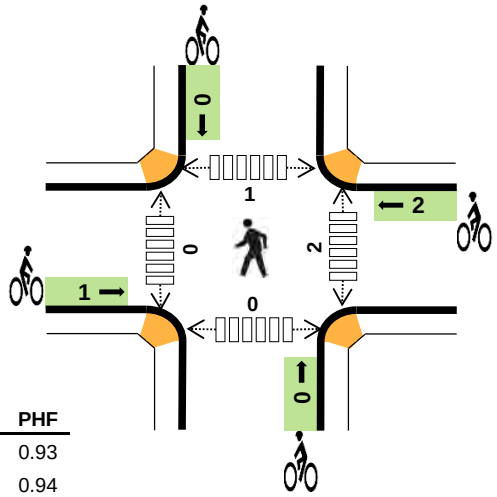
Note: Five-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

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***

N ATLAS RD
W SELTICE WAY

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	0.6%	0.93
WB	0.7%	0.94
NB	-	-
SB	1.3%	0.92
TOTAL	0.8%	0.96

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 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		
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.

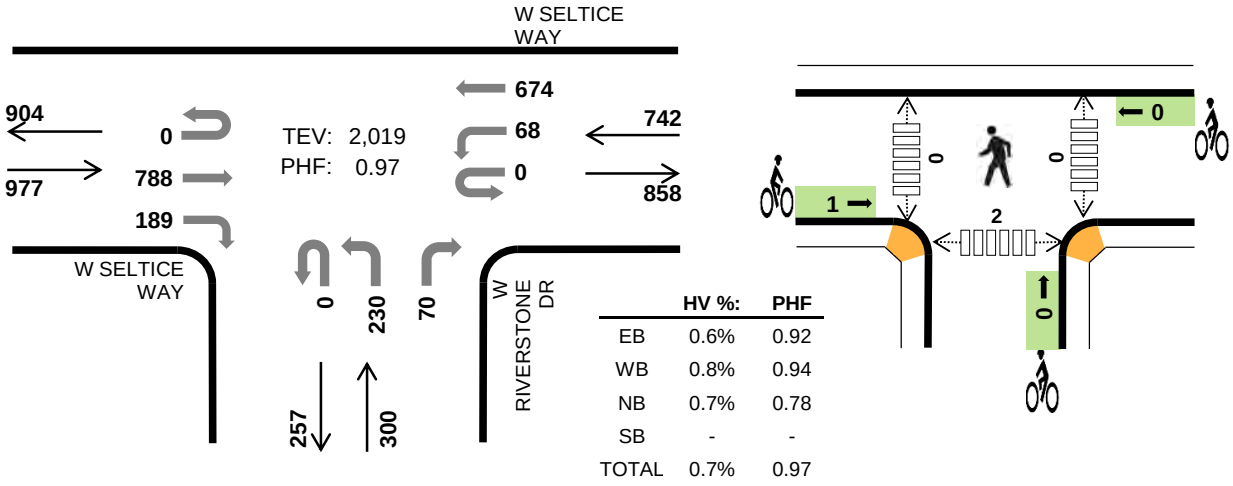
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:00 PM	4	6	0	1	*11*	0	0	0	0	*0*	0	0	0	0	*0*
2:15 PM	1	3	0	2	*6*	0	0	0	0	*0*	0	0	0	0	*0*
2:30 PM	3	2	0	3	*8*	0	0	0	0	*0*	0	1	0	0	*1*
2:45 PM	5	3	0	2	*10*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

W RIVERSTONE DR
W SELTICE WAY

N

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	0.6%	0.92
WB	0.8%	0.94
NB	0.7%	0.78
SB	-	-
TOTAL	0.7%	0.97

Five-Hour Count Summaries

Interval Start	W SELTICE WAY Eastbound				W SELTICE WAY Westbound				W RIVERSTONE DR Northbound				0 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	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

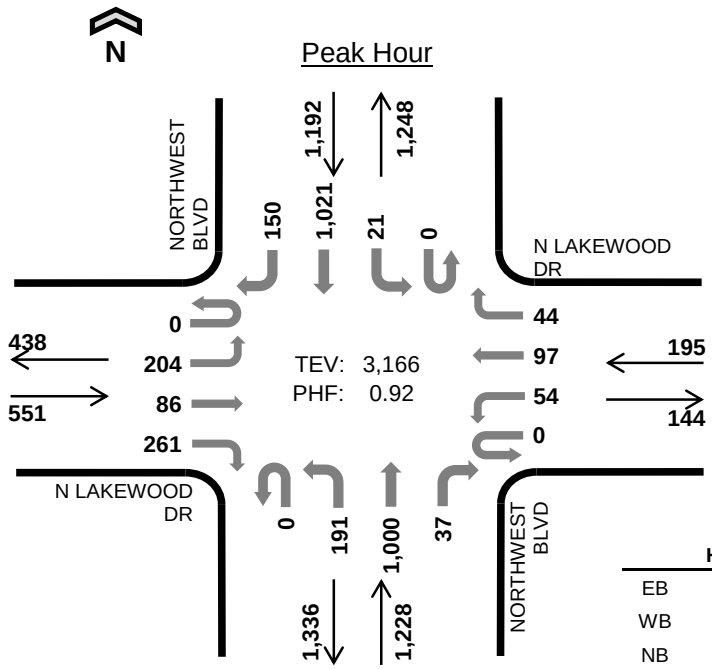
Interval Start	W SELTICE WAY				W SELTICE WAY				W RIVERSTONE DR				0				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	0	160	45	0	18	113	0	0	29	0	24	0	0	0	0	389	0
2:15 PM	0	0	139	36	0	24	125	0	0	39	0	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**

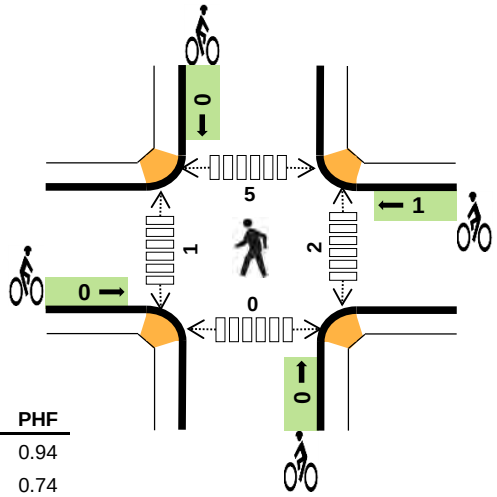
Note: Five-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

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***

NORTHWEST BLVD
N LAKEWOOD 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	0.2%	0.94
WB	1.0%	0.74
NB	1.1%	0.87
SB	0.3%	0.89
TOTAL	0.7%	0.92

Five-Hour Count Summaries

Interval Start	N LAKEWOOD DR Eastbound				N LAKEWOOD DR 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	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

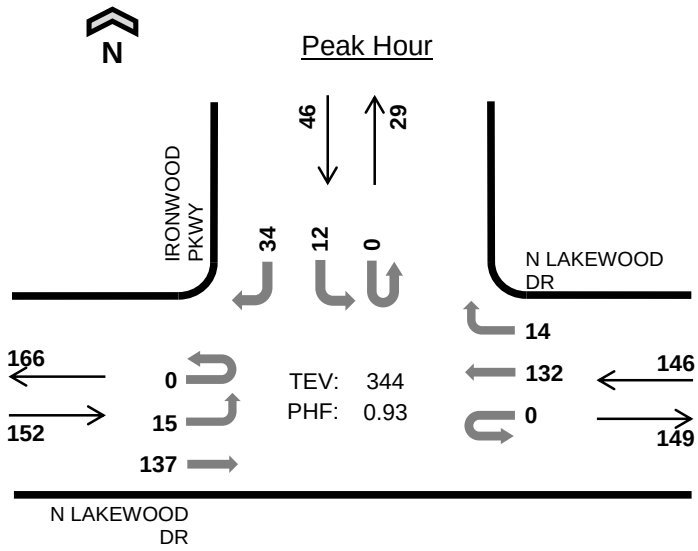
Interval Start	N LAKEWOOD DR Eastbound				N LAKEWOOD DR Westbound				NORTHWEST BLVD Northbound				NORTHWEST BLVD Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	57	17	60	0	9	16	4	0	48	231	10	0	6	209	36	703	0
2:15 PM	0	54	14	53	0	11	25	7	0	55	289	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**

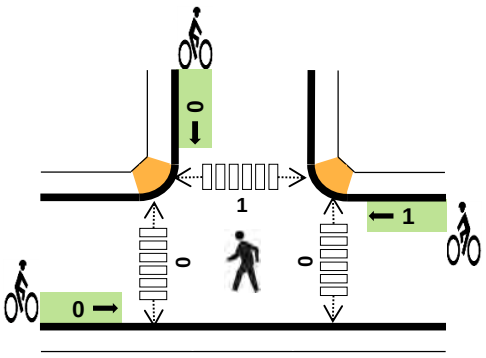
Note: Five-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

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***

IRONWOOD PKWY
N LAKEWOOD DR

Date: Wed, Aug 22, 2018
Count Period: 2:00 PM to 7:00 PM
Peak Hour: 3:15 PM to 4:15 PM





	HV %:	PHF
EB	0.7%	0.88
WB	2.7%	0.87
NB	-	-
SB	0.0%	0.61
TOTAL	1.5%	0.93

Five-Hour Count Summaries

Interval Start	N LAKEWOOD DR Eastbound				N LAKEWOOD DR Westbound				0 Northbound				IRONWOOD PKWY Southbound				15-min Total	Rolling One Hour
	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

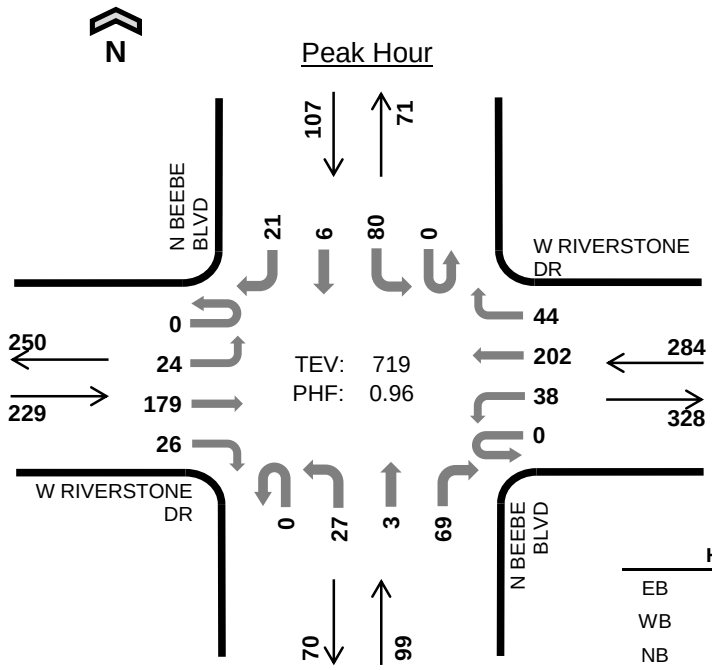
Interval Start	N LAKEWOOD DR				N LAKEWOOD DR				0				IRONWOOD PKWY				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	4	33	0	1	0	23	2	0	0	0	0	0	1	0	8	72	0
2:15 PM	0	6	24	0	0	0	36	0	0	0	0	0	0	5	0	7	78	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**

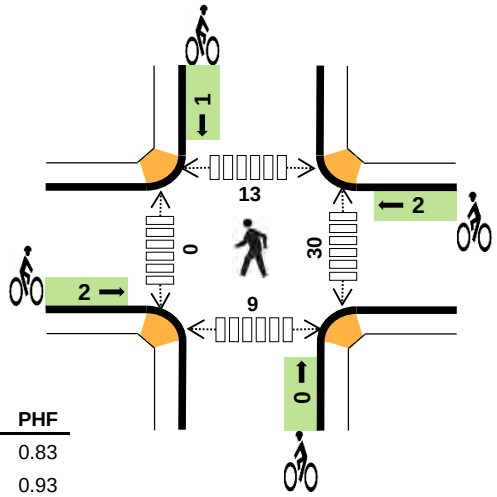
Note: Five-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

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***

N BEEBE BLVD
W RIVERSTONE DR

Date: Wed, Aug 22, 2018
Count Period: 2:00 PM to 7:00 PM
Peak Hour: 2:30 PM to 3:30 PM





	HV %:	PHF
EB	0.9%	0.83
WB	2.1%	0.93
NB	1.0%	0.83
SB	0.9%	0.86
TOTAL	1.4%	0.96

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

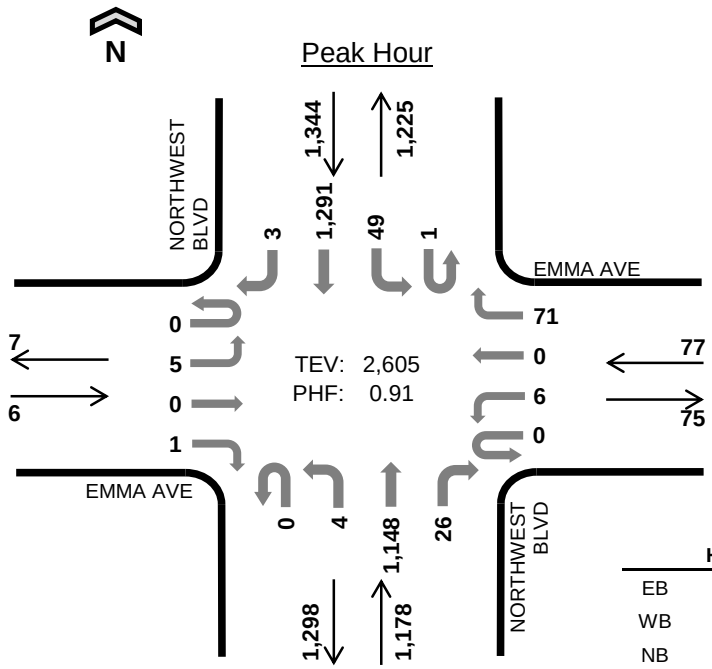
Interval Start	W RIVERSTONE DR Eastbound				W RIVERSTONE DR Westbound				N BEEBE BLVD Northbound				N BEEBE BLVD Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	9	54	3	0	15	31	10	0	3	0	16	0	16	0	4	161	0
2:15 PM	0	5	43	12	0	10	51	16	0	3	2	13	0	12	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**

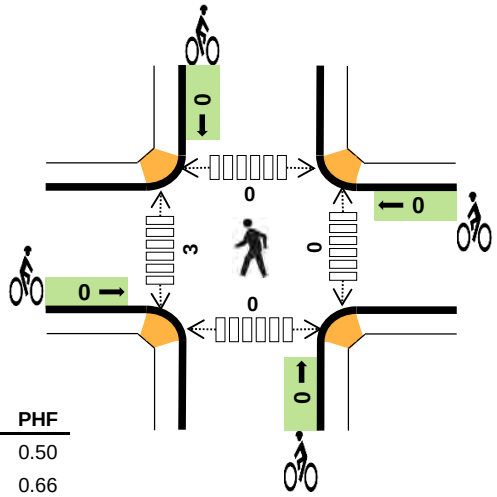
Note: Five-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

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***

NORTHWEST BLVD
EMMA AVE

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%	0.50
WB	0.0%	0.66
NB	1.2%	0.87
SB	0.4%	0.92
TOTAL	0.7%	0.91

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

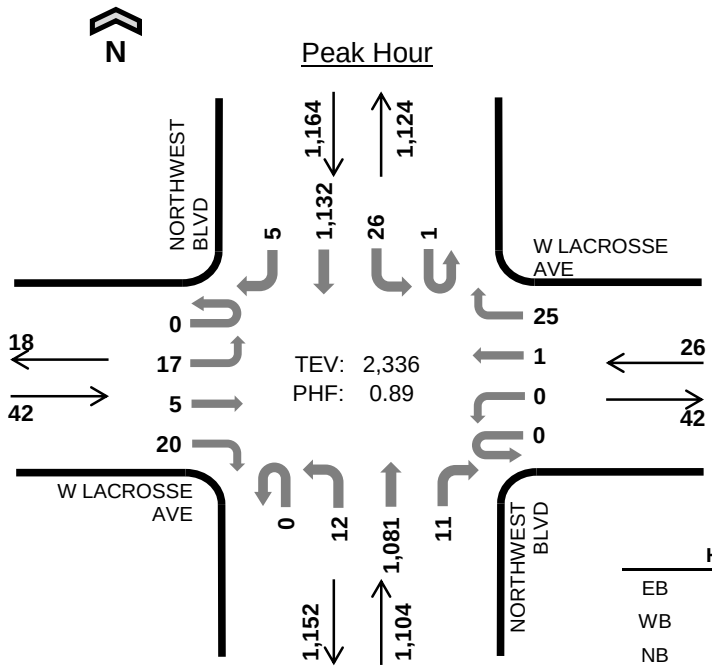
Interval Start	EMMA AVE Eastbound				EMMA AVE Westbound				NORTHWEST BLVD Northbound				NORTHWEST BLVD Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	2	0	0	0	1	0	20	0	1	264	7	0	18	260	0	573	0
2:15 PM	0	0	0	0	0	2	0	17	0	0	343	5	0	9	271	0	647	0
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**

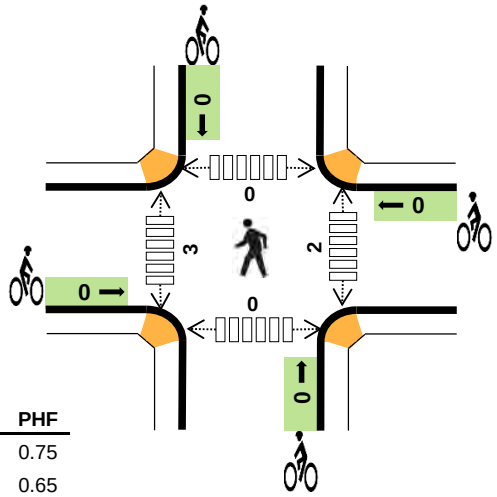
Note: Five-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

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***

NORTHWEST BLVD
W LACROSSE AVE

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%	0.75
WB	0.0%	0.65
NB	1.2%	0.82
SB	0.3%	0.96
TOTAL	0.7%	0.89

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

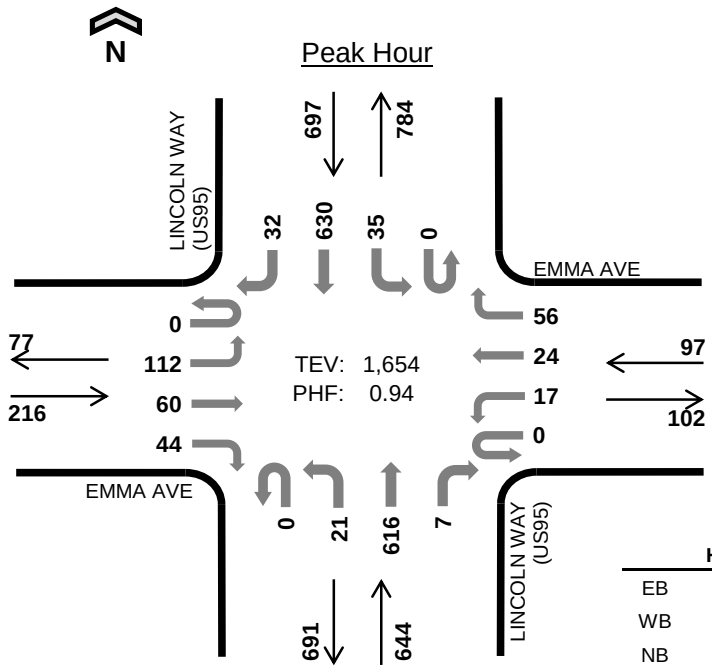
Interval Start	W LACROSSE AVE Eastbound				W LACROSSE AVE Westbound				NORTHWEST BLVD Northbound				NORTHWEST BLVD Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	2	1	6	0	0	0	2	0	2	259	2	0	7	227	3	511	0
2:15 PM	0	1	0	4	0	0	0	3	0	1	345	3	0	7	237	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**

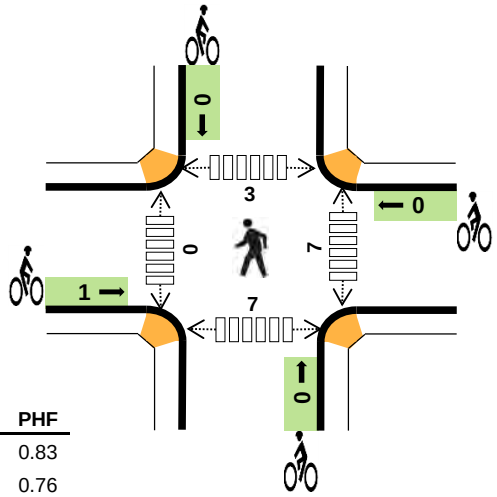
Note: Five-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

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***

LINCOLN WAY (US95)
EMMA AVE

Date: Wed, Aug 22, 2018
Count Period: 2:00 PM to 7:00 PM
Peak Hour: 4:15 PM to 5:15 PM





	HV %:	PHF
EB	0.5%	0.83
WB	0.0%	0.76
NB	4.3%	0.82
SB	3.4%	0.93
TOTAL	3.2%	0.94

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

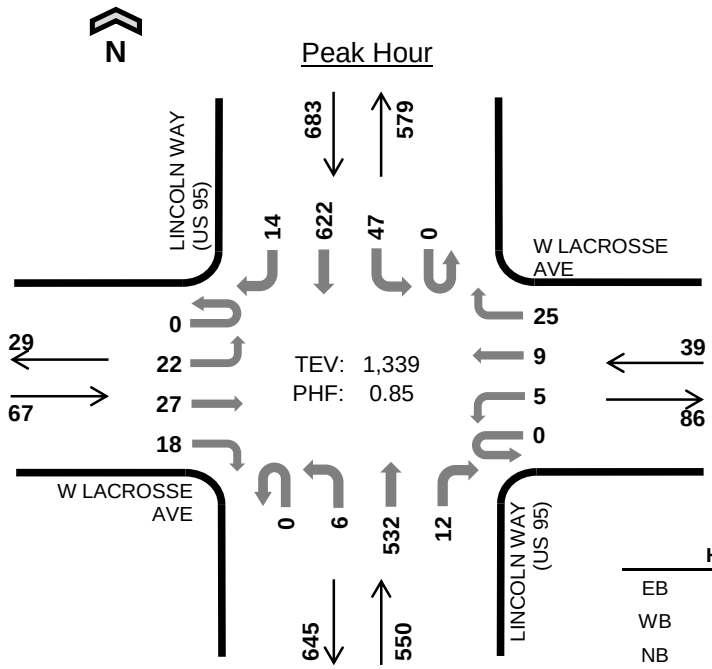
Interval Start	EMMA AVE Eastbound				EMMA AVE Westbound				LINCOLN WAY (US95) Northbound				LINCOLN WAY (US95) Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	20	13	8	0	1	8	12	0	5	129	4	0	19	140	8	367	0
2:15 PM	0	19	6	8	0	3	7	14	0	8	175	3	0	11	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**

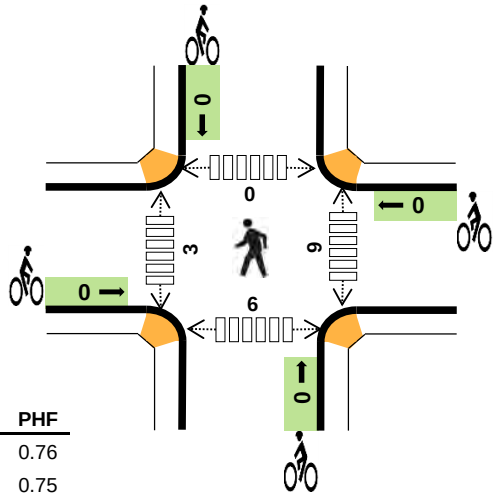
Note: Five-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

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	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

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

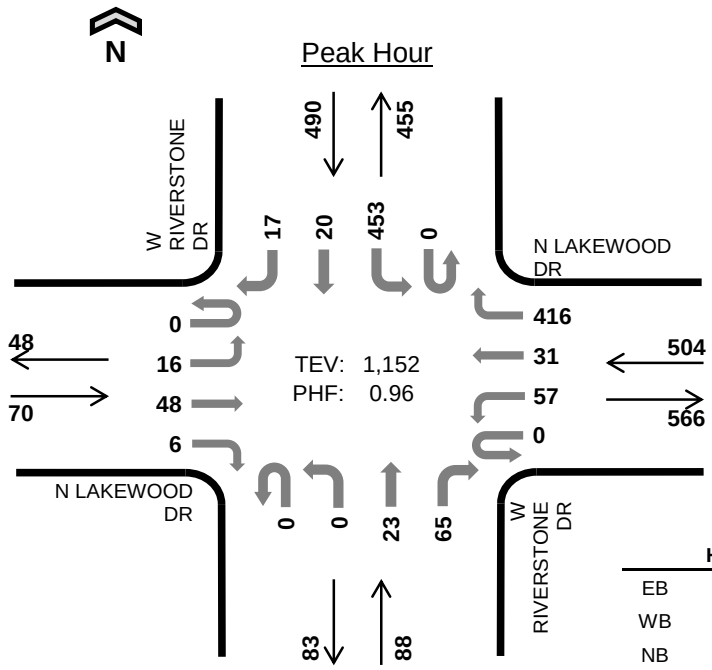
Interval Start	W LACROSSE AVE Eastbound				W LACROSSE AVE Westbound				LINCOLN WAY (US 95) Northbound				LINCOLN WAY (US 95) Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	1	6	5	0	1	1	4	0	2	130	1	0	5	132	3	291	0
2:15 PM	0	4	1	5	0	1	4	6	0	1	162	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**

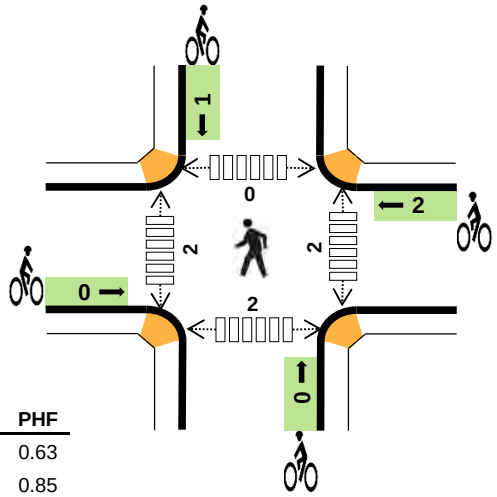
Note: Five-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

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***

W RIVERSTONE DR
N LAKEWOOD DR

Date: Wed, Aug 22, 2018
Count Period: 2:00 PM to 7:00 PM
Peak Hour: 2:15 PM to 3:15 PM





	HV %:	PHF
EB	4.3%	0.63
WB	1.2%	0.85
NB	2.3%	0.85
SB	0.8%	0.93
TOTAL	1.3%	0.96

Five-Hour Count Summaries

Interval Start	N LAKEWOOD DR Eastbound				N LAKEWOOD DR Westbound				W RIVERSTONE DR Northbound				W RIVERSTONE DR Southbound				15-min Total	Rolling One Hour
	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 Eastbound				N LAKEWOOD DR Westbound				W RIVERSTONE DR Northbound				W RIVERSTONE DR Southbound				15-min Total	Rolling One Hour
	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.

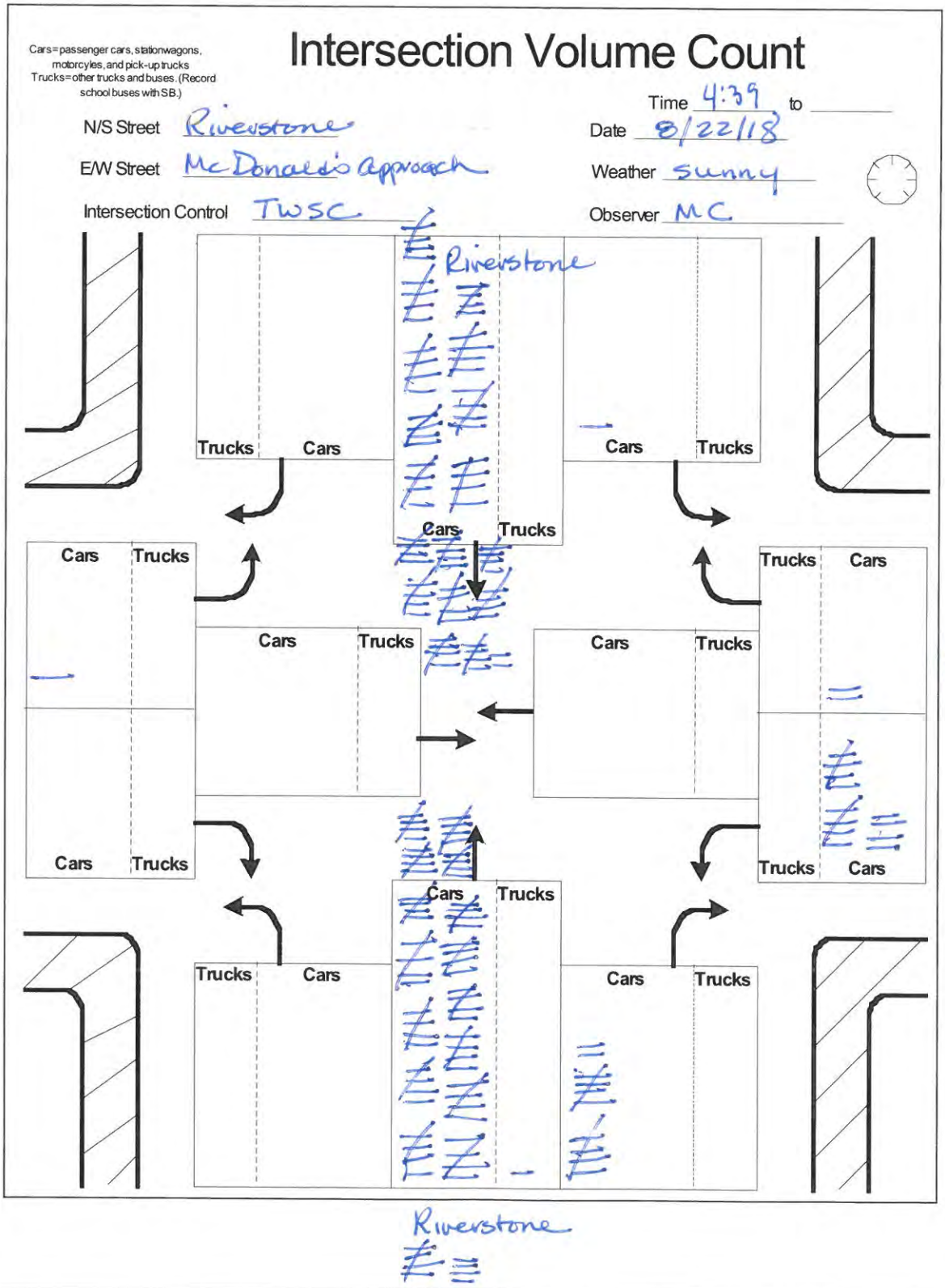
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:00 PM	0	0	0	0	*0*	0	0	0	1	*1*	0	1	0	0	*1*
2:15 PM	**1**	**0**	**0**	**1**	***2***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**0**	**0**	*2*
2:30 PM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

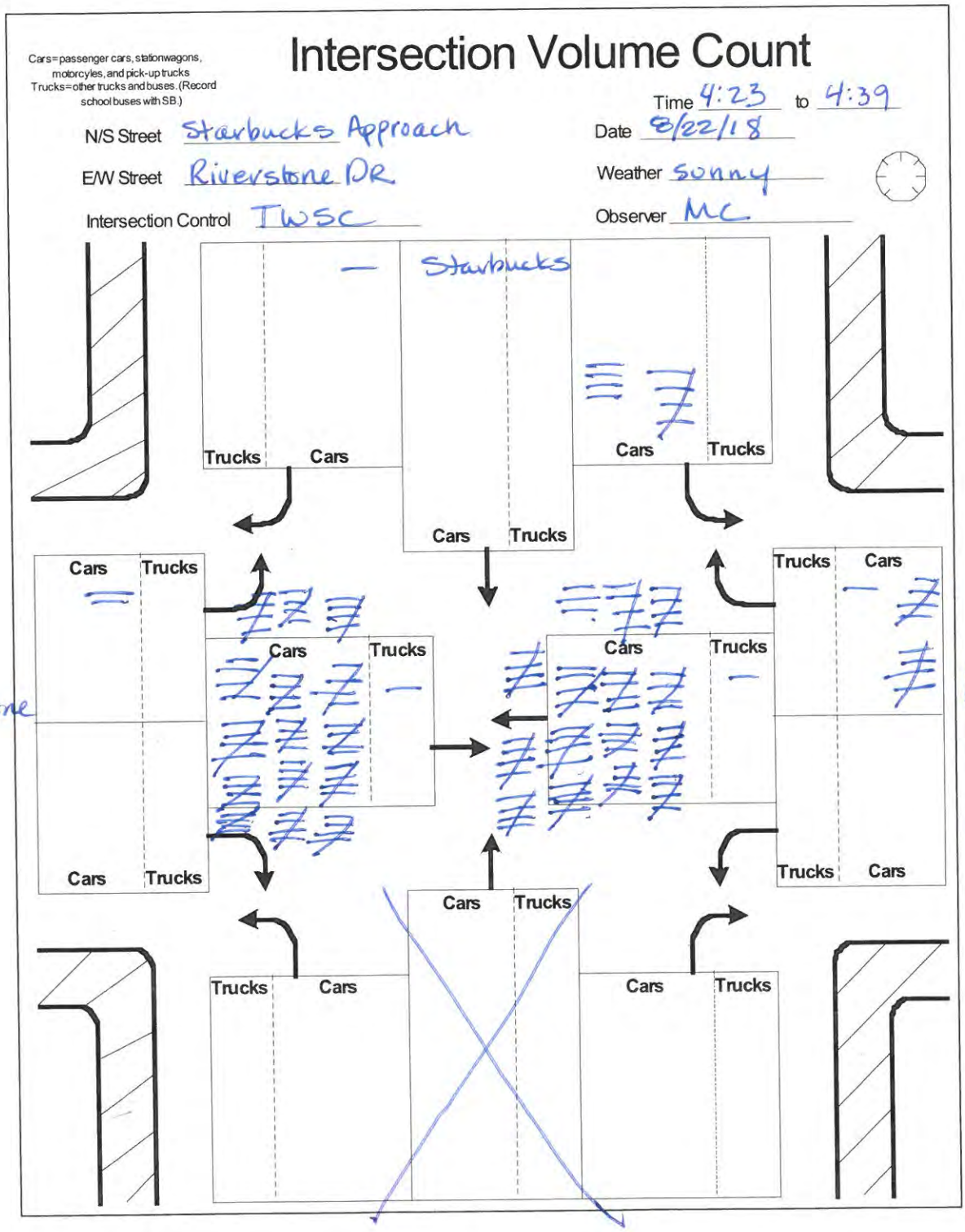
Hand Count Data Summaries

WELCH-COMER
ENGINEERS | SURVEYORS

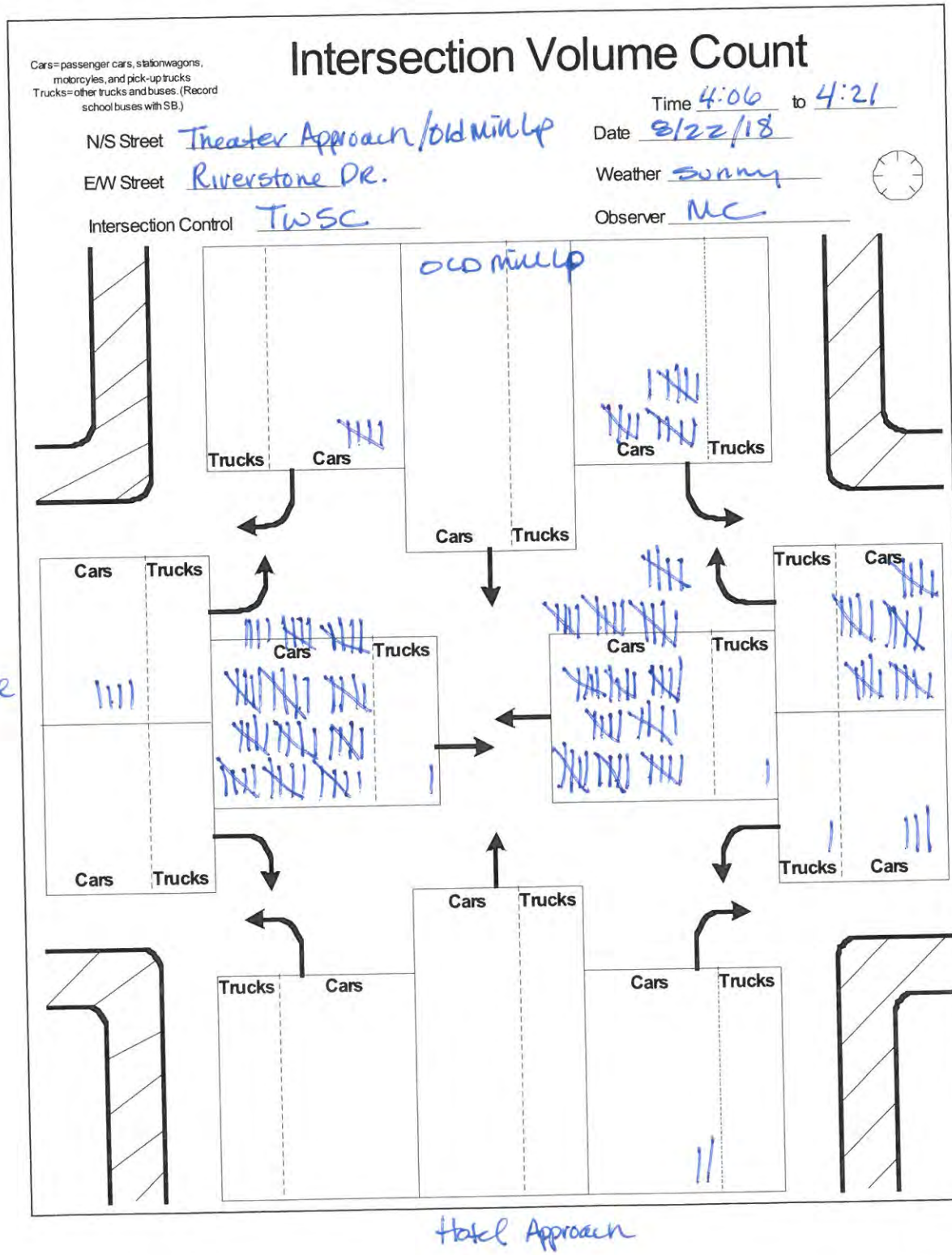
APPENDIX B: TRAFFIC VOLUME COUNT INTERSECTION TALLY SHEET



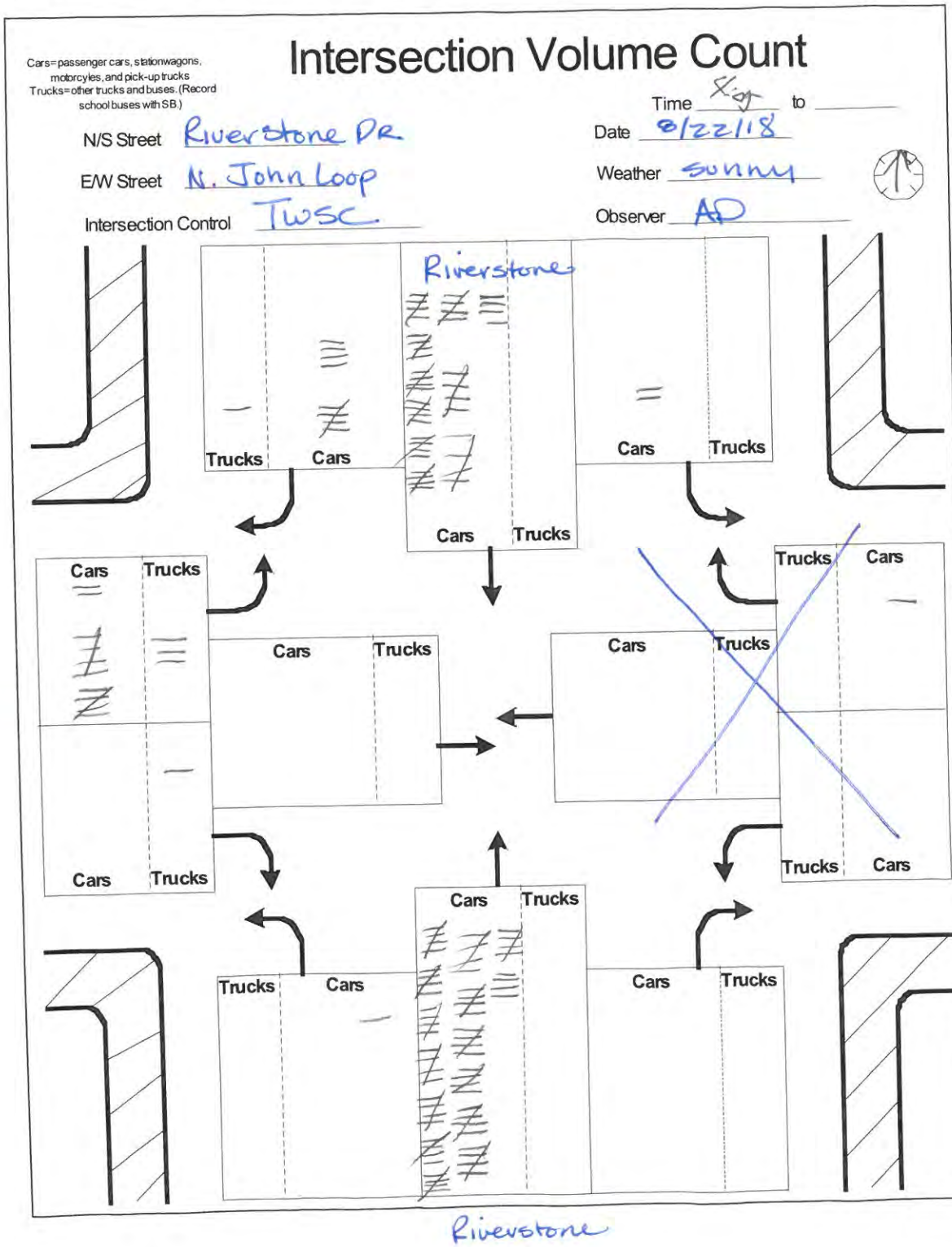
APPENDIX B: TRAFFIC VOLUME COUNT INTERSECTION TALLY SHEET



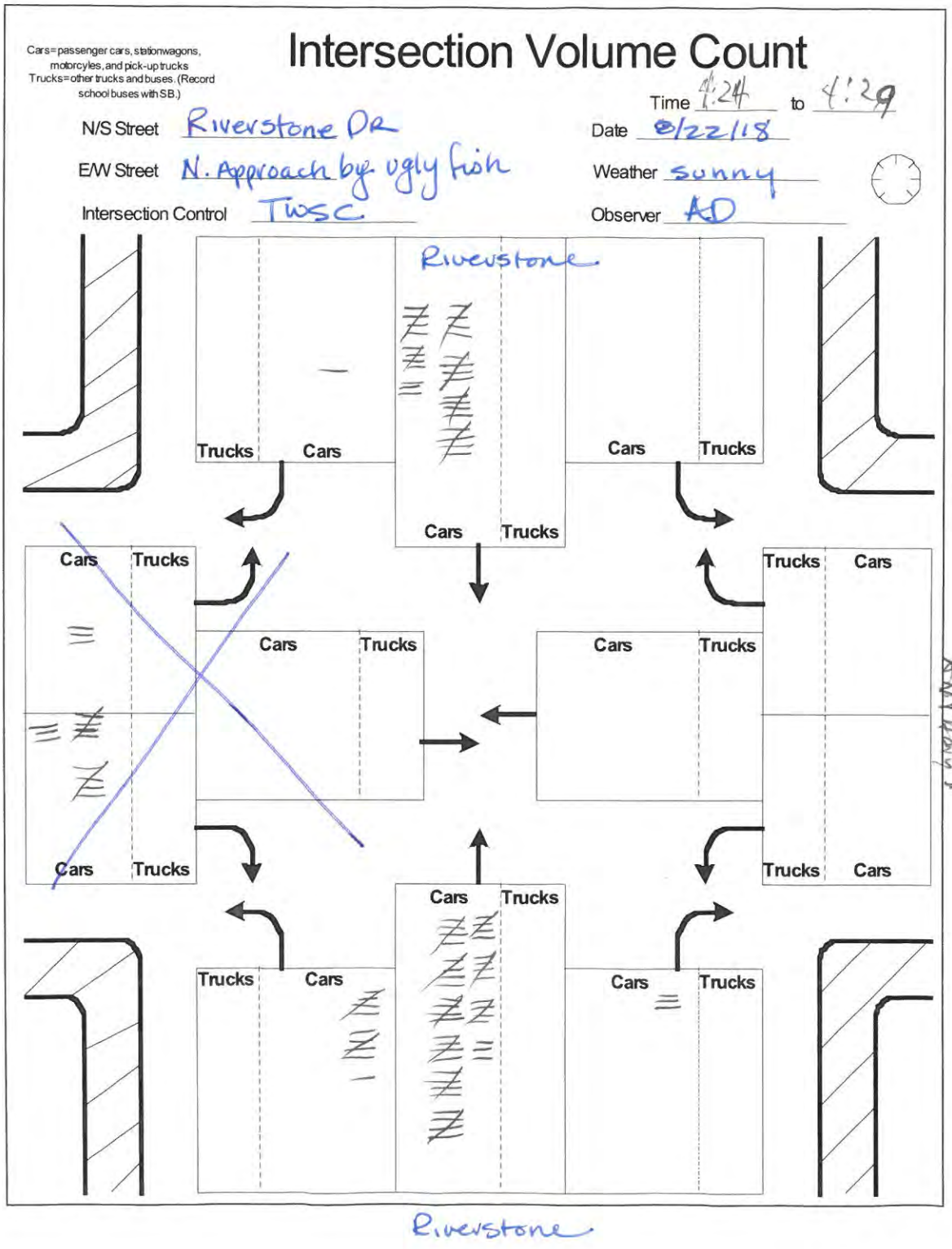
APPENDIX B: TRAFFIC VOLUME COUNT INTERSECTION TALLY SHEET



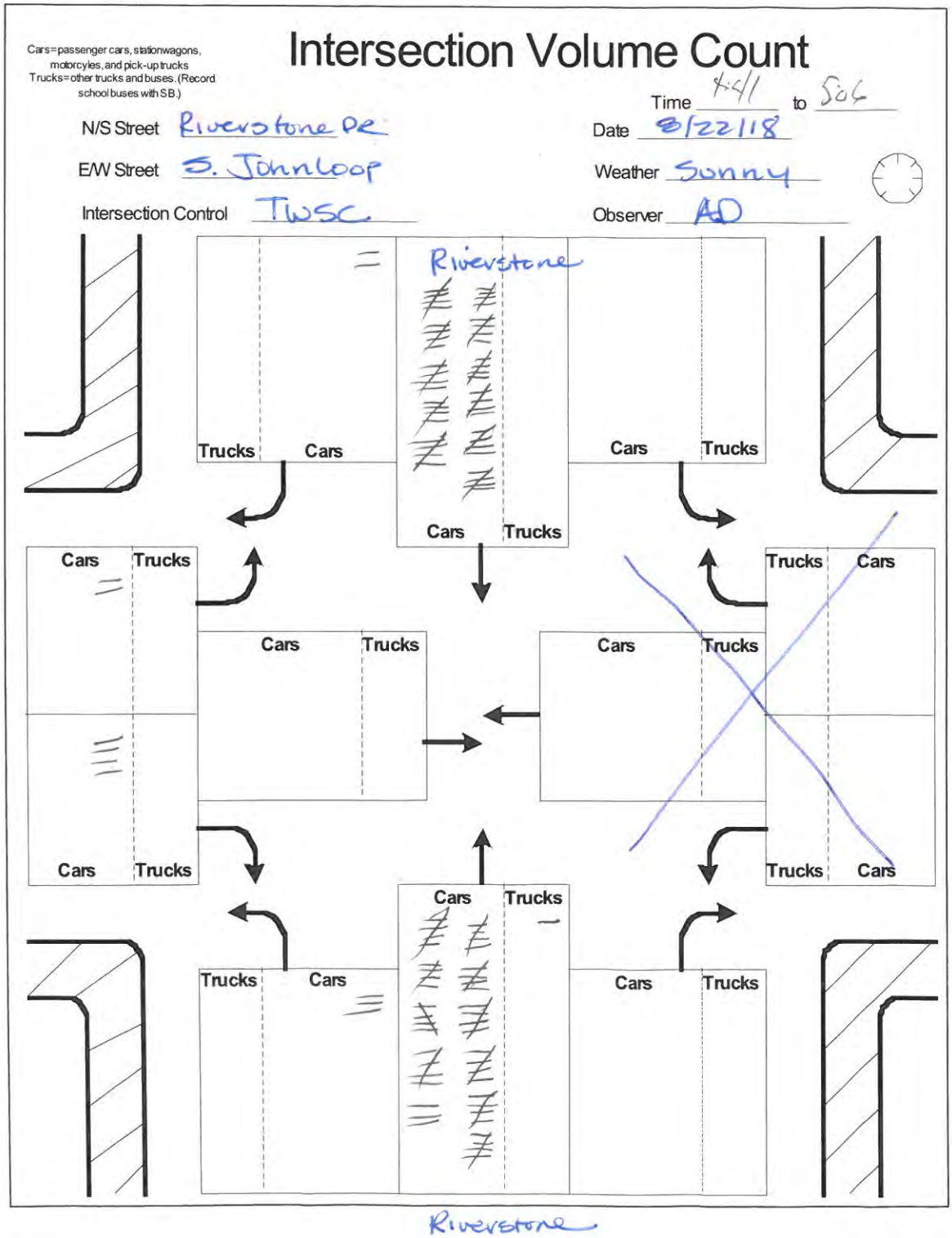
APPENDIX B: TRAFFIC VOLUME COUNT INTERSECTION TALLY SHEET



APPENDIX B: TRAFFIC VOLUME COUNT INTERSECTION TALLY SHEET



APPENDIX B: TRAFFIC VOLUME COUNT INTERSECTION TALLY SHEET



APPENDIX C:

Public Comment Boards/Photos from Open House No. 1

WELCH-COMER
ENGINEERS | SURVEYORS

Atlas Waterfront / Riverstone
Traffic Impact Study
41292.03

Public Comments Received
1/25/2019

WELCH-COMER
ENGINEERS | SURVEYORS

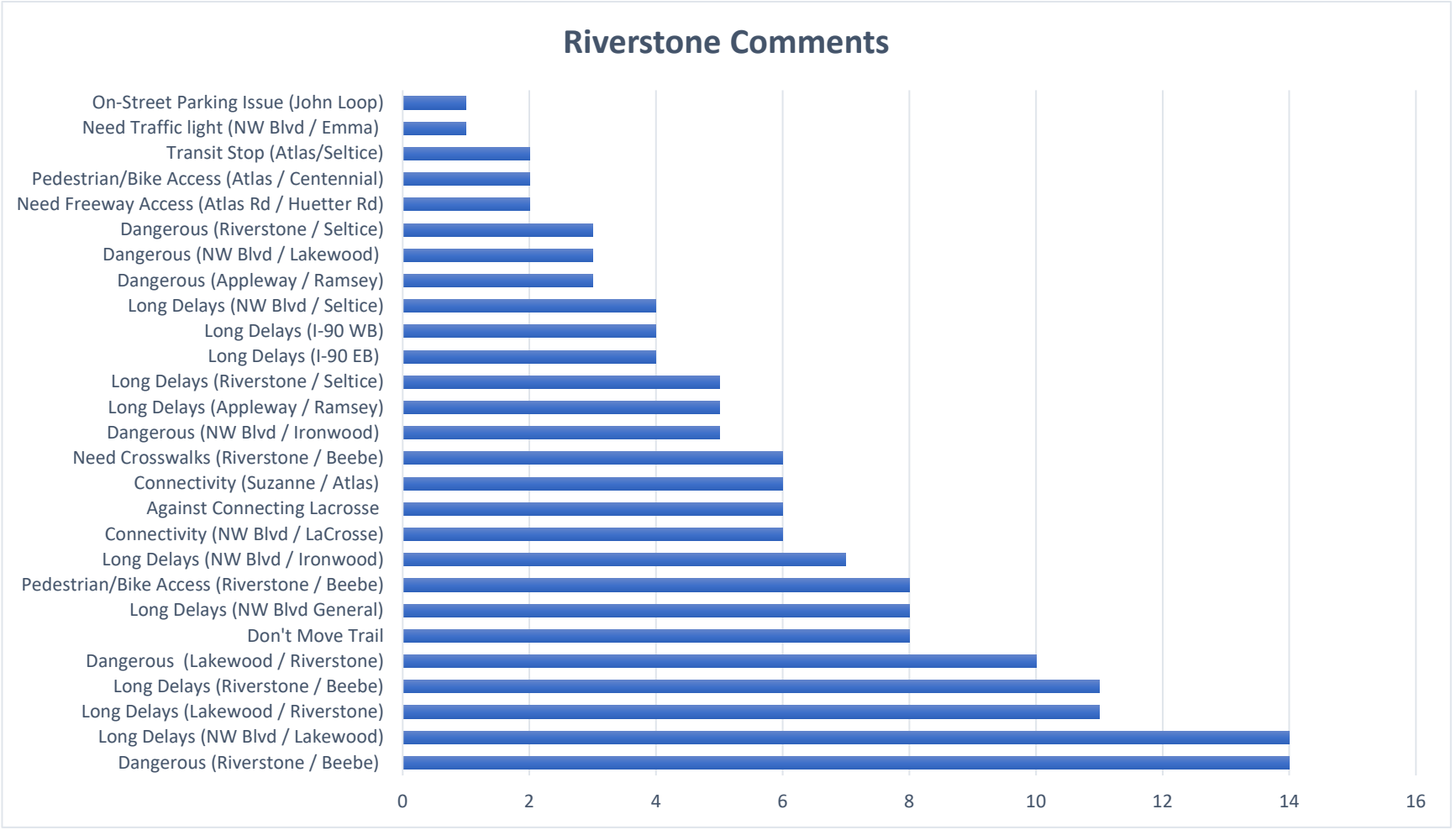
AtlasTIS@welchcomer.com

350 E. Kathleen Ave
Coeur d'Alene, ID 83815
(208) 664–9382

Comment Count from Wikimapping
&
Physical Forms
through 10/18/2018

WELCH-COMER
ENGINEERS | SURVEYORS

Comment	Count
Dangerous (Riverstone / Beebe)	14
Long Delays (NW Blvd / Lakewood)	14
Long Delays (Lakewood / Riverstone)	11
Long Delays (Riverstone / Beebe)	11
Dangerous (Lakewood / Riverstone)	10
Don't Move Trail	8
Long Delays (NW Blvd General)	8
Pedestrian/Bike Access (Riverstone / Beebe)	8
Long Delays (NW Blvd / Ironwood)	7
Connectivity (NW Blvd / LaCrosse)	6
Against Connecting Lacrosse	6
Connectivity (Suzanne / Atlas)	6
Need Crosswalks (Riverstone / Beebe)	6
Dangerous (NW Blvd / Ironwood)	5
Long Delays (Appleway / Ramsey)	5
Long Delays (Riverstone / Seltice)	5
Long Delays (I-90 EB)	4
Long Delays (I-90 WB)	4
Long Delays (NW Blvd / Seltice)	4
Dangerous (Appleway / Ramsey)	3
Dangerous (NW Blvd / Lakewood)	3
Dangerous (Riverstone / Seltice)	3
Need Freeway Access (Atlas Rd / Huetter Rd)	2
Pedestrian/Bike Access (Atlas / Centennial)	2
Transit Stop (Atlas/Seltice)	2
Need Traffic light (NW Blvd / Emma)	1
On-Street Parking Issue (John Loop)	1


Riverstone Comments
On-Street Parking Issue (John Loop)
Need Traffic light (NW Blvd / Emma)
Transit Stop (Atlas/Seltice)
Pedestrian/Bike Access (Atlas / Centennial)
Need Freeway Access (Atlas Rd / Huetter Rd)
Dangerous (Riverstone / Seltice)
Dangerous (NW Blvd / Lakewood)
Dangerous (Appleway / Ramsey)
Long Delays (NW Blvd / Seltice)
Long Delays (I-90 WB)
Long Delays (I-90 EB)
Long Delays (Riverstone / Seltice)
Long Delays (Appleway / Ramsey)
Dangerous (NW Blvd / Ironwood)
Need Crosswalks (Riverstone / Beebe)
Connectivity (Suzanne / Atlas)
Against Connecting Lacrosse
Connectivity (NW Blvd / LaCrosse)
Long Delays (NW Blvd / Ironwood)
Pedestrian/Bike Access (Riverstone / Beebe)
Long Delays (NW Blvd General)
Don't Move Trail
Dangerous (Lakewood / Riverstone)
Long Delays (Riverstone / Beebe)
Long Delays (Lakewood / Riverstone)
Long Delays (NW Blvd / Lakewood)
Dangerous (Riverstone / Beebe)
0
2
4
6
8
10
12
14
16

Wikimap Comments / Pins

WELCH-COMER
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Created	Long Delays	Dangerous	Needs B&P Access	Desired Street Connection	Needs Transit Stop	How often do you travel here?	Comments:
9/13/2018	x	x				Daily	Intersection at Lakewood and Riverstone this is very congested and too much traffic on Riverstone. It is very difficult to make left hand turn onto Lakewood. Sometimes wait for multiple lights to make left turn onto Lakewood. Then a lot of congestion and backups on Lakewood due to congestion at Northwest Blvd. It seems that the traffic on Riverstone will get worse as development continues. There is a new hotel being built by the McDonalds on this intersection and how will Riverstone be able to handle this additional traffic. If people are leaving the hotel or McDonalds it is extremely difficult and dangerous to make a left turn onto Riverstone. Another issue on Riverstone going West is the bus stop in front of Starbucks on the North side of the street. This is only a 2 way street and traffic gets backed up behind the bus. This bus stop and cross walk are located in a very dangerous location with a cross walk. Sometimes people are waiting to cross the street at this cross walk and it appears they are waiting for a bus, so cars do not stop for these pedestrians. The bus stop and cross walk need to be move to an actual street intersection. This is very dangerous to pedestrians and drives and very inefficient. The Cross walk for the centennial trail on BeBe is also very dangerous for bicyclists and pedestrians. This cross walk angles across BeBe and cars do not stop for the pedestrians. I live in this area and use the Centennial trail almost daily and this is a very dangerous cross walk. There is too much traffic on BeBe and people park in the bike lanes that are painted on the street. Because of parking on the street drivers are unable to see pedestrians. The street needs to have parking violation signs and fine for cars in the bike lanes. Final thought the traffic on Riverstone is highly congested and will become more so with the Public Transit Center, new hotel, new office building for North Idaho Dermatology and business and home developments in the Riverstone area. There isn't room to connect Riverstone to The Property they need to remain as separate developments and connect them with Seltice which has all of the new street improvements.
9/13/2018		x				Daily	Bus stop need to be relocated away from crosswalk. Riders waiting for bus cause traffic to stop a riders also appear to be waiting to cross street
9/13/2018	x					Weekly	
9/13/2018	x	x				Daily	Traffic regularly crosses double yellow line to enter and exit McDonalds, will be worse when hotel opens
9/13/2018		x	x			Daily	Centinal trail crossing Bebe poorly marked crossing, Vehicle traffic fails to yield and pedestrians and cyclists fail to look both ways befor crossing. Hard to seecyclists that approach Bebe on the trail when cyclists traveling at higher speeds
9/13/2018	x		x			Daily	Hard to make left turn onto Riverside from Bebe heading toward northwest blvd.
9/13/2018		x				Daily	This intersection always congested
9/13/2018	x	x				Daily	Left turn onto Lakeside frequently backed up
9/13/2018		x	x			Daily	Very congested during peck trail and park use
9/13/2018		x				Daily	Transit center will add many more trips per day
9/13/2018	x					Daily	Lots of transit traffic at times along with other vehilces, takes two signal light cycles to make left on Seltice way

9/15/2018	x					Daily	Driving north on NW Blvd; turning left onto Lakewood: the left turn signal is drastically out of synch with traffic traveling south on NW Blvd. The left turn lane light remains red while southbound traffic is absent. Then the signal stops the southbound traffic as soon as it reaches the light, then allows the left turn lane to proceed.
9/15/2018						Daily	Confusion Drivers coming from NW Blvd proceeding to the light at the Lakewood-Riverstone intersection often turn right when the right turn arrow is red. Typically it is blinking yellow allowing cars to turn. However, drivers are confused about what a red arrow means.
9/15/2018	x	x				Daily	Drivers wanting to turn left onto NW Blvd from Seltice are often faced with long delays (3-4 light change cycles) The delays are most severe during peak traffic times i.e. 7:00 to 9:00 am and 3:30 to 6:30 pm), Long waits seem to create more risk taking by drivers including running red lights and attempting radical lane changes.
9/15/2018		x				Daily	Drivers faced with long delays at the Seltice-NW Blvd intersections turn onto Riverstone to use as a shortcut bypassing the intersection. While the speed limit is 25MPH cars often exceed that speed. I have been honked at when stopping for pedestrians or tailgated when driving the speed limit.
9/15/2018		x	x			Daily	Foot traffic emerging from the Hampton Inn and traveling to the shops and cinema at Riverstone do no have a crosswalk. Drivers do not stop typically, and when one car going one direction stops cars traveling the other directions may or may not. This creates a serious pedestrian safety issue.
9/15/2018		x				Daily	
9/15/2018		x				Daily	On-street parking creates the need to cross the center line in order to pass. While this typically is not a problem, increased traffic and increased parking could make it so.
9/15/2018						Weekly	This intersection is vastly improved with the roundabout on Seltice. It was a terrible intersections before this change.
9/15/2018		x				Daily	I have observed more red light running at this intersection than at any other. I'm not sure what precipitates this, since I have observed it with cars coming from different directions. I suspect that the delays drivers experiences at signals ahead of these stretches driver patience and instill a sense of entitlement to proceed in spite of the red light.
9/16/2018	x					Weekly	All of Riverstone Drive needs to have speed limit enforced - AND - easy crossings for pedestrians.
9/17/2018		x	x			Daily	Another pedestrian crossing is needed at this location....preferably lighted.
9/17/2018						Daily	If there HAS to be another access road through Riverstone to Atlas, it should go on the lower train bed area....NOT tear up the trail and place a road between the Trail and the park!
9/17/2018				x		Daily	Use Suzanne for connecting road through to Atlas site
9/19/2018						Daily	need additional freeway access to I90 between Post Falls and Northwest Blvd.
9/19/2018						Daily	Need to Leave the current Centennial trail, a designated Millennium Legacy Trail in place where it is with neighborhoods, Riverstone, Atlas Mill Site and Mill River enjoying a higher quality of life with connectivity with this amazing trail and not roads.
9/19/2018				x		Daily	need another connection road to northwest blvd.

9/19/2018						Never	if plans are adamant about road connectivity between Riverstone, Mill River and The Atlas Project then put the road on the old RR right of way between Bebee Lane and the centennial trail. It makes the most sense there because of its grade and levelness but Prefer no roads for neighborhood connectivity, just trails, to encourage people meeting people for healthier life styles.
9/24/2018	x	x				Weekly	At 9:00am on many weekdays, inbound traffic is backed up to I-90! 4-5pm also bad!
9/24/2018	x	x				Daily	Rush hours are very congested
9/24/2018	x	x				Weekly	Rush hours congestion
9/24/2018		x				Weekly	Eastbound off-ramp traffic backs up onto I-90 at times. Very dangerous!
9/24/2018		x	x			Weekly	Need pedestrian crosswalks.

Letters & Emails Received

WELCH-COMER
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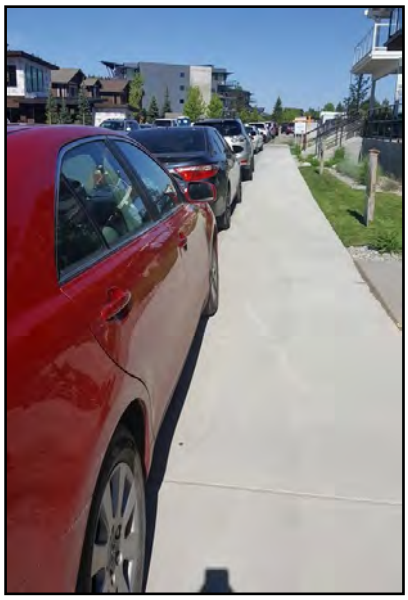
Riverstone/Atlas Waterfront Study

Though W-C is compiling GPS phone data to study traffic patterns, I was told at the presentation it didn't get underway until late summer. Don't forget factoring in pedestrian and bicycle traffic.



Connecting LaCrosse to Beebe: Speaking of the peak months (May-early September), there are literally hundreds of pedestrians, cyclists, skateboarders (kids) and cars using Beebe Blvd.

As a resident of Bellerive Lane, I travel this area multiple times a day. During peak season, cars park bumper to bumper on Beebe and overflow onto Bellerive Lane. Le Peep restaurant has hundreds of daily customers that its own parking lot can't fit so they park on Beebe Blvd. and Bellerive Lane (a privately owned street maintained at the expense of Bellerive owners).

The parked cars on Beebe block drivers' vision making it difficult to see Centennial Trail users crossing Beebe (cyclists are the worse as they don't stop - they just blast across the road). Don't forget Hampton Inn guests - that's even more volume waking Beebe!

A parking sign on Beebe directing cars to turn NW onto Tilford Lane to park in the large lot in Riverstone Park is a partial solution (users are not fully aware of its existence).

Connecting LaCrosse to Beebe will make this area dangerously congested and potentially dangerous for users. Plus, the intersection of Beebe and Riverstone Drive experience backups.

More example pictures available

Bellerive Lane (another reason for no LaCrosse connection): Bellerive Lane has become an ideal parking spot for pedestrians and cyclist to access the Centennial Trail. It is commonplace for vehicles, RVs and boat trailers to spend the entire day parked on Bellerive Lane.

NW Blvd to Seltice Shortcut: Driving north on NW Blvd, a neighbor waited in the left turn lane to head into Riverstone via Lakewood Drive. He was the last of nine cars through the light. Out of curiosity, he wondered how many of these eight cars in front of him that their intended destination was Riverstone (e.g., residents or visiting a business). He followed the eight cars west along Riverstone Drive. All but one turned off Riverstone Drive; the other seven used the west exit to turn left (west) onto Seltice Way. They chose this route to avoid the lights at Ironwood Drive and NW Blvd. No wondered that intersection is always congested.

Deborah Vernon
208-699-5662
jerdebv@aol.com

From:	Leasa VandeKamp
To:	Adam Dorsey
Subject:	Riverstone traffic concern
Date:	Thursday, November 8, 2018 11:04:12 AM

Sir. - I am a resident of Riverstone. We live at 1568 W Bellerive Lane.

Last week Thursday we went to Anthony's for dinner. It was also "rush hour". We had to wait several minutes for the traffic. It was difficult to make a left turn off BeeBee. And it is no longer the tourist season!

The cars speed down that road. It is just a matter of time before there is a bad collision.

My concern is that even more traffic coming through Riverstone via the Atlas project will just make things more difficult. Especially for the restaurants to the left of BeeBee.

Thanks for taking time to read my concerns.

Leasa VandeKamp

Adam Dorsey

From: Robb Bloem <robb@stancraftboats.com>
Sent: Friday, November 02, 2018 4:17 PM
To: Adam Dorsey
Subject: Riverstone/Atlas Waterfront areas - Traffic study
Attachments: PastedGraphic-4.tiff

Hello Adam,

I'm writing to express my concerns for new development in the Riverstone/Atlas waterfront areas. I by no means am against development and actually am very excited for the areas potential. My concern as i'm sure is yours is the affects this will have on traffic, egress, and safety on the roads. We have lived on W. Bellerive Ln. now for 6 years and have seen the development occur not only in Riverstone, but Bellerive Ln itself. Where Beebe Blvd and W. Riverstone meet there is definitely an issue and more traffic would only make the current intersection worse. I'd love to see a round about there, but probably not enough room, a traffic light would be the best of the bad choices. The intersection itself seems to be the highpoint of all the roads and visibility as it stands is challenging at best.

If you have any layouts of proposed roadways I'd love to see them or have some access. I think what has been done to Seltice Way has been wonderful and the intersection at Seltice and Atlas wonderful. We travel that way everyday to our offices. That kind of planning will be key to the success of the new waterfront.

Thank you in advance for any insight and taking the time to read my concerns. It's a tough area as it has become what we all wanted, vibrant businesses, many homes, and the true live, work play neighborhood of Riverstone. Good luck, I wish you the best in your efforts.

Robb Bloem
StanCraft Boat Co.
Cell: 208.818.2772
Office: 208-457-8000
robb@stancraftboats.com
www.stancraftboats.com
www.stancraftmarinecenter.com

From:	Casey Price
To:	Adam Dorsey
Subject:	Hi Adam - Riverstone/Atlas Waterfront Traffic Study concerns from Bellerive/Riverstone Residence
Date:	Monday, November 5, 2018 11:20:34 AM

Hi Adam,

Thanks for your time. My wife and I wanted to shoot you an email regarding our concern about the many developments around Riverstone and traffic gridlock which may impact emergency response. Our understanding was the traffic study was a one day study, is that right? We drive Riverstone daily and it can vary drastically on the day depending on what's happening locally. If it was just a one day study, please considering doing a longer study.

We really love where we live, but lately the traffic getting in and out of Riverstone is severe. The idea of having additional traffic funnel in/through Riverstone seems dangerous. Is there anything we can do to actively voice our concern or help in figuring out ways to keep traffic moving through Riverstone without bringing in additional roads that would just create shortcuts and additional traffic through the neighborhood. Please let us know how we can help.

Thanks again! Will you confirm receipt?

Casey Price
Price, Gardner & Rutledge Real Estate
Windermere Real Estate/M2, LLC
Casey Price: 425-446-1892 | cprice@windermere.com
Tyler Gardner: 425-327-4194 | tylergardner@windermere.com
Merrick Rutledge: 425-346-9844 | merrick@windermere.com
www.CaseyPriceRealEstate.com
Thanks for your referrals!

Atlas Waterfront/Riverstone Traffic Study

What Are Your Observations? Speaking as a resident in Riverstone, I daily see firsthand traffic gridlock which is getting worse. Plus, it's becoming more dangerous for the many pedestrians who enjoy the area and visit businesses.

Safety Concerns: It is common to experience backed up traffic. Waiting multiple light cycles at Lakewood Drive and NW Blvd is routine. In an emergency, the response time of law enforcement, an ambulance or fire trucks will be compromised.

Control High Density Development: Presently there are numerous developments proposed in Riverstone certain to further strain an already overloaded high density neighborhood. There must be a balance between the needs and rights of residents to enjoy their neighborhoods vs yielding to developers whose goal is squeezing as many units as possible into the smallest space.

Riverstone Drive and Lakewood Drive (vehicles wanting to exit and turn onto NW Blvd): To exit the Riverstone community, vehicles driving on Riverstone Drive must wait for the left turn signal to turn north onto Lakewood. It is not uncommon to wait multiple signals on Riverstone Drive. This causes a backup on Riverstone Drive past the pedestrian crosswalk and bus stop. Sometimes 10 or more cars.

Pedestrians: (Besides the speeding cars)

Issue 1: When the above happens, cars (on the north side of Riverstone Drive) driving past McDonalds cannot see pedestrians because their line of sight is obscured by waiting traffic (on the south side). This makes it dangerous for people in the marked pedestrian crossing, the cars don't see you in the crosswalk because the backup blocks their vision. This means the pedestrian is halfway in the crosswalk before cars see him/her and often don't stop.

Issue 2: The crosswalk essentially overlaps the bus stop so buses obstruct with the pedestrians.

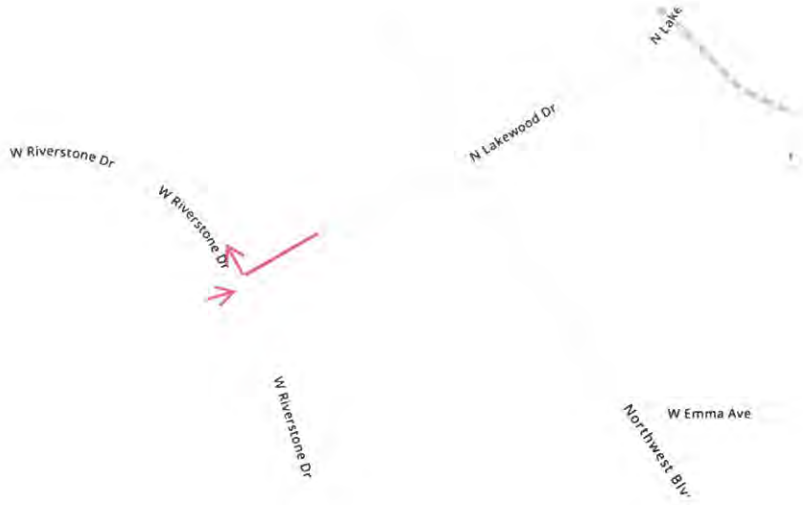
Issue 3: Some drivers get impatient turning right out of McDonalds – they rush to get a traffic break and are NOT looking ahead to see a pedestrian in the crosswalk.

Solutions: (A) Flashing lights on the pedestrians signs that a walker can activate (similar to that on Ironwood Drive south of the hospital), (B) move the crosswalk and/or (C) move bus stop further west.

On NW Blvd, coming from the south to enter the Riverstone community: Too often, cars must wait multiple signals cycles to turn onto Lakewood Drive into the Riverstone community. This causes a LONG backup well past the gas station, which then blocks both north bound lanes on NW Blvd, especially at peak hour and even more so in tourist season! Often, after the south bound traffic clears, the north bound left turn lane drivers just sit there observing no oncoming traffic

Solution: Program a flashing left turn yellow signal (same as NW Blvd./Ironwood) allowing traffic to turn left into Riverstone – such clears the backup.

Signal issues at Lakewood and Riverstone Intersection: When traffic has entered Riverstone and are on Lakewood Drive wanting to turn right on Riverstone Drive (in front of McDonalds), when this light is green for driving straight ahead, there is a solid red right arrow for turners. Makes no sense to have green for straight ahead and right turn red arrow. If it is because the oncoming traffic has a green left signal, then there should be no green signal for oncoming traffic. If it's green straight ahead, it should be green for a right turn (not red).



Beebe Blvd: On weekends and during the tourist season, this street is HEAVILY used with pedestrians, parked cars and lots of traffic. With many using the Centennial Trail, which dissects Beebe at a 45 degree angle, I'm surprised no one has been hit.

Solution: Permit parking on one side only. Straighten the trail.

Caution: Don't extend LaCrosse Ave. to end on Beebe Blvd. Beebe Blvd. – this street with all the issues noted above, can't handle any more traffic. If you MUST extend LaCrosse Ave., the dead end of Lakewood Drive – EASILY connection, very convenient and less cost! (Alternative: Merrit Creek Loop)

Beebe Blvd. and Riverstone Drive Crosswalk: Many pedestrians cross here (e.g., guests of Hampton Inn and the hundreds of residents on Bellerive Lane). Two years ago, Steve Widmeyer, Mayor, approved painting a crosswalk across Riverstone Drive. This crosswalk is on a small rise so the white markings are not noticeable in a car until right upon them. Mayor Widmeyer approved placing two crosswalk caution signs – this helped alert drivers if they were paying attention. However, many don't making it a challenge for pedestrians to safety cross over busy Riverstone Drive.

Solution: Flashing lights on the pedestrians signs that a walker can activate (similar to that on Ironwood Drive south of the hospital).

Intersection of Riverstone on Lakewood Drive: Traveling south on Lakewood Drive, the light to enter Riverstone or turn left onto NW Blvd., if this intersection has no other vehicles, or it's after 9 pm'ish, this light doesn't turn green. One sits there through multiple lights then, eventually, runs it – dangerous. Suggest fixing the sensor (if that's the case), or making sure this signal works the same at all times to allow traffic to pass.

Too many signals: Going north or south on NW Blvd. is "stop & go" the entire journey, particularly across the bridge! Don't see why signals can't be timed so the bulk of the traffic flows without stopping. I'd rather see Ignitecda fund this vs other projects because all residents benefit and will support it!

On Bridge - Badly time signal at the I-90 west bound onramp: In the north bound lanes, when waiting in the two left turn lanes to travel west on I-90, for some reason, at any time of day, even early morning rush, this left turn signal cycles so quickly that it lets just three row of cars through (fewer if someone isn't paying attention). This creates a HUGE back up that eventually blocks the inside north bound lane.

Solution: time light to let at least 7 or 8 rows of traffic to enter i-90. At busy times, extend the left turn light longer so the traffic clears.

Submitted by: Deborah Vernon
1755 W. Bellerive Lane (Riverstone)
208-699-5662
jerdebV@aol.com

Nicole Stufflebeam

From: Ann Miller <faceitann@comcast.net>
Sent: Saturday, November 3, 2018 7:47 AM
To: Adam Dorsey
Subject: Riverstone resident - Traffic in area

Hello,

I would like to express my concerns about the Atlas project as well as the continued expansion of the area between Atlas and up through Bellerive to the 95 bridge. We currently live on Bellerive Lane. The entire Riverstone area is why we chose to move there. The area has a village feel meaning that the walkability as well as riding area is great. Already though the traffic in the area has become congested and sometimes it is dangerous riding into the village around peak times of the day and especially worse in the summer. Adding a huge project such as the Atlas project and the continued building that will follow will swallow up this quaint and wonderful part of the city.

We have attended the Planning meetings and it worries us that there has not been more consideration about the density of this project. We understand that a city can't stay stagnant and must add tax revenue but to do it without considering the huge impact on the traffic and flow of the area is not responsible planning. To make this area C-17 seems to be crazy. I would urge more thought to go into this huge project so the residents that choose to live here do not have to wait for 2 or 3 light cycles to get to their homes. As of now, coming off of Ramsey and Northwest Blvd. into the Riverstone area either by McDonalds or off of Seltice, can be quite frustrating. We are from Seattle and we unfortunately see a similarity where construction of housing and retail projects start without the necessary infrastructure put in place first. Let me tell you, it increases road rage, accidents and many just move away. I see so many people running red lights now just so they don't have to wait for one more light. Adding a road from Northwest and La Crosse will also not be the answer. This will just flow more people into a bottle neck.

Please urge the planning commission to revisit this plan and make it safe and enjoyable for all without making it into another overcrowded area.

Thank you for your time,
Ann Miller
1573 W Bellerive Lane
CDA, ID 83814
425-445-2957

Nicole Stufflebeam

From: Kathi Abate <kmabate62@gmail.com>
Sent: Sunday, November 4, 2018 6:24 AM
To: Adam Dorsey
Subject: Riverstone

Adam,

We reside at 1884 W Bellerive Ln in Riverfront Condos.

We are concerned about the traffic flow on Beebe Blvd, Riverstone Dr and Lakewood Dr.. Getting in and out of the area has become increasingly difficult as traffic often gets backed up at the stoplight on Lakewood Dr and Northwest Blvd wrapping all the way around on to Riverstone back to Red Robin. It's not uncommon to wait 5 minutes just to get onto Riverstone from Beebe Blvd during busy hours of the day. This is even prior the finish of the new hotel next to McDonalds.

There should be further consideration for how increased housing/high density/commercial development (apartments, hotels etc..) in this area is going to affect access not to mention safety. Please consider a solution that works for all and don't just move ahead in developing without a solid solution to ease congestion.

CDA is busting at the seams so smart, affective planning is a responsibility owed to our community and it residents.

Thank you for consideration on this issue.

The Abate Family
Riverstone Resident
Sent from my iPhone

Nicole Stufflebeam

From: Melanie Price <melaniegrace@outlook.com>
Sent: Monday, November 5, 2018 2:44 PM
To: Adam Dorsey
Subject: Bellerive

Hi Adam,

As a resident of Riverstone I wanted to add my concerns to the list regarding Riverstone and the possibility of more traffic as a result of the Atlas project and/or the city considering putting more 'through' roads in the development. We have 3 little boys and purchased this property as it was on a dead end street, close to the trail and relatively quiet, except when you venture up to NW Boulevard. The thought of more traffic and roads is very concerning. What is the latest with this? Please consider our request for managing the traffic through our area.

Thanks!

Melanie Price
1634 W Bellerive Lane,
Coeur d'Alene ID 83814

Melanie
Sent from my i phone

Nicole Stufflebeam

From: Casey Price <cprice@windermere.com>
Sent: Monday, November 5, 2018 11:20 AM
To: Adam Dorsey
Subject: Hi Adam - Riverstone/Atlas Waterfront Traffic Study concerns from Bellerive/Riverstone Residence

Hi Adam,

Thanks for your time. My wife and I wanted to shoot you an email regarding our concern about the many developments around Riverstone and traffic gridlock which may impact emergency response. Our understanding was the traffic study was a one day study, is that right? We drive Riverstone daily and it can vary drastically on the day depending on what's happening locally. If it was just a one day study, please considering doing a longer study.

We really love where we live, but lately the traffic getting in and out of Riverstone is severe. The idea of having additional traffic funnel in/through Riverstone seems dangerous. Is there anything we can do to actively voice our concern or help in figuring out ways to keep traffic moving through Riverstone without bringing in additional roads that would just create shortcuts and additional traffic through the neighborhood. Please let us know how we can help.

Thanks again! Will you confirm receipt?

Casey Price
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Casey Price: 425-446-1892 | cprice@windermere.com
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Merrick Rutledge: 425-346-9844 | merrick@windermere.com
www.CaseyPriceRealEstate.com
Thanks for your referrals!

From: Melanie Price
To: Adam Dorsey
Subject: Bellerive
Date: Monday, November 5, 2018 2:44:02 PM

Hi Adam,

As a resident of Riverstone I wanted to add my concerns to the list regarding Riverstone and the possibility of more traffic as a result of the Atlas project and/or the city considering putting more 'through' roads in the development. We have 3 little boys and purchased this property as it was on a dead end street, close to the trail and relatively quiet, except when you venture up to NW Boulevard. The thought of more traffic and roads is very concerning. What is the latest with this? Please consider our request for managing the traffic through our area.

Thanks!

Melanie Price
1634 W Bellerive Lane,
Coeur d'Alene ID 83814

Melanie
Sent from my i phone

Nicole Stufflebeam

From: twmsports@comcast.net
Sent: Monday, November 5, 2018 10:00 AM
To: Adam Dorsey
Subject: Traffic Study

Adam,

I appreciate you taking feedback on the traffic issues and safety concerns in the Riverstone area. There are many areas that need traffic intervention as it is very congested from Northwest Blvd down Lakewood onto Riverstone. With the new Hotel being completed by Mc Donald's not sure what the plan is to get the traffic snarl cleared up to exit these 2 businesses? It is a very unsafe way to turn left onto Riverstone, cars taking risk pulling out into the turning lane daily near misses with cars and pedestrians in this area.

Having mid road crosswalks are very unsafe and on Riverstone there area 4 of them that need to be addressed. The locations today are unsafely placed by the Riverstone shopping entrances with both car and Pedestrians interactions. These are very unsafe for pedestrians as drivers are not looking for pedestrians in these areas and need to be crossing in a controlled intersections.

Riverstone should have bus stop pullouts so as to not back up traffic on this 2 lane road. This brings me to Riverstone and Beebe which is again a very unsafe non controlled intersection that gets backed up and car and pedestrians are taking unnecessary risk crossing and trying to take left turns. This area is in vital need of being a controlled intersection.

The last area of concern is the Trail crossing on Beebe is an absolute disaster with a 40 degree angle crosswalk that again is uncontrolled and has 1000.00 of car/ pedestrians/bikes interactions daily. This area needs to be a straight 90 degree controlled trail crossing with lights for both pedestrians/ bikes and cars. Today I personally have seen more near misses and confused pedestrians/bikes and cars as no one know the right of way!!

I live on Bellerive Lane and travel these streets daily and see a great need for the public safety to address these very unsafe areas in Riverstone.

Tom Miller
425-495-9101

From: Zac Scott
To: Adam Dorsey
Subject: Bellerive/Riverstone-
Date: Thursday, November 8, 2018 7:13:18 PM

Hi Adam,

My wife and I currently live down in Bellerive on the secondary side of the street. We wanted to send you an email about our concerns about the future development around Riverstone which we heard could impact emergency response time frames. Did you guys do your study over multiple days or just one, and if so, was it during the Summer months? We have noticed, especially during the Summer/tourism season that the traffic here is very crazy and slow getting to NW Blvd. Is there any way that we could come up with ideas/solutions for this?

Thank you for your time.

Zac Scott
Coldwell Banker-Schneidmiller
509-868-5244

From:	Tom Whin
To:	atlastis
Subject:	Atlas Project Traffic Impact Study
Date:	Friday, January 04, 2019 9:36:52 AM

I am a frequent visitor and driver to Riverstone, Seltice, and NW Blvd areas and traffic currently is at or over capacity most times of day. In the summer when tourists increase CdA's population this area is a complete mess at several hours during any day of the week. Adding high density housing to this area in my opinion is foolish and irresponsible as road expansion does not seem possible and in fact the addition of even more traffic signals will bog down traffic even worse than it is now.

Another access to Riverstone is overdue and the LaCrosse route makes the best and most cost effective sense. I would however not install a signal at NW and Lacrosse. Allow right turns only from Lacrosse to NW Blvd. Anyone needing to go left should use the other exit onto NW.

I feel that there is a need for low cost apartment housing but that it should be considered somewhere along the east Sherman corridor which is fairly close to I-90 but never seems to have the traffic congestion seen along NW Blvd. If there's an area that could use real urban renewal it seems to be this part of town.

My suggestion is to not allow hundreds of additional housing units at Atlas in the first place.

As mentioned it'd be a good idea for the city to take over control of the signals along NW Blvd near I-90….but ***only*** as long as the city can find someone that knows how to program signals properly. After seeing how poorly signals are synched and programmed on Harrison and along Government Way I do not have confidence that the city has anyone currently that's competent in programming traffic lights.

The city also should try to get federal money for traffic signal computers or at least some sort of telemetry system that allows adjacent signals to communicate with each other.

Also suggest that the city invest in reliable sensors at intersections that maximize green light time for directions that call for it and cut down on green time for directions when all the traffic has cleared. Nothing is more irritating than a left turn arrow activating in the opposite direction when there are no vehicles present and staying on for 10 to 15 seconds further backing up oncoming straight ahead traffic.

Also suggest more use of lagging rather than leading left turn arrows since straight ahead traffic typically has more traffic waiting and should get priority. And more use of blinking arrows so that left turns are allowed when oncoming traffic has cleared. This often would preclude green arrows from having to activate.

Also suggest using "third vehicle sensors" for some left turn lanes. These would activate arrows only if 3 or more vehicles are waiting in the turn lane. Otherwise two vehicles typically can make the left turn at the end of the green cycle without needing an arrow.

I've lived in other states and I have to say that even decades ago other communities did a better job of programming signals than what I've observed here with IDOT, CdA, Post Falls,

and even Spokane Valley. Traffic is needlessly backed up much of the time.

Tom Whin
Coeur d Alene

From:	james elgee
To:	atlastis
Subject:	Atlas traffic comments:
Date:	Friday, January 04, 2019 12:38:58 PM

Good Afternoon,
Just my 2 cents… Please sync the lights on NW Blvd/I-90/Kathleen corridor. It's a nightmare to take a left off this artery.
Also, an I-90 bypass through Rathdrum is the best idea I've ever heard. Do it soon before the whole prairie is eaten up with new developments. This has to happen sooner than later.
Thanks for listening.
Jim Elgee

From:	Roger Smith
To:	atlastis
Cc:	ANDERSON, HILARY; Tony Berns
Subject:	Comments on Traffic Study for Atlas Waterfront / Riverstone Area
Date:	Friday, January 11, 2019 1:57:56 PM

TO: Welch-Comer Engineers

cc: City of CDA
ignite CDA

Subject: Comments on Traffic Study for Atlas Waterfront / Riverstone Area

Scope of Study
It was unfortunate that with limited funding, the Study was only able to monitor and report on one day's traffic, at an assumed worst case peak hour. Considering the importance of this study to the future quality of life in Coeur d'Alene, an expanded, more thorough study is needed.

Public Outreach & Involvement
The public outreach for input to the Study (Open House #1) was not effective. There was lots of confusion among attendee as to how their public input was to be expressed. The signboards used were confusing and did not capture the full level of public concern about current traffic in the area. Also, there was no open 'public comment' period at either Open House.

Intersection LOS
With several key intersection at today's traffic levels, operating at a 'D', 'E' or 'F' level of service (LOS), mitigation measures are already needed - even without any additional development. Worth noting is that of the 15 intersections studied, 10 are currently at a LOS 'D' or worse and 6 of those are at the very poor 'E' and 'F' LOS. This fact should be highlighted in a 'Conclusion' section.
For the 10-year (2028) traffic prediction, the assumed traffic growth rate resulted in a predicted increase of only 22% at a busy intersection like Seltice and Northwest Blvd.. Considering the anticipated development in the area, this is likely an underestimate of traffic growth, and would result in predicting lower future traffic and therefore a higher LOS at several key intersections.

Mitigation Measures Recommended
Adjustments to optimize the current intersection signal technology would not likely be sufficient to mitigate both the current traffic congestion AND the anticipated additional traffic from both new developments (the planned Atlas Development and the proposed Rivers Edge Apartments project). A 3rd-party review of the study should be done to estimate the beneficial effects of signal optimization.
Several of the key mitigation measures recommended are very speculative and far off in the future (e.g. Huetter Byway, IDT's highway improvements, employer shift changes). Some measures are also out of the jurisdiction and control of the City. So while waiting (and hoping) for these possible mitigation measures to be implemented, the public would be asked to suffer increased traffic congestion. This would be a classic example of irresponsible, poor planning... where traffic capacity is not increased in time for the impacts of new development.

Other Recommendations I'd like to see...

1. Considering the importance of a thorough traffic study to the future quality of life in Coeur d'Alene, an
expanded, more thorough study should be done, incorporating these initial findings.

2. The Traffic Study findings and conclusions should be reviewed by other traffic experts, including IDT.

3. Traffic growth rate assumptions should be verified to be realistic for the study region.

4. The mitigation measures recommended should be reviewed and substantiated by all outside agencies
expected to be involved (e.g IDT) to determine if and when the assumed mitigation work might be a
reality.

5. No major zoning changes for very high-density development - such as Rivers Edge Apartments rezone to
R34 (870 apartments) - should be approved until definite traffic mitigation measures are assured, funded and
implemented.

6. The City should exercise its full authority for approval of PUD's to ensure that very high-density
development is not approved prior to roadway improvements necessary to handle the increased traffic.

It could be said that virtually all instances of traffic congestion represent poor planning. The City must ensure that roadway improvements for adequate capacity are required as a condition of approval for all major traffic-generating projects.

Sincerely,

Roger Smith

--
Roger Smith
(916)652-5685
(916)300-6310 cell

From: Terry Godbout
To: atlastis
Subject: Draft Traffic Study input
Date: Friday, January 11, 2019 4:34:01 PM

Feedback after reviewing the draft of the Welch-Comer Traffic Study:

1. To hear that most of the intersections included in the study area already have hardware installed that would allow for optimizing the traffic flow in the study area yet, despite many complaints of traffic congestion, the optimization process has not been done by either the City or ITD is rather hard to believe. To then hear from Welch-Comer officials that, in their opinion, this optimizing process should solve all of the existing congestion and any additional congestion brought on by the buildout of Riverstone as well as the development of the Atlas and Rivers Edge project, seems beyond belief. Since the optimizing process will not require much additional capital expenditures, no development should be approved in this area of the City until we find out if the optimization process will even solve the existing congestion. It seems that this could be done in 6 to 9 months.
2. There should also be a reality check about the mitigating effects of the several major ITD projects that could affect congestion in this area because virtually all of them will require hundreds of millions of dollars and will take 3 to 20+ years to bring online.
3. The public input process for this traffic study has been marginal at best. According to the IgniteCDA minutes, Welch-Comer was supposed to conduct three public input events yet they only did two. The first one had three boards displayed that most of us thought were identical but they were not. The feedback documents were confusing at best and the electronic feedback system did not begin to function until days after the event. At the recent second event, Welch-Comer officials were available to discuss findings and one official made a 30-minute PowerPoint presentation and then told everyone that she would be in the back of the room to answer any questions following the presentation. There was no opportunity for any member of the Public to ask a question in front of the people attending or to come to a podium to make a statement.
4. The draft Traffic Study document stated that the information supplied by the Rivers Edge applicant's Engineer was considered in the Welch-Comer study process. This is unfathomable as a study of this importance should be done by an independent Traffic Study firm that is not the applicant, the City or the Engineering firm contracted to design projects in the area.
5. Has Welch-Comer ever done a traffic study of this magnitude? If not, why were they given the contract to do the study without having to compete with any firms in the PNW that actually specialize in traffic studies.
Bottom line, the credibility of this process certainly seems to be suspect.

Terry Godbout

Sent from my iPad

Atlas TIS #1
Comment Forms

WELCH-COMER
ENGINEERS | SURVEYORS

What Are Your Observations?

Place letters that correspond to the statements below or make your own.

NW BLVD/Lakewood

Ramsey/Appleway

NW BLVD/Ironwood

More intersection blow ups are on the back of this sheet.

A Long Delays

B Dangerous

C Need Ped/Bike Access

D Desired Street Connection

E Need Transit Stop

F _____ Write in

G _____ Write in

City of Coeur d'Alene IDAHO

ignite cda

WELCH-COMER

Ramsey/Golf Course Rd

NW BLVD/I-90

Lakewood/Riverstone

I am very concerned about new housing projects that will increase congestion even more.

What Are Your Observations?

Use this area to expand on your comments.

A. Traffic is all backed up on Lakewood, Riverstone + BeeBee from 4-6:00 during evening rush hour. We have a difficult time making a right turn from BeeBee onto Riverstone. There is so much traffic coming down Seltice + Riverstone. A left turn is completely impossible. We wait several turn signal lights to get from Riverstone to Lakewood. That turn lane blocks all McDonald's customers from getting onto Riverstone. I am shocked that the businesses on Riverstone are not complaining! During evening rush hour, traffic is a huge hinderance. Not good for marketing businesses now.

B. Safety is alarming to me as a homeowner. With all that traffic, how could fire engines possibly get through on a timely basis? It also makes drivers become less friendly and more aggressive. I've seen hotel guests trying to cross Riverstone on bikes or on foot. It's becoming dangerous to go to dinner in Riverstone!

Leasa VandeKamp
636-236-5402

Return this form one of the following ways

Scan & email to:
mcleveland@welchcomer.com

Hand Deliver or Mail to:
Welch Comer Engineers
c/o Melissa Cleveland
350 E Kathleen Avenue
Coeur d'Alene, ID 83815

Complete the online version of this form at:
http://wikimapping.com/wikimap/Atlas-Waterfront-Riverstone-Public-Meeting.html

Atlas Waterfront/ Riverstone Traffic Study

City of Coeur d'Alene IDAHO
ignite cda
WELCH-COMER ENGINEERS | SURVEYORS

What Are Your Observations?

Place letters that correspond to the statements below or make your own.

Atlas Waterfront/
Riverstone
Traffic Study

NW BLVD/Lakewood

Ramsey/Appleway

NW BLVD/Ironwood

More intersection blow ups are on the back of this sheet.

A	B	C	D	E	F	G
Long Delays	Dangerous	Need Ped/Bike Access	Desired Street Connection	Need Transit Stop	Write in	Write in

City of Coeur d'Alene IDAHO

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WELCH-COMER

Ramsey/Golf Course Rd

NW BLVD/I-90

Lakewood/Riverstone

What Are Your Observations?

Use this area to expand on your comments.

"A" Long Delays. Current backup @ 6:45am to 8am on Ramsey heading S. to I-90 can easily be 20 minutes to 40 minutes- this doesn't account for development underway or future projects off of Ramsey!!

"B" These intersections are currently busy & dangerous And that's not even considering new Large hotel project behind McDonalds estimated at Approx 150 rooms.

The practice of detouring From seltice through Riverstone and over to NW Blvd to avoid 3 signals is a common practice. I've witnessed or followed vehicles going over 50 mph in their attempt to cut off time.

Bottom line is I don't believe sufficient consideration is given to future projects & their impact. The only discussion is About the Atlas Project which is short sighted. I believe a community advisory council is needed. Emmaco 541-490-1171

Return this form one of the following ways

Scan & email to:
mcleveland@welchcomer.com

Hand Deliver or Mail to:
Welch Comer Engineers
c/o Melissa Cleveland
350 E Kathleen Avenue
Coeur d'Alene, ID 83815

Complete the online version of this form at:
http://wikimapping.com/wikimap/Atlas-Waterfront-Riverstone-Public-Meeting.html

Atlas Waterfront/ Riverstone Traffic Study

City of Coeur d'Alene IDAHO
ignite cda
WELCH-COMER

What Are Your Observations?

Place letters that correspond to the statements below or make your own.

NW BLVD/Lakewood

Ramsey/Appleway

New Hilton Hotel mon traffic

NW BLVD/Ironwood

More intersection blow ups are on the back of this sheet.

New Hotel

McDonalds

Left turn into Riverstone is impossible

- A — Long Delays (Riverstone Lakewood)
- B — Dangerous
- C — Need Ped/Bike Access
- D — Desired Street Connection
- E — Need Transit Stop
- F — Write in _____
- G — Write in _____

City of Coeur d'Alene IDAHO

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WELCH-COMER ENGINEERS · SURVEYORS

Ramsey/Golf Course Rd

NW BLVD/I-90

Lakewood/Riverstone

What Are Your Observations?

Use this area to expand on your comments.

1. Too much traffic on Riverstone already

2. Too much traffic on BEBE.
   - Pedestrians can't cross on the cross walk on BEBE - NO ONE STOPS for pedestrians

3. Can't make a LEFT turn from RIVERSTONE onto LAKEWOOD and vise versa. This is without the new hotel that is being built. Did the new hotel have to add to roadway improvements prior to building?

4. Increased traffic from the new transit center on Riverstone and Seltice.

The Atlas project needs to be accessed from Seltice not Riverstone. Riverstone is too congested and very dangerous due to bus stops and pedestrians

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Atlas Waterfront/ Riverstone Traffic Study

City of Coeur d'Alene IDAHO

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WELCH-COMER ENGINEERS | BUSINESSES

What Are Your Observations?

Place letters that correspond to the statements below or make your own.

NW BLVD/Lakewood

Ramsey/Appleway

NW BLVD/Ironwood

More intersection blow ups are on the back of this sheet.

- A — Long Delays
- B — Dangerous
- C — Need Ped/Bike Access
- D — Desired Street Connection
- E — Need Transit Stop
- F — _____ Write in
- G — _____ Write in

City of Coeur d'Alene IDAHO

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WELCH-COMER ENGINEERS - SURVEYORS

Ramsey/Golf Course Rd

NW BLVD/I-90

Lakewood/Riverstone

What Are Your Observations?

Use this area to expand on your comments.

Thanks

Ironwood is way overcrowded. Access to medical difficult even with new signals. Would like to see a walking + bike trail straight from Atlas road right to the newly acquired river front.

Also, need a transit Stop on Atlas & Prairie, Nearest one on Ramsey too far for anyone living with the Landings or Hawks Nest or other tracts of houses to access.

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Atlas Waterfront/ Riverstone Traffic Study

City of Coeur d'Alene IDAHO

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WELCH-COMER ENGINEERS | SURVEYORS

What Are Your Observations?

Place letters that correspond to the statements below or make your own.

NW BLVD/Lakewood

Ramsey/Appleway

NW BLVD/Ironwood

More intersection blow ups are on the back of this sheet.

A Long Delays

B Dangerous

C Need Ped/Bike Access

D Desired Street Connection

E Need Transit Stop

F _____ Write in

G _____ Write in

City of Coeur d'Alene Idaho

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WELCH-COMER

Ramsey/Golf Course Rd

NW BLVD/I-90

Lakewood/Riverstone

What Are Your Observations?

Use this area to expand on your comments.

Don't put Tilford Rd thru Park – Don't change Centennial Trail – down by river – Cutting off Riverwalks – promised access to Trail – Those lots were sold with the intent of trail access – NOT fronting a road.

Let connectivity from Atlas Area to Riverstone – to City be by walking & bike – not more cars traffic / Consider wheel chair / handicap people – No cars by River – John's Loop is not very crowded.

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Atlas Waterfront/ Riverstone Traffic Study

City of Coeur d'Alene IDAHO

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WELCH-COMER ENGINEERS | SURVEYORS

What Are Your Observations?

Place letters that correspond to the statements below or make your own.

NW BLVD/Lakewood

Ramsey/Appleway

NW BLVD/Ironwood

More intersection blow ups are on the back of this sheet.

A Long Delays

B Dangerous

C Need Ped/Bike Access

D Desired Street Connection

E Need Transit Stop

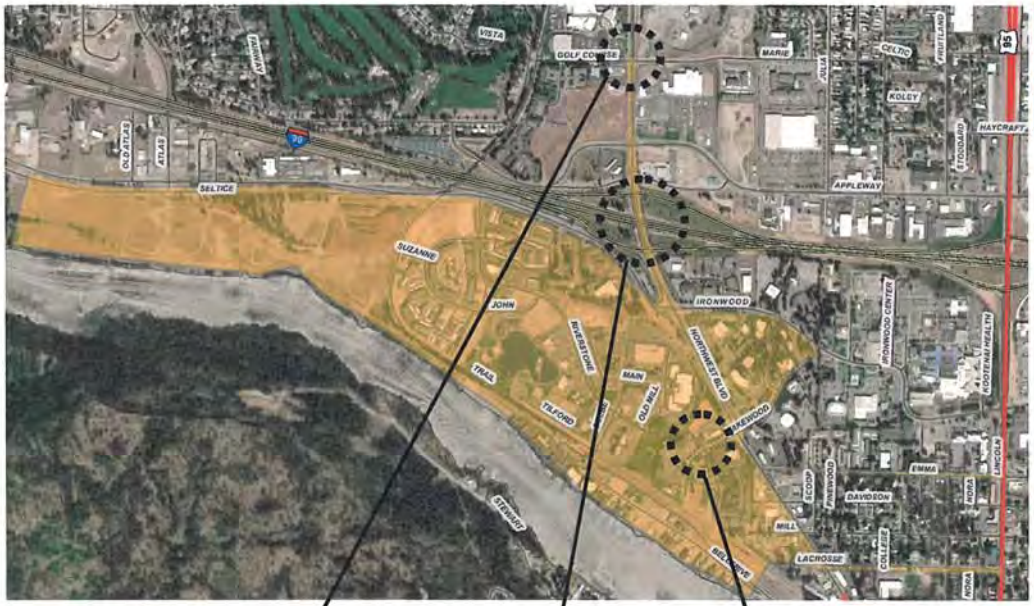
F _____ Write in

G _____ Write in

City of Coeur d'Alene IDAHO

ignite cda

WELCH-COMER



Ramsey/Golf Course Rd

NW BLVD/I-90

Lakewood/Riverstone

What Are Your Observations?

Use this area to expand on your comments.

EAST BOUND EXIT OFF I 90 AT ATLAS TO RIVERSTONE

GET SIGNAL LIGHT TO WORK IN TIME MORE TURN LIGHTS TO MUCH BACK UP OF TRAFFIC.

NO FLOW

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Atlas Waterfront/ Riverstone Traffic Study

City of Coeur d'Alene IDAHO

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WELCH-COMER ENGINEERS / SURVEYORS

What Are Your Observations?

Place letters that correspond to the statements below or make your own.

Ramsey/Appleway

NW BLVD/Ironwood

NW BLVD/Lakewood

More intersection blow ups are on the back of this sheet.

A Long Delays

B Dangerous

C Need Ped/Bike Access

D Desired Street Connection

E Need Transit Stop

F Write in: need additional (L) turn lane or blinking Yellow

G Write in: additional access needed

City of Coeur d'Alene IDAHO

ignite cda

WELCH-COMER ENGINEERS · SURVEYORS

Ramsey/Golf Course Rd

NW BLVD/I-90

Lakewood/Riverstone

What Are Your Observations?

Use this area to expand on your comments.

NW Blvd to Lakewood (Left turn) has the most grid lock at lunch time 11:30am - 1:30pm It is unsafe because traffic backs up and blocks other intersections (turning up Emma? from NW Blvd).

Additional access into Riverstone via Lacrosse or Modification of lights may help.

But, traffic study from 2-7 pm misses the huge lunch time backlog of traffic.

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Atlas Waterfront/ Riverstone Traffic Study

City of Coeur d'Alene IDAHO

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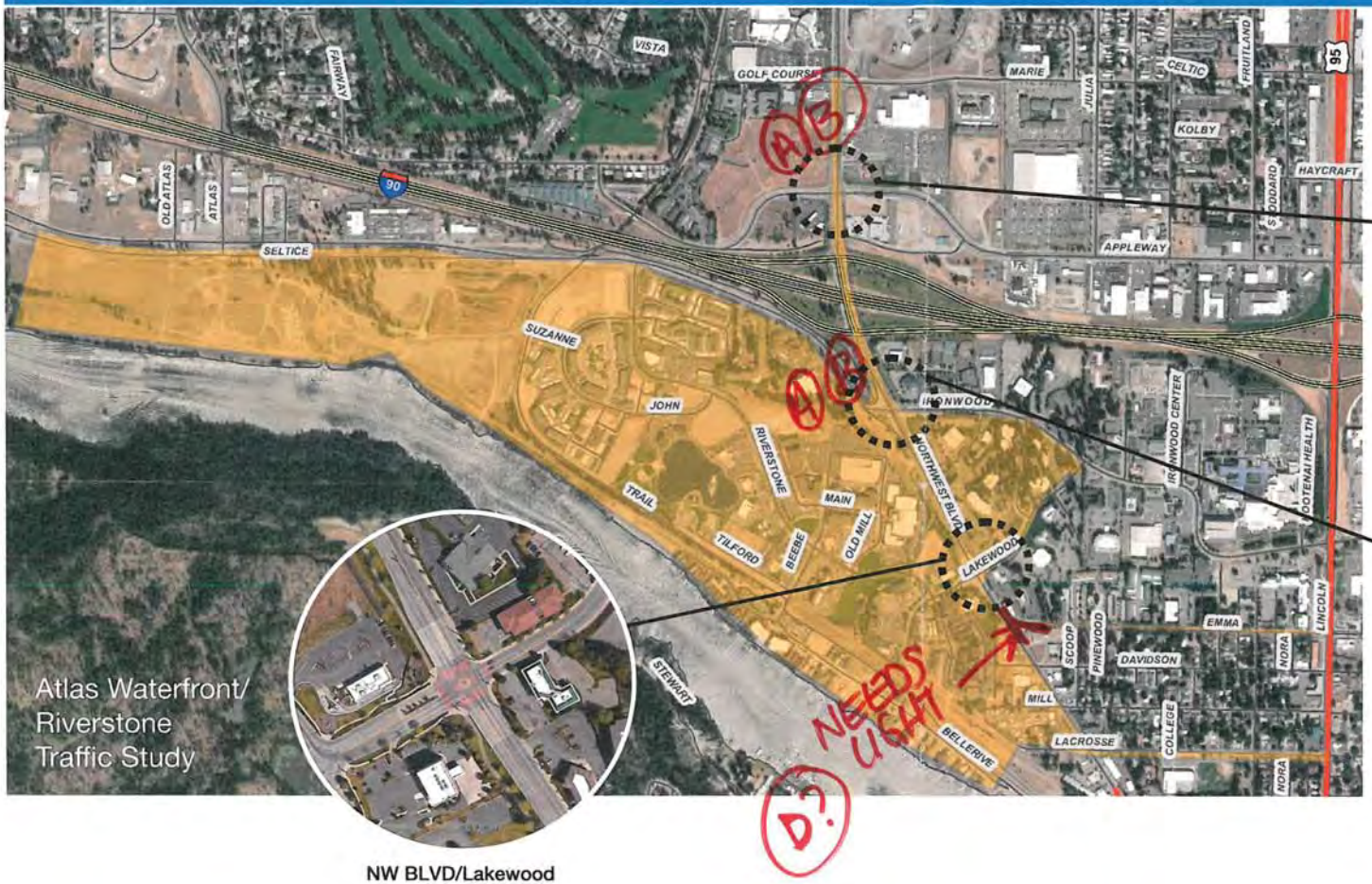
What Are Your Observations?

Place letters that correspond to the statements below or make your own.



Atlas Waterfront/
Riverstone
Traffic Study

NW BLVD/Lakewood

Ramsey/Appleway

NW BLVD/Ironwood

More intersection blow ups are on the back of this sheet.

- A — Long Delays
- B — Dangerous
- C — Need Ped/Bike Access
- D — Desired Street Connection
- E — Need Transit Stop
- F — Write in _____
- G — Write in _____

City of Coeur d'Alene IDAHO

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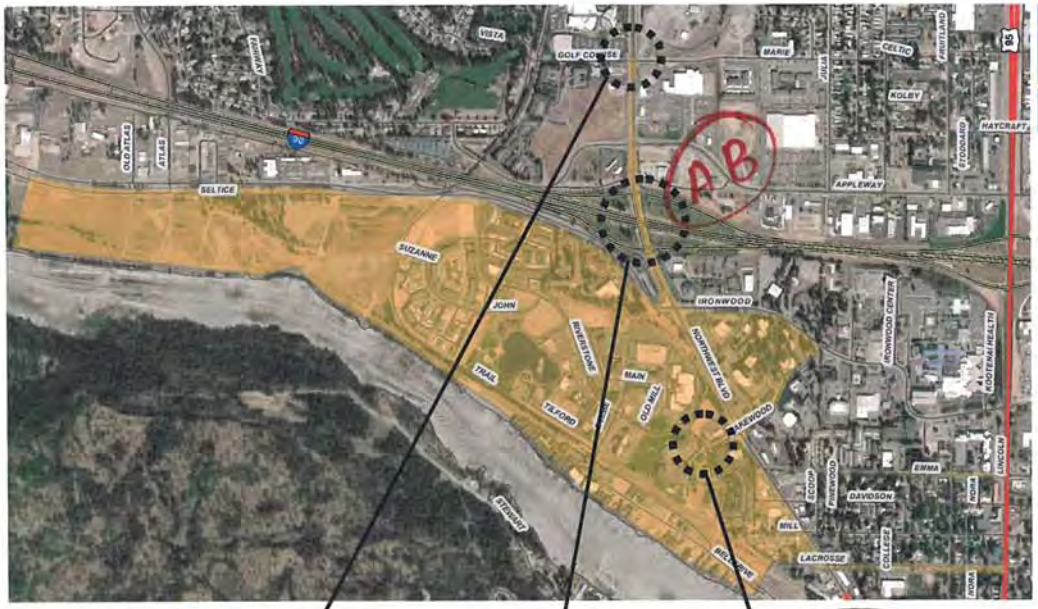

Ramsey/Golf Course Rd

NW BLVD/I-90

Lakewood/Riverstone

What Are Your Observations?

Use this area to expand on your comments.

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Atlas Waterfront/ Riverstone Traffic Study

City of Coeur d'Alene IDAHO

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WELCH-COMER ENGINEERS | SURVEYORS

What Are Your Observations?

Place letters that correspond to the statements below or make your own.

Ramsey/Appleway

NW BLVD/Ironwood

NW BLVD/Lakewood

More intersection blow ups are on the back of this sheet.

A Long Delays

B Dangerous

C Need Ped/Bike Access

D Desired Street Connection

E Need Transit Stop

F _____ Write in

G _____ Write in

City of Coeur d'Alene IDAHO

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WELCH-COMER ENGINEERS | SURVEYORS

Write–in comments
TIS Public Meeting #1

WELCH-COMER
ENGINEERS | SURVEYORS

What Are Your Observations?

Place letters that correspond to the statements below or make your own.

Ramsey/Golf Course Rd

NW BLVD/I-90

Lakewood/Riverstone

Atlas Waterfront/
Riverstone
Traffic Study

A Long Delays

B Dangerous

C Need Ped/Bike Access

D Desired Street Connection

E Need Transit Stop

City of Coeur d'Alene IDAHO

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WELCH-COMER ENGINEERS | SURVEYORS

What Are Your Observations?

Place letters that correspond to the statements below or make your own.

Lakewood/Riverstone

Ramsey/Golf Course Rd

NW BLVD/I-90

Atlas Waterfront/
Riverstone
Traffic Study

- A — Long Delays
- B — Dangerous
- C — Need Ped/Bike Access
- D — Desired Street Connection
- E — Need Transit Stop

City of Coeur d'Alene IDAHO

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WELCH-COMER ENGINEERS / SURVEYORS

What Are Your Observations?

Place letters that correspond to the statements below or make your own.

Ramsey/Appleway

NW BLVD/Ironwood

Northwest BLVD/Lakewood

Atlas Waterfront/ Riverstone Traffic Study

- A — Long Delays
- B — Dangerous
- C — Need Ped/Bike Access
- D — Desired Street Connection
- E — Need Transit Stop

City of Coeur d'Alene IDAHO

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WELCH-COMER

What Are Your Observations?

Place letters that correspond to the statements below or make your own.

Northwest BLVD/Lakewood

Ramsey/Appleway

NW BLVD/Ironwood

ADDRESS NEW HOTEL TRAFFIC

D- CONSIDER CONNECTION (COMMERCIAL AREA)

Atlas Waterfront/
Riverstone
Traffic Study

- A — Long Delays
- B — Dangerous
- C — Need Ped/Bike Access
- D — Desired Street Connection
- E — Need Transit Stop

City of Coeur d'Alene IDAHO

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WELCH-COMER

APPENDIX D:

Origin – Destination Data

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ENGINEERS | SURVEYORS

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

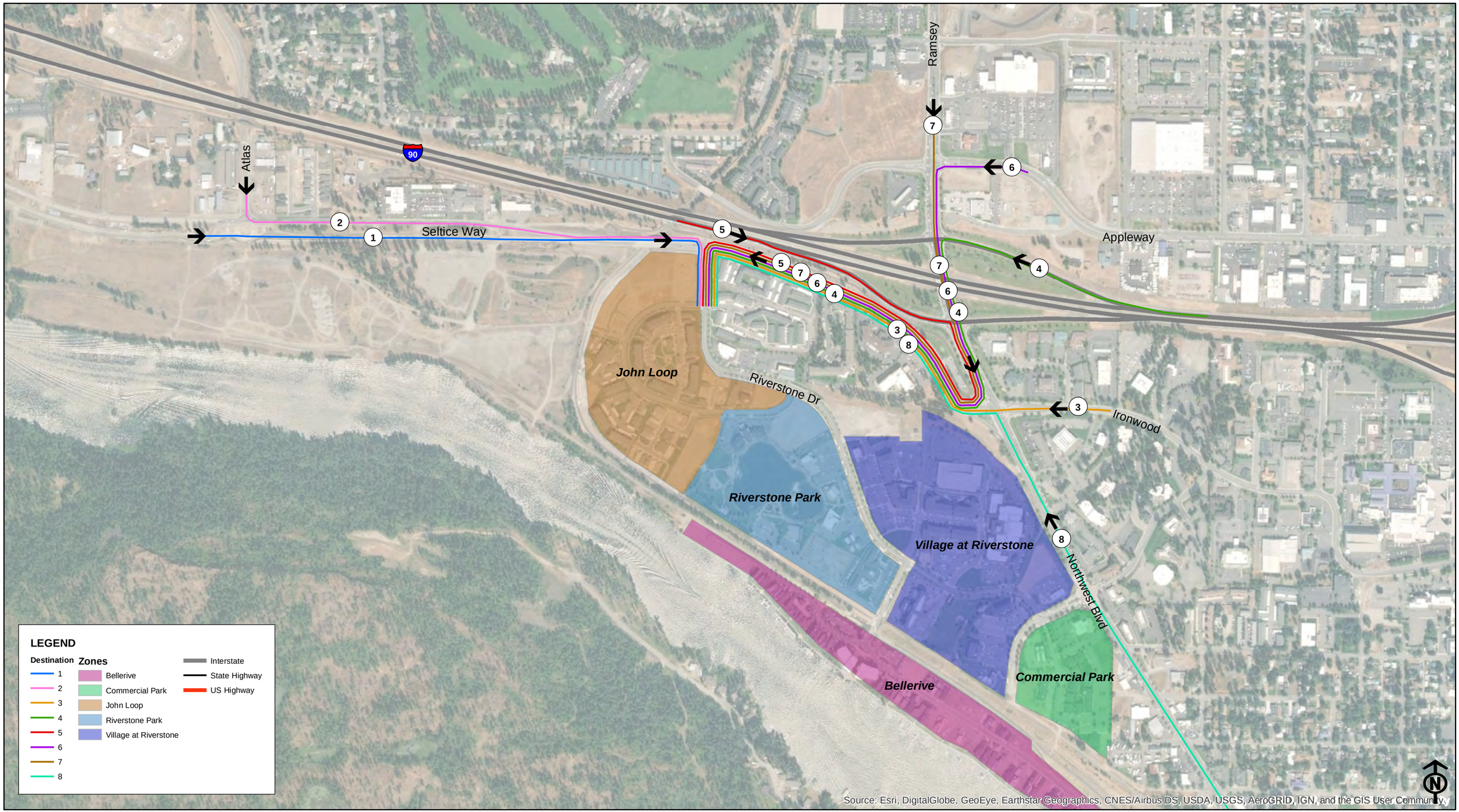
	Stay in Riverstone	Total
John Loop	0.05	1.00
Riverstone Park	0	1.00
Village at Riverstone	0.01	1.00
Bellerive	0.04	1.00
Office/Medical Park	0.053	1.00

Riverstone Zones as Destinations

	Riverstone/Seltice Intersection from								
	1	2	3	4	5	6	7	8	Using
	W. Seltice	N. Atlas	Ironwood	WB I-90	EB I-90	E. Appleway	N. Ramsey	S. NW BLVD	Entrance
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:									
	9	10	11	12	13	14	15	16	17	Using
	EB I-90	N. Ramsey	E. Appleway	WB I-90	Ironwood	Lakewood	Emma	Lacrosse	S. NWBLVD	Entrance
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



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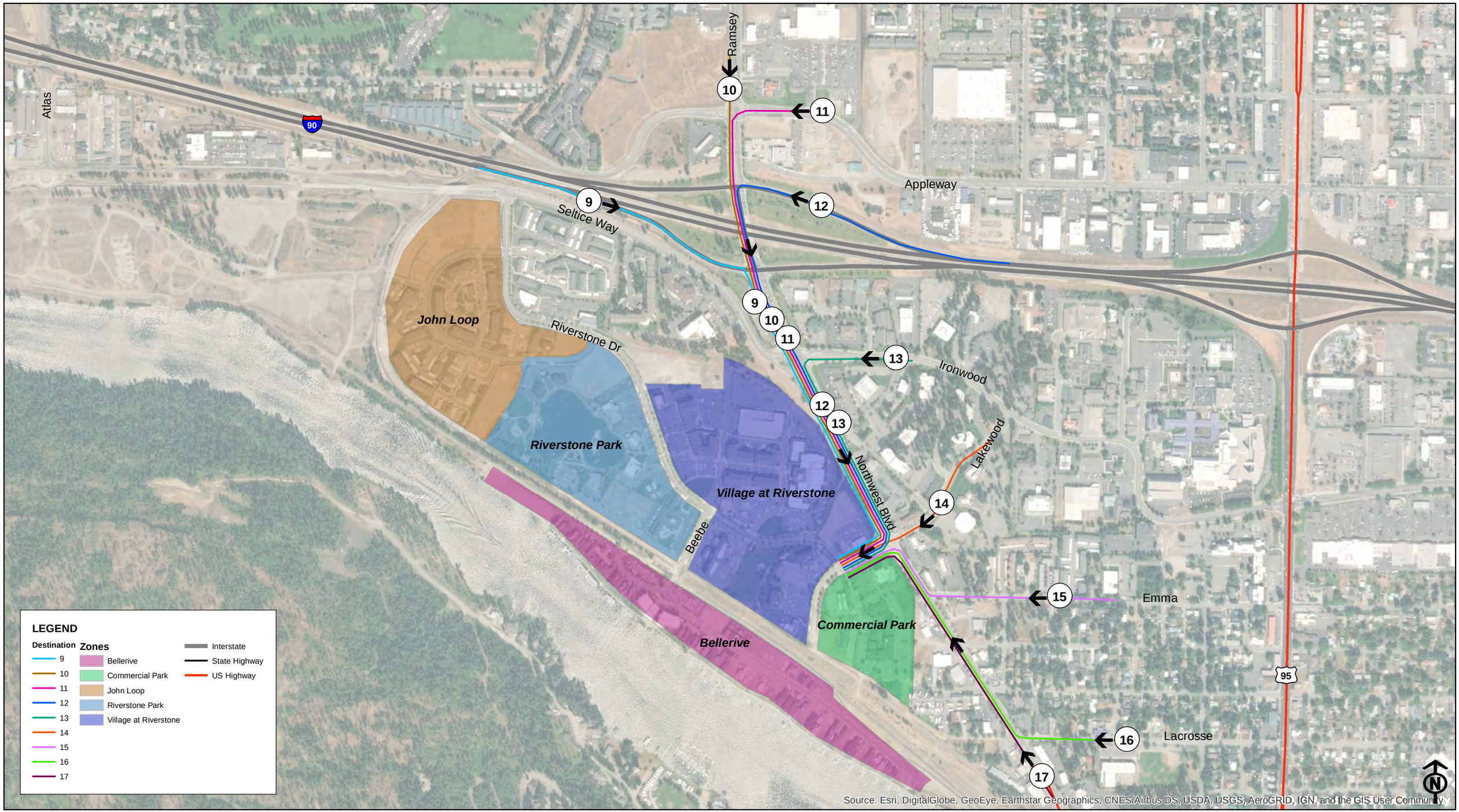
www.welchcomer.com **208-664-9382**

ignite CDA

Traffic Impact Study
Riverstone as Destination (North)

Sources:
Kootenai County GIS
Idaho Transportation Dept.

PROJECT NO.....41292.03
DRAWN BY.....AW
FILENAME.....TISDestinationNorth
DATE.....10/16/18



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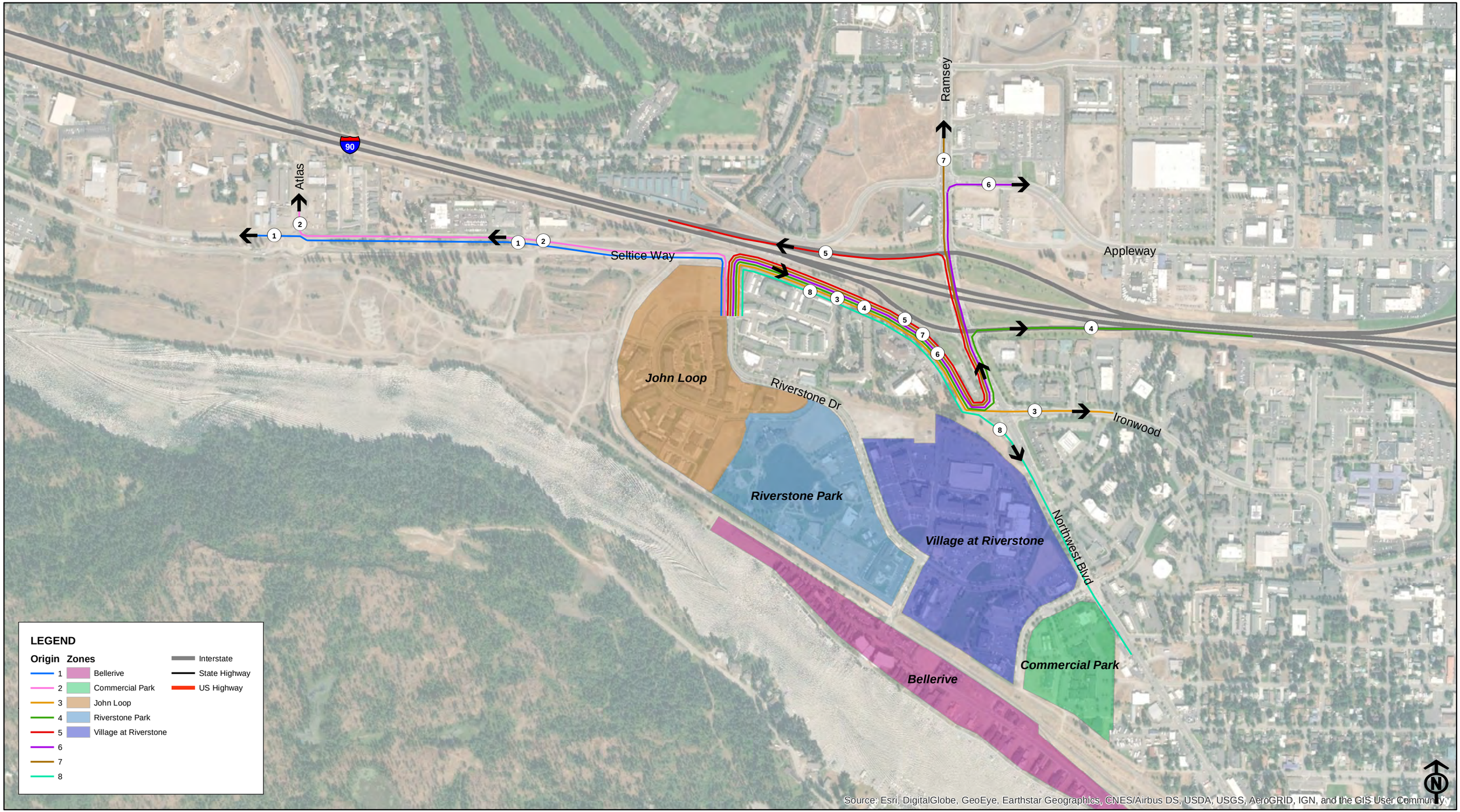
ignite CDA

Traffic Impact Study
Riverstone as Origin (South)

Sources:
Kootenai County GIS
Idaho Transportation Dept.

PROJECT NO.....41292.03
DRAWN BY.....AW
FILENAME.....TISOriginSouth
DATE.....10/16/18



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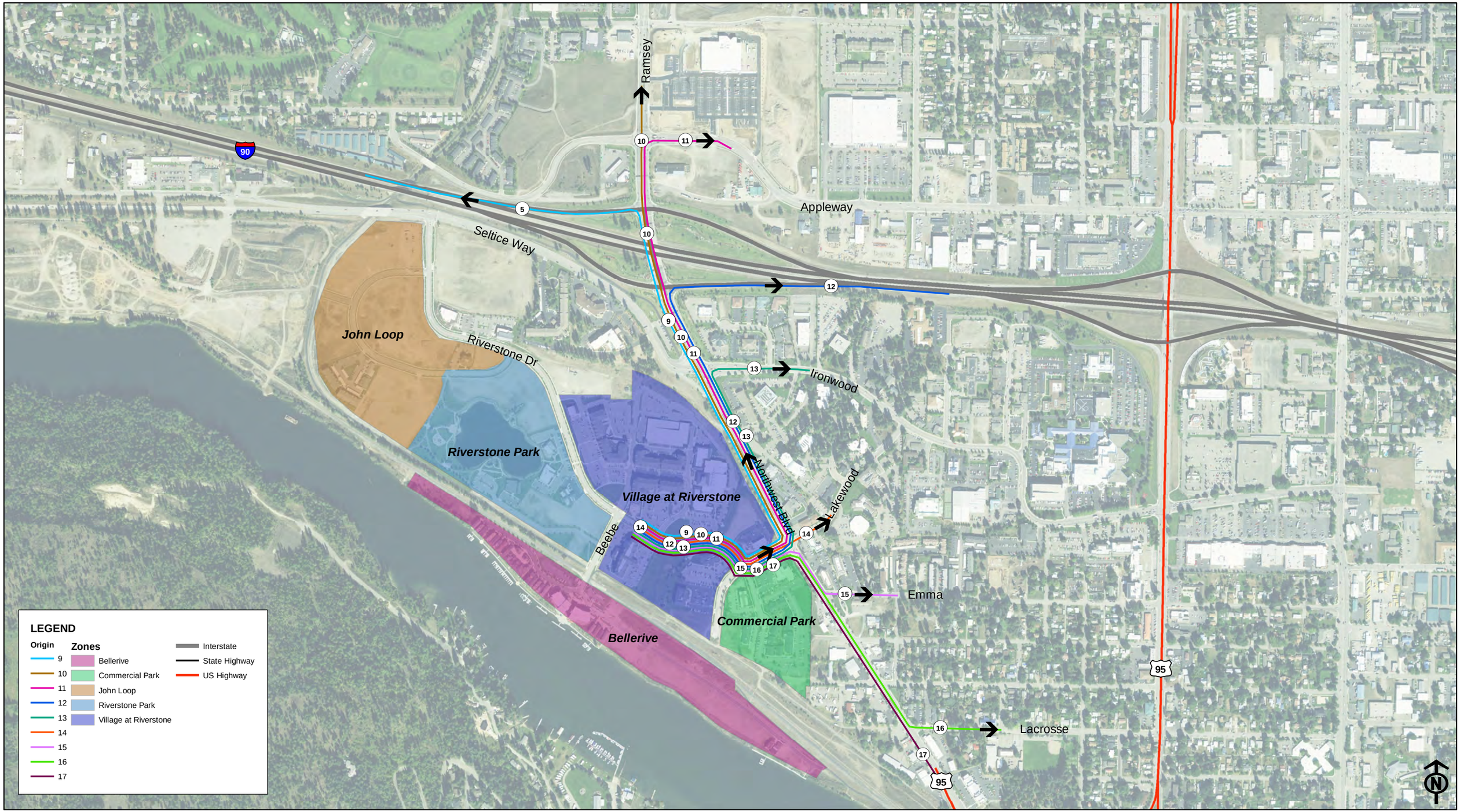
Traffic Impact Study
Riverstone as Origin (North)

Sources:
Kootenai County GIS
Idaho Transportation Dept.

PROJECT NO.....41292.03
DRAWN BY.....AW
FILENAME.....TISOriginNorth
DATE.....10/16/18



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Traffic Impact Study
Riverstone as Origin (South)

Sources:
Kootenai County GIS
Idaho Transportation Dept.

PROJECT NO.....41292.03
DRAWN BY.....AW
FILENAME.....TISOriginSouth
DATE.....10/16/18

APPENDIX E:

2018 Existing Vistro Intersection Reports

WELCH-COMER
ENGINEERS | SURVEYORS

Table of Contents

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										
Approach	Eastbound					Westbound				
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										
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										
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]	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
I, 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 [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	21.68	21.68	21.68
l_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
l_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
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
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

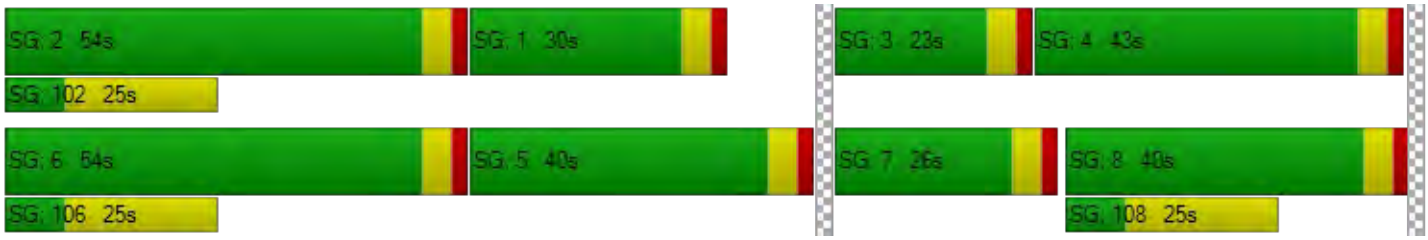
d_M, Delay for Movement [s/veh]	81.77	57.35	71.74	96.27	55.18	53.00	78.73	47.65	48.13	81.24	68.79	61.73
Movement LOS	F	E	E	F	E	D	E	D	D	F	E	E
d_A, Approach Delay [s/veh]	71.08			58.18			53.91			69.01		
Approach LOS	E			E			D			E		
d_I, Intersection Delay [s/veh]	63.00											
Intersection LOS	E											
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 [ft²/ped]	3150.00	12600.00	3150.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	69.38	69.38	69.38	0.00
l_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
l_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	Delay (sec / veh):	43.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	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												
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	
I, 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

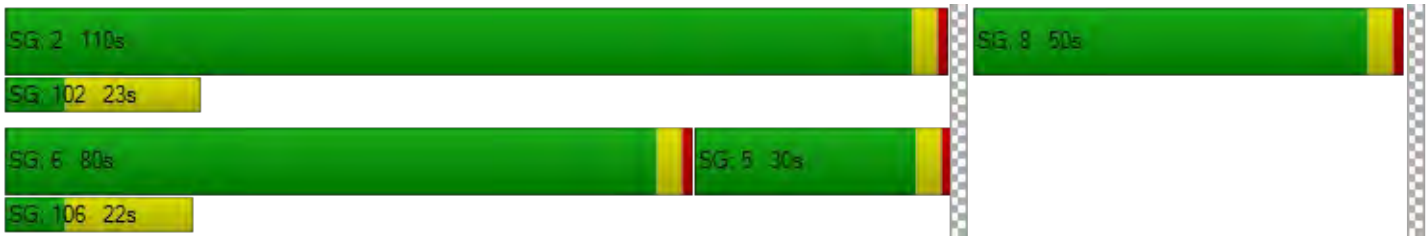
d_M, Delay for Movement [s/veh]	0.00	38.62	38.81	82.81	23.16	0.00	76.84	76.84	67.03	0.00	0.00	0.00
Movement LOS		D	D	F	C		E	E	E			
d_A, Approach Delay [s/veh]	38.63			33.90			75.50			0.00		
Approach LOS	D			C			E			A		
d_I, Intersection Delay [s/veh]	43.04											
Intersection LOS	D											
Intersection 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 [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	69.38	69.38
l_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
l_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 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]	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
I, 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 [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	71.25	71.25
l_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
l_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												
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
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
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

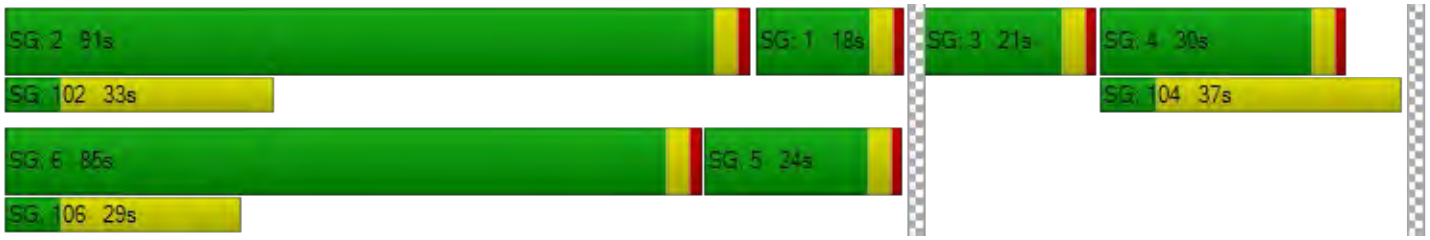
d_M, Delay for Movement [s/veh]	68.16	46.14	24.80	82.20	49.58	49.59	74.66	86.50	76.37	78.96	70.05	67.36
Movement LOS	E	D	C	F	D	D	E	F	E	E	E	E
d_A, Approach Delay [s/veh]	46.43			53.73			82.36			76.65		
Approach LOS	D			D			F			E		
d_I, Intersection Delay [s/veh]	54.75											
Intersection LOS	D											
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 [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	69.38	69.38	69.38
l_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
l_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 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			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
I, 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 [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	71.25	71.25	71.25	71.25
l_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
l_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
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
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 [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	71.25	71.25	71.25	71.25
l_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
l_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
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.04	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

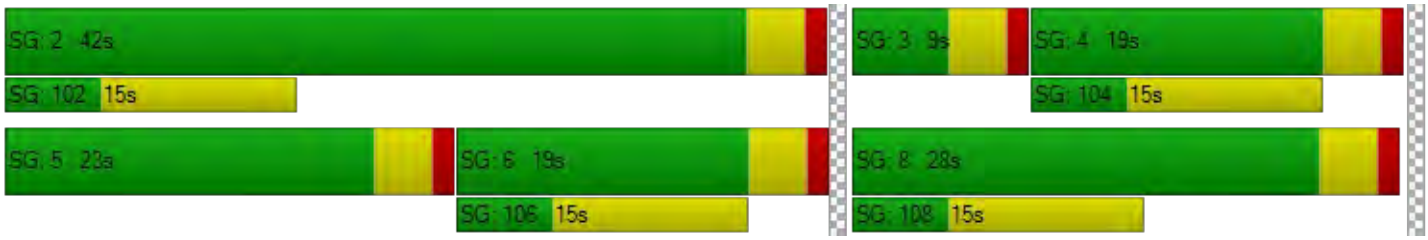
d_M, Delay for Movement [s/veh]	16.85	15.70	15.70	33.92	11.09	22.16	0.00	31.28	31.28	22.06	6.95	6.95
Movement LOS	B	B	B	C	B	C	A	C	C	C	A	A
d_A, Approach Delay [s/veh]	15.94			22.70			31.28			21.28		
Approach LOS	B			C			C			C		
d_I, Intersection Delay [s/veh]	22.73											
Intersection LOS	C											
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 [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	26.58	26.58	26.58	26.58
l_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
l_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		Northeastbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Right	Left	Thru
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		W Riverstone Dr	
Base Volume Input [veh/h]	202	7	9	18	24	253
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]	202	7	9	18	24	253
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]	55	2	2	5	7	69
Total Analysis Volume [veh/h]	220	8	10	20	26	275
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	0.02	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						
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												
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												
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 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]	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
I, 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 [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	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			W Riverstone Dr		W Riverstone Dr	
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			W Riverstone Dr		W Riverstone Dr	
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

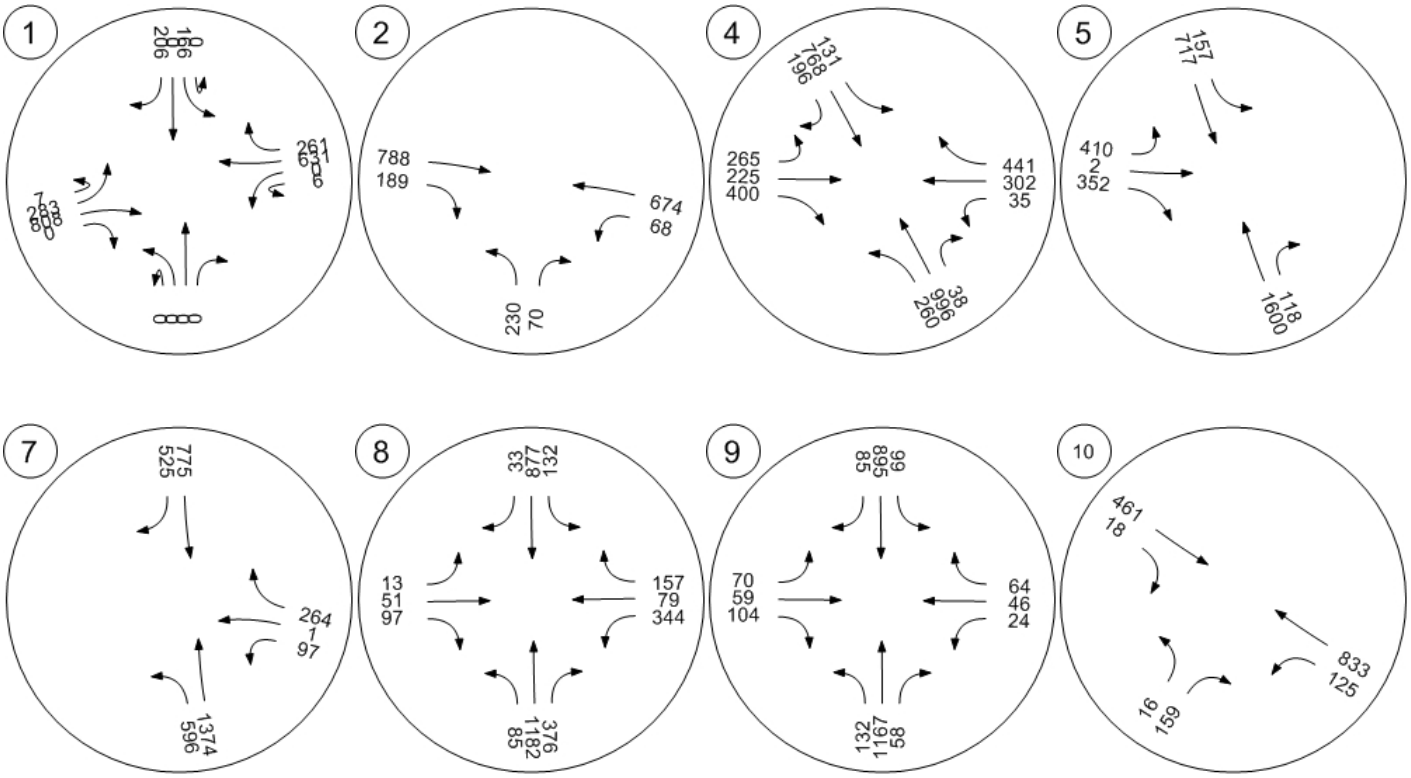
Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

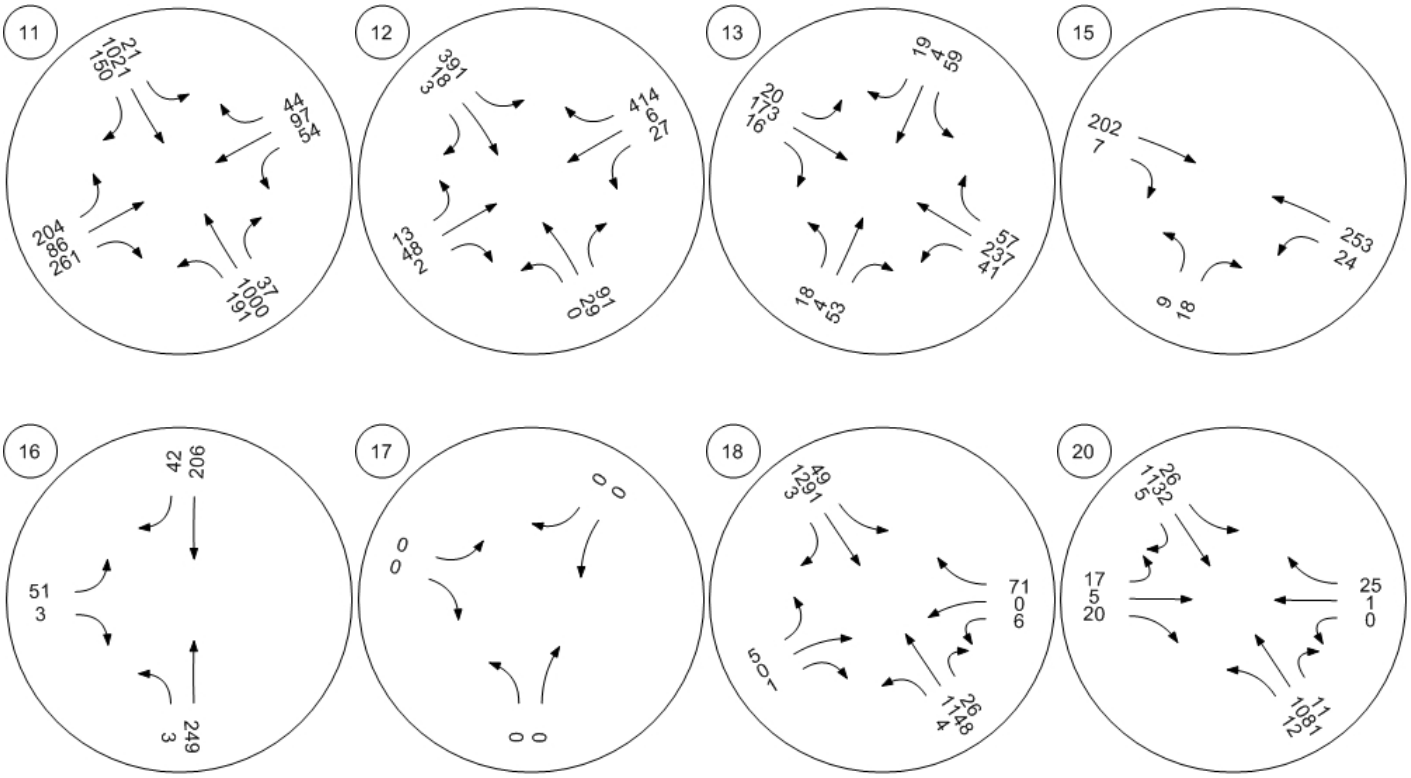
V/C, Movement V/C Ratio	0.02	0.00	0.01	0.23	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	19.18	18.61	10.64	22.96	22.05	15.16	8.08	0.00	0.00	8.40	0.00	0.00
Movement LOS	C	C	B	C	C	C	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.07	0.07	0.07	0.96	0.96	0.96	0.01	0.01	0.01	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

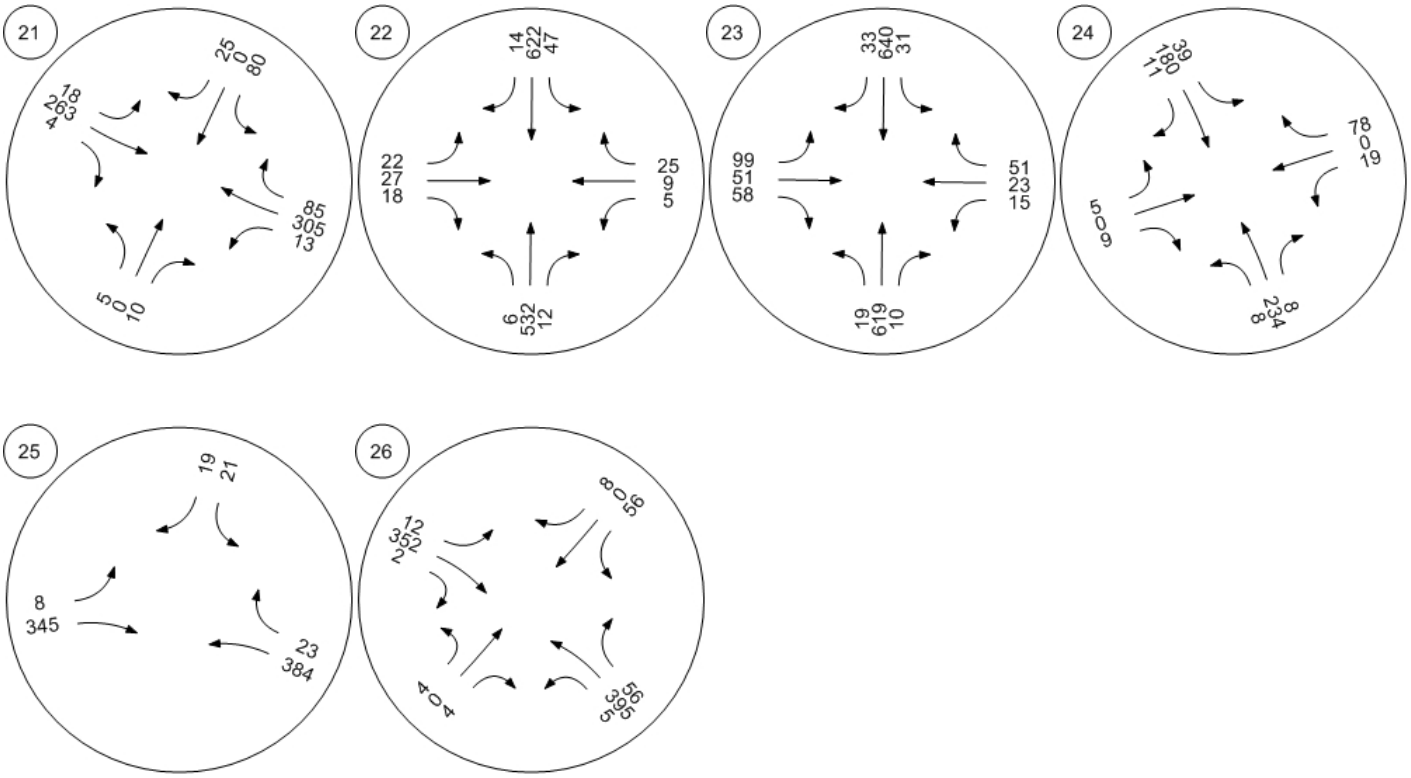
Traffic Volume - Base Volume



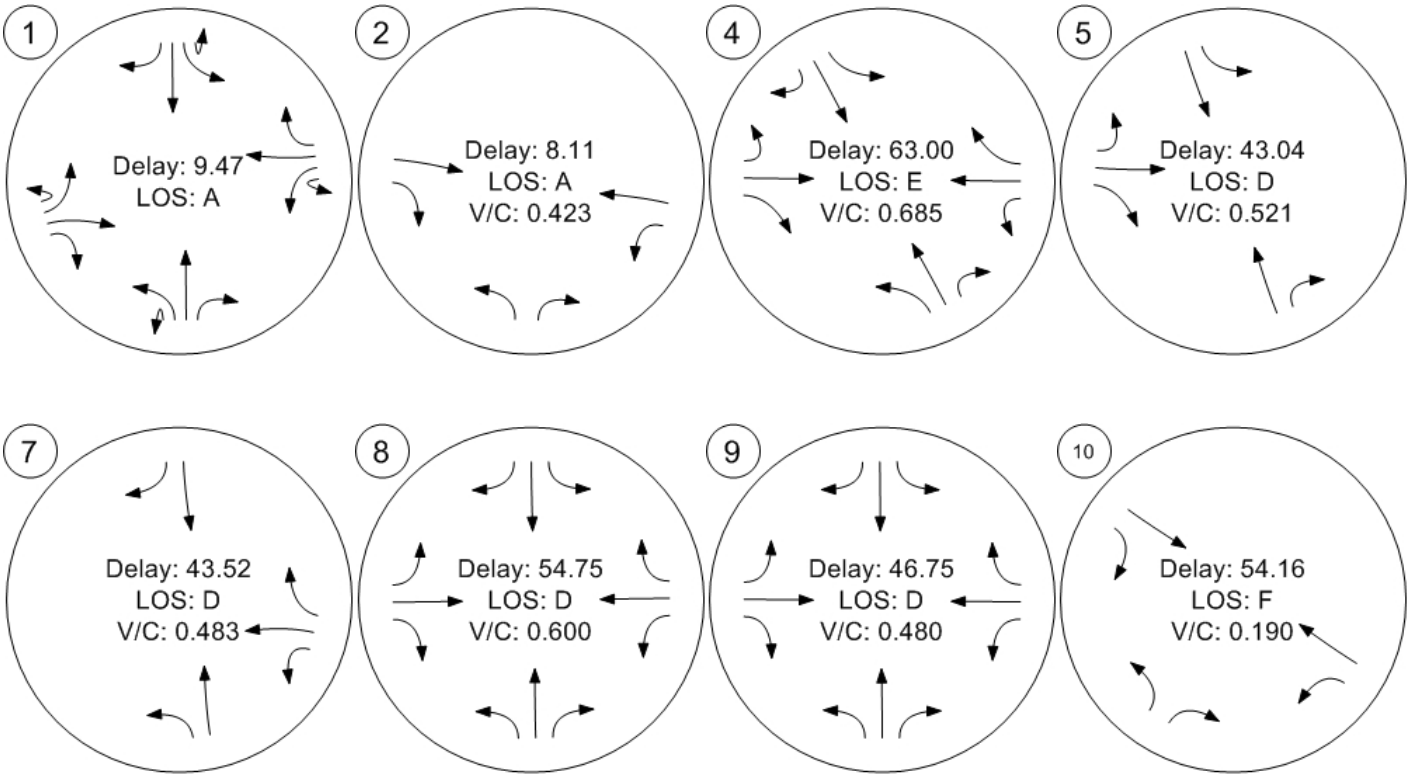
Traffic Volume - Base Volume



Traffic Volume - Base Volume



Traffic Conditions



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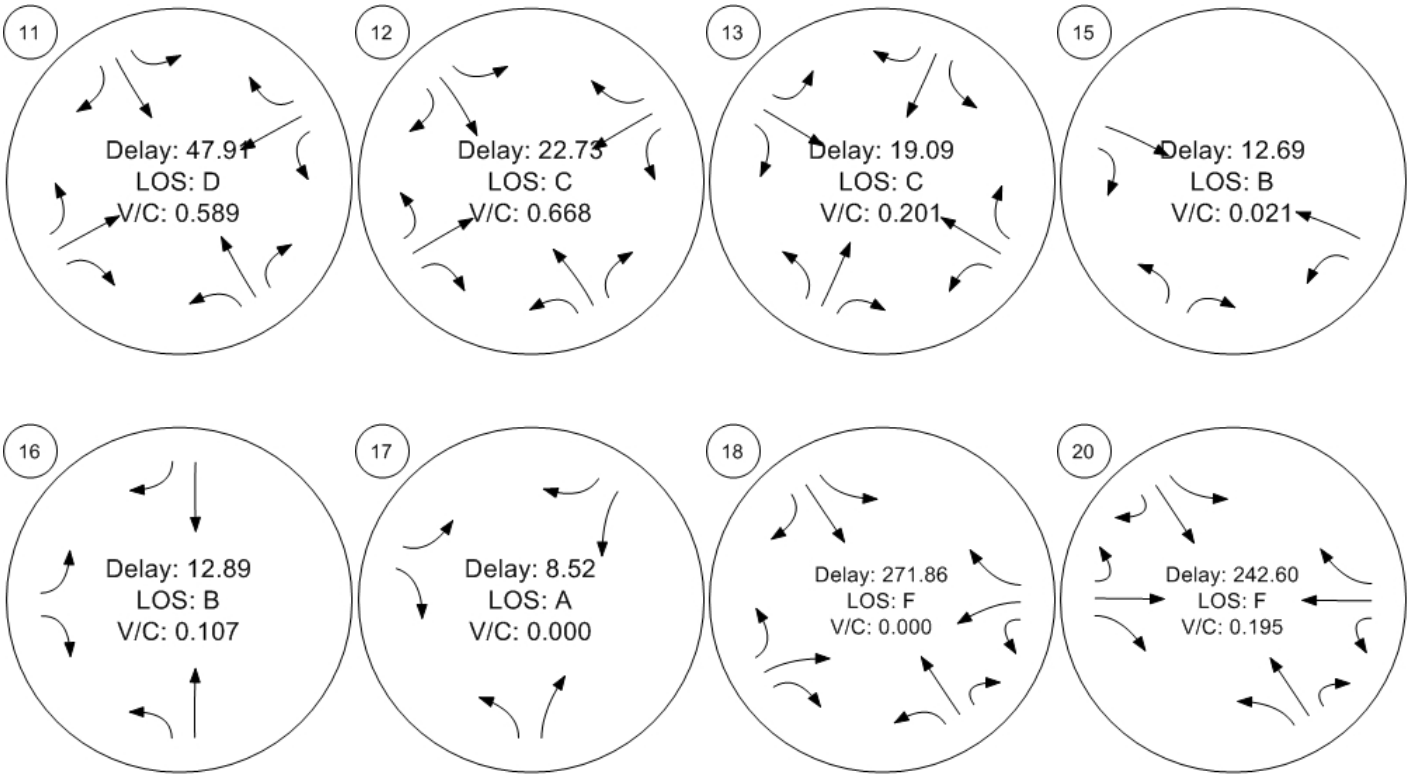

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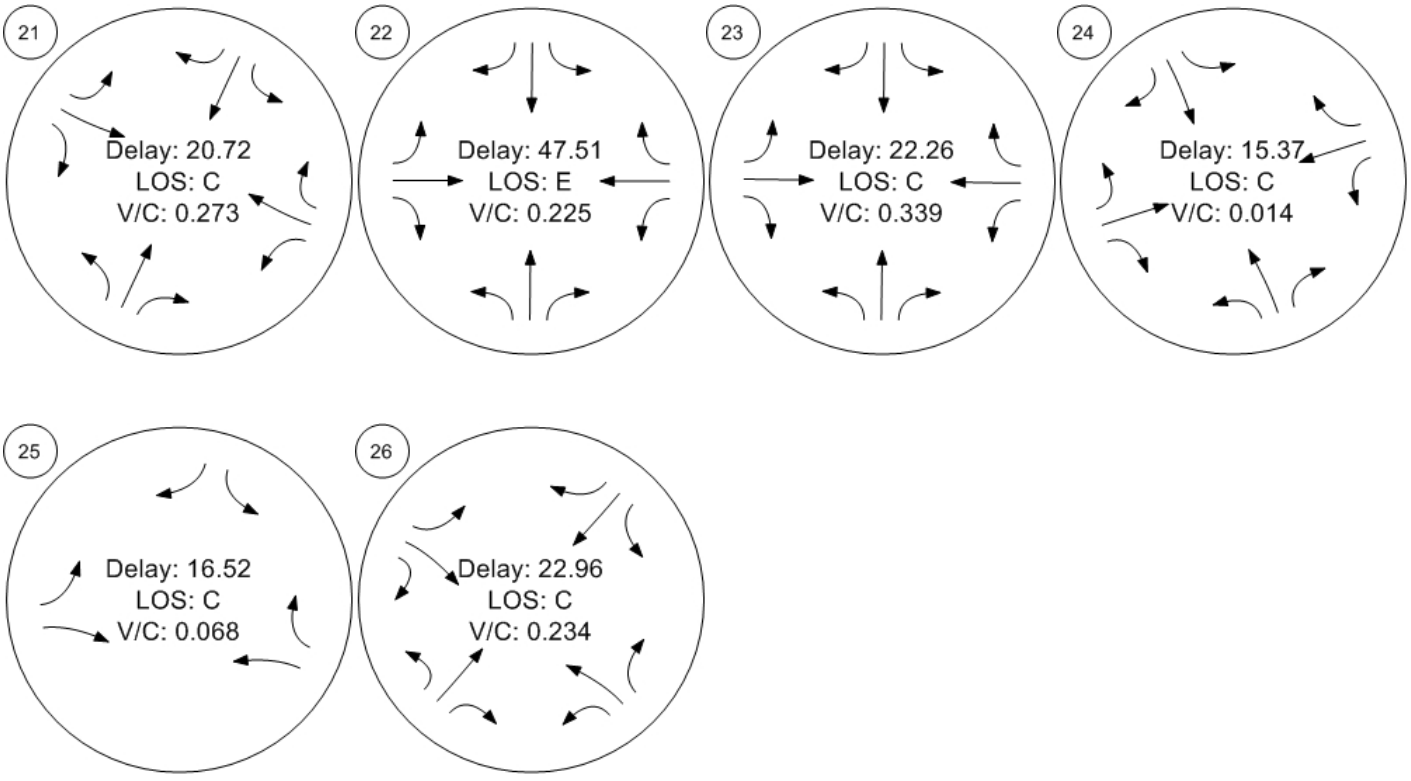
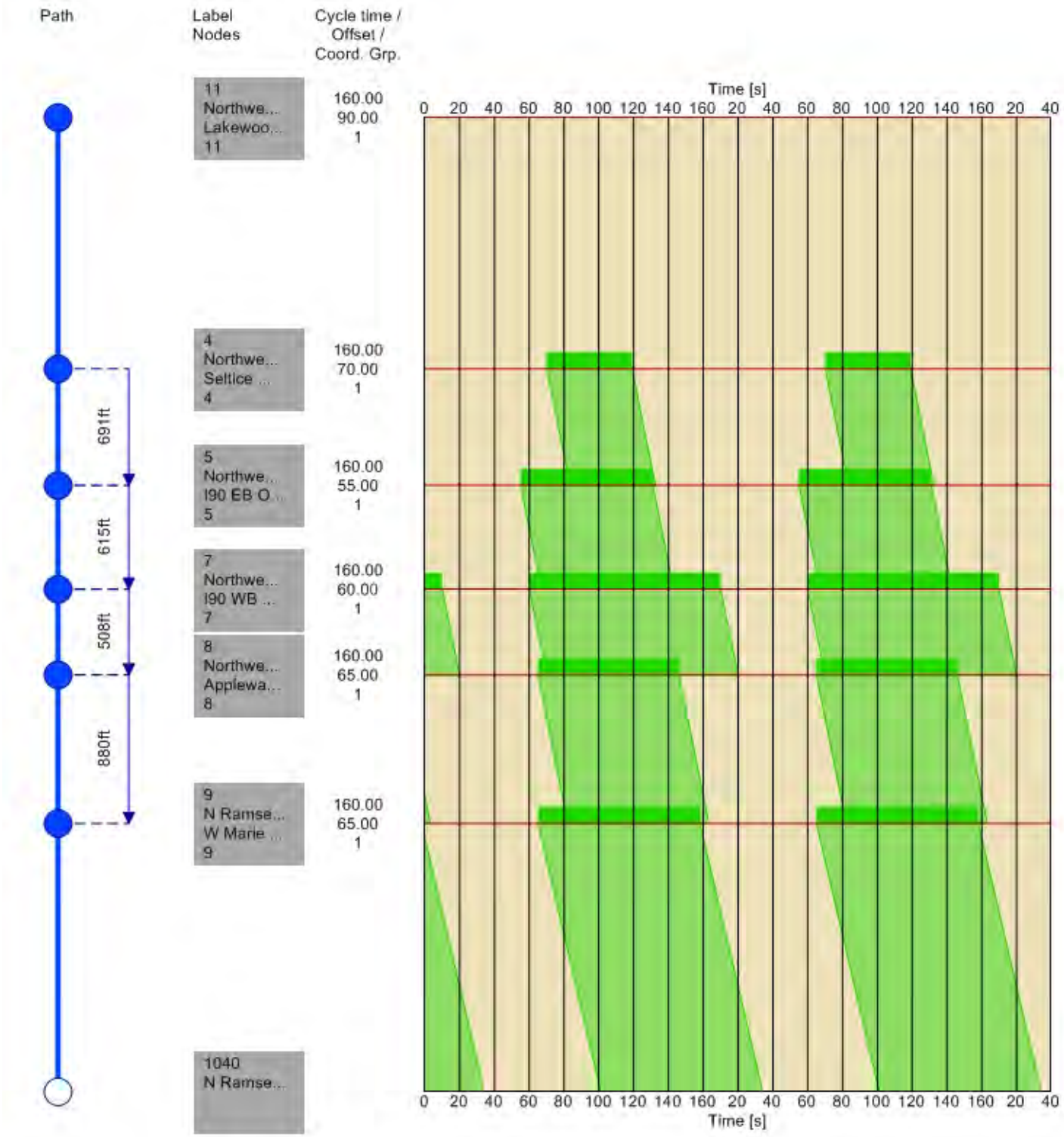


Time Space Diagram - Flowing Off

Route 11: NW Blvd NB

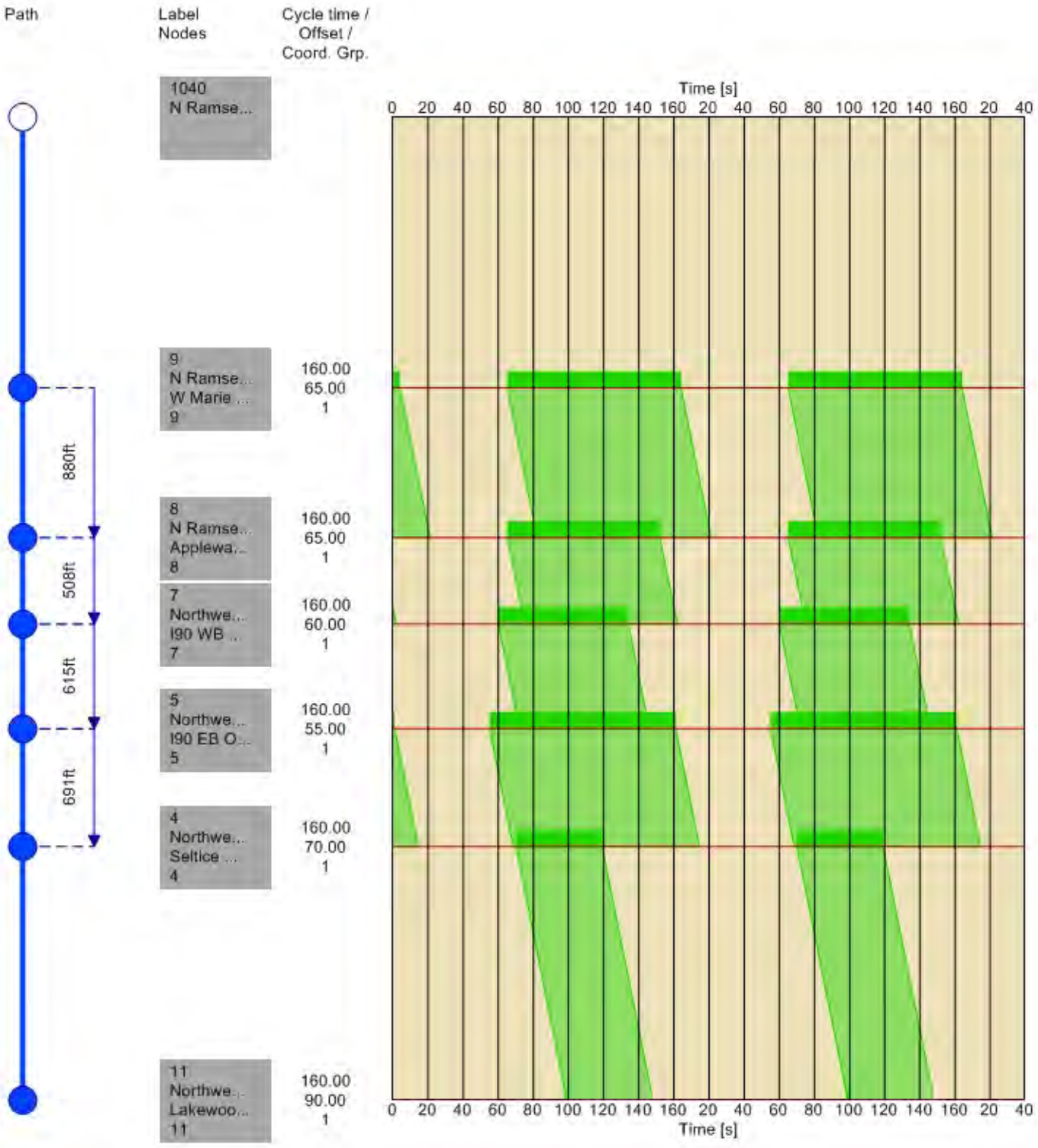
Route 11: NW Blvd NB



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

WELCH-COMER
ENGINEERS | SURVEYORS

Table of Contents

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

21	Riverstone/Old Mill	Two-way stop	HCM 6th Edition	SWB Left	0.275	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	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										
Approach	Eastbound					Westbound				
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										
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										
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]	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
I, 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 [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	21.68	21.68	21.68
l_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
l_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 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]	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
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
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 [ft²/ped]	3150.00	12600.00	3150.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	39.61	39.61	39.61	0.00
l_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
l_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 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]	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	
I, 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

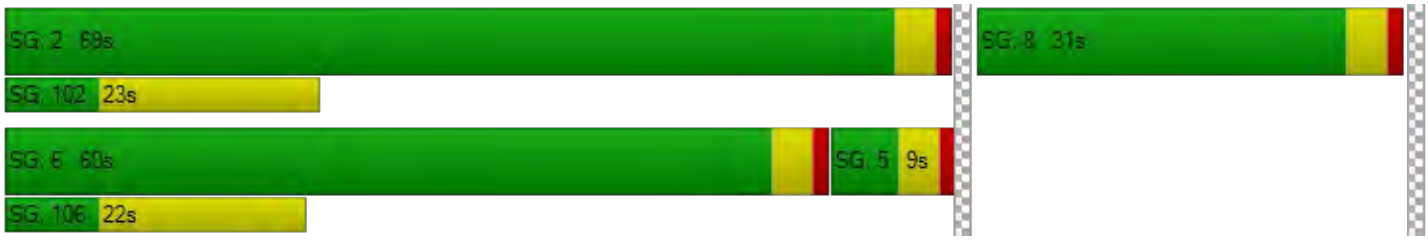
d_M, Delay for Movement [s/veh]	0.00	26.61	26.98	52.69	16.66	0.00	47.47	47.47	41.20	0.00	0.00	0.00
Movement LOS		C	C	D	B		D	D	D			
d_A, Approach Delay [s/veh]	26.63			23.15			46.61			0.00		
Approach LOS	C			C			D			A		
d_I, Intersection Delay [s/veh]	28.76											
Intersection LOS	C											
Intersection 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 [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	39.61	39.61
l_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
l_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
I, 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

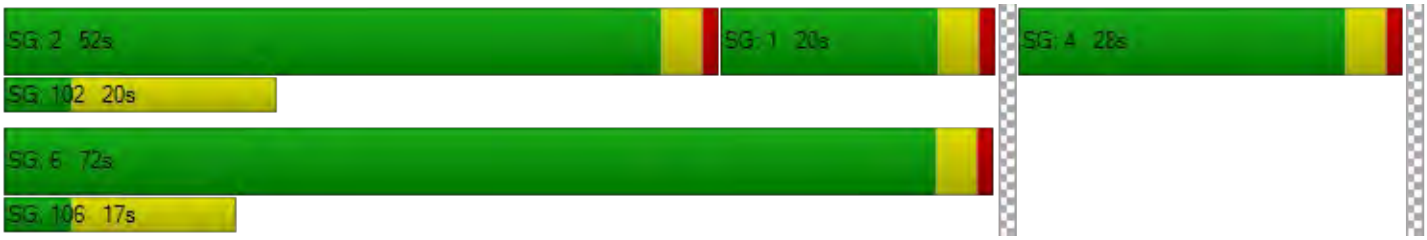
d_M, Delay for Movement [s/veh]	43.55	19.87	0.00	0.00	26.33	27.60	0.00	0.00	0.00	46.76	48.19	48.19
Movement LOS	D	B			C	C				D	D	D
d_A, Approach Delay [s/veh]	27.03			26.63			0.00			47.46		
Approach LOS	C			C			A			D		
d_I, Intersection Delay [s/veh]	28.13											
Intersection LOS	C											
Intersection 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 [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	41.41	41.41
l_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
l_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												
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]	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
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
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 [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	39.61	39.61	39.61
l_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
l_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 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			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
I, 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 [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.41	41.41	41.41	41.41
l_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
l_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
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
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

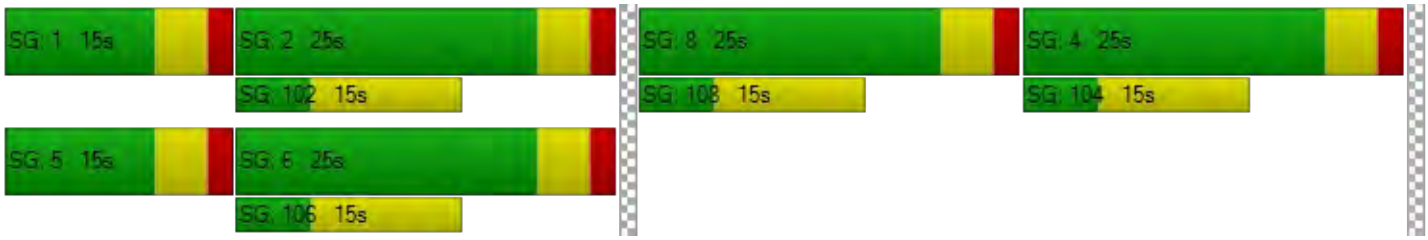
d_M, Delay for Movement [s/veh]	41.39	41.36	38.32	38.36	40.54	40.54	30.22	33.84	33.90	25.07	52.93	31.70
Movement LOS	D	D	D	D	D	D	C	C	C	C	D	C
d_A, Approach Delay [s/veh]	40.95			39.86			33.28			51.83		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	41.69											
Intersection LOS	D											
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 [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.45	36.45	36.45	36.45
l_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
l_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
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.04	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

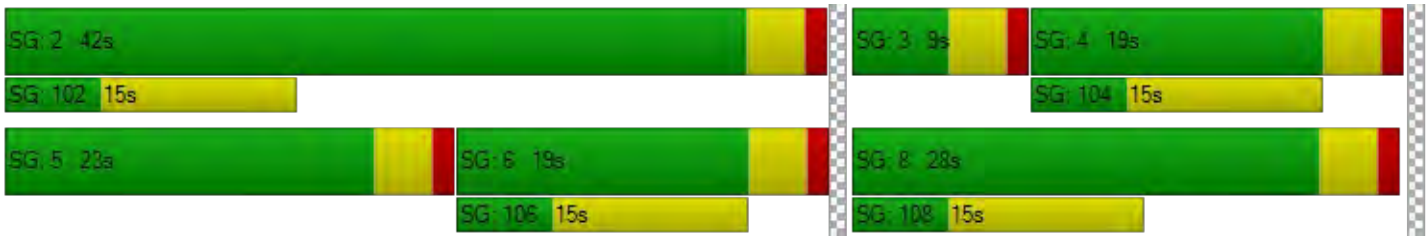
d_M, Delay for Movement [s/veh]	16.85	15.70	15.70	33.92	11.09	22.16	0.00	31.28	31.28	22.06	6.95	6.95
Movement LOS	B	B	B	C	B	C	A	C	C	C	A	A
d_A, Approach Delay [s/veh]	15.94			22.70			31.28			21.28		
Approach LOS	B			C			C			C		
d_I, Intersection Delay [s/veh]	22.73											
Intersection LOS	C											
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 [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	26.58	26.58	26.58	26.58
l_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
l_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		Northeastbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Right	Left	Thru
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		W Riverstone Dr	
Base Volume Input [veh/h]	202	7	9	18	24	253
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]	202	7	9	18	24	253
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]	55	2	2	5	7	69
Total Analysis Volume [veh/h]	220	8	10	20	26	275
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	0.02	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						
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												
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												
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
I, 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 [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.45	36.45	36.45	36.45
l_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
l_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			W Riverstone Dr		W Riverstone Dr	
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			W Riverstone Dr		W Riverstone Dr	
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

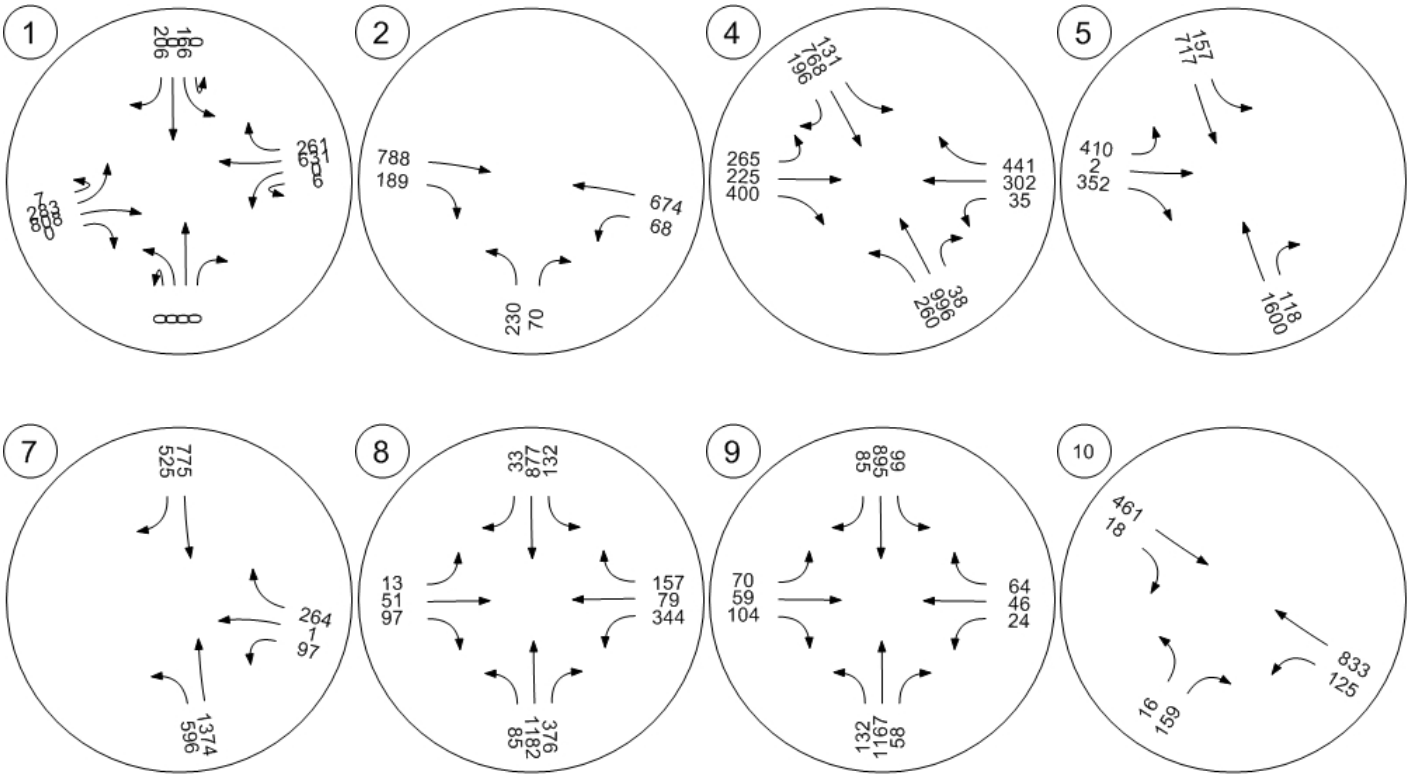
Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

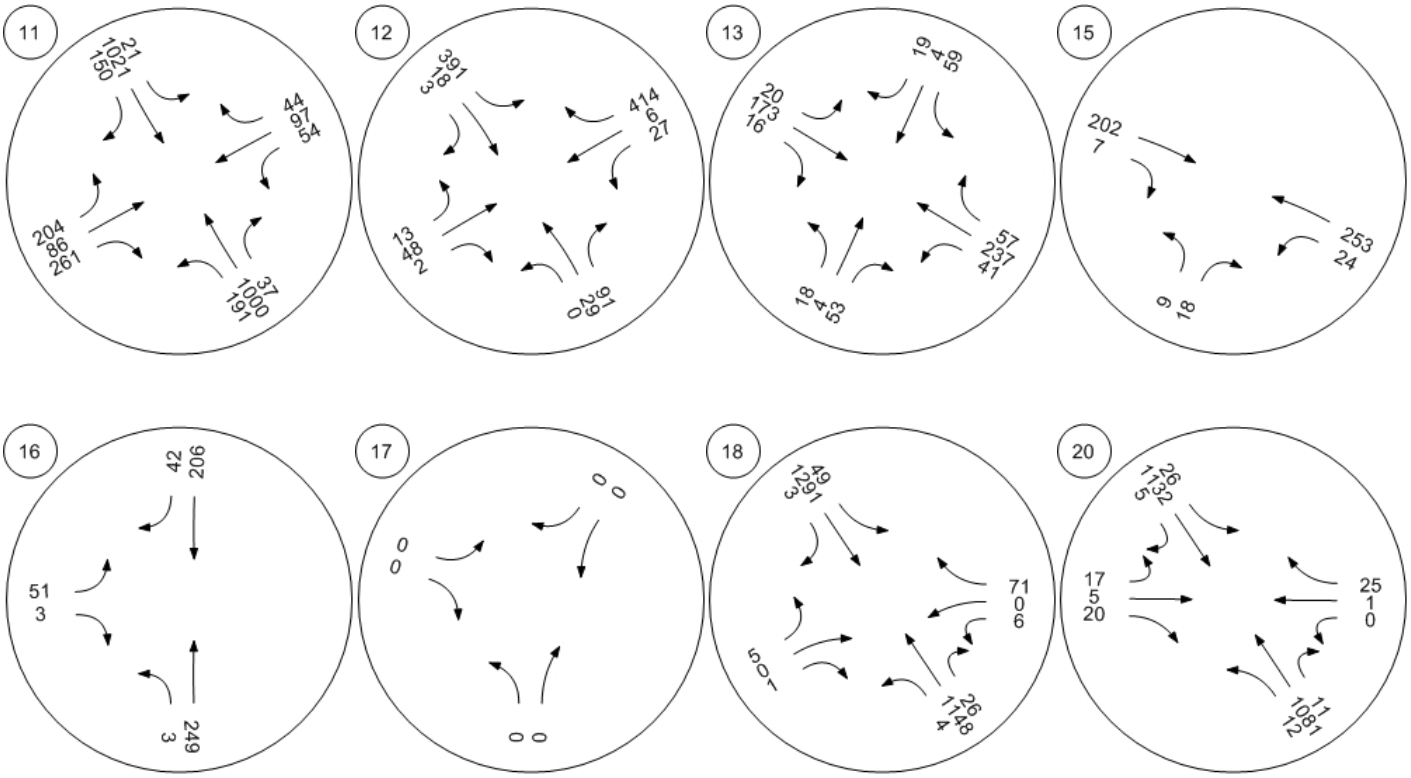
V/C, Movement V/C Ratio	0.02	0.00	0.01	0.23	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	19.18	18.61	10.64	22.96	22.05	15.16	8.08	0.00	0.00	8.40	0.00	0.00
Movement LOS	C	C	B	C	C	C	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.07	0.07	0.07	0.96	0.96	0.96	0.01	0.01	0.01	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

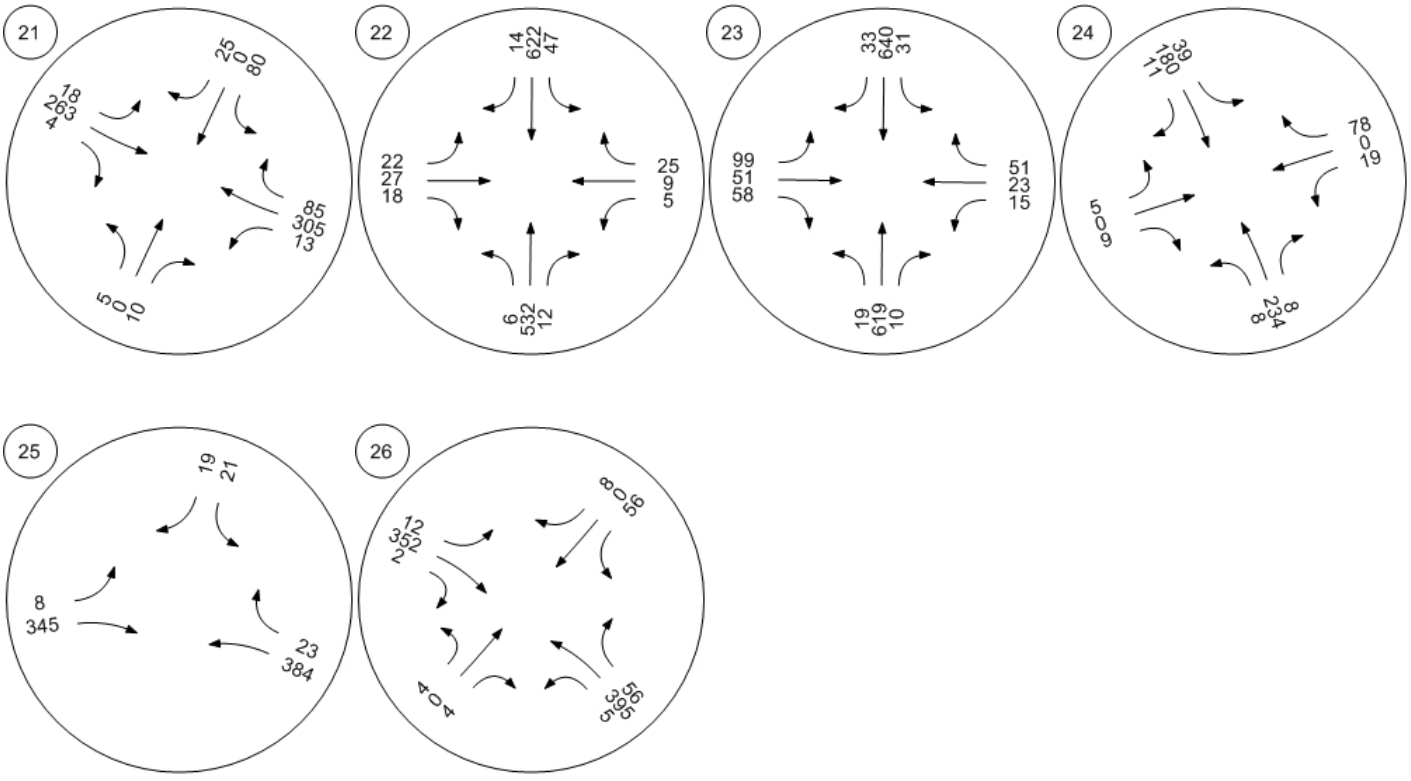
Traffic Volume - Base Volume



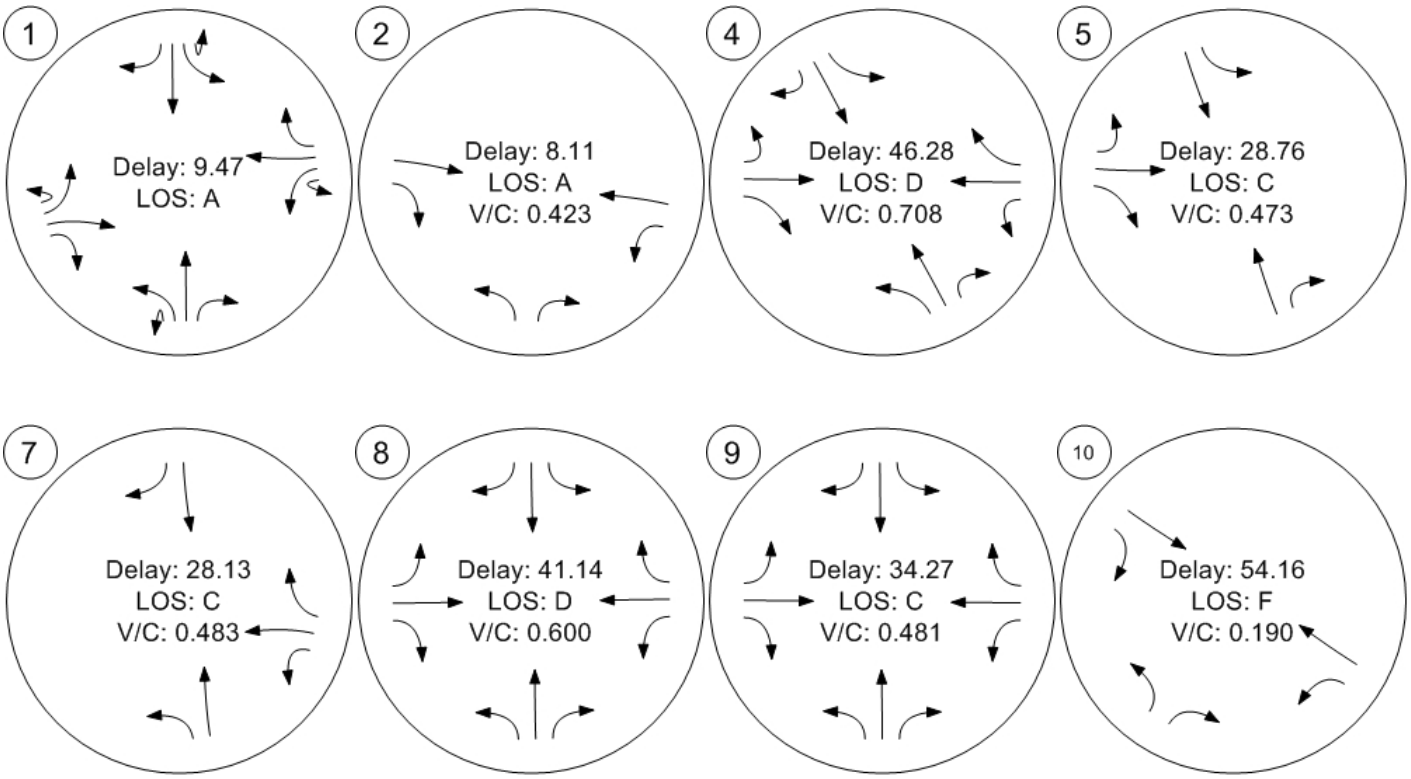
Traffic Volume - Base Volume



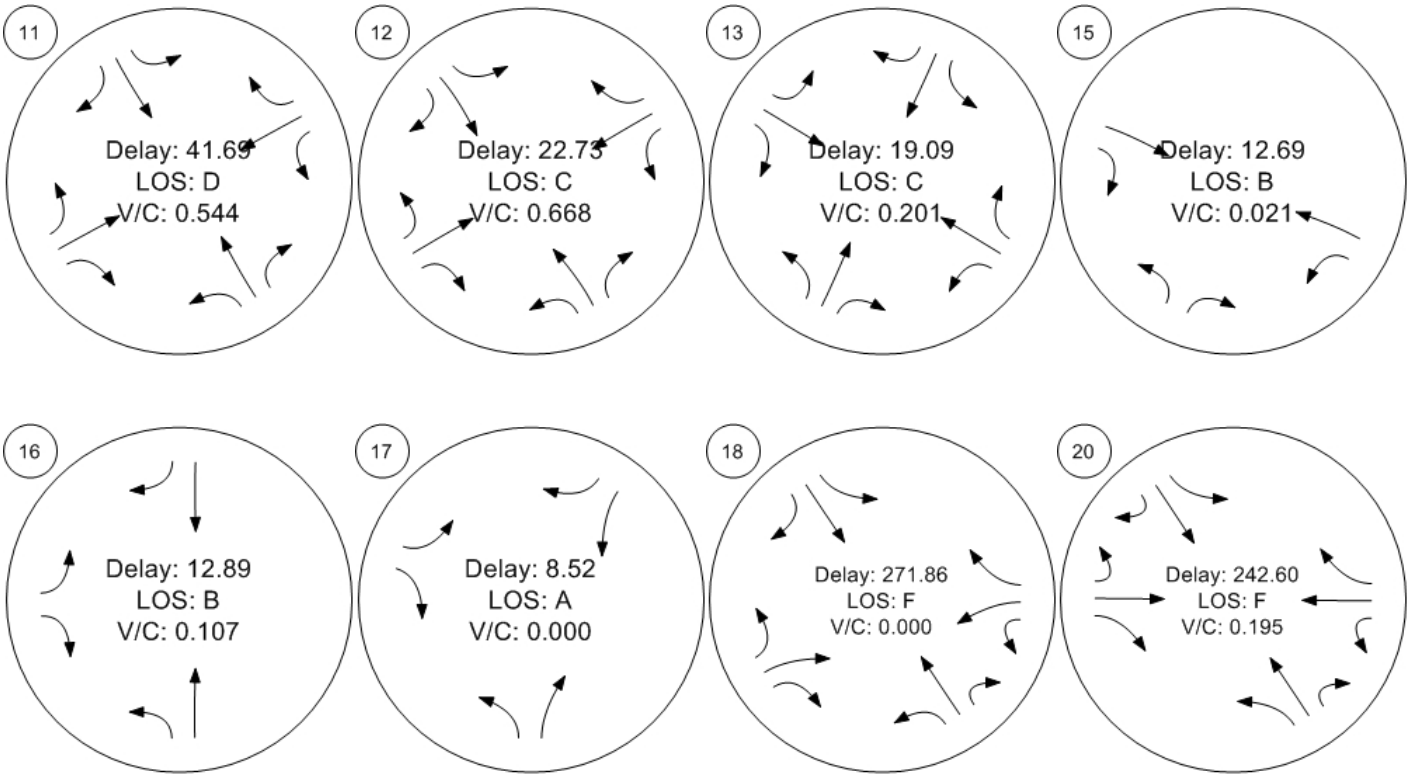
Traffic Volume - Base Volume



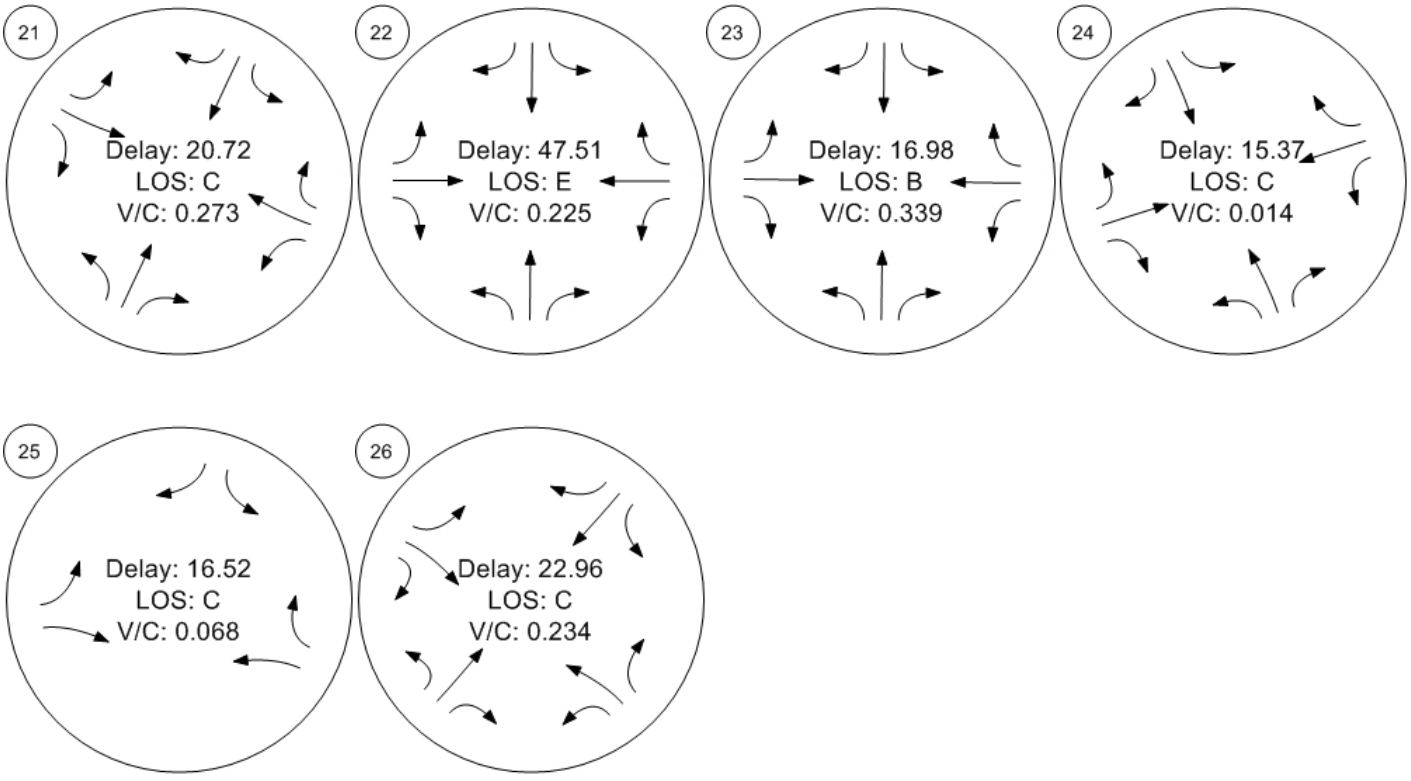
Traffic Conditions



Traffic Conditions



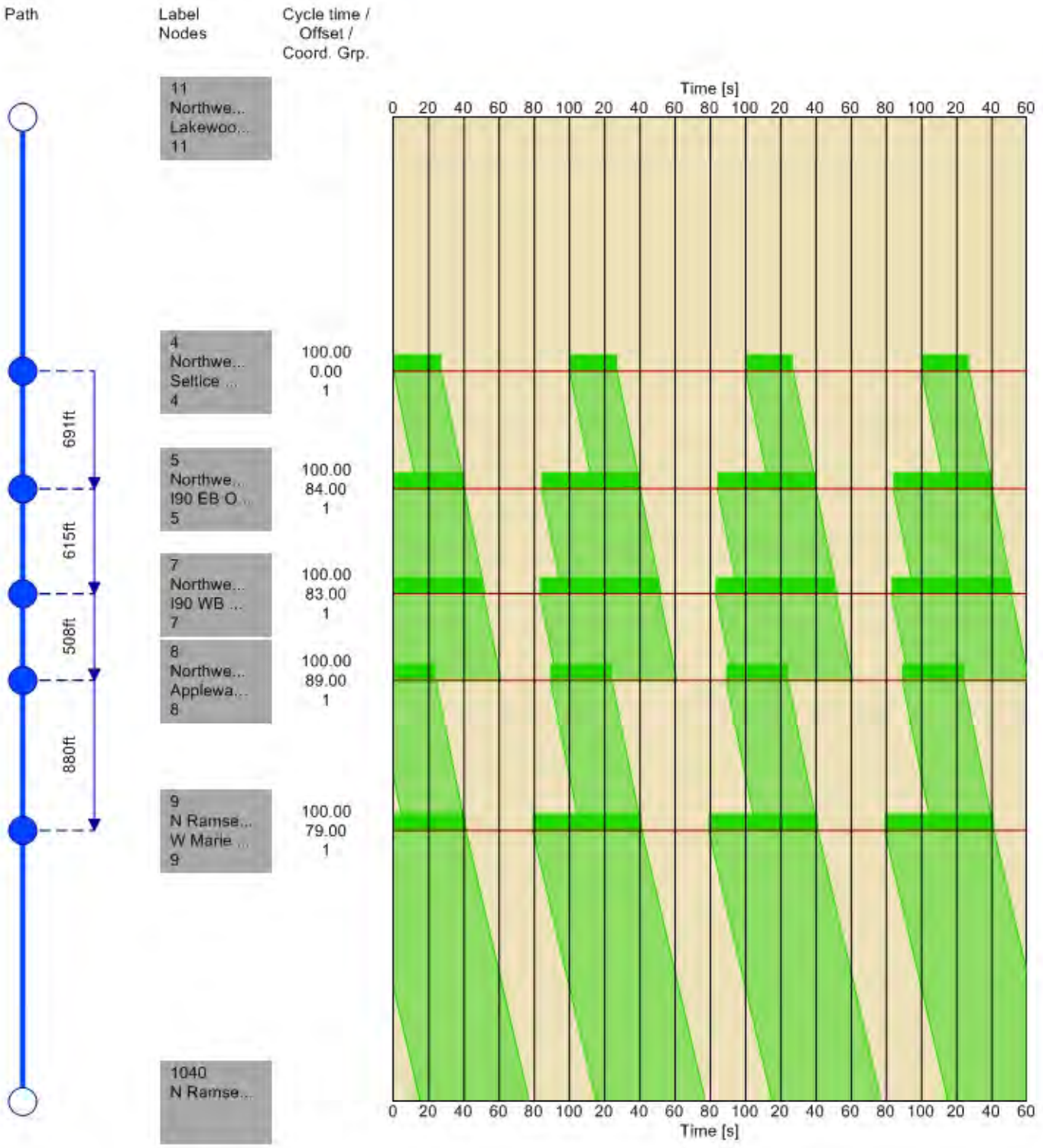
Traffic Conditions



Time Space Diagram - Flowing Off

Route 11: NW Blvd NB

Route 11: NW Blvd NB



APPENDIX G:

2028 Buildout Vistro Intersection Reports

WELCH-COMER
ENGINEERS | SURVEYORS

Table of Contents

Atlas Waterfront TIS

Vistro File: X:\...\41292 Base Model 20181130.vistro
Scenario 9 2028 Buildout w/ SE Lacrosse
Report File: X:\...\20181228 Vistro Report Existing.pdf
1/25/2019

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	WB Right		27.1	D
2	W Riverstone Dr / W Seltice Way	Signalized	HCM 6th Edition	WB Left	0.591	12.0	B
4	Northwest Blvd / W Ironwood Dr	Signalized	HCM 6th Edition	NWB Left	0.786	52.4	D
5	Northwest/I90 EB	Signalized	HCM 6th Edition	SB Left	0.600	35.5	D
7	Northwest/I90 WB	Signalized	HCM 6th Edition	NB Left	0.627	38.1	D
8	Northwest Blvd / W Appleway Ave	Signalized	HCM 6th Edition	SB Left	0.738	51.9	D
9	N Ramsey Rd / W Golf Course Rd	Signalized	HCM 6th Edition	SB Left	0.591	41.0	D
10	Lakewood/Ironwood	Two-way stop	HCM 6th Edition	NEB Left	0.537	190.1	F
11	Northwest/Lakewood	Signalized	HCM 6th Edition	SEB Thru	0.695	43.0	D
12	W Riverstone Dr / N Lakewood Dr	Signalized	HCM 6th Edition	SWB Left	0.785	44.1	D
13	N Beebe Blvd / W Riverstone Dr	Two-way stop	HCM 6th Edition	SWB Left	0.684	62.7	F
15	Riverstone/John's Loop South	Two-way stop	HCM 6th Edition	NEB Left	0.041	19.5	C
16	Riverstone/John's Loop North	Two-way stop	HCM 6th Edition	EB Left	0.250	17.6	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	1,014.9	F
20	Northwest Blvd / W Lacrosse Ave	Signalized	HCM 6th Edition	NEB Right	0.508	12.8	B
21	Riverstone/Old Mill	Two-way stop	HCM 6th Edition	SWB Left	0.490	39.0	E
			HCM 6th				

22	Lincoln Way/Lacrosse Ave.	Two-way stop	HCM 6th Edition	EB Thru	0.370	91.8	F
23	Lincoln Way / Emma Ave.	Signalized	HCM 6th Edition	WB Right	0.410	19.0	B
24	Riverstone/Village North	Two-way stop	HCM 6th Edition	EB Left	0.039	25.4	D
25	Riverstone/Starbucks	Two-way stop	HCM 6th Edition	SB Left	0.113	22.9	C
26	Riverstone/McDonald's	Two-way stop	HCM 6th Edition	SWB Left	0.438	43.3	E

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):	27.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes		

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	1	0	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00	150.00
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	1.16	1.16	1.00	1.16	1.00	1.16	1.16	1.16	1.00	1.16	1.00	1.16
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	203	0	33	0	247
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	55	0	9	0	67
Total Analysis Volume [veh/h]	0	26	0	62	0	121	0	221	0	36	0	268
Pedestrian Volume [ped/h]	0						1					

Intersection Settings

Number of Conflicting Circulating Lanes	2						2					
Circulating Flow Rate [veh/h]	1736						1250					
Exiting Flow Rate [veh/h]	294						810					
Demand Flow Rate [veh/h]	0	24	0	57	0	111	0	203	0	33	0	247
Adjusted Demand Flow Rate [veh/h]	0	26	0	62	0	121	0	221	0	36	0	268

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)	1350.00	1420.00	1350.00	1420.00
B (coefficient)	0.00092	0.00085	0.00092	0.00085
HV Adjustment Factor	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	101	113	263	274
Capacity of Entry and Bypass Lanes [veh/h]	274	325	428	491
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	268	319	420	482
X, volume / capacity	0.37	0.35	0.61	0.56

Movement, Approach, & Intersection Results

Lane LOS	C	C	C	C
95th-Percentile Queue Length [veh]	1.61	1.51	3.97	3.35
95th-Percentile Queue Length [ft]	40.33	37.83	99.33	83.71
Approach Delay [s/veh]	20.79		21.74	
Approach LOS	C		C	
Intersection Delay [s/veh]	27.11			
Intersection LOS	D			

Intersection Setup

Name										
Approach	Eastbound					Westbound				
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										
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	1.16	1.16	1.00	1.16	1.16	1.16	1.16	1.16	1.00	1.16
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]	14	345	0	996	16	7	216	866	0	328
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	94	0	271	4	2	59	235	0	89
Total Analysis Volume [veh/h]	15	375	0	1083	17	8	235	941	0	357
Pedestrian Volume [ped/h]	0					0				

Intersection Settings

Number of Conflicting Circulating Lanes	1					1				
Circulating Flow Rate [veh/h]	510					488				
Exiting Flow Rate [veh/h]	0					0				
Demand Flow Rate [veh/h]	14	345	0	996	16	7	216	866	0	328
Adjusted Demand Flow Rate [veh/h]	15	375	0	1083	17	8	235	941	0	357

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]	715	806	739	834
Capacity of Entry and Bypass Lanes [veh/h]	893	893	912	912
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	876	876	894	894
X, volume / capacity	0.80	0.90	0.81	0.91

Movement, Approach, & Intersection Results

Lane LOS	C	D	C	D
95th-Percentile Queue Length [veh]	8.61	12.67	9.01	13.36
95th-Percentile Queue Length [ft]	215.37	316.83	225.28	333.93
Approach Delay [s/veh]	28.01		28.93	
Approach LOS	D		D	
Intersection Delay [s/veh]	27.11			
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]	488					510				
Exiting Flow Rate [veh/h]	1462					1275				
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]	27.11	
Intersection LOS	D	

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

Control Type:	Signalized	Delay (sec / veh):	12.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.591

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	1.16	1.16	1.16	1.16	1.16	1.16
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]	325	124	1093	228	142	1089
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]	88	34	297	62	39	296
Total Analysis Volume [veh/h]	353	135	1188	248	154	1184
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]	16	16	36	36	36	36
g / C, Green / Cycle	0.26	0.26	0.60	0.60	0.60	0.60
(v / s)_i Volume / Saturation Flow Rate	0.22	0.09	0.37	0.18	0.36	0.37
s, saturation flow rate [veh/h]	1603	1431	3204	1401	424	3204
c, Capacity [veh/h]	422	377	1934	846	258	1934
d1, Uniform Delay [s]	20.92	18.01	7.51	5.71	21.25	7.49
k, delay calibration	0.11	0.11	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.44	0.58	1.47	0.88	9.79	1.46
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	0.84	0.36	0.61	0.29	0.60	0.61
d, Delay for Lane Group [s/veh]	25.36	18.59	8.98	6.60	31.04	8.95
Lane Group LOS	C	B	A	A	C	A
Critical Lane Group	Yes	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	4.78	1.46	3.69	1.25	2.67	3.67
50th-Percentile Queue Length [ft/ln]	119.62	36.61	92.28	31.36	66.66	91.75
95th-Percentile Queue Length [veh/ln]	8.37	2.64	6.64	2.26	4.80	6.61
95th-Percentile Queue Length [ft/ln]	209.30	65.89	166.10	56.45	119.98	165.15

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	25.36	18.59	8.98	6.60	31.04	8.95
Movement LOS	C	B	A	A	C	A
d_A, Approach Delay [s/veh]	23.49		8.56		11.49	
Approach LOS	C		A		B	
d_I, Intersection Delay [s/veh]	12.00					
Intersection LOS	B					
Intersection V/C	0.591					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	21.68	21.68	21.68
l_p,int, Pedestrian LOS Score for Intersection	2.429	2.957	2.886
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
l_b,int, Bicycle LOS Score for Intersection	4.132	4.245	4.164
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):	52.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.786

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	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16
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	378	0	0	381	0	0	7	0	0	349
Total Hourly Volume [veh/h]	447	304	126	42	419	131	381	1183	38	152	924	99
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]	121	83	34	11	114	36	104	321	10	41	251	27
Total Analysis Volume [veh/h]	486	330	137	46	455	142	414	1286	41	165	1004	108
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	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]	21	40	0	11	30	0	22	49	0	10	37	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]	17	34	34	4	20	20	58	48	48	58	35	35
g / C, Green / Cycle	0.15	0.30	0.30	0.03	0.18	0.18	0.52	0.43	0.43	0.52	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.14	0.18	0.09	0.03	0.13	0.09	0.38	0.25	0.25	0.24	0.28	0.07
s, saturation flow rate [veh/h]	3459	1870	1589	1781	3560	1589	1083	3560	1841	698	3560	1589
c, Capacity [veh/h]	534	570	485	62	659	294	434	1542	797	295	1132	505
d1, Uniform Delay [s]	51.43	42.68	38.30	53.28	45.22	43.33	58.58	37.46	37.47	58.86	47.24	36.61
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.34	0.93	0.32	16.39	1.30	1.23	33.05	1.52	2.92	7.43	10.34	0.96
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	0.91	0.58	0.28	0.75	0.69	0.48	0.95	0.57	0.57	0.56	0.89	0.21
d, Delay for Lane Group [s/veh]	57.77	43.61	38.61	69.67	46.52	44.55	91.62	38.98	40.39	66.29	57.58	37.57
Lane Group LOS	E	D	D	E	D	D	F	D	D	E	E	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.60	9.41	3.66	1.54	6.27	3.78	14.84	12.28	13.02	4.51	16.19	2.89
50th-Percentile Queue Length [ft/ln]	189.92	235.29	91.40	38.54	156.71	94.62	370.94	307.09	325.45	112.68	404.77	72.28
95th-Percentile Queue Length [veh/ln]	12.12	14.44	6.58	2.78	10.37	6.81	21.15	18.03	18.94	7.99	22.79	5.20
95th-Percentile Queue Length [ft/ln]	302.93	361.07	164.52	69.38	259.37	170.32	528.86	450.79	473.38	199.72	569.74	130.11

Movement, Approach, & Intersection Results

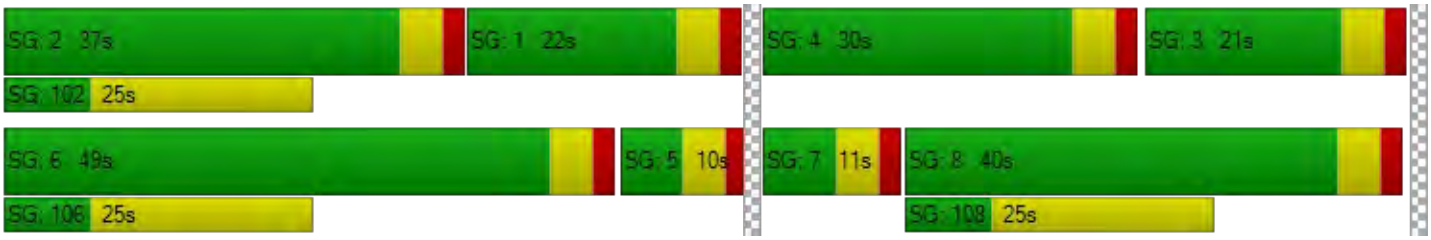
d_M, Delay for Movement [s/veh]	57.77	43.61	38.61	69.67	46.52	44.55	91.62	39.43	40.39	66.29	57.58	37.57
Movement LOS	E	D	D	E	D	D	F	D	D	E	E	D
d_A, Approach Delay [s/veh]	50.12			47.74			51.86			57.01		
Approach LOS	D			D			D			E		
d_I, Intersection Delay [s/veh]	52.35											
Intersection LOS	D											
Intersection V/C	0.786											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	3150.00	12600.00	3150.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	44.55	44.55	44.55	0.00
l_p,int, Pedestrian LOS Score for Intersection	3.495	3.381	2.922	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]	636	455	800	582
d_b, Bicycle Delay [s]	25.57	32.84	19.80	27.65
l_b,int, Bicycle LOS Score for Intersection	3.756	2.404	2.521	2.901
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):	35.5
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.			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	1.16	1.16	1.16	1.16	1.00	1.16	1.16	1.16	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	1994	142	182	1033	0	476	2	114	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	542	39	49	281	0	129	1	31	0	0	0
Total Analysis Volume [veh/h]	0	2167	154	198	1123	0	517	2	124	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]	98.0
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	73	0	9	82	0	0	28	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]	71	71	80	80	22	22	22	
g / C, Green / Cycle	0.65	0.65	0.73	0.73	0.20	0.20	0.20	
(v / s)_i Volume / Saturation Flow Rate	0.43	0.43	0.27	0.32	0.15	0.15	0.08	
s, saturation flow rate [veh/h]	3560	1807	739	3560	1781	1782	1589	
c, Capacity [veh/h]	2300	1167	413	2593	355	355	316	
d1, Uniform Delay [s]	32.52	32.23	67.24	22.46	48.52	48.52	45.02	
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	1.59	2.97	3.94	0.53	2.95	2.95	0.79	
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	0.67	0.66	0.48	0.43	0.73	0.73	0.39	
d, Delay for Lane Group [s/veh]	34.11	35.20	71.19	22.99	51.48	51.47	45.81	
Lane Group LOS	C	D	E	C	D	D	D	
Critical Lane Group	Yes	No	Yes	No	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	21.27	21.67	1.93	14.06	7.79	7.80	3.47	
50th-Percentile Queue Length [ft/ln]	531.64	541.76	48.25	351.57	194.84	194.90	86.73	
95th-Percentile Queue Length [veh/ln]	28.83	29.30	3.47	20.21	12.37	12.38	6.24	
95th-Percentile Queue Length [ft/ln]	720.70	732.62	86.85	505.32	309.30	309.38	156.12	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	34.42	35.20	71.19	22.99	0.00	51.48	51.47	45.81	0.00	0.00	0.00
Movement LOS		C	D	E	C		D	D	D			
d_A, Approach Delay [s/veh]	34.47			30.21			50.38			0.00		
Approach LOS	C			C			D			A		
d_I, Intersection Delay [s/veh]	35.55											
Intersection LOS	D											
Intersection V/C	0.600											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	44.55	44.55
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.819	2.093
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]	1255	1418	436	0
d_b, Bicycle Delay [s]	7.64	4.65	33.62	55.00
l_b,int, Bicycle LOS Score for Intersection	2.850	2.649	3.193	4.132
Bicycle LOS	C	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):	38.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.627

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	1.16	1.16	1.00	1.00	1.16	1.16	1.00	1.00	1.00	1.16	1.16	1.16
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]	735	1688	0	0	1031	307	0	0	0	182	1	124
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]	200	459	0	0	280	83	0	0	0	49	0	34
Total Analysis Volume [veh/h]	799	1835	0	0	1121	334	0	0	0	198	1	135
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]	93.0
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]	32	88	0	0	56	0	0	0	0	0	22	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]	86	86	55	55		16	16
g / C, Green / Cycle	0.78	0.78	0.50	0.50		0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.45	0.52	0.27	0.29		0.11	0.09
s, saturation flow rate [veh/h]	1762	3560	3560	1667		1781	1591
c, Capacity [veh/h]	1173	2777	1778	833		263	235
d1, Uniform Delay [s]	54.99	27.73	34.44	35.30		45.03	43.76
k, delay calibration	0.50	0.50	0.41	0.50		0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	3.20	1.25	0.99	2.97		4.37	2.26
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	0.68	0.66	0.55	0.58		0.75	0.58
d, Delay for Lane Group [s/veh]	58.19	28.99	35.42	38.26		49.40	46.02
Lane Group LOS	E	C	D	D		D	D
Critical Lane Group	No	Yes	No	No		Yes	No
50th-Percentile Queue Length [veh/ln]	9.86	24.39	13.28	13.81		5.44	3.56
50th-Percentile Queue Length [ft/ln]	246.57	609.77	332.07	345.36		135.93	89.10
95th-Percentile Queue Length [veh/ln]	15.01	32.49	19.26	19.91		9.26	6.42
95th-Percentile Queue Length [ft/ln]	375.34	812.26	481.49	497.75		231.53	160.39

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	58.19	28.99	0.00	0.00	35.81	38.26	0.00	0.00	0.00	49.40	46.02	46.02
Movement LOS	E	C			D	D				D	D	D
d_A, Approach Delay [s/veh]	37.84			36.37			0.00			48.02		
Approach LOS	D			D			A			D		
d_I, Intersection Delay [s/veh]	38.13											
Intersection LOS	D											
Intersection V/C	0.627											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	46.37	46.37
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.715	2.278
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]	1527	945	0	327
d_b, Bicycle Delay [s]	3.07	15.29	55.00	38.47
l_b,int, Bicycle LOS Score for Intersection	3.733	2.526	4.132	2.411
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):	51.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.738

Intersection Setup

Name	Northwest Blvd.			N Ramsey Rd.			Appleway Ave.			Appleway 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	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	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16
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]	99	1435	117	153	1091	30	15	59	29	457	92	47
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]	27	390	32	42	296	8	4	16	8	124	25	13
Total Analysis Volume [veh/h]	108	1560	127	166	1186	33	16	64	32	497	100	51
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			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]	92.0
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]	12	50	0	10	48	0	9	9	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]	112	112	112	112	112	112	112	112	112	112	112	112
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]	9	58	58	6	55	55	6	6	6	25	25	25
g / C, Green / Cycle	0.08	0.52	0.52	0.05	0.49	0.49	0.06	0.06	0.06	0.22	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.07	0.49	0.09	0.05	0.36	0.36	0.01	0.04	0.02	0.16	0.06	0.04
s, saturation flow rate [veh/h]	1603	3204	1431	3113	1683	1667	1603	1683	1431	3113	1683	1431
c, Capacity [veh/h]	136	1670	745	169	825	817	92	97	82	700	378	322
d1, Uniform Delay [s]	53.52	44.45	25.70	55.02	40.15	40.18	50.34	51.80	50.97	48.31	43.13	41.95
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
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
d2, Incremental Delay [s]	9.94	11.13	0.50	28.73	5.95	6.04	0.89	7.56	3.00	1.35	0.37	0.23
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	0.79	0.93	0.17	0.98	0.74	0.74	0.17	0.66	0.39	0.71	0.26	0.16
d, Delay for Lane Group [s/veh]	63.46	55.58	26.19	83.75	46.10	46.22	51.23	59.36	53.97	49.66	43.50	42.18
Lane Group LOS	E	E	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]	3.51	25.54	3.15	3.07	18.76	18.63	0.45	1.95	0.93	7.41	2.74	1.36
50th-Percentile Queue Length [ft/ln]	87.70	638.55	78.78	76.82	468.88	465.78	11.16	48.67	23.16	185.33	68.43	33.89
95th-Percentile Queue Length [veh/ln]	6.31	33.83	5.67	5.53	25.86	25.71	0.80	3.50	1.67	11.88	4.93	2.44
95th-Percentile Queue Length [ft/ln]	157.86	845.76	141.80	138.28	646.44	642.75	20.09	87.61	41.70	296.96	123.17	61.01

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	63.46	55.58	26.19	83.75	46.16	46.22	51.23	59.36	53.97	49.66	43.50	42.18
Movement LOS	E	E	C	F	D	D	D	E	D	D	D	D
d_A, Approach Delay [s/veh]	53.97			50.66			56.66			48.12		
Approach LOS	D			D			E			D		
d_I, Intersection Delay [s/veh]	51.92											
Intersection LOS	D											
Intersection V/C	0.738											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	44.55	44.55	44.55
l_p,int, Pedestrian LOS Score for Intersection	0.000	3.072	2.387	2.937
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]	836	800	91	673
d_b, Bicycle Delay [s]	18.62	19.80	50.11	24.22
l_b,int, Bicycle LOS Score for Intersection	3.328	2.709	1.883	2.852
Bicycle LOS	C	B	A	C

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):	41.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.591

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	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16
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]	153	1418	57	115	1112	84	81	68	73	28	53	44
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]	42	385	15	31	302	23	22	18	20	8	14	12
Total Analysis Volume [veh/h]	166	1541	62	125	1209	91	88	74	79	30	58	48
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			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]	81.0
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]	20	79	0	10	69	0	0	21	0	0	21	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]	114	114	114	114	114	114	114	114	114	114
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	20	20	20	20
g / C, Green / Cycle	0.75	0.65	0.65	0.74	0.66	0.66	0.18	0.18	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.30	0.48	0.48	0.26	0.39	0.39	0.08	0.10	0.03	0.07
s, saturation flow rate [veh/h]	554	1683	1660	472	1683	1642	1159	1542	1110	1558
c, Capacity [veh/h]	306	1093	1079	249	1107	1080	178	270	139	273
d1, Uniform Delay [s]	64.14	35.50	35.72	69.88	30.80	30.90	50.04	43.03	50.81	41.59
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.74	4.40	4.60	7.04	2.34	2.43	2.10	1.86	0.76	0.90
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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	0.54	0.73	0.74	0.50	0.59	0.60	0.49	0.57	0.22	0.39
d, Delay for Lane Group [s/veh]	70.88	39.90	40.32	76.93	33.14	33.32	52.14	44.89	51.57	42.49
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]	4.06	24.03	24.01	2.90	18.58	18.26	2.52	4.05	0.84	2.68
50th-Percentile Queue Length [ft/ln]	101.59	600.80	600.30	72.38	464.40	456.41	63.09	101.14	21.07	67.10
95th-Percentile Queue Length [veh/ln]	7.31	32.07	32.05	5.21	25.64	25.26	4.54	7.28	1.52	4.83
95th-Percentile Queue Length [ft/ln]	182.85	801.79	801.21	130.29	641.11	631.59	113.56	182.06	37.93	120.78

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	70.88	40.10	40.32	76.93	33.22	33.32	52.14	44.89	44.89	51.57	42.49	42.49
Movement LOS	E	D	D	E	C	C	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	43.00			37.06			47.54			44.50		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	40.99											
Intersection LOS	D											
Intersection V/C	0.591											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	46.37	46.37	46.37	46.37
l_p,int, Pedestrian LOS Score for Intersection	3.083	3.173	2.482	2.315
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]	1345	1164	291	291
d_b, Bicycle Delay [s]	5.89	9.62	40.16	40.16
l_b,int, Bicycle LOS Score for Intersection	3.027	2.748	2.036	1.834
Bicycle LOS	C	B	B	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):	190.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.537

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	1.16	1.16	1.16	1.16	1.16	1.16
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]	19	223	192	1036	578	21
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	61	52	282	157	6
Total Analysis Volume [veh/h]	21	242	209	1126	628	23
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.54	0.51	0.22	0.01	0.01	0.00
d_M, Delay for Movement [s/veh]	190.06	105.58	9.95	0.00	0.00	0.00
Movement LOS	F	F	A	A	A	A
95th-Percentile Queue Length [veh/ln]	10.68	10.68	0.86	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	266.90	266.90	21.38	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	112.32		1.56		0.00	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	14.06					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 11: Northwest/Lakewood

Control Type:	Signalized	Delay (sec / veh):	43.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.695

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	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16
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]	266	139	76	63	160	41	215	1239	37	24	1224	50
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	38	21	17	43	11	58	337	10	7	333	14
Total Analysis Volume [veh/h]	289	151	83	68	174	45	234	1347	40	26	1330	54
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]	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]	92	92	92	92	92	92	92	92	92	92	92
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]	14	14	14	13	13	50	42	42	50	35	35
g / C, Green / Cycle	0.15	0.15	0.15	0.15	0.15	0.54	0.46	0.46	0.54	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.12	0.12	0.05	0.04	0.12	0.31	0.37	0.37	0.05	0.37	0.03
s, saturation flow rate [veh/h]	1781	1840	1589	1781	1805	759	1870	1851	545	3560	1589
c, Capacity [veh/h]	271	280	242	259	262	372	855	847	282	1356	605
d1, Uniform Delay [s]	37.62	37.62	34.87	34.91	38.21	19.53	21.54	21.60	19.55	39.79	26.05
k, delay calibration	0.11	0.11	0.11	0.11	0.20	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.40	5.23	0.84	0.54	12.10	7.80	8.32	8.58	0.65	20.31	0.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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	0.80	0.80	0.34	0.26	0.84	0.63	0.81	0.82	0.09	0.98	0.09
d, Delay for Lane Group [s/veh]	43.02	42.85	35.71	35.44	50.31	27.33	29.86	30.17	20.19	60.10	26.34
Lane Group LOS	D	D	D	D	D	C	C	C	C	E	C
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.97	5.12	1.68	1.36	5.54	3.13	13.82	13.82	0.46	19.93	1.06
50th-Percentile Queue Length [ft/ln]	124.15	127.92	41.93	33.97	138.39	78.19	345.41	345.51	11.51	498.25	26.53
95th-Percentile Queue Length [veh/ln]	8.62	8.83	3.02	2.45	9.39	5.63	19.91	19.92	0.83	27.25	1.91
95th-Percentile Queue Length [ft/ln]	215.51	220.66	75.47	61.14	234.86	140.75	497.81	497.93	20.73	681.29	47.76

Movement, Approach, & Intersection Results

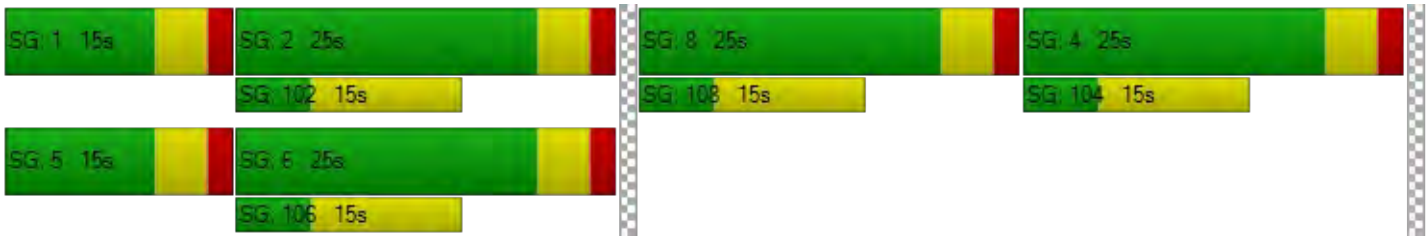
d_M, Delay for Movement [s/veh]	42.97	42.85	35.71	35.44	50.31	50.31	27.33	30.01	30.17	20.19	60.10	26.34
Movement LOS	D	D	D	D	D	D	C	C	C	C	E	C
d_A, Approach Delay [s/veh]	41.78			46.79			29.63			58.08		
Approach LOS	D			D			C			E		
d_I, Intersection Delay [s/veh]	43.01											
Intersection LOS	D											
Intersection V/C	0.695											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.45	36.45	36.45	36.45
l_p,int, Pedestrian LOS Score for Intersection	3.068	2.159	3.068	3.295
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
l_b,int, Bicycle LOS Score for Intersection	2.795	2.050	2.902	2.852
Bicycle LOS	C	B	C	C

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):	44.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.785

Intersection Setup

Name				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			W Riverstone Dr			W Riverstone Dr		
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	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16
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	120	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	56	2	31	7	434	0	34	106	521	21	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	15	1	8	2	118	0	9	29	142	6	1
Total Analysis Volume [veh/h]	16	61	2	34	8	472	0	37	115	566	23	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]	79	79	79	79	79	79	79	79	79
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]	21	21	3	28	28	10	10	29	43
g / C, Green / Cycle	0.27	0.27	0.03	0.35	0.35	0.13	0.13	0.37	0.55
(v / s)_i Volume / Saturation Flow Rate	0.01	0.04	0.02	0.00	0.33	0.00	0.10	0.35	0.02
s, saturation flow rate [veh/h]	1266	1674	1603	1683	1431	1246	1485	1603	1649
c, Capacity [veh/h]	395	448	54	592	503	208	186	596	903
d1, Uniform Delay [s]	23.21	22.14	37.94	16.78	24.93	0.00	33.88	24.25	8.27
k, delay calibration	0.11	0.11	0.11	0.11	0.36	0.11	0.11	0.40	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.04	0.14	11.62	0.01	21.78	0.00	8.44	22.86	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	0.04	0.14	0.63	0.01	0.94	0.00	0.82	0.95	0.03
d, Delay for Lane Group [s/veh]	23.26	22.28	49.56	16.79	46.71	0.00	42.32	47.11	8.28
Lane Group LOS	C	C	D	B	D	A	D	D	A
Critical Lane Group	No	No	No	No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.23	0.89	0.81	0.09	11.08	0.00	3.21	13.37	0.19
50th-Percentile Queue Length [ft/ln]	5.73	22.13	20.33	2.33	276.92	0.00	80.30	334.37	4.76
95th-Percentile Queue Length [veh/ln]	0.41	1.59	1.46	0.17	16.54	0.00	5.78	19.37	0.34
95th-Percentile Queue Length [ft/ln]	10.31	39.83	36.60	4.19	413.38	0.00	144.54	484.32	8.57

Movement, Approach, & Intersection Results

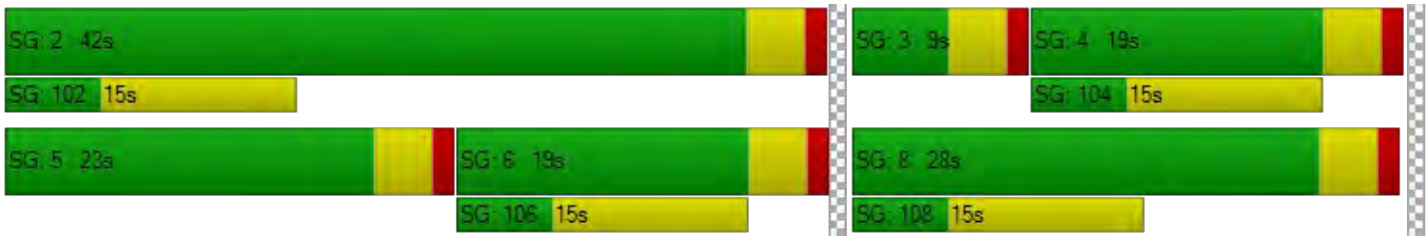
d_M, Delay for Movement [s/veh]	23.26	22.28	22.28	49.56	16.79	46.71	0.00	42.32	42.32	47.11	8.28	8.28
Movement LOS	C	C	C	D	B	D	A	D	D	D	A	A
d_A, Approach Delay [s/veh]	22.48			46.43			42.32			45.41		
Approach LOS	C			D			D			D		
d_I, Intersection Delay [s/veh]	44.09											
Intersection LOS	D											
Intersection V/C	0.785											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	26.58	26.58	26.58	26.58
l_p,int, Pedestrian LOS Score for Intersection	1.958	2.626	1.998	2.354
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
l_b,int, Bicycle LOS Score for Intersection	1.690	2.606	1.810	2.536
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):	62.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.684

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	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16
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]	87	13	67	107	11	71	69	293	102	54	222	74
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	4	18	29	3	19	19	80	28	15	60	20
Total Analysis Volume [veh/h]	95	14	73	116	12	77	75	318	111	59	241	80
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	0.55	0.07	0.10	0.68	0.06	0.12	0.06	0.00	0.00	0.05	0.00	0.00
d_M, Delay for Movement [s/veh]	55.53	51.67	39.55	62.74	22.71	11.21	8.12	0.00	0.00	8.39	0.00	0.00
Movement LOS	F	F	E	F	C	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	4.94	4.94	4.94	4.05	0.18	0.40	0.18	0.18	0.18	0.15	0.15	0.15
95th-Percentile Queue Length [ft/ln]	123.57	123.57	123.57	101.15	4.40	9.92	4.45	4.45	4.45	3.79	3.79	3.79
d_A, Approach Delay [s/veh]	48.82			41.04			1.21			1.30		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	14.48											
Intersection LOS	F											

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

Control Type:	Two-way stop	Delay (sec / veh):	19.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.041

Intersection Setup

Name			John's Loop		W Riverstone Dr	
Approach	Eastbound		Northeastbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Right	Left	Thru
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		W Riverstone Dr	
Base Volume Input [veh/h]	202	7	9	18	24	253
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	1.16	1.16	1.16	1.16	1.16	1.16
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	34	0	0	74	71	74
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]	268	8	10	95	99	367
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]	73	2	3	26	27	100
Total Analysis Volume [veh/h]	291	9	11	103	108	399
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	0.04	0.14	0.09	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	19.51	11.07	8.12	0.00
Movement LOS	A	A	C	B	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.65	0.65	0.26	0.26
95th-Percentile Queue Length [ft/ln]	0.00	0.00	16.20	16.20	6.38	6.38
d_A, Approach Delay [s/veh]	0.00		11.88		1.73	
Approach LOS	A		B		A	
d_I, Intersection Delay [s/veh]	2.42					
Intersection LOS	C					

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

Control Type:	Two-way stop	Delay (sec / veh):	17.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.250

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	1.16	1.16	1.16	1.16	1.16	1.16
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	362	271	89	87	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	98	74	24	24	1
Total Analysis Volume [veh/h]	4	393	295	97	95	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	0.25	0.01
d_M, Delay for Movement [s/veh]	8.10	0.00	0.00	0.00	17.64	13.32
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.00	0.00	1.01	1.01
95th-Percentile Queue Length [ft/ln]	0.26	0.26	0.00	0.00	25.25	25.25
d_A, Approach Delay [s/veh]	0.08		0.00		17.43	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	2.00					
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	
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	
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	1.16	1.16	1.16	1.16	1.16	1.16
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):	1,014.9
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												
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	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16
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]	7	0	107	6	0	1	5	1379	30	69	1525	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	29	2	0	0	1	375	8	19	414	1
Total Analysis Volume [veh/h]	8	0	116	7	0	1	5	1499	33	75	1658	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	0.65	0.00	0.34	0.97	0.00	0.00	0.01	0.01	0.00	0.17	0.02	0.00
d_M, Delay for Movement [s/veh]	409.28	680.08	125.93	936.11	1014.94	448.71	14.56	0.00	0.00	15.12	0.00	0.00
Movement LOS	F	F	F	F	F	F	B	A	A	C	A	A
95th-Percentile Queue Length [veh/ln]	6.73	6.73	6.73	1.72	1.72	1.72	0.04	0.02	0.00	0.62	0.00	0.00
95th-Percentile Queue Length [ft/ln]	168.28	168.28	168.28	42.96	42.96	42.96	0.99	0.50	0.00	15.61	0.00	0.00
d_A, Approach Delay [s/veh]	144.21			875.18			0.05			0.65		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	7.66											
Intersection LOS	F											

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

Control Type:	Signalized	Delay (sec / veh):	12.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.508

Intersection Setup

Name	Lacrosse Ave.						Northwest Blvd.			Northwest Blvd.		
Approach	Westbound			Northeastbound			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	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	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16
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	29	20	6	91	90	1302	13	31	1339	6
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	8	5	2	25	24	354	4	8	364	2
Total Analysis Volume [veh/h]	0	1	32	22	7	99	98	1415	14	34	1455	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	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	0.30	0.43	0.43	0.10	0.43	0.43
s, saturation flow rate [veh/h]	1159	1437	1238	1445	327	1683	1677	337	1683	1680
c, Capacity [veh/h]	109	206	173	207	252	1383	1378	261	1383	1381
d1, Uniform Delay [s]	0.00	86.35	91.77	91.05	17.26	6.36	6.36	13.02	6.46	6.47
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	1.66	1.51	8.74	4.47	1.39	1.39	1.03	1.45	1.46
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	0.16	0.13	0.51	0.39	0.52	0.52	0.13	0.53	0.53
d, Delay for Lane Group [s/veh]	0.00	88.01	93.28	99.79	21.73	7.74	7.76	14.05	7.91	7.92
Lane Group LOS	A	F	F	F	C	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	1.85	1.28	6.46	2.78	10.83	10.82	0.73	11.27	11.26
50th-Percentile Queue Length [ft/ln]	0.00	46.33	32.00	161.47	69.43	270.79	270.44	18.20	281.67	281.47
95th-Percentile Queue Length [veh/ln]	0.00	3.34	2.30	10.63	5.00	16.23	16.21	1.31	16.77	16.76
95th-Percentile Queue Length [ft/ln]	0.00	83.40	57.59	265.67	124.97	405.73	405.29	32.75	419.29	419.04

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	88.01	88.01	93.28	99.79	99.79	21.73	7.75	7.76	14.05	7.92	7.92
Movement LOS	A	F	F	F	F	F	C	A	A	B	A	A
d_A, Approach Delay [s/veh]		88.01			98.67			8.65			8.06	
Approach LOS		F			F			A			A	
d_I, Intersection Delay [s/veh]	12.81											
Intersection LOS	B											
Intersection V/C	0.508											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	1031.81	190.02	0.00	0.00
d_p, Pedestrian Delay [s]	106.18	106.18	106.18	106.18
l_p,int, Pedestrian LOS Score for Intersection	2.057	2.187	3.045	3.050
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
l_b,int, Bicycle LOS Score for Intersection	1.614	1.771	2.819	2.794
Bicycle LOS	A	A	C	C

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	Delay (sec / veh):	39.0
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.490

Intersection Setup

Name	W Riverstone Dr									W Riverstone Dr		
Approach	Westbound			Northeastbound			Southwestbound			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									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	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16
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]	15	427	99	6	0	12	93	0	29	21	372	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]	4	116	27	2	0	3	25	0	8	6	101	1
Total Analysis Volume [veh/h]	16	464	108	7	0	13	101	0	32	23	404	5
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	0.04	0.00	0.02	0.49	0.00	0.06	0.02	0.00	0.00
d_M, Delay for Movement [s/veh]	8.18	0.00	0.00	24.02	22.43	11.18	39.02	37.25	28.01	8.68	0.00	0.00
Movement LOS	A	A	A	C	C	B	E	E	D	A	A	A
95th-Percentile Queue Length [veh/ln]	0.04	0.04	0.04	0.18	0.18	0.18	2.98	2.98	2.98	0.06	0.06	0.06
95th-Percentile Queue Length [ft/ln]	0.99	0.99	0.99	4.43	4.43	4.43	74.51	74.51	74.51	1.61	1.61	1.61
d_A, Approach Delay [s/veh]	0.22			15.68			36.37			0.46		
Approach LOS	A			C			E			A		
d_I, Intersection Delay [s/veh]	4.67											
Intersection LOS	E											

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

Control Type:	Two-way stop	Delay (sec / veh):	91.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.370

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	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16
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]	7	617	14	55	722	16	26	31	22	6	10	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]	2	168	4	15	196	4	7	8	6	2	3	8
Total Analysis Volume [veh/h]	8	671	15	60	785	17	28	34	24	7	11	32
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	0.07	0.01	0.00	0.28	0.37	0.04	0.08	0.12	0.05
d_M, Delay for Movement [s/veh]	9.47	0.00	0.00	9.34	0.00	0.00	88.51	91.82	58.84	54.08	50.27	16.72
Movement LOS	A	A	A	A	A	A	F	F	F	F	F	C
95th-Percentile Queue Length [veh/ln]	0.03	0.01	0.00	0.22	0.00	0.00	3.75	3.75	3.75	0.97	0.97	0.97
95th-Percentile Queue Length [ft/ln]	0.65	0.33	0.00	5.42	0.00	0.00	93.75	93.75	93.75	24.19	24.19	24.19
d_A, Approach Delay [s/veh]	0.11			0.65			81.54			29.33		
Approach LOS	A			A			F			D		
d_I, Intersection Delay [s/veh]	5.39											
Intersection LOS	F											

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

Control Type:	Signalized	Delay (sec / veh):	19.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.410

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	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16
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]	22	718	12	36	742	63	127	59	67	17	27	59
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]	6	195	3	10	202	17	35	16	18	5	7	16
Total Analysis Volume [veh/h]	24	780	13	39	807	68	138	64	73	18	29	64
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]	57	48	48	57	49	49	21	13	21	7
g / C, Green / Cycle	0.63	0.53	0.53	0.63	0.54	0.54	0.24	0.15	0.24	0.08
(v / s)_i Volume / Saturation Flow Rate	0.03	0.24	0.24	0.05	0.26	0.26	0.10	0.09	0.01	0.06
s, saturation flow rate [veh/h]	686	1683	1673	741	1683	1637	1420	1526	1259	1501
c, Capacity [veh/h]	449	888	883	489	904	879	385	228	320	118
d1, Uniform Delay [s]	7.68	13.20	13.20	7.44	13.15	13.15	28.94	35.93	26.92	40.89
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.50	0.25	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.05	1.63	1.64	0.32	1.90	1.96	1.28	2.54	0.07	10.93
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	0.45	0.45	0.08	0.49	0.49	0.36	0.60	0.06	0.79
d, Delay for Lane Group [s/veh]	7.73	14.83	14.84	7.76	15.05	15.11	30.23	38.46	26.99	51.82
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]	0.16	4.93	4.91	0.29	5.57	5.43	2.59	2.94	0.30	2.36
50th-Percentile Queue Length [ft/ln]	3.89	123.26	122.63	7.22	139.29	135.86	64.76	73.38	7.56	59.07
95th-Percentile Queue Length [veh/ln]	0.28	8.57	8.54	0.52	9.44	9.26	4.66	5.28	0.54	4.25
95th-Percentile Queue Length [ft/ln]	7.01	214.29	213.43	13.00	236.06	231.43	116.56	132.09	13.60	106.32

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	7.73	14.84	14.84	7.76	15.08	15.11	30.23	38.46	38.46	26.99	51.82	51.82
Movement LOS	A	B	B	A	B	B	C	D	D	C	D	D
d_A, Approach Delay [s/veh]	14.63			14.77			34.33			47.79		
Approach LOS	B			B			C			D		
d_I, Intersection Delay [s/veh]	18.99											
Intersection LOS	B											
Intersection V/C	0.410											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.45	36.45	36.45	36.45
l_p,int, Pedestrian LOS Score for Intersection	2.696	2.752	2.090	2.046
Crosswalk LOS	B	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]	600	600	644	556
d_b, Bicycle Delay [s]	22.05	22.05	20.68	23.47
l_b,int, Bicycle LOS Score for Intersection	2.234	2.314	2.013	1.743
Bicycle LOS	B	B	B	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):	25.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.039

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	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16
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]	9	404	9	6	0	10	22	0	102	45	316	13
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	110	2	2	0	3	6	0	28	12	86	4
Total Analysis Volume [veh/h]	10	439	10	7	0	11	24	0	111	49	343	14
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	0.04	0.00	0.02	0.10	0.00	0.18	0.04	0.00	0.00
d_M, Delay for Movement [s/veh]	8.02	0.00	0.00	25.44	19.79	10.82	23.19	22.15	13.80	8.39	0.00	0.00
Movement LOS	A	A	A	D	C	B	C	C	B	A	A	A
95th-Percentile Queue Length [veh/ln]	0.02	0.02	0.02	0.17	0.17	0.17	1.15	1.15	1.15	0.13	0.13	0.13
95th-Percentile Queue Length [ft/ln]	0.57	0.57	0.57	4.30	4.30	4.30	28.76	28.76	28.76	3.16	3.16	3.16
d_A, Approach Delay [s/veh]	0.17			16.50			15.47			1.01		
Approach LOS	A			C			C			A		
d_I, Intersection Delay [s/veh]	2.83											
Intersection LOS	D											

Intersection Level Of Service Report
Intersection 25: Riverstone/Starbucks

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):	0.113

Intersection Setup

Name			W Riverstone Dr		W Riverstone Dr	
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			W Riverstone Dr		W Riverstone Dr	
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	1.16	1.16	1.16	1.16	1.16	1.16
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]	24	22	9	467	519	27
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]	7	6	2	127	141	7
Total Analysis Volume [veh/h]	26	24	10	508	564	29
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	0.11	0.05	0.01	0.01	0.01	0.00
d_M, Delay for Movement [s/veh]	22.87	14.17	8.70	0.00	0.00	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.56	0.56	0.03	0.03	0.00	0.00
95th-Percentile Queue Length [ft/ln]	14.04	14.04	0.69	0.69	0.00	0.00
d_A, Approach Delay [s/veh]	18.69		0.17		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	0.88					
Intersection LOS	C					

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

Control Type:	Two-way stop	Delay (sec / veh):	43.3
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.438

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	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16
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]	5	0	5	65	0	9	6	532	65	14	475	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	18	0	2	2	145	18	4	129	1
Total Analysis Volume [veh/h]	5	0	5	71	0	10	7	578	71	15	516	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	0.03	0.00	0.01	0.44	0.00	0.02	0.01	0.01	0.00	0.02	0.01	0.00
d_M, Delay for Movement [s/veh]	28.14	26.00	12.06	43.31	40.58	28.44	8.46	0.00	0.00	8.90	0.00	0.00
Movement LOS	D	D	B	E	E	D	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.13	0.13	0.13	2.15	2.15	2.15	0.02	0.02	0.02	0.05	0.05	0.05
95th-Percentile Queue Length [ft/ln]	3.13	3.13	3.13	53.72	53.72	53.72	0.43	0.43	0.43	1.14	1.14	1.14
d_A, Approach Delay [s/veh]	20.10			41.48			0.09			0.25		
Approach LOS	C			E			A			A		
d_I, Intersection Delay [s/veh]	2.93											
Intersection LOS	E											

Atlas Waterfront TIS

Vistro File: X:\...\41292 Base Model 20181130.vistro
Report File: X:\...\20181228 Vistro Report Existing.pdf

Scenario 9 2028 Buildout w/ SE Lacrosse
1/25/2019

Trip Generation summary

Added Trips

Zone ID: Name	Land Use variables	Code	Ind. Var.	Rate	Quantity	% In	% Out	Trips In	Trips Out	Total Trips	% of Total Trips
31: Bellerive Res.				1.000	0.000	50.00	50.00	37	26	63	5.45
32: Riverstone Comm.				1.000	0.000	50.00	50.00	75	106	181	15.67
33: Atlas Comm.				1.000	0.000	50.00	50.00	138	149	287	24.85
34: Atlas Res.				1.000	0.000	50.00	50.00	151	92	243	21.04
35: Open Space				1.000	0.000	50.00	50.00	2	0	2	0.17
36: River's Edge				1.000	0.000	50.00	50.00	217	139	356	30.82
37: Park and Ride				1.000	0.000	50.00	50.00	6	17	23	1.99
					Added Trips Total			**626**	**529**	**1155**	**100.00**

Atlas Waterfront TIS

Vistro File: X:\...\41292 Base Model 20181130.vistro
Report File: X:\...\20181228 Vistro Report Existing.pdf

Scenario 9 2028 Buildout w/ SE Lacrosse
1/25/2019

Trip Distribution summary

Zone / Gate	Zone 31: Bellerive Res.			
	To Bellerive Res.:		From Bellerive Res.:	
	Share %	Trips	Share %	Trips
32: Riverstone Comm.	0.00	0	0.00	0
33: Atlas Comm.	0.00	0	0.00	0
34: Atlas Res.	0.00	0	0.00	0
35: Open Space	0.00	0	0.00	0
36: River's Edge	0.00	0	0.00	0
37: Park and Ride	0.00	0	0.00	0
38: Seltice West of Atlas	4.92	2	19.02	5
39: Atlas North of Seltice	3.93	1	24.54	6
40: I-90 East	1.52	1	3.63	1
41: I-90 West	20.45	8	4.63	1
42: Ramsey North	9.27	3	4.91	1
43: NW Blvd South	40.06	15	27.59	8
44: US95 North	0.00	0	1.71	0
45: US95 South	0.00	0	0.00	0
46: Ironwood East	18.43	7	10.47	3
47: Appleway East	1.42	1	3.50	1
Total	**100.00**	**38**	**100.00**	**26**

Zone / Gate	Zone 32: Riverstone Comm.			
	To Riverstone Comm.:		From Riverstone Comm.:	
	Share %	Trips	Share %	Trips
31: Bellerive Res.	0.00	0	0.00	0
33: Atlas Comm.	0.00	0	0.00	0
34: Atlas Res.	0.00	0	0.00	0
35: Open Space	0.00	0	0.00	0
36: River's Edge	0.00	0	0.00	0
37: Park and Ride	0.00	0	0.00	0
38: Seltice West of Atlas	4.60	3	31.45	34
39: Atlas North of Seltice	4.60	3	11.27	12
40: I-90 East	20.30	15	8.87	9
41: I-90 West	9.39	7	3.91	4
42: Ramsey North	18.23	14	18.15	19
43: NW Blvd South	13.98	10	11.51	12
44: US95 North	2.55	2	0.00	0
45: US95 South	0.00	0	0.00	0
46: Ironwood East	17.04	13	8.55	9
47: Appleway East	9.31	7	6.29	7
Total	**100.00**	**74**	**100.00**	**106**

Zone / Gate	Zone 33: Atlas Comm.			
	To Atlas Comm.:		From Atlas Comm.:	
	Share %	Trips	Share %	Trips
31: Bellerive Res.	0.00	0	0.00	0
32: Riverstone Comm.	0.00	0	0.00	0
34: Atlas Res.	0.00	0	0.00	0
35: Open Space	0.00	0	0.00	0
36: River's Edge	0.00	0	0.00	0
37: Park and Ride	0.00	0	0.00	0
38: Seltice West of Atlas	9.07	13	13.80	21
39: Atlas North of Seltice	7.05	10	6.13	9
40: I-90 East	3.63	5	8.21	12
41: I-90 West	16.44	23	8.03	12
42: Ramsey North	11.65	16	2.40	4
43: NW Blvd South	30.53	42	30.20	45
44: US95 North	2.02	3	7.99	12
45: US95 South	0.00	0	1.00	1
46: Ironwood East	12.39	17	18.11	27
47: Appleway East	7.22	10	4.13	6
Total	**100.00**	**139**	**100.00**	**149**

Zone / Gate	Zone 34: Atlas Res.			
	To Atlas Res.:		From Atlas Res.:	
	Share %	Trips	Share %	Trips
31: Bellerive Res.	0.00	0	0.00	0
32: Riverstone Comm.	0.00	0	0.00	0
33: Atlas Comm.	0.00	0	0.00	0
35: Open Space	0.00	0	0.00	0
36: River's Edge	0.00	0	0.00	0
37: Park and Ride	0.00	0	0.00	0
38: Seltice West of Atlas	9.68	15	5.32	5
39: Atlas North of Seltice	9.68	15	29.79	26
40: I-90 East	12.90	19	3.19	3
41: I-90 West	4.30	6	10.64	10
42: Ramsey North	10.75	16	15.96	15
43: NW Blvd South	15.05	23	11.70	11
44: US95 North	5.38	8	0.00	0
45: US95 South	0.00	0	0.00	0
46: Ironwood East	21.51	32	17.02	16
47: Appleway East	10.75	16	6.38	6
Total	**100.00**	**150**	**100.00**	**92**

Zone / Gate	Zone 35: Open Space			
	To Open Space:		From Open Space:	
	Share %	Trips	Share %	Trips
31: Bellerive Res.	0.00	0	0.00	0
32: Riverstone Comm.	0.00	0	0.00	0
33: Atlas Comm.	0.00	0	0.00	0
34: Atlas Res.	0.00	0	0.00	0

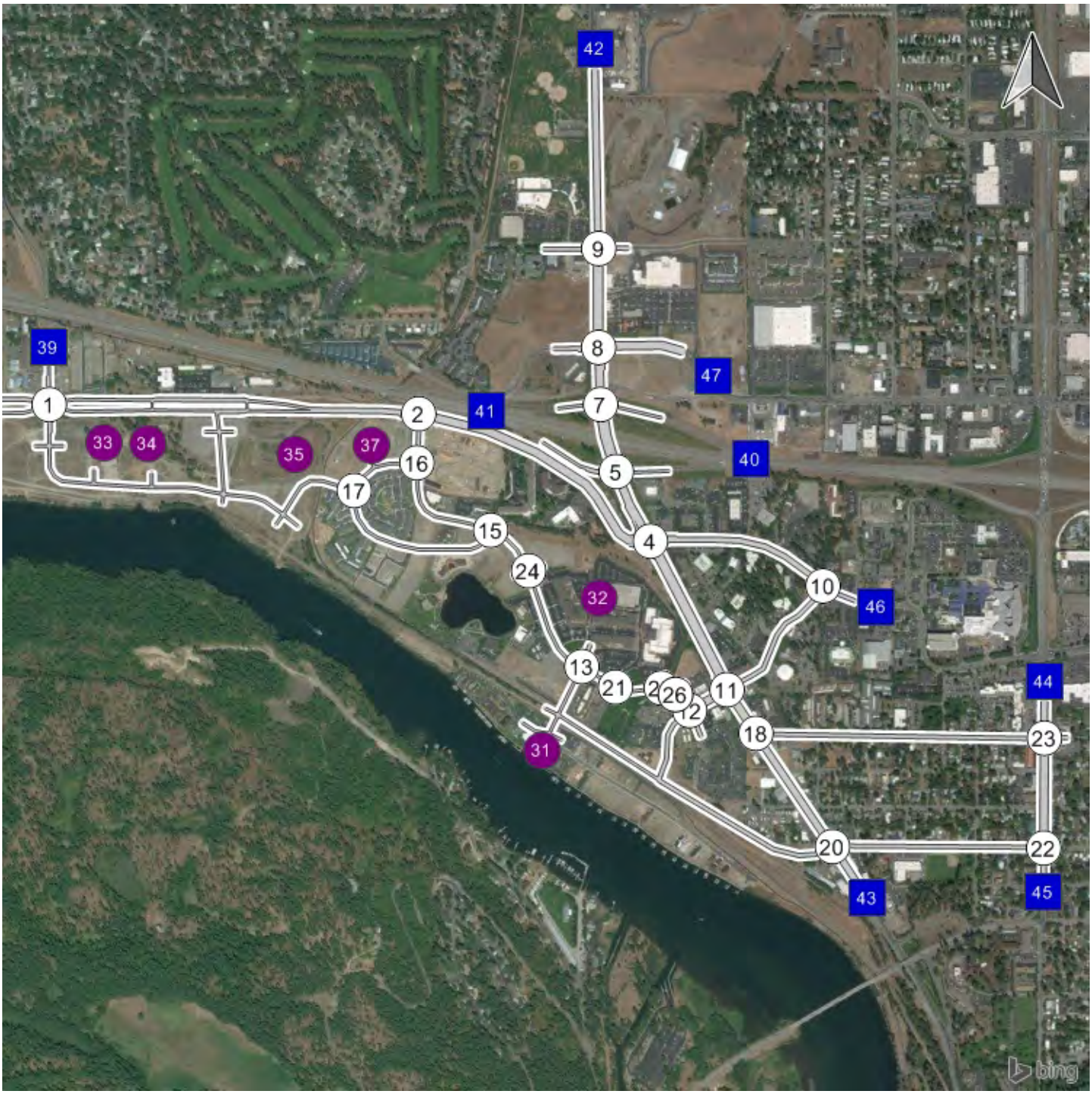
Zone / Gate	Zone 36: River's Edge			
	To River's Edge:		From River's Edge:	
	Share %	Trips	Share %	Trips
31: Bellerive Res.	0.00	0	0.00	0
32: Riverstone Comm.	0.00	0	0.00	0
33: Atlas Comm.	0.00	0	0.00	0
34: Atlas Res.	0.00	0	0.00	0

36: River's Edge	0.00	0	0.00	0
37: Park and Ride	0.00	0	0.00	0
38: Seltice West of Atlas	14.89	0	10.00	0
39: Atlas North of Seltice	4.26	0	10.00	0
40: I-90 East	2.13	0	10.00	0
41: I-90 West	11.70	0	10.00	0
42: Ramsey North	28.72	1	10.00	0
43: NW Blvd South	24.47	0	10.00	0
44: US95 North	0.00	0	10.00	0
45: US95 South	0.00	0	10.00	0
46: Ironwood East	12.77	0	10.00	0
47: Appleway East	1.06	0	10.00	0
Total	**100.00**	**1**	**100.00**	**0**

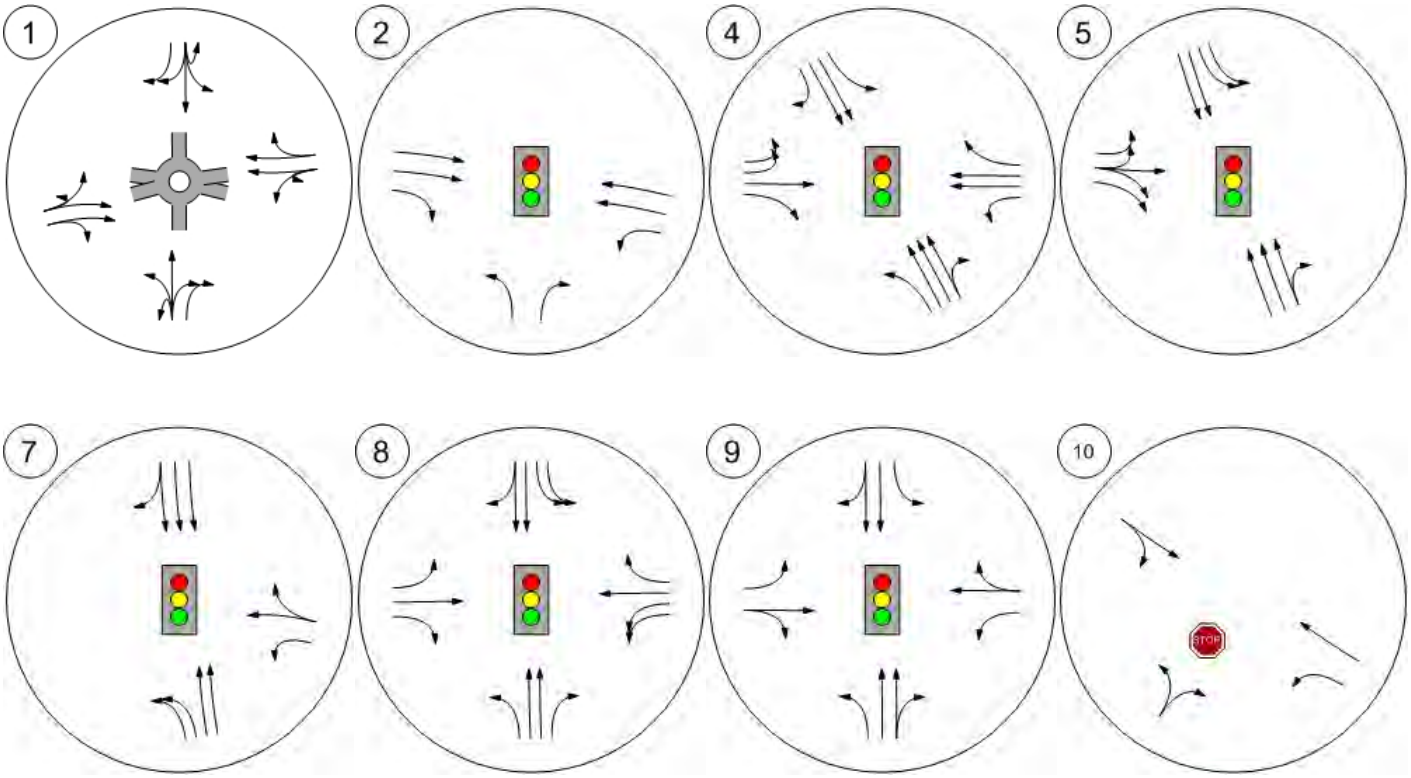
35: Open Space	0.00	0	0.00	0
37: Park and Ride	0.00	0	0.00	0
38: Seltice West of Atlas	9.68	21	5.32	7
39: Atlas North of Seltice	9.68	21	29.79	42
40: I-90 East	12.90	28	3.19	4
41: I-90 West	4.30	9	10.64	15
42: Ramsey North	10.75	23	15.96	22
43: NW Blvd South	15.05	33	11.70	16
44: US95 North	5.38	12	0.00	0
45: US95 South	0.00	0	0.00	0
46: Ironwood East	21.51	47	17.02	24
47: Appleway East	10.75	23	6.38	9
Total	**100.00**	**217**	**100.00**	**139**

	Zone 37: Park and Ride			
	To Park and Ride:		**From Park and Ride:**	
Zone / Gate	**Share %**	**Trips**	**Share %**	**Trips**
31: Bellerive Res.	0.00	0	0.00	0
32: Riverstone Comm.	0.00	0	0.00	0
33: Atlas Comm.	0.00	0	0.00	0
34: Atlas Res.	0.00	0	0.00	0
35: Open Space	0.00	0	0.00	0
36: River's Edge	0.00	0	0.00	0
38: Seltice West of Atlas	9.68	1	5.32	1
39: Atlas North of Seltice	9.68	1	29.79	4
40: I-90 East	12.90	1	3.19	1
41: I-90 West	4.30	0	10.64	2
42: Ramsey North	10.75	1	15.96	3
43: NW Blvd South	15.05	1	11.70	2
44: US95 North	5.38	0	0.00	0
45: US95 South	0.00	0	0.00	0
46: Ironwood East	21.51	1	17.02	3
47: Appleway East	10.75	1	6.38	1
Total	**100.00**	**7**	**100.00**	**17**

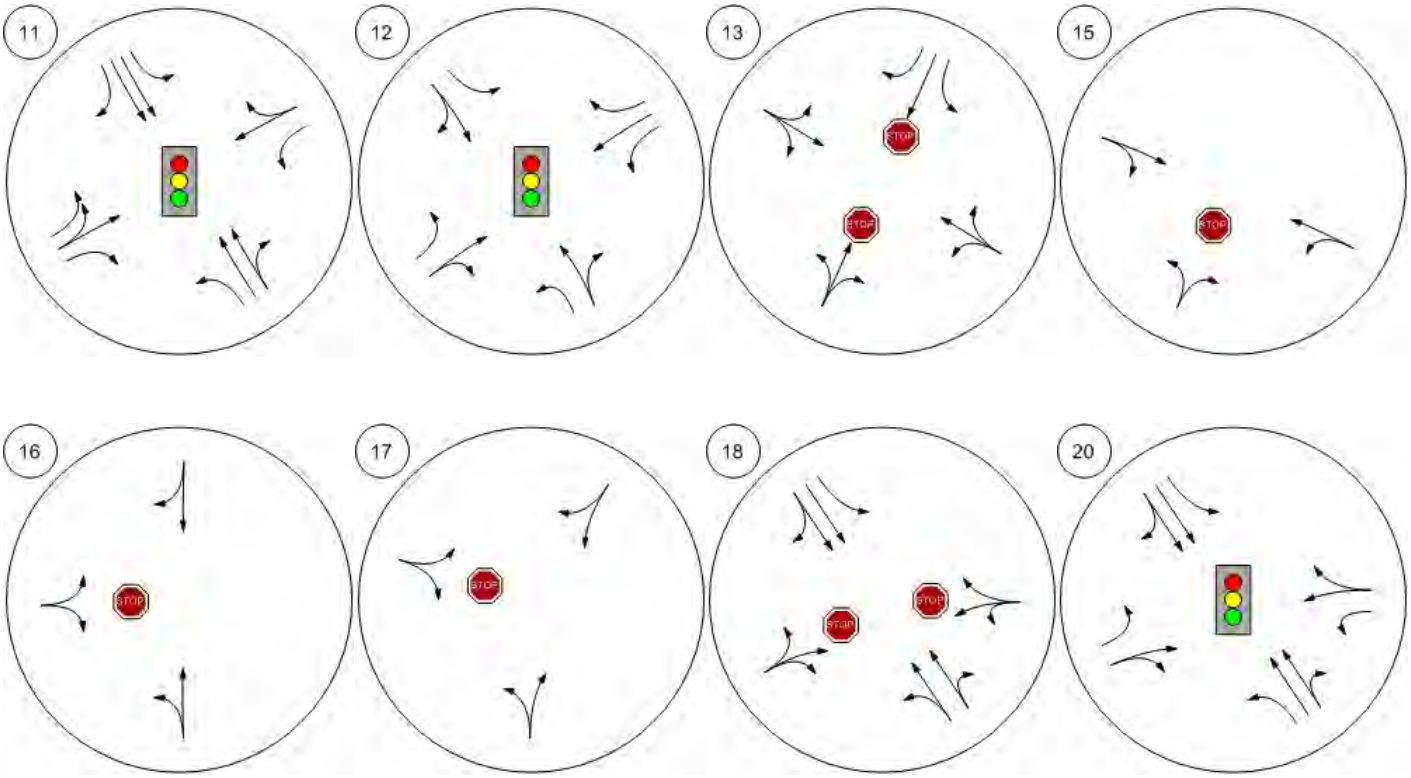
Study Intersections



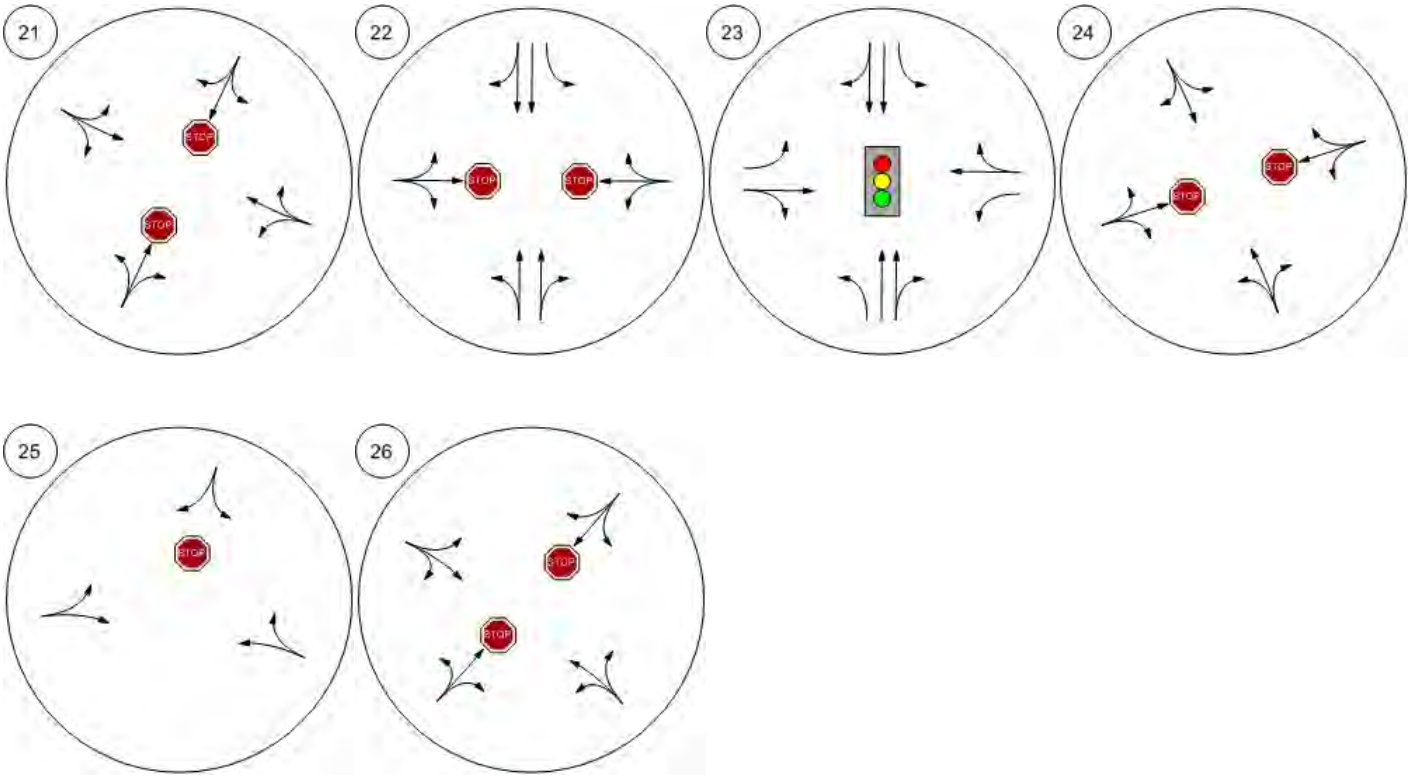
Lane Configuration and Traffic Control



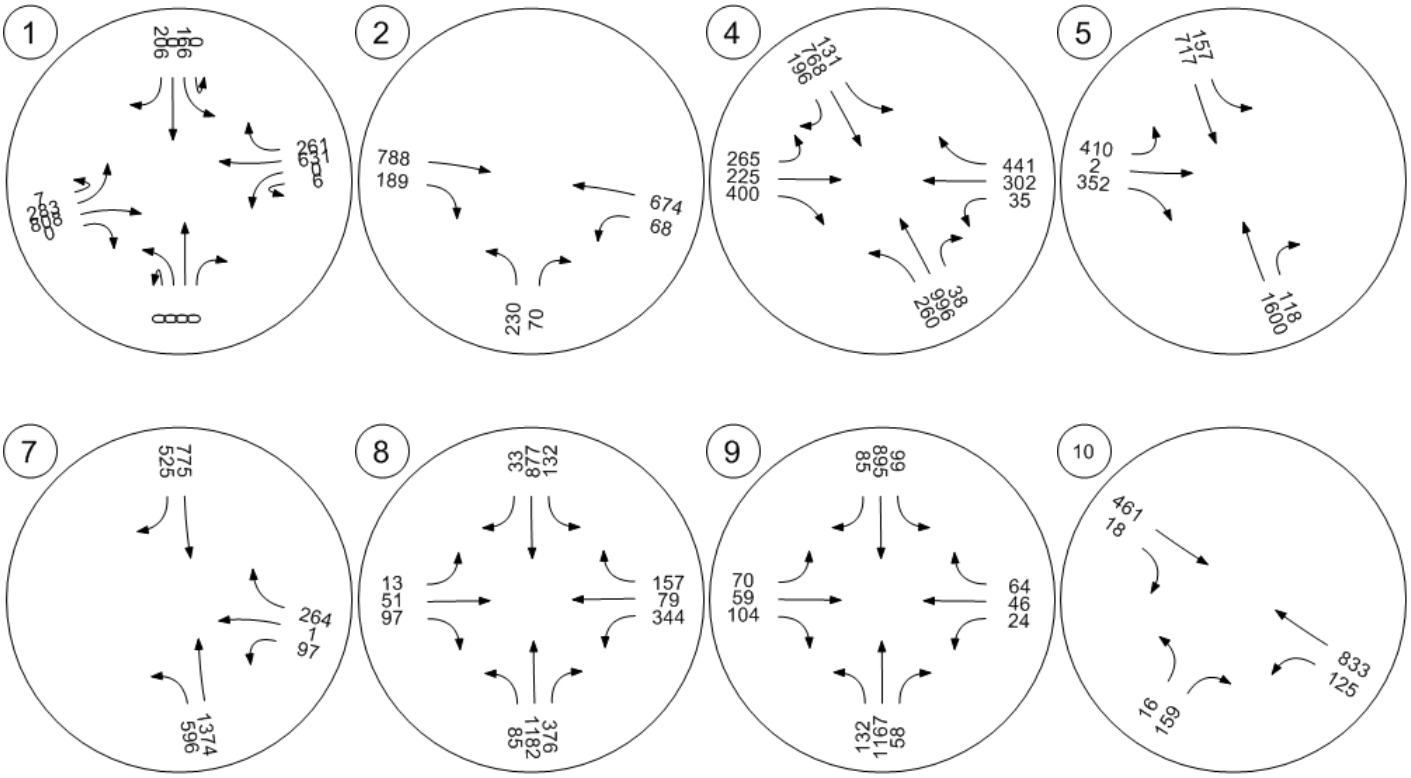
Lane Configuration and Traffic Control



Lane Configuration and Traffic Control



Traffic Volume - Base Volume



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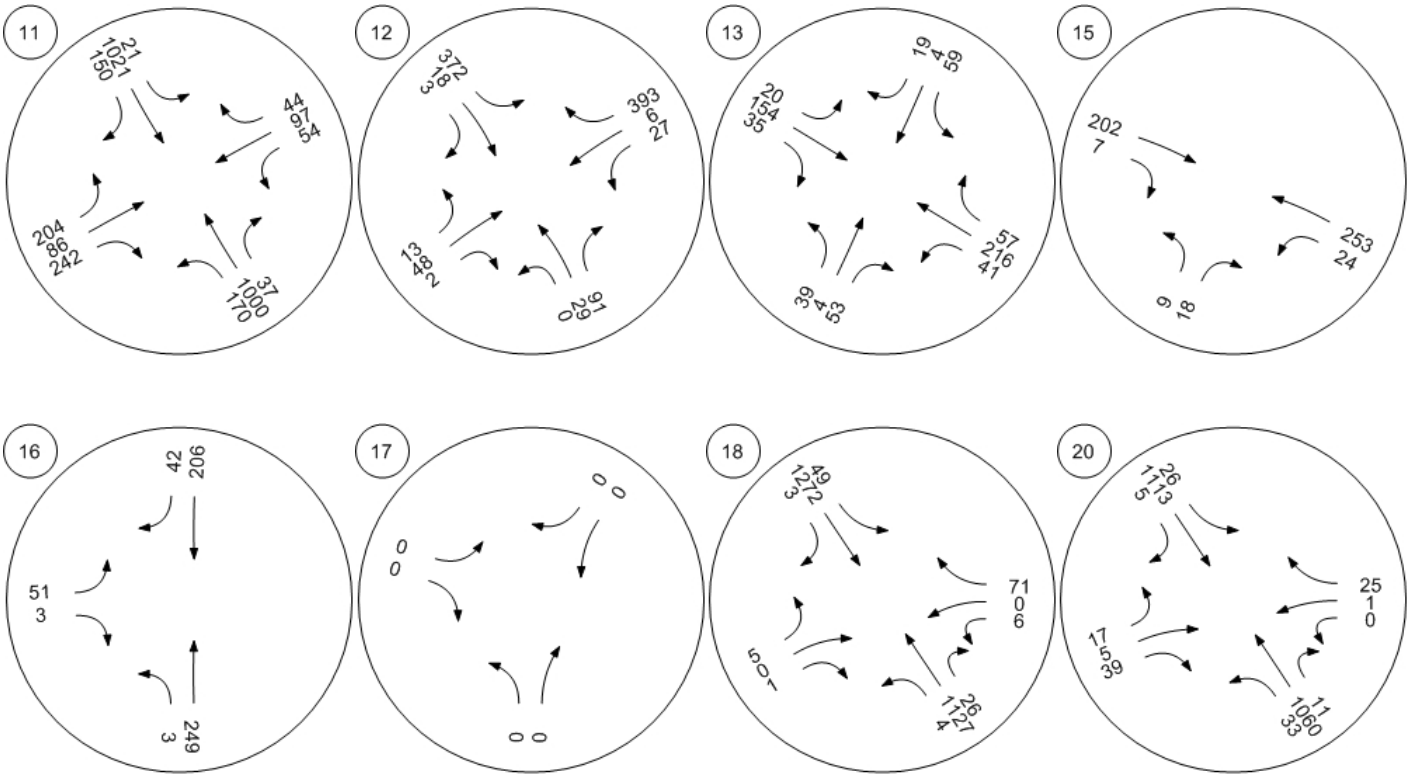
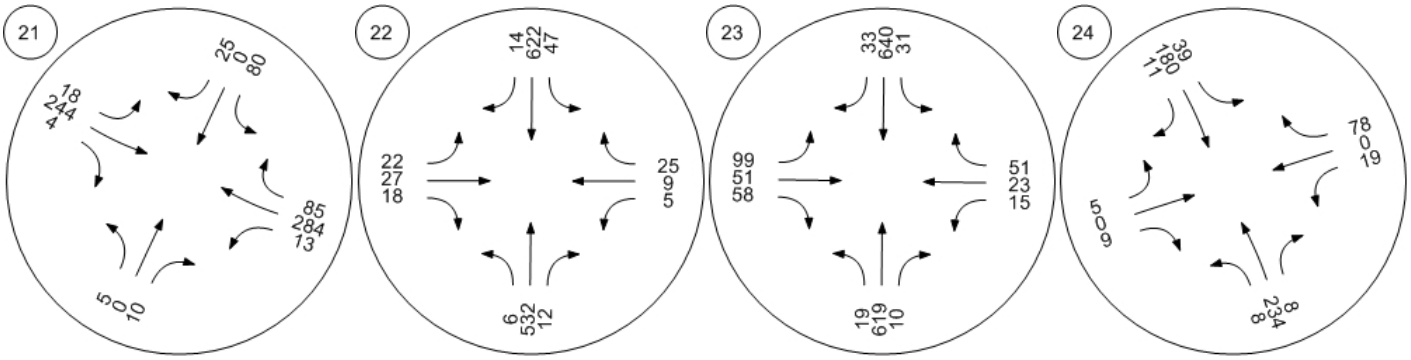
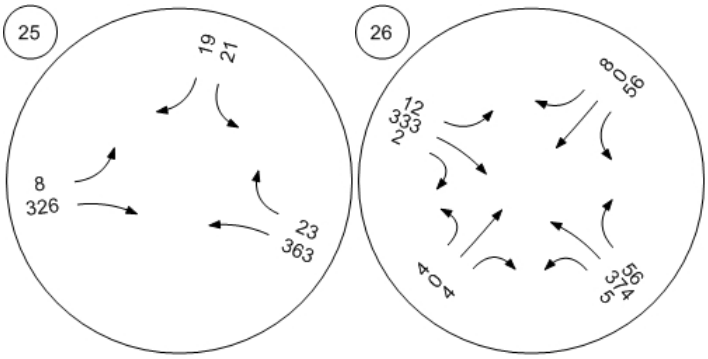
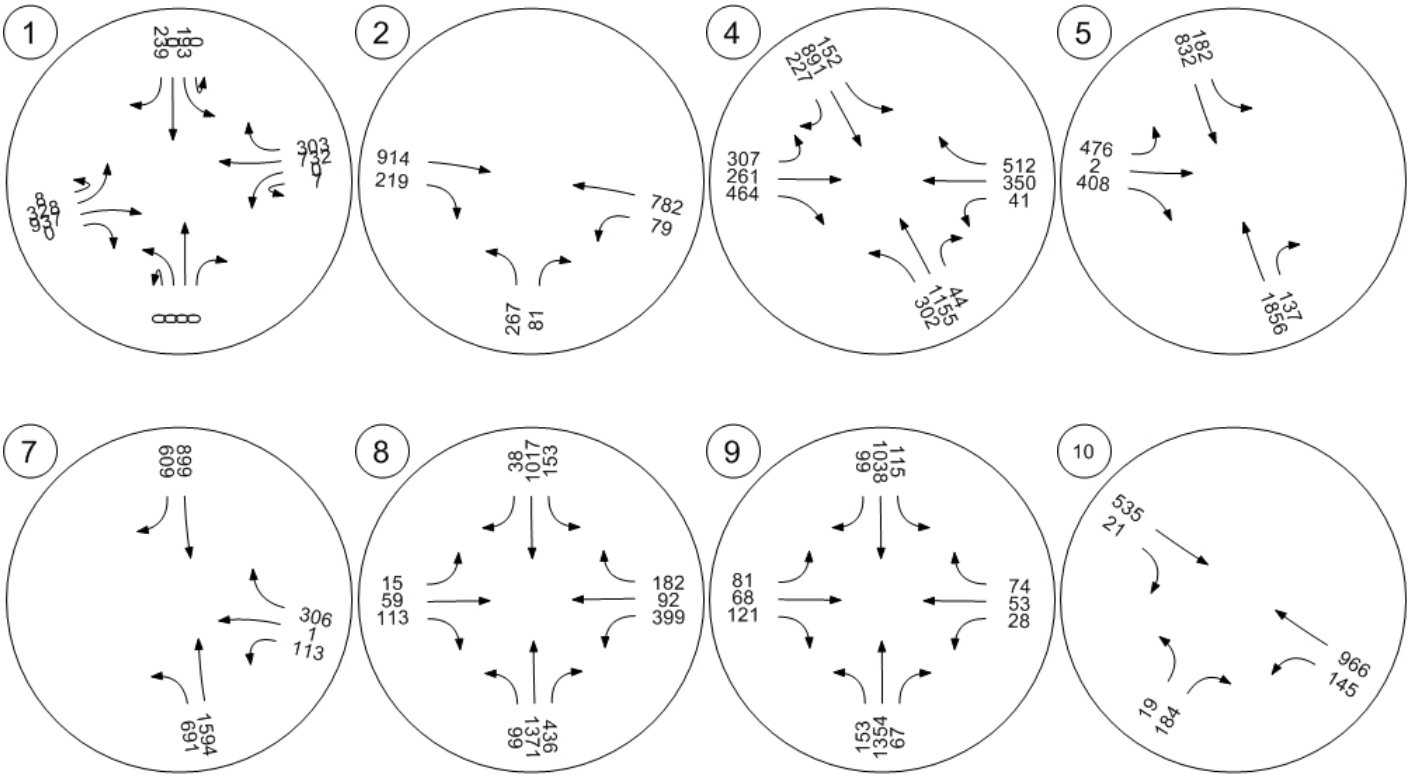


Traffic Volume - Base Volume

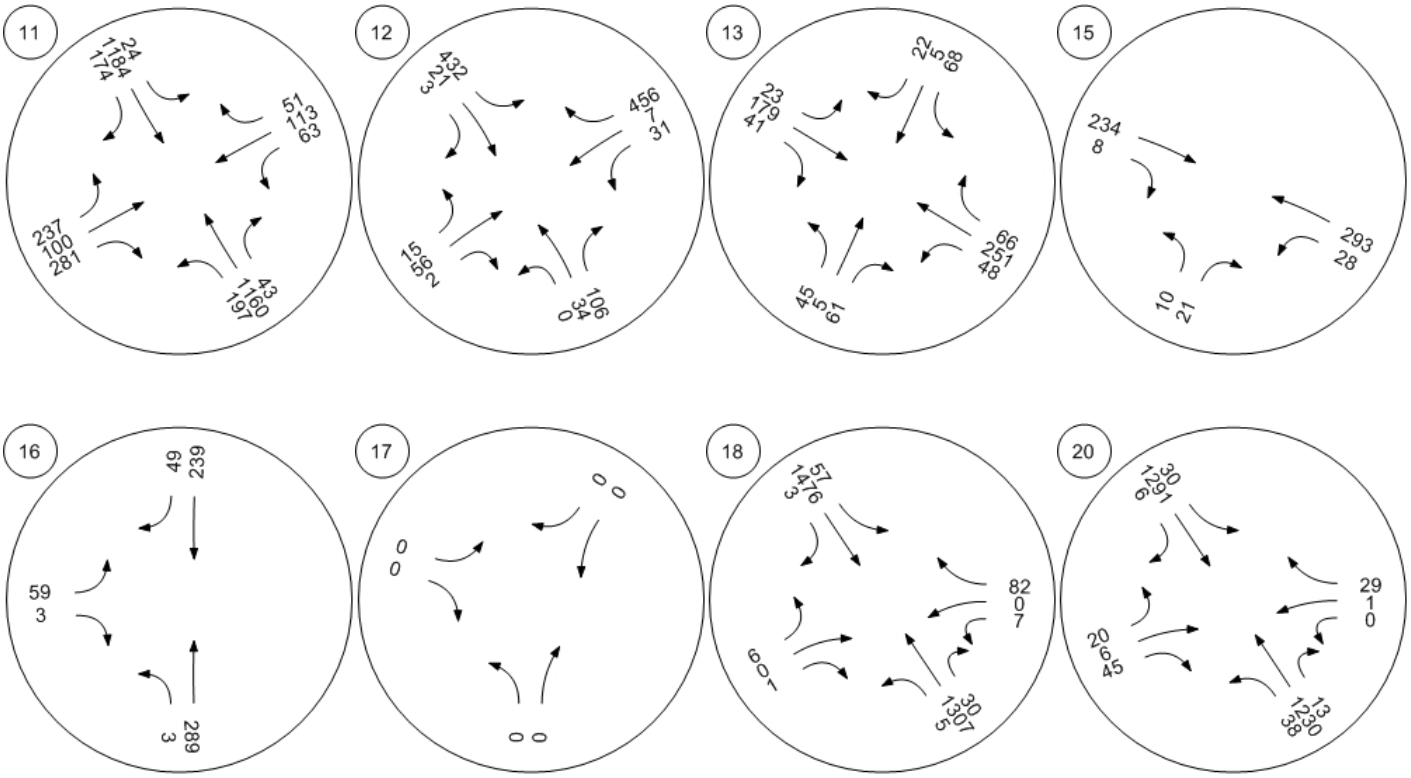




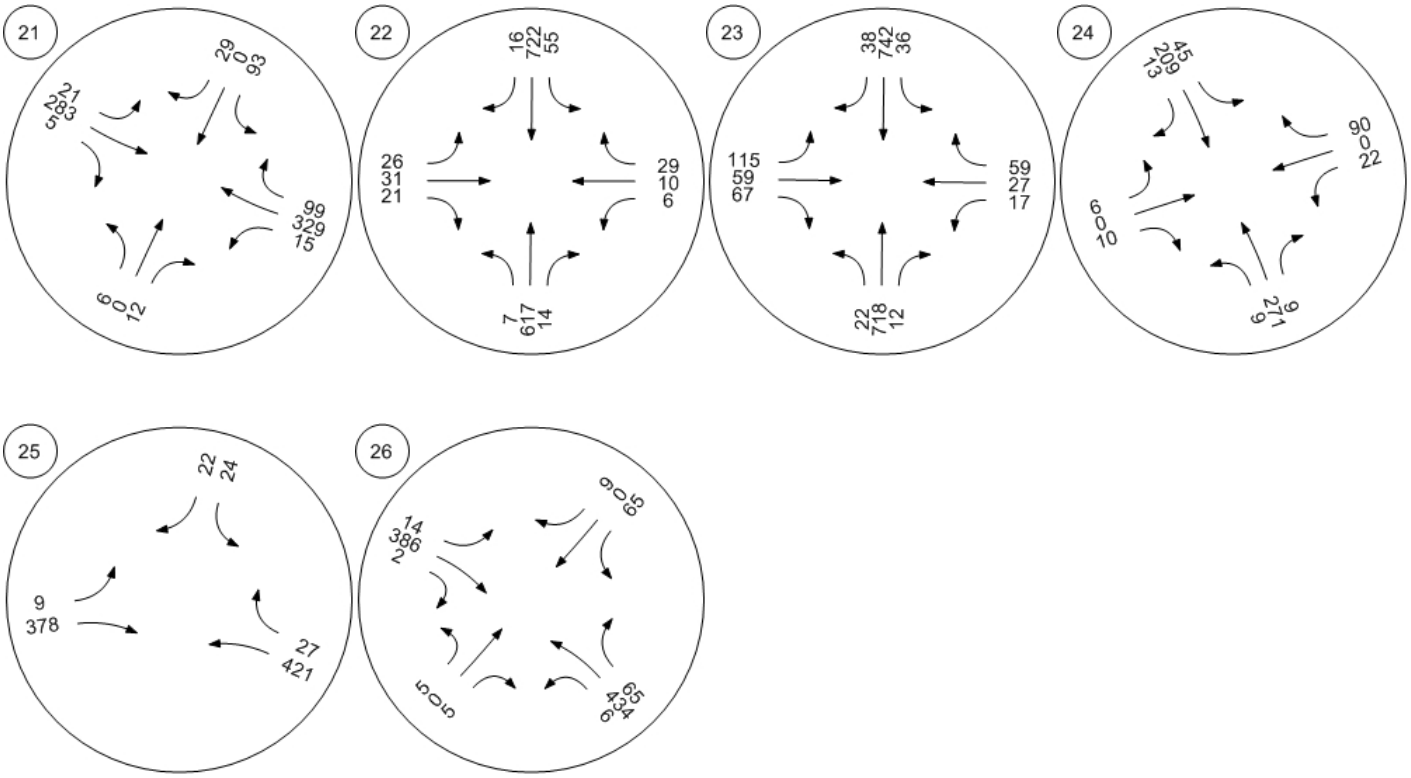
Traffic Volume - Future Background Volume



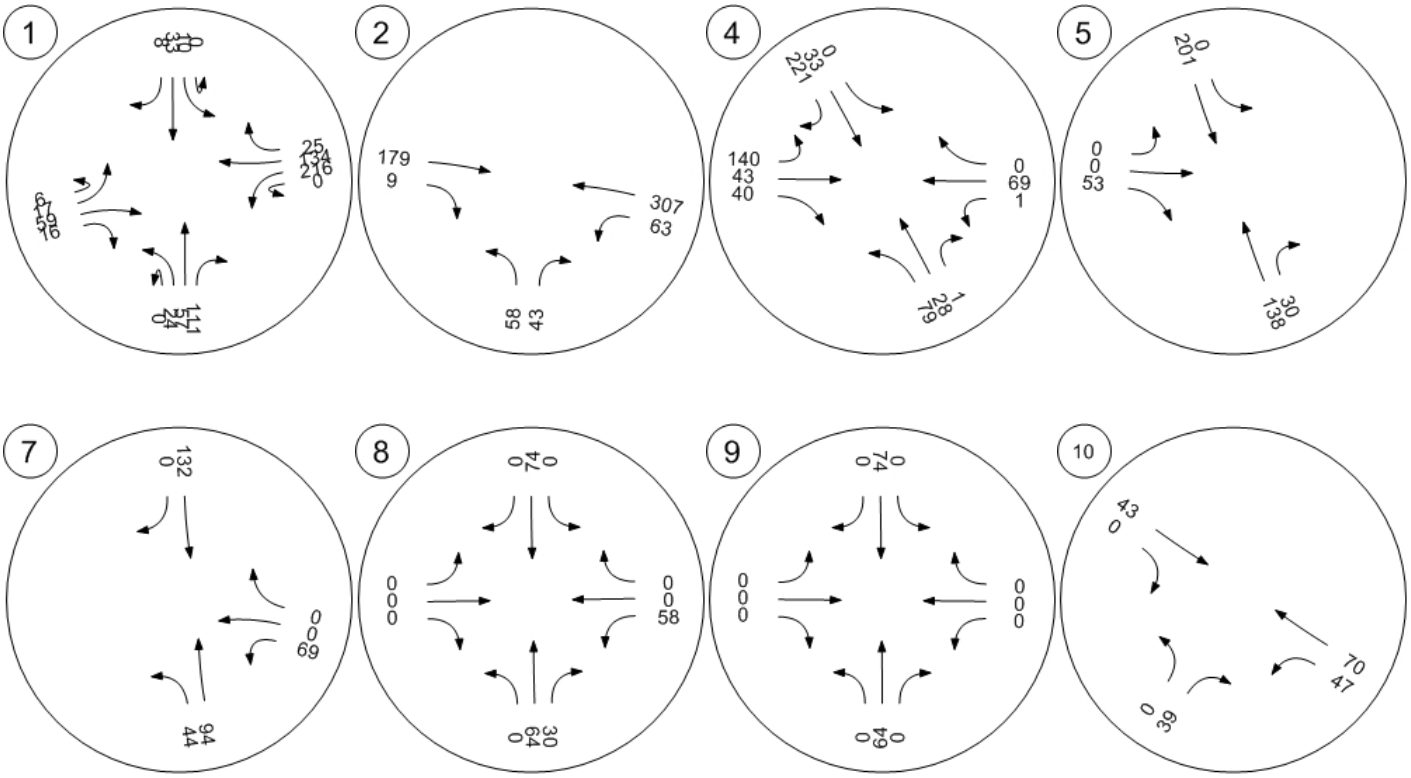
Traffic Volume - Future Background Volume



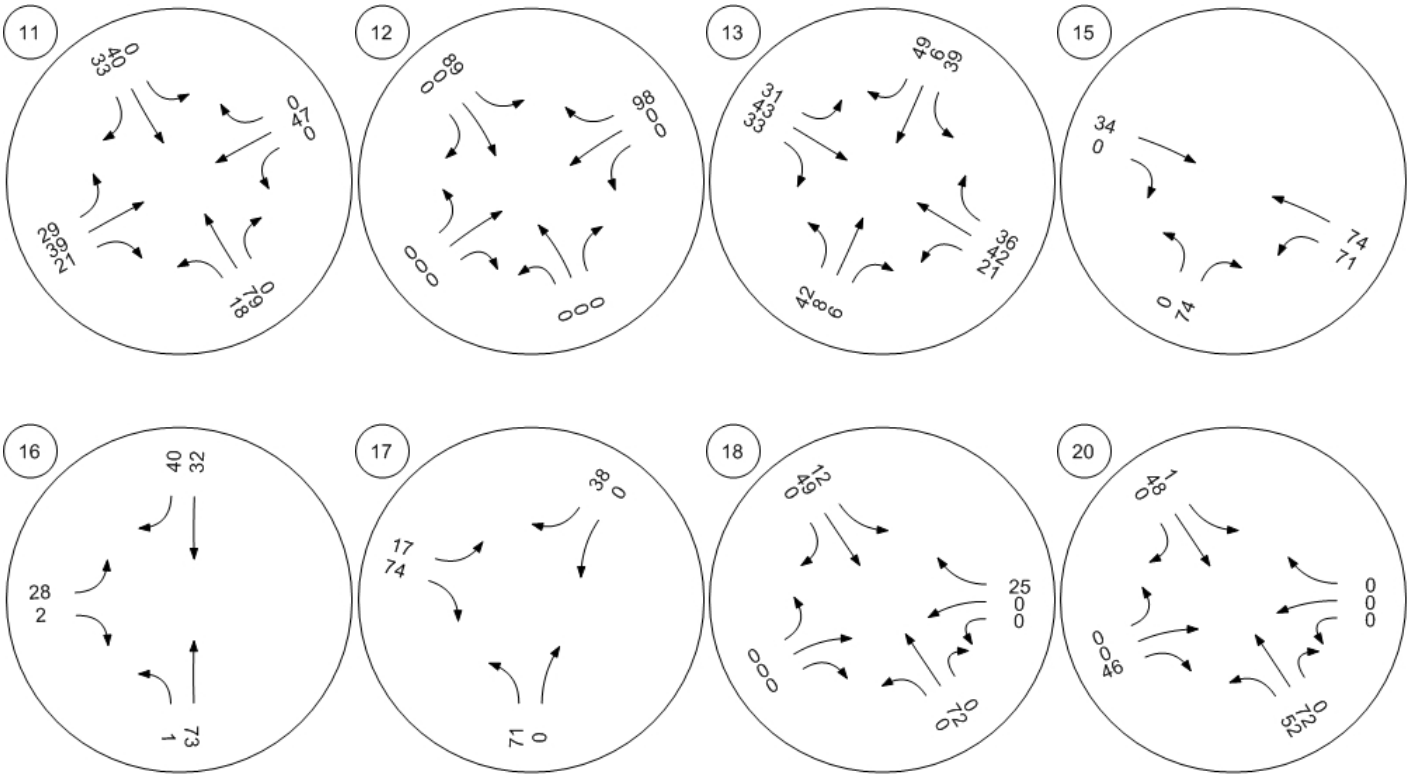
Traffic Volume - Future Background Volume



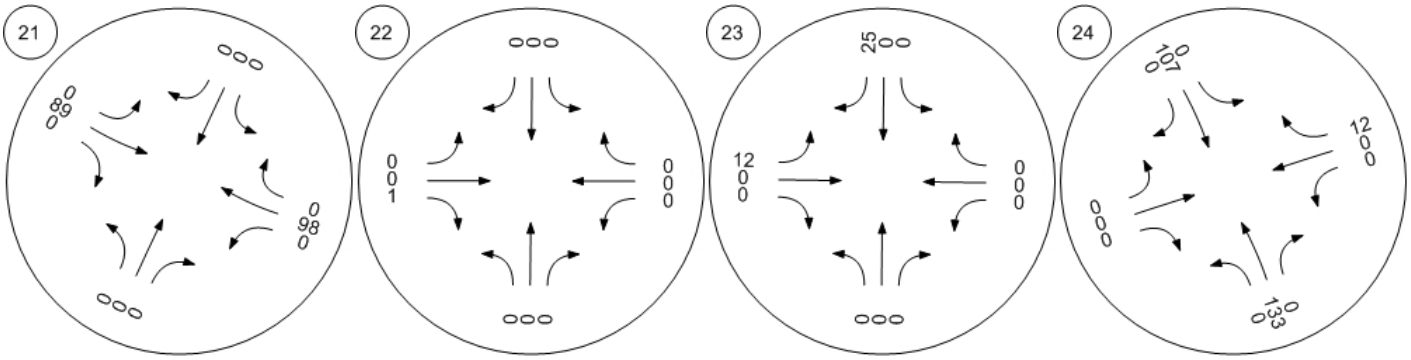
Traffic Volume - Net New Site Trips

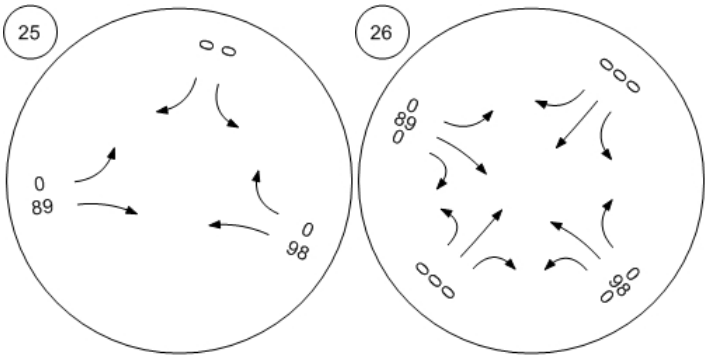


Traffic Volume - Net New Site Trips

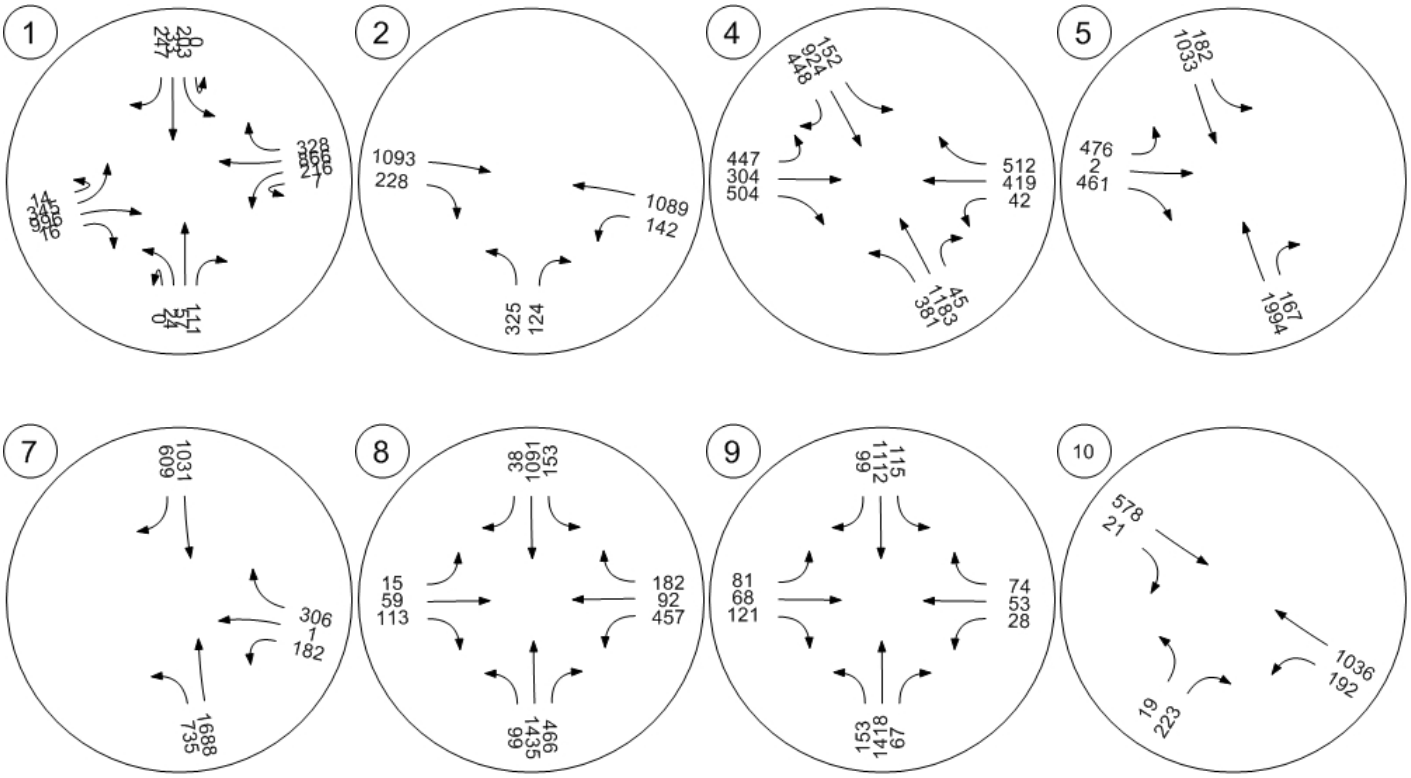


Traffic Volume - Net New Site Trips

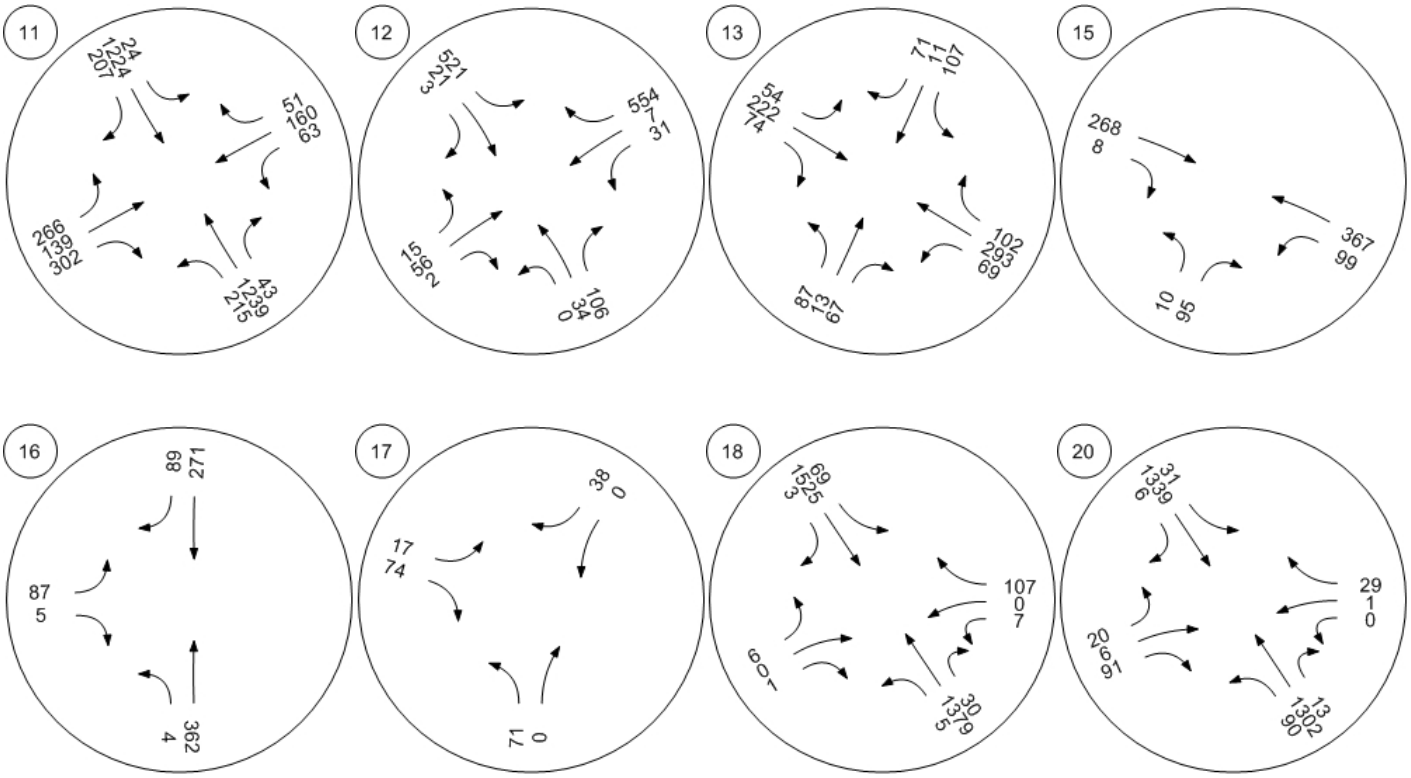




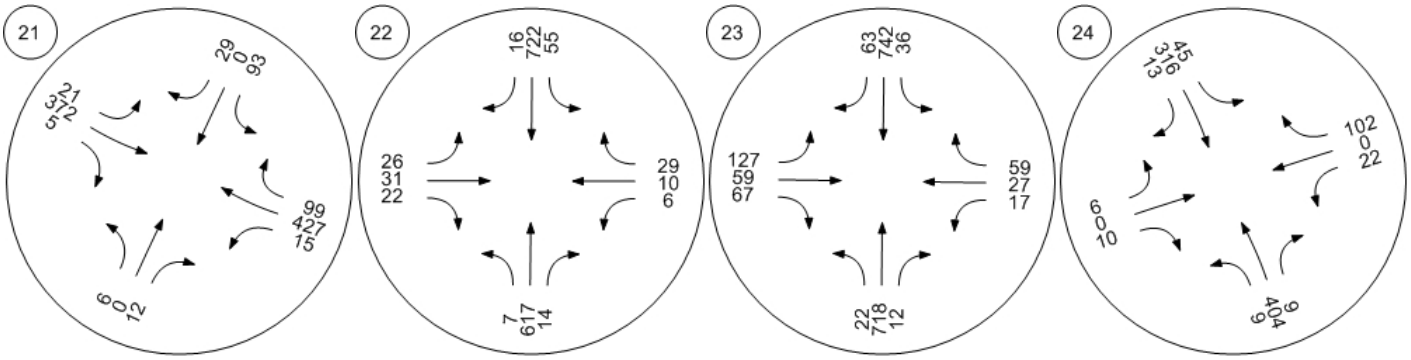
Traffic Volume - Future Total Volume

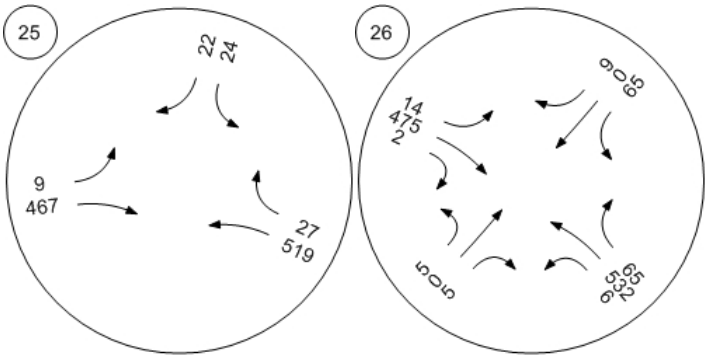


Traffic Volume - Future Total Volume

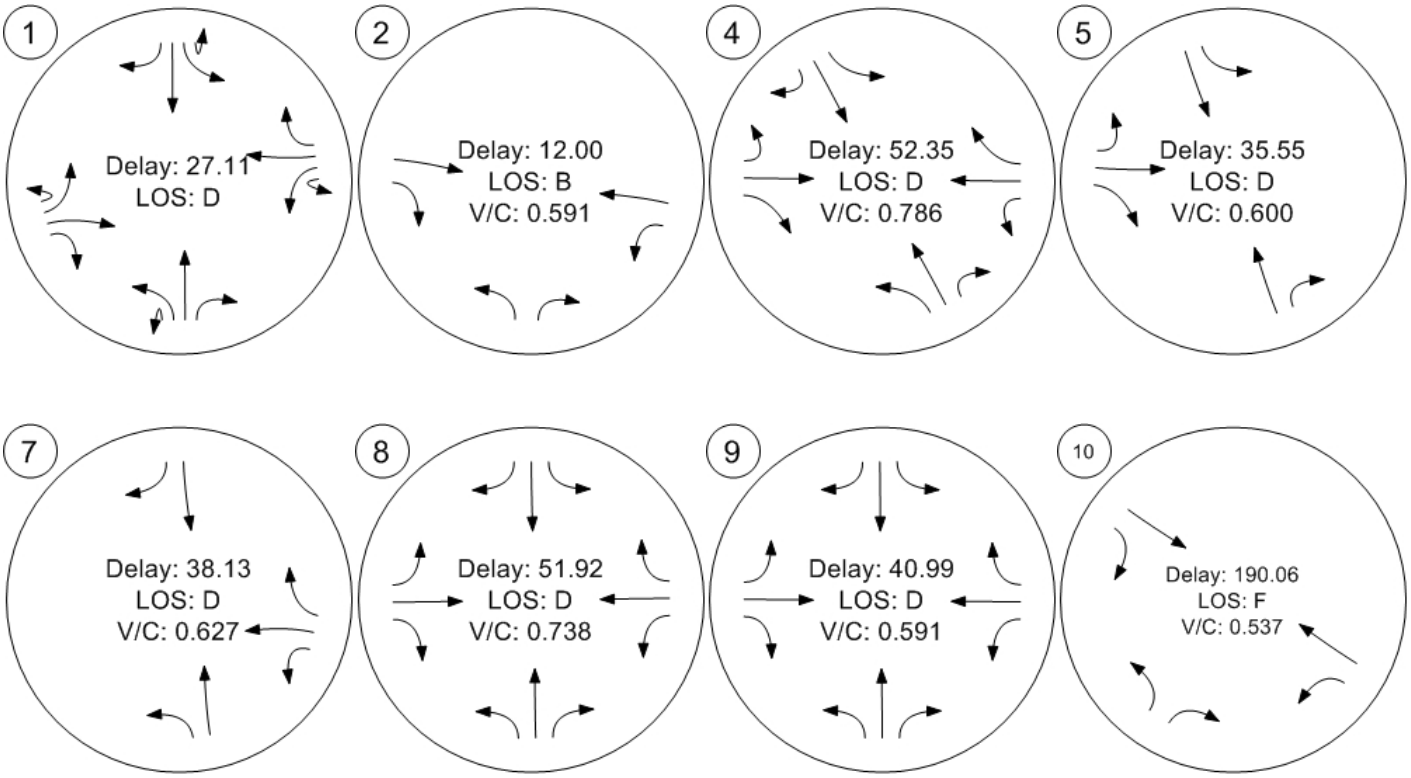


Traffic Volume - Future Total Volume

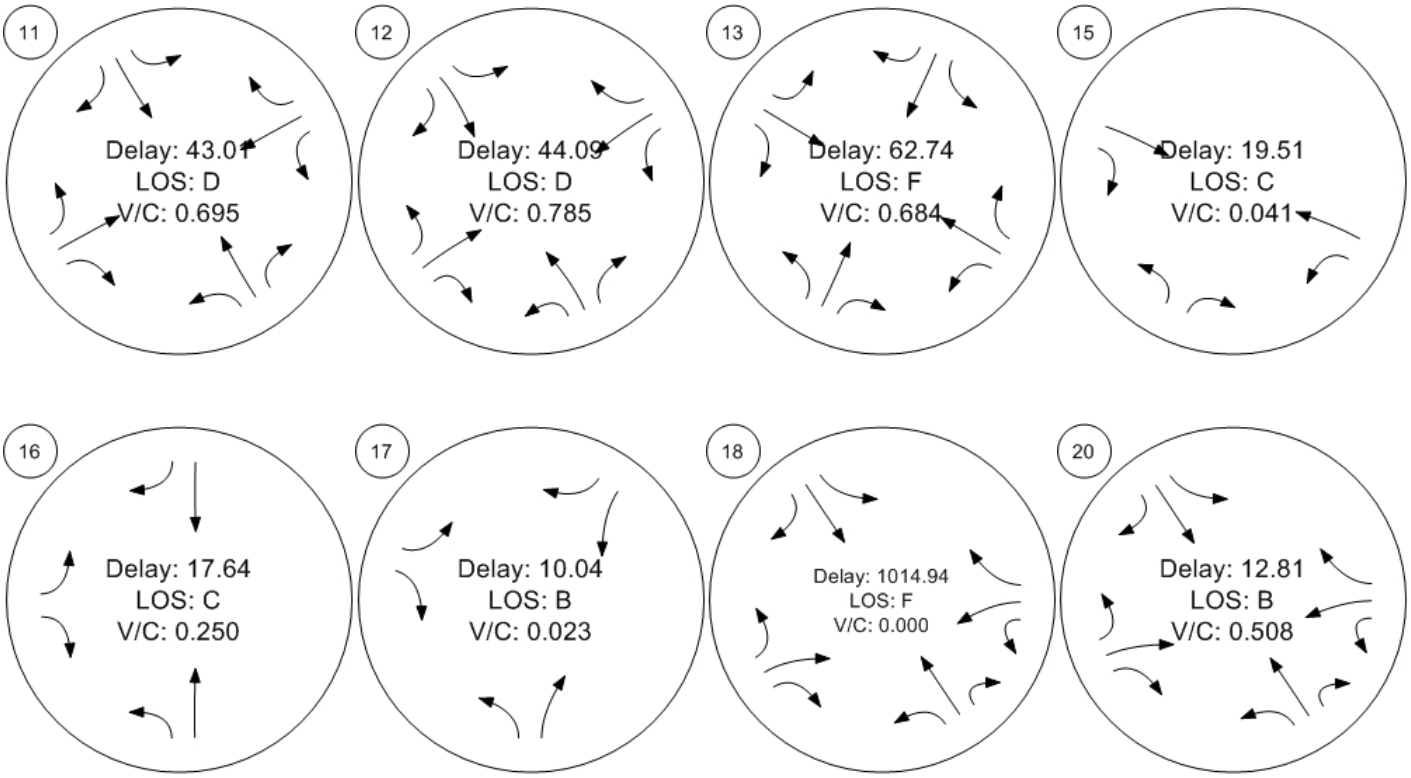




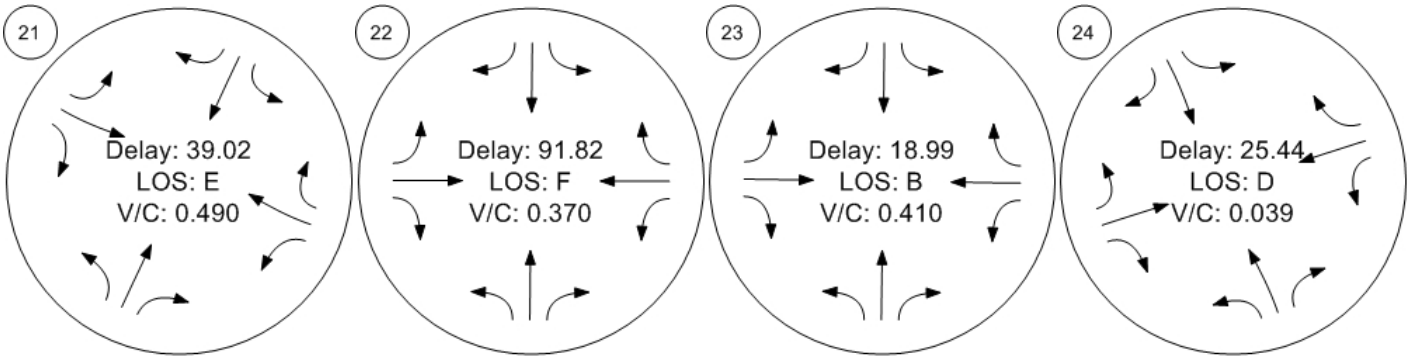
Traffic Conditions

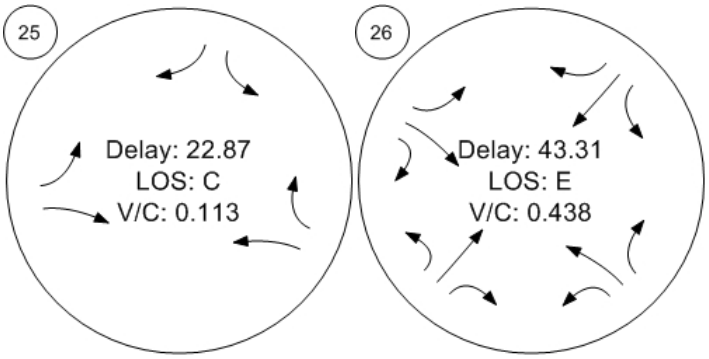


Traffic Conditions



Traffic Conditions

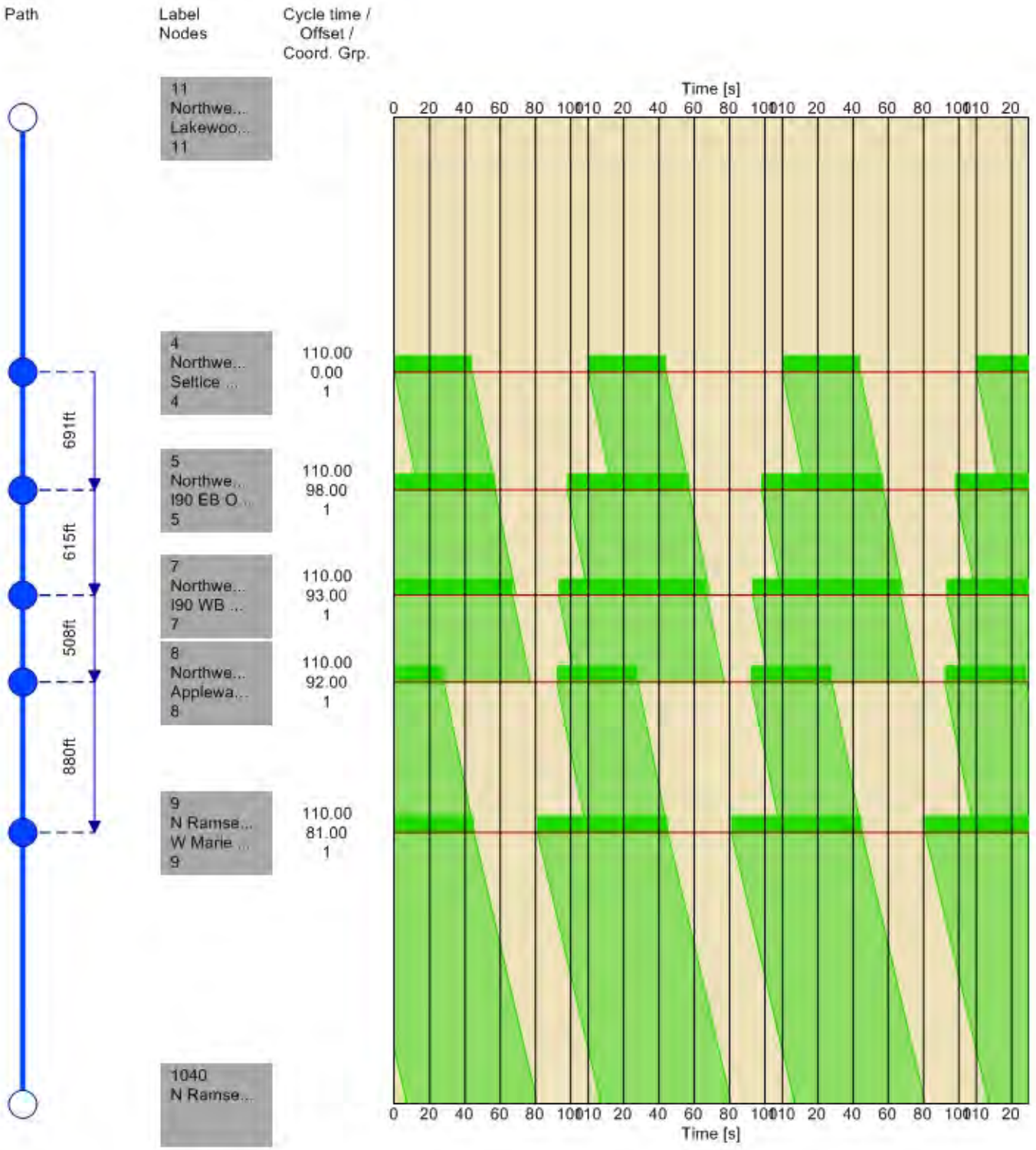




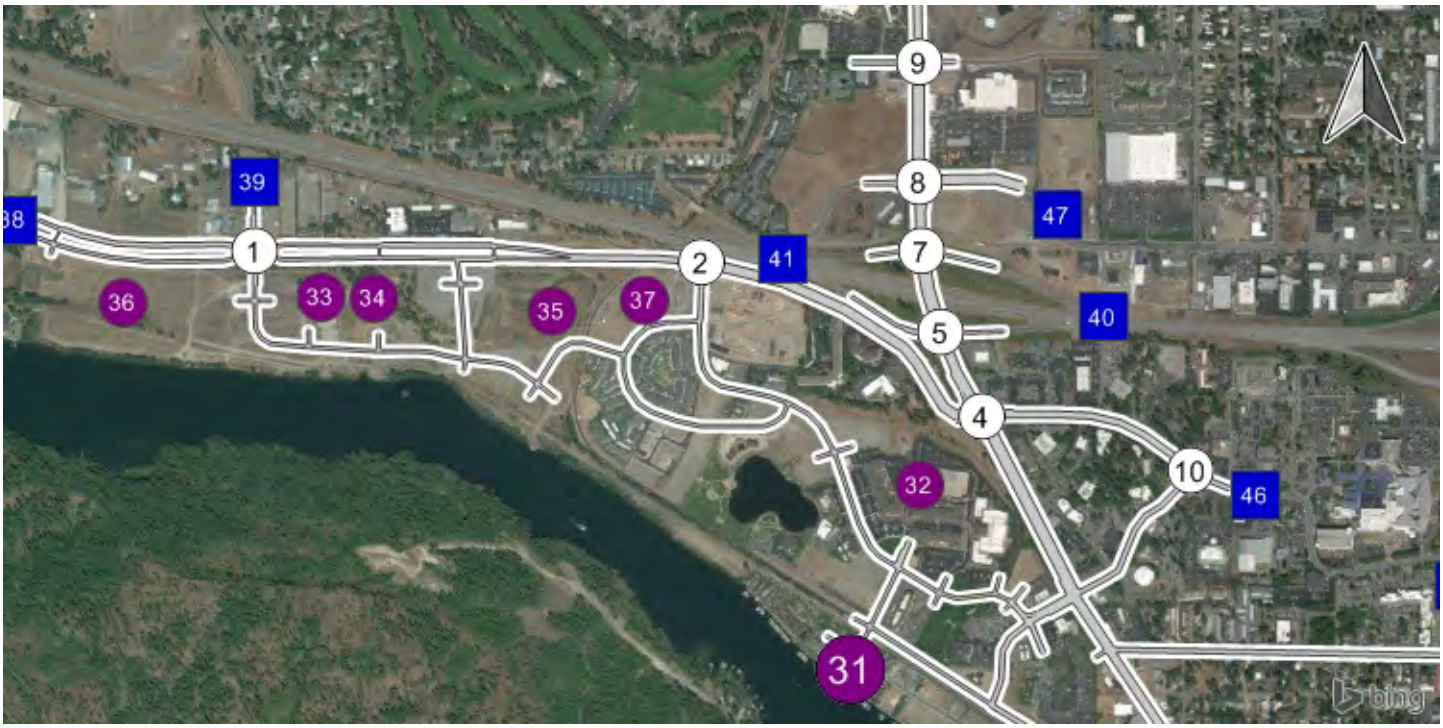
Time Space Diagram - Flowing Off

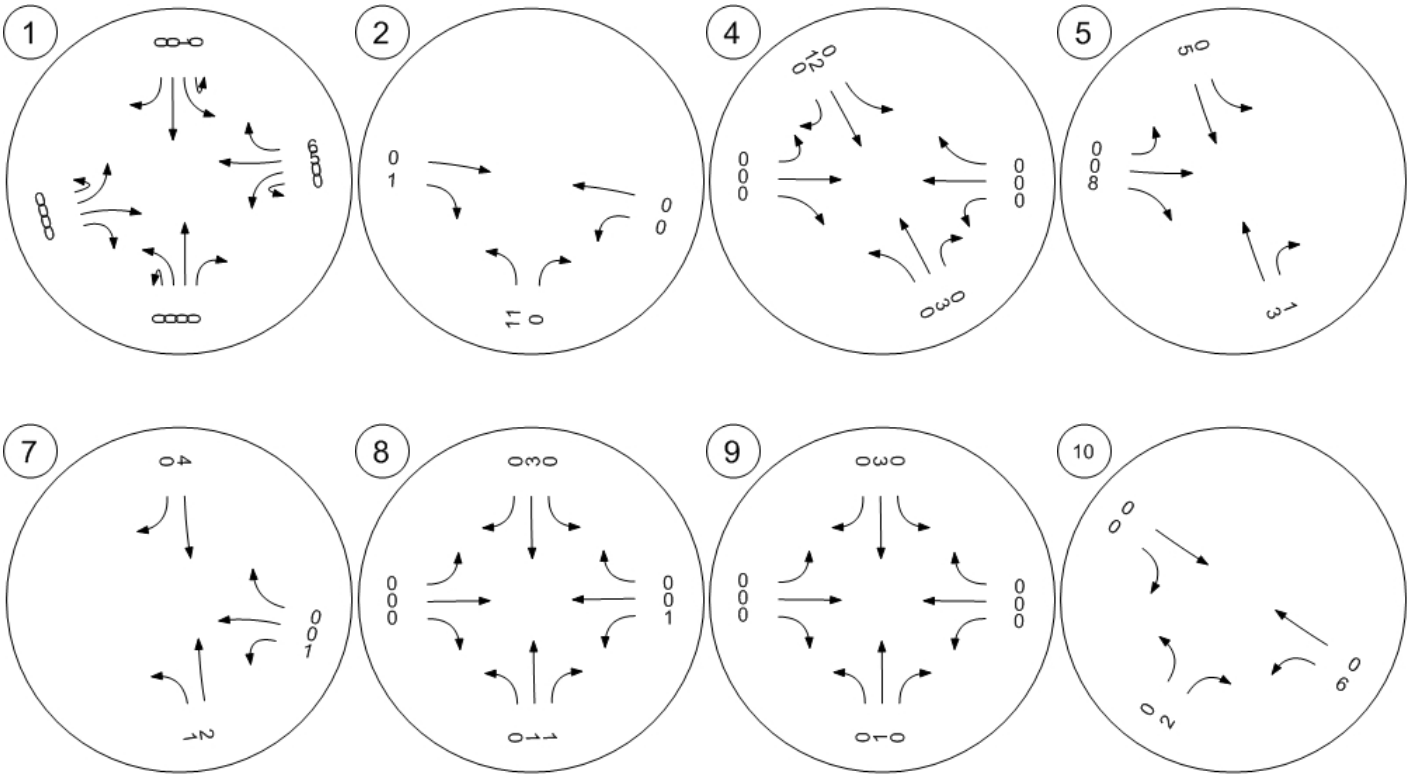
Route 11: NW Blvd NB

Route 11: NW Blvd NB

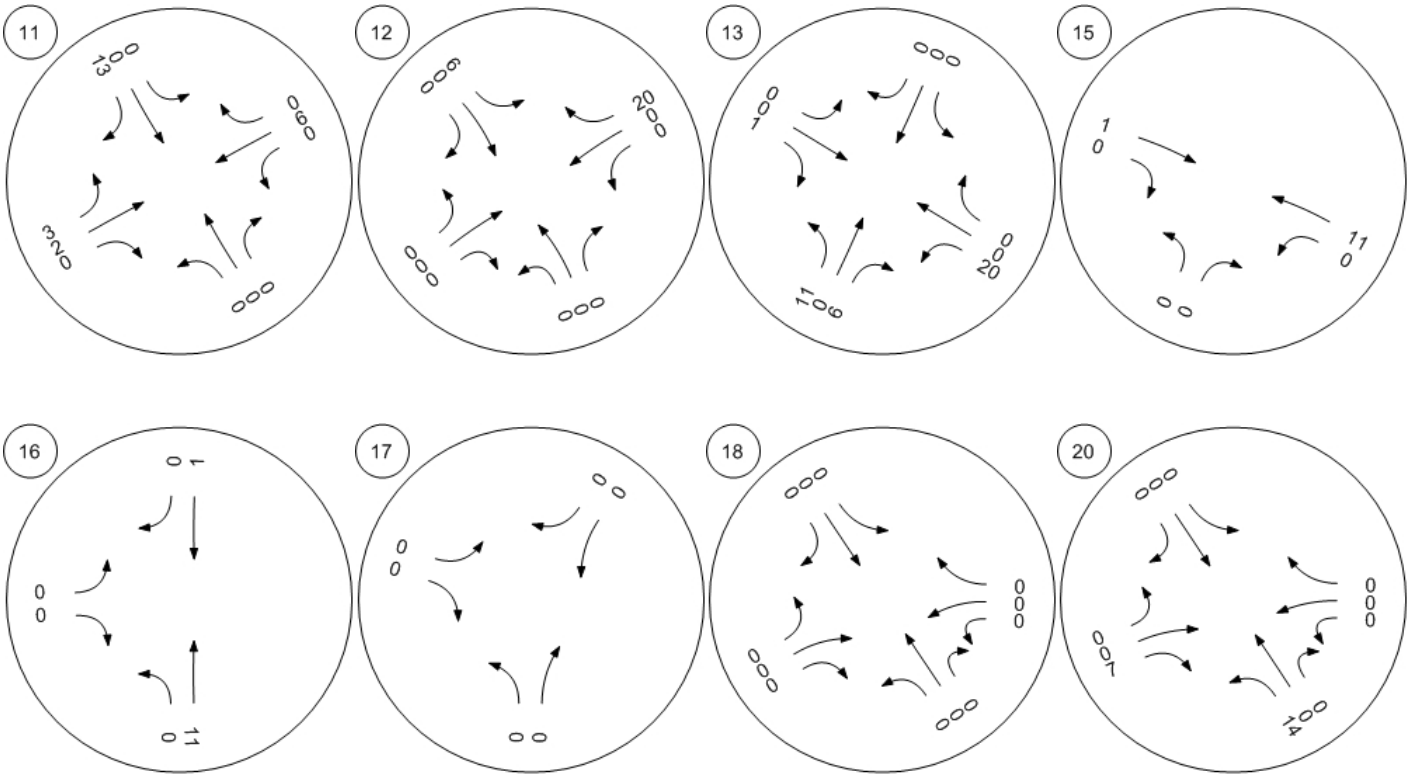


Fair Share - Fair Share Volumes - Zone 31: Bellerive Res.

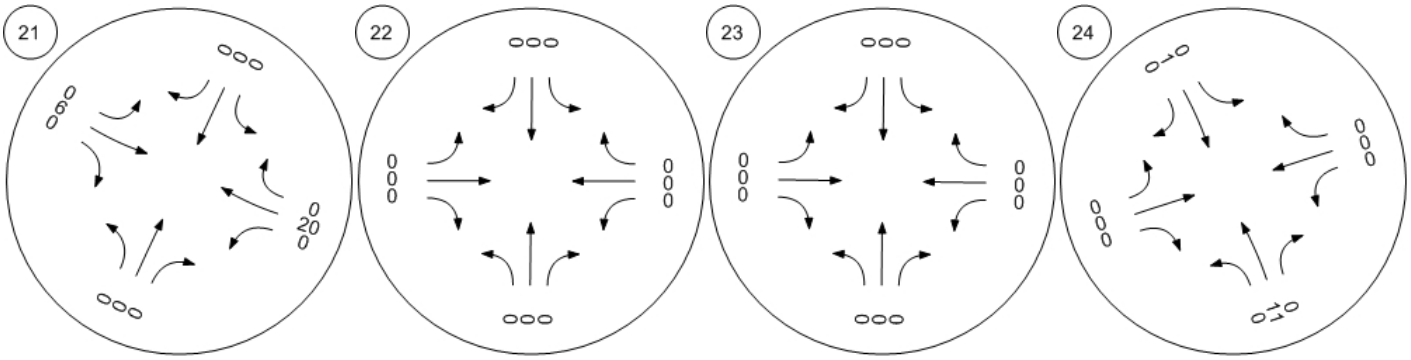


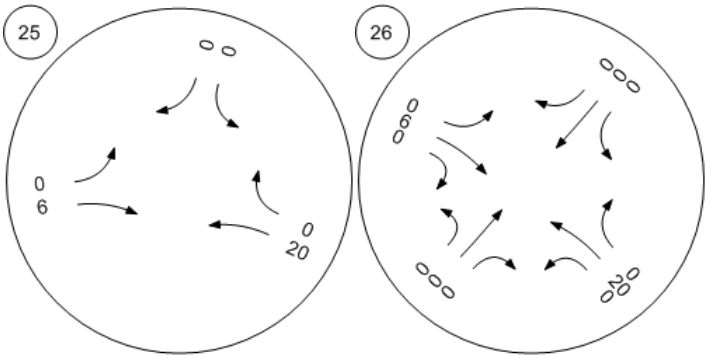


Fair Share - Fair Share Volumes - Zone 31: Bellerive Res.

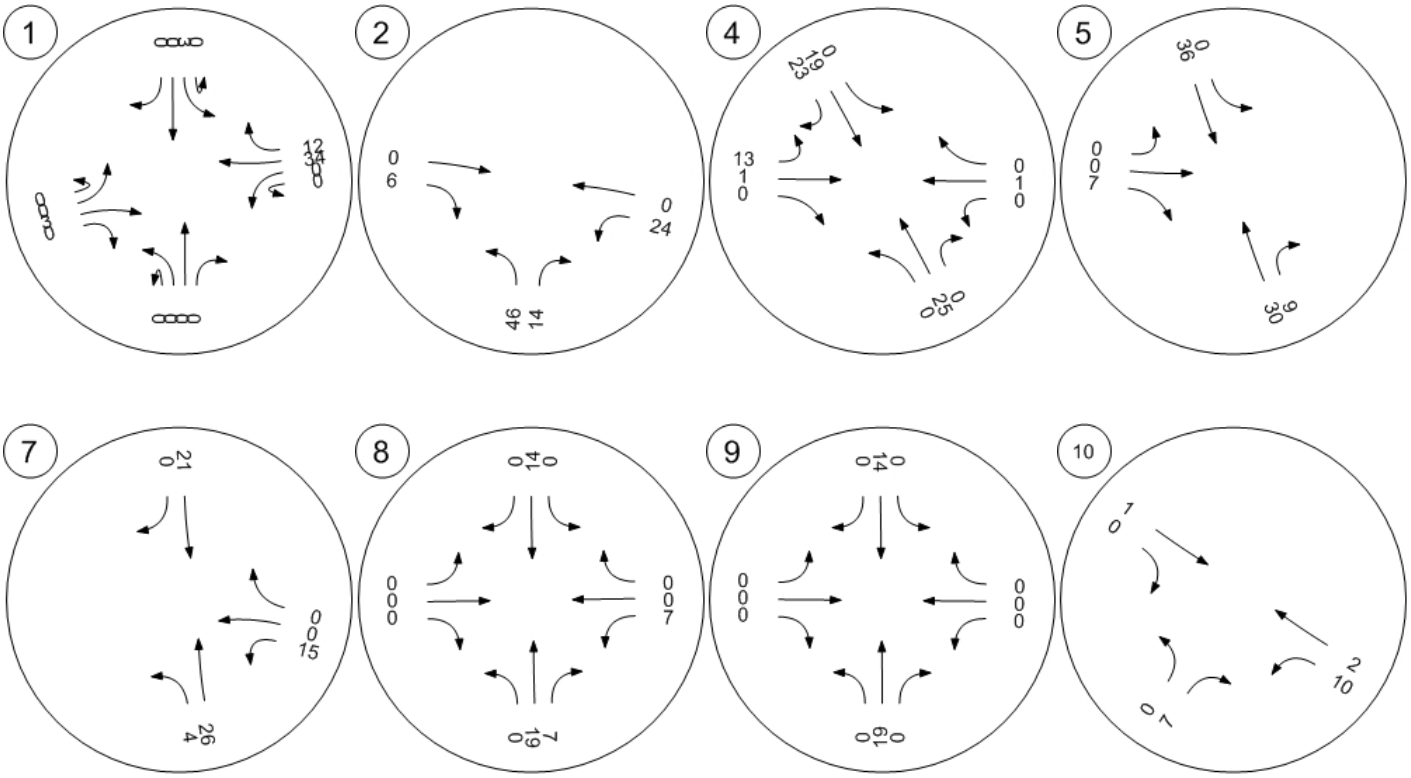


Fair Share - Fair Share Volumes - Zone 31: Bellerive Res.

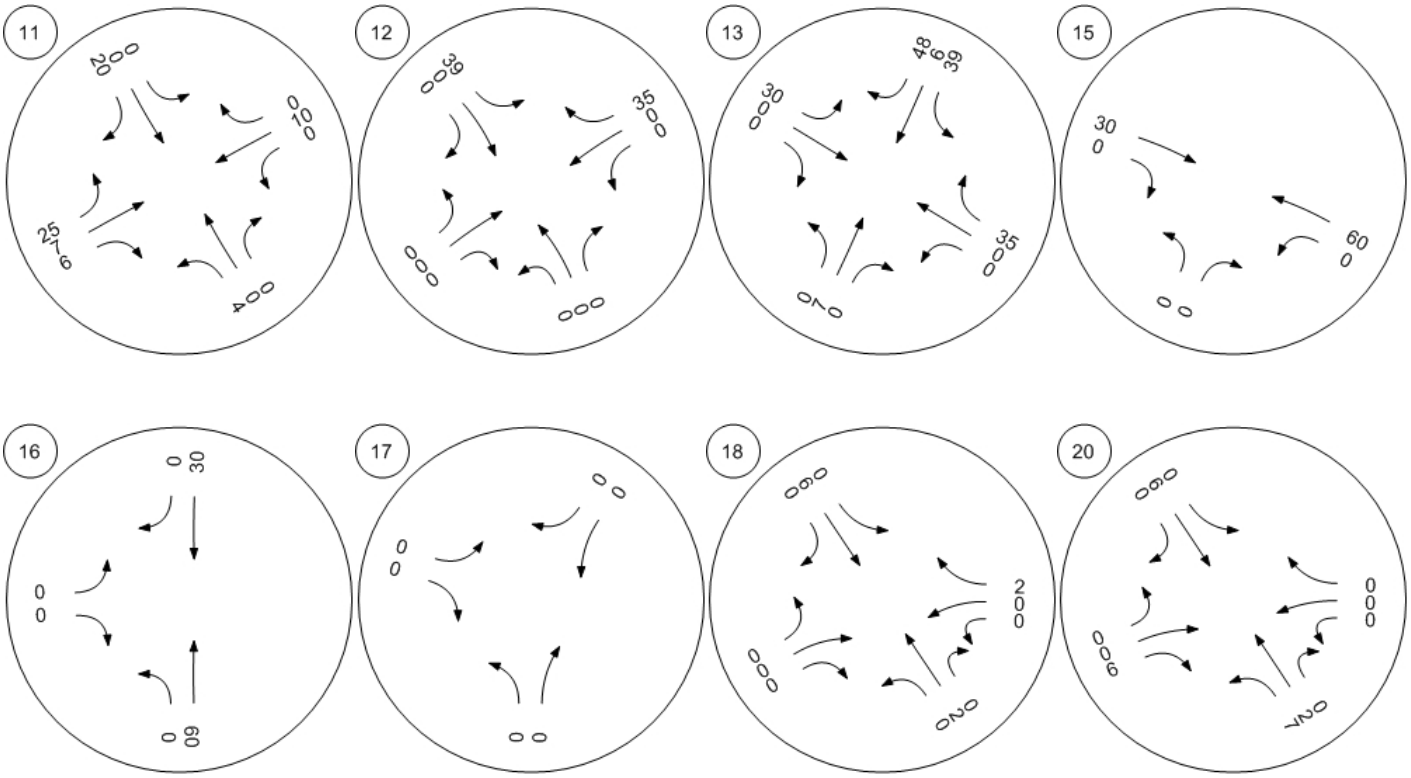




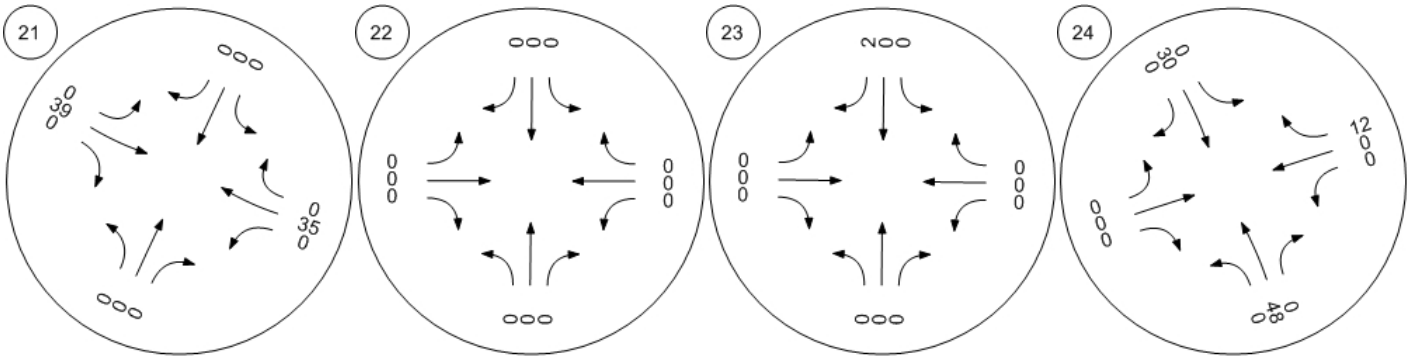
Fair Share - Fair Share Volumes - Zone 32: Riverstone Comm.

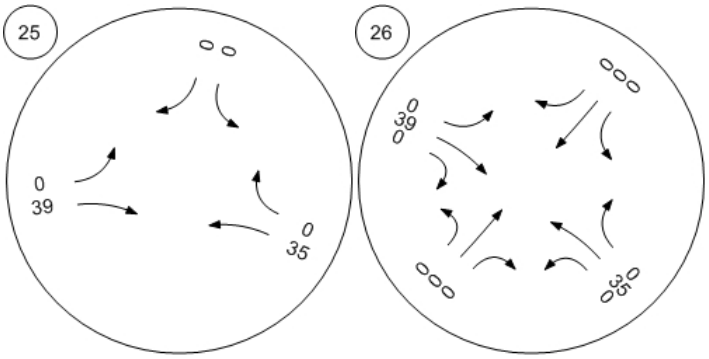


Fair Share - Fair Share Volumes - Zone 32: Riverstone Comm.

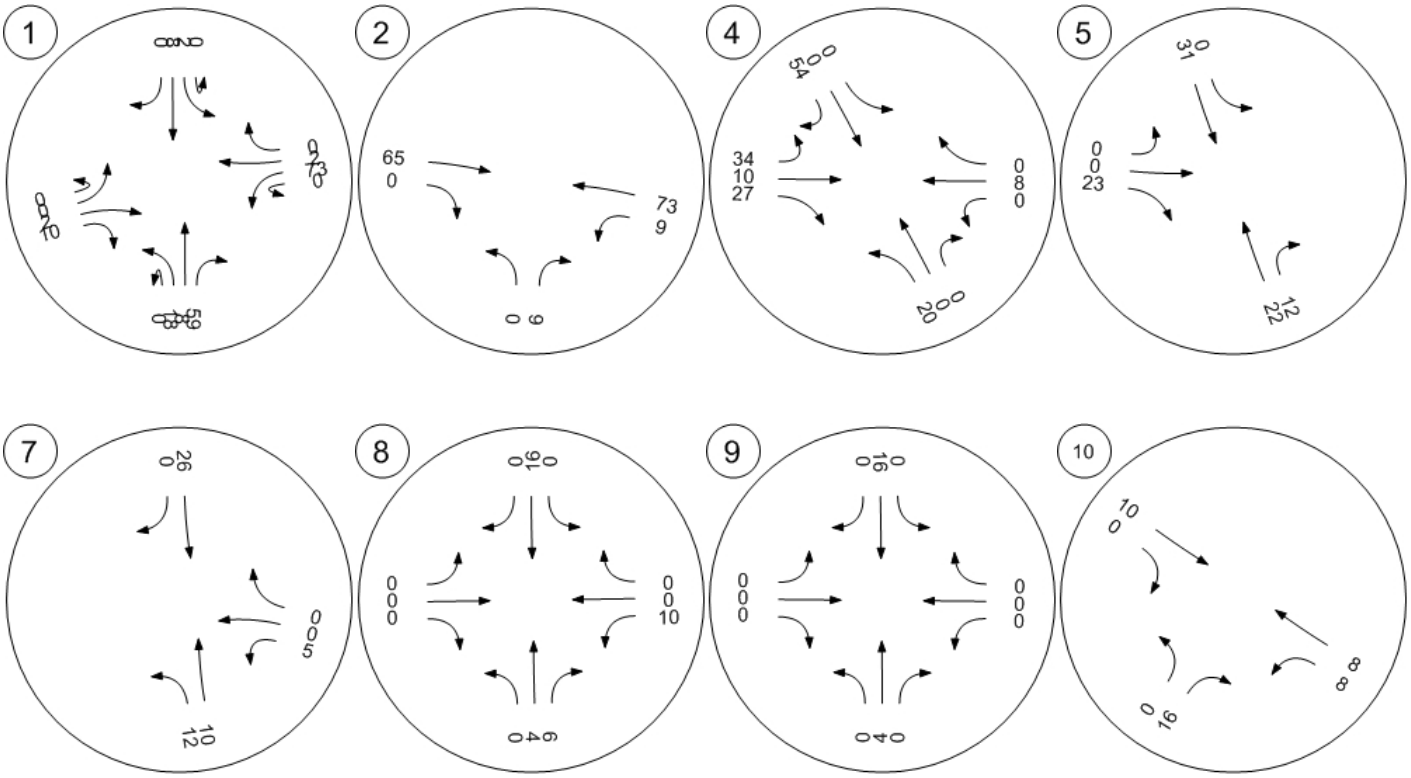


Fair Share - Fair Share Volumes - Zone 32: Riverstone Comm.

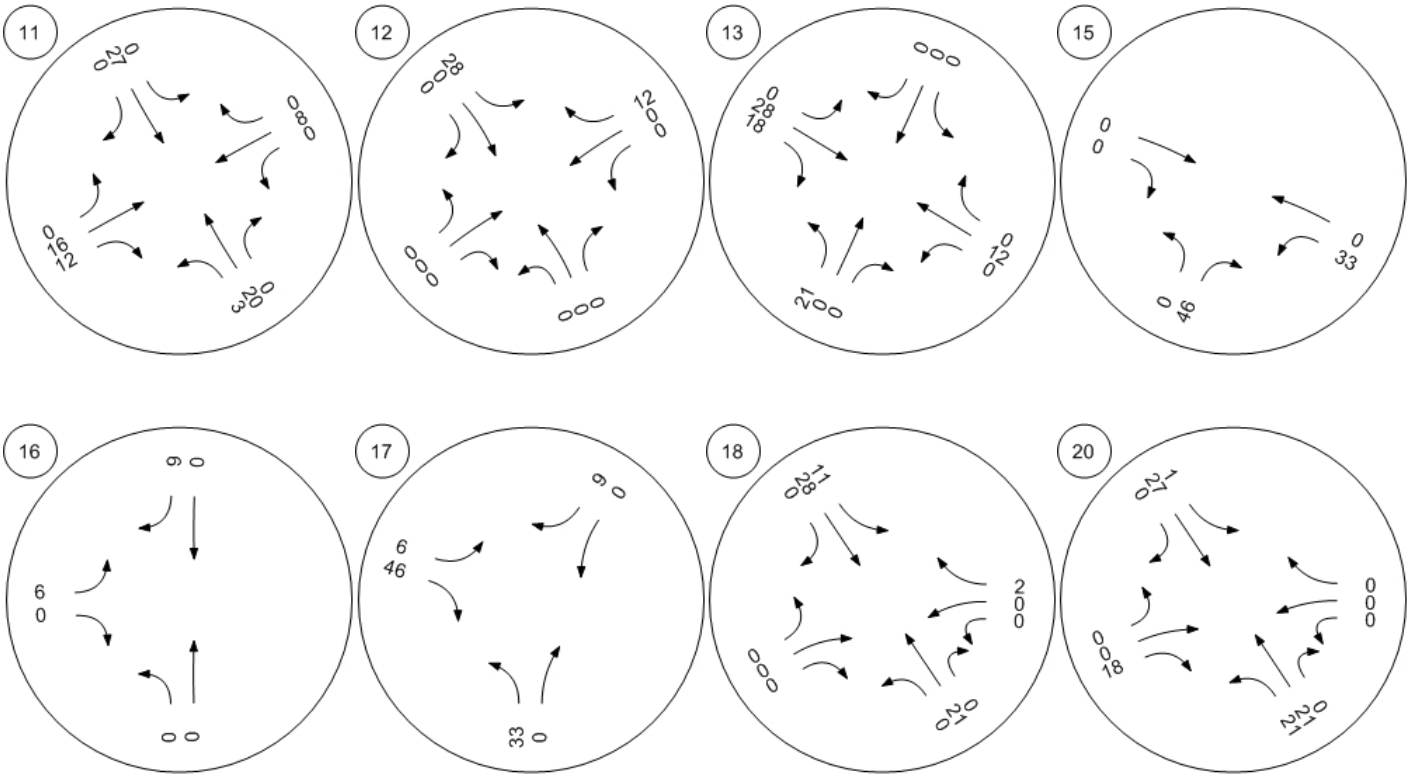




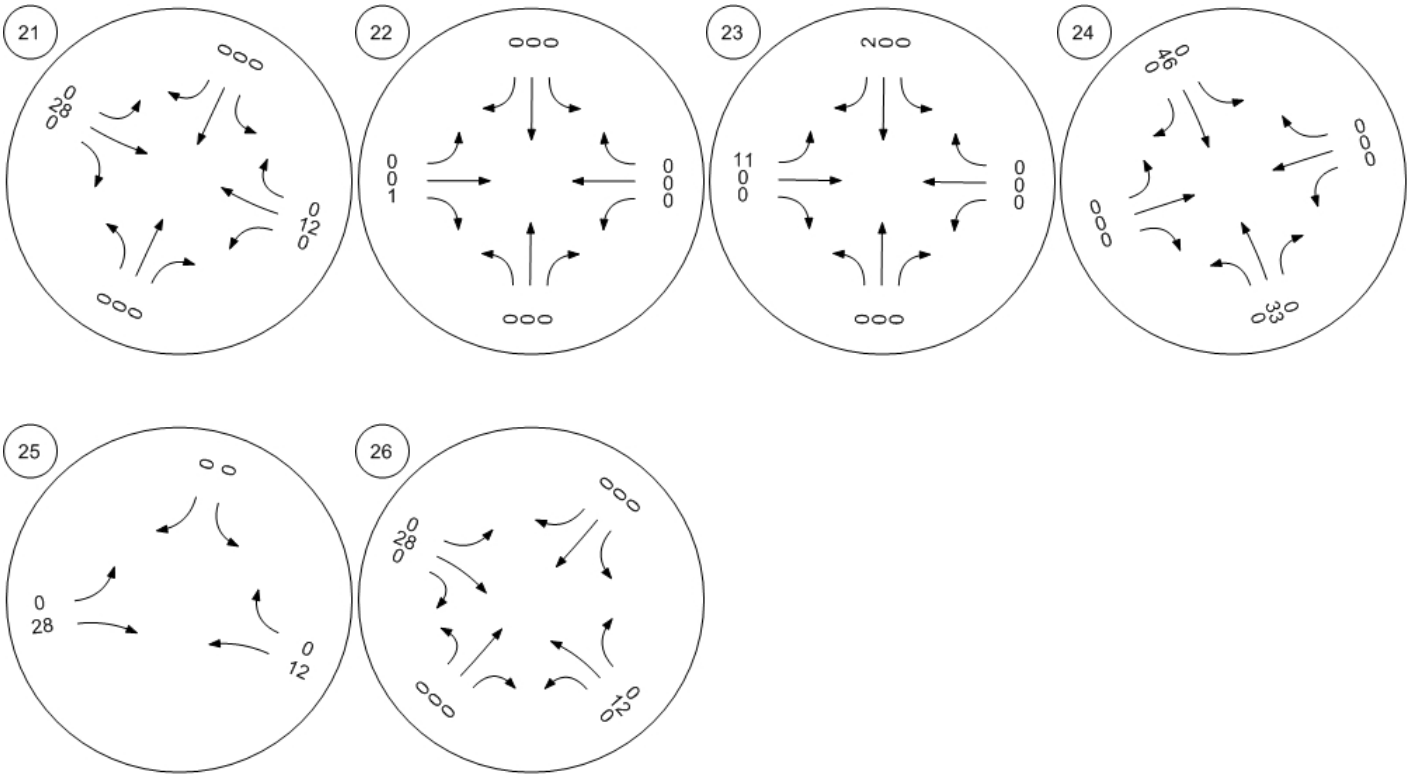
Fair Share - Fair Share Volumes - Zone 33: Atlas Comm.



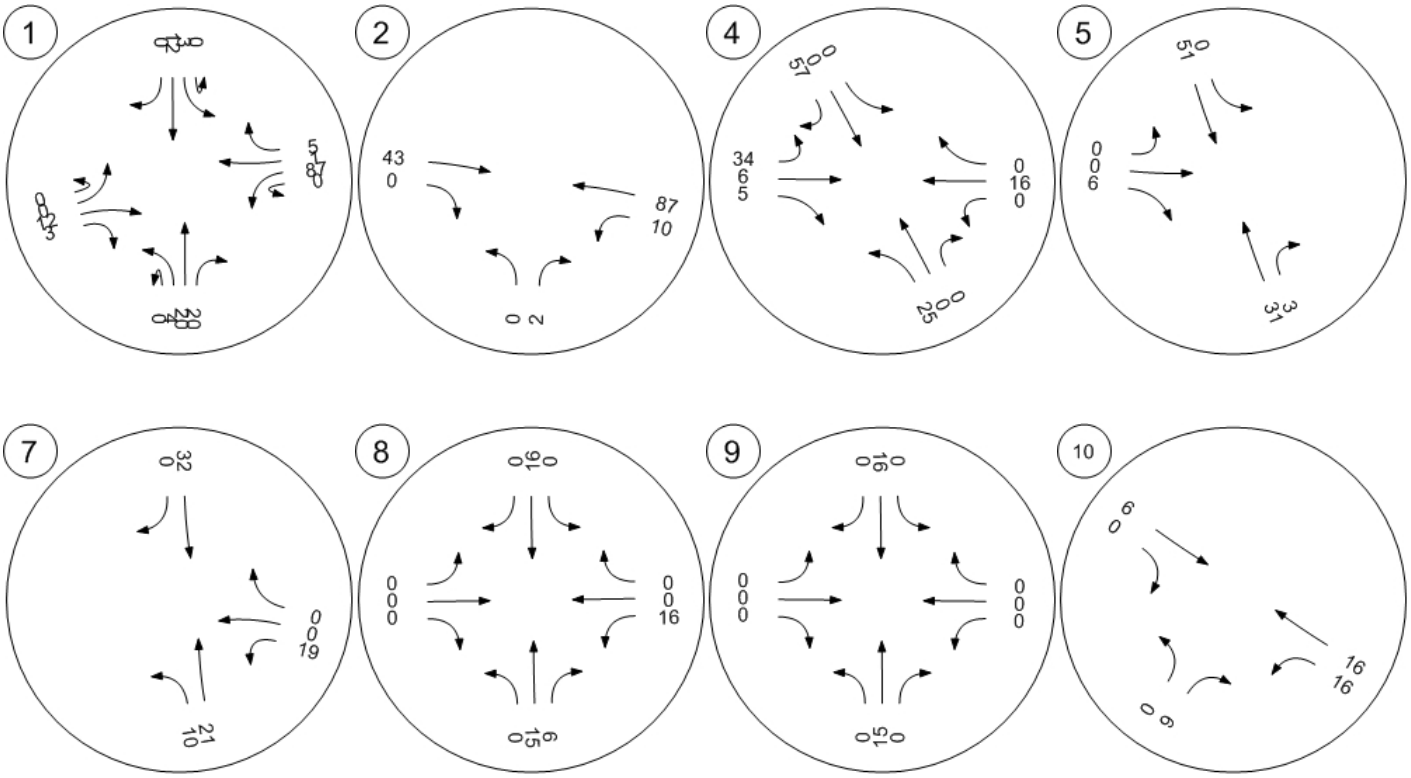
Fair Share - Fair Share Volumes - Zone 33: Atlas Comm.



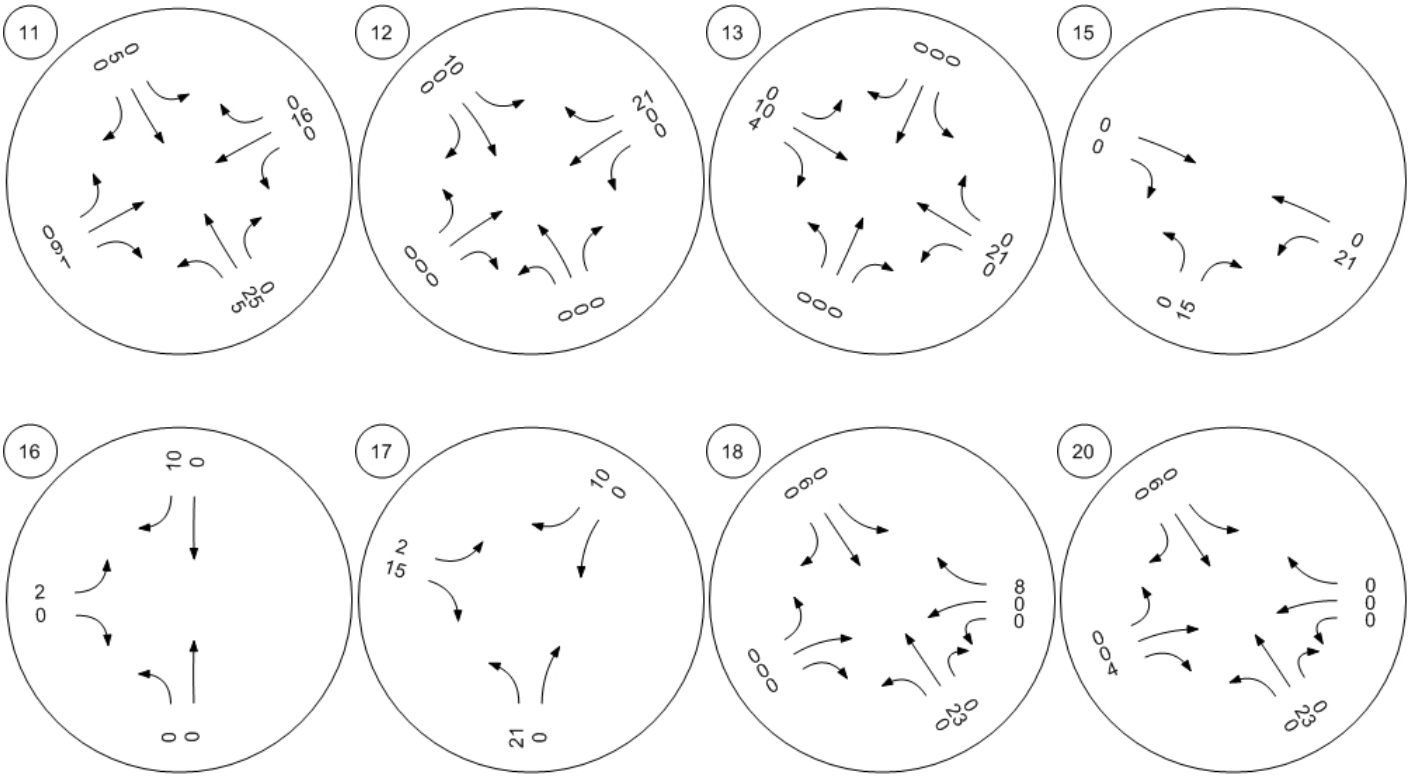
Fair Share - Fair Share Volumes - Zone 33: Atlas Comm.



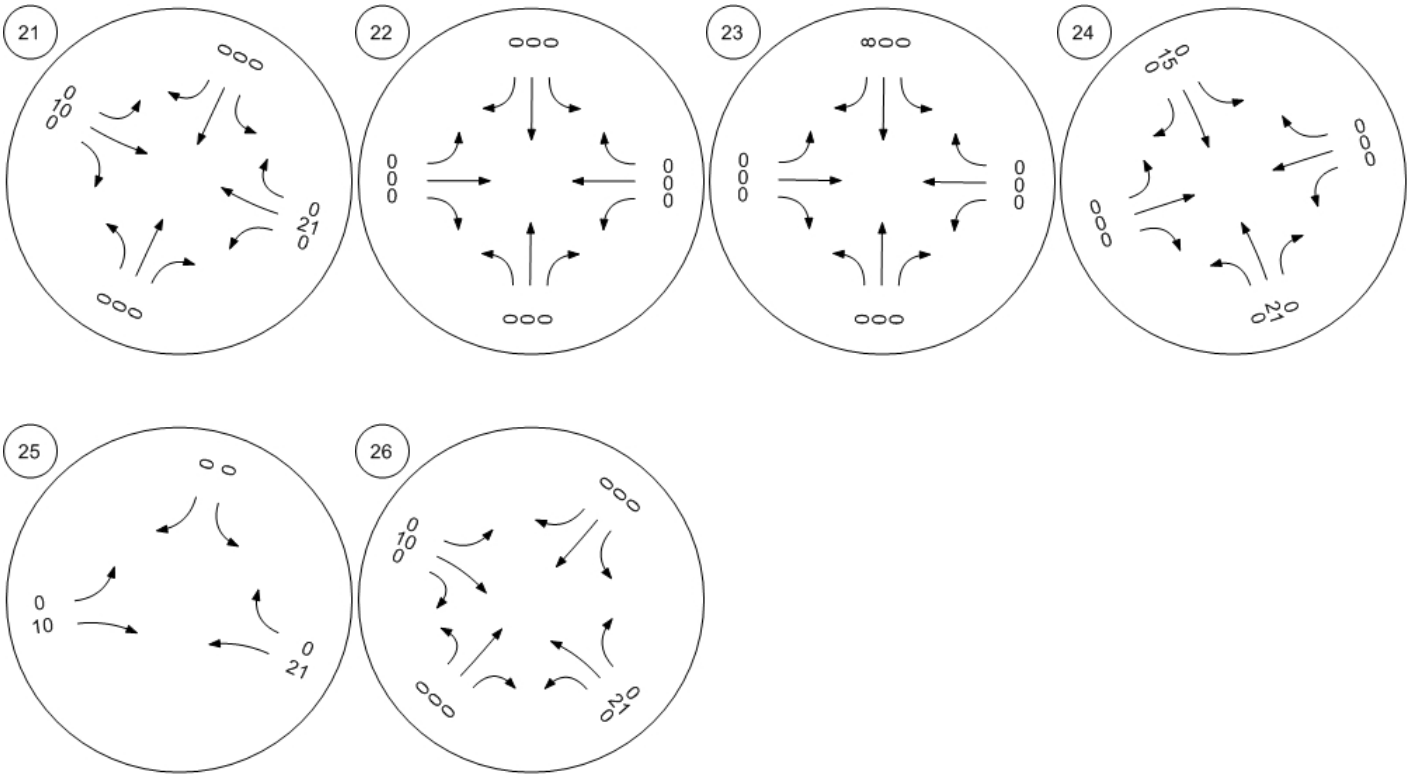
Fair Share - Fair Share Volumes - Zone 34: Atlas Res.



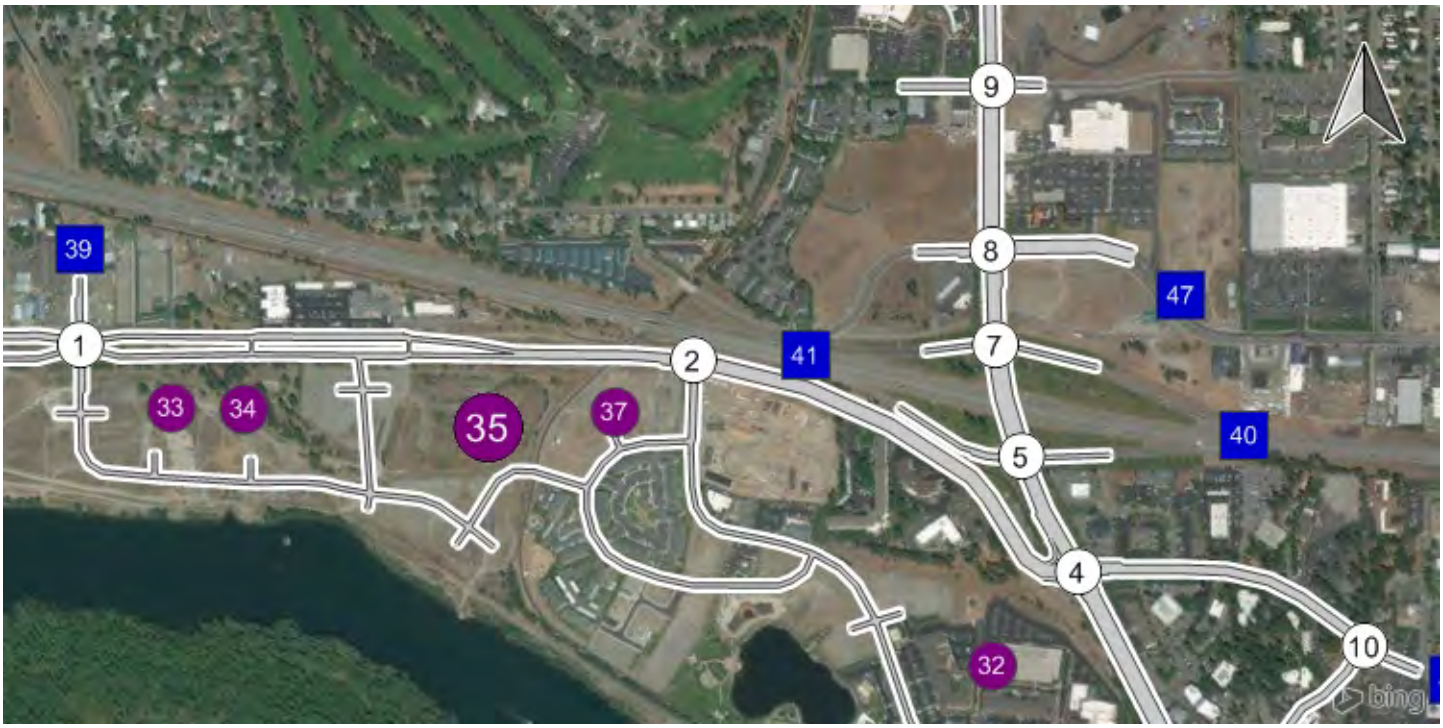
Fair Share - Fair Share Volumes - Zone 34: Atlas Res.

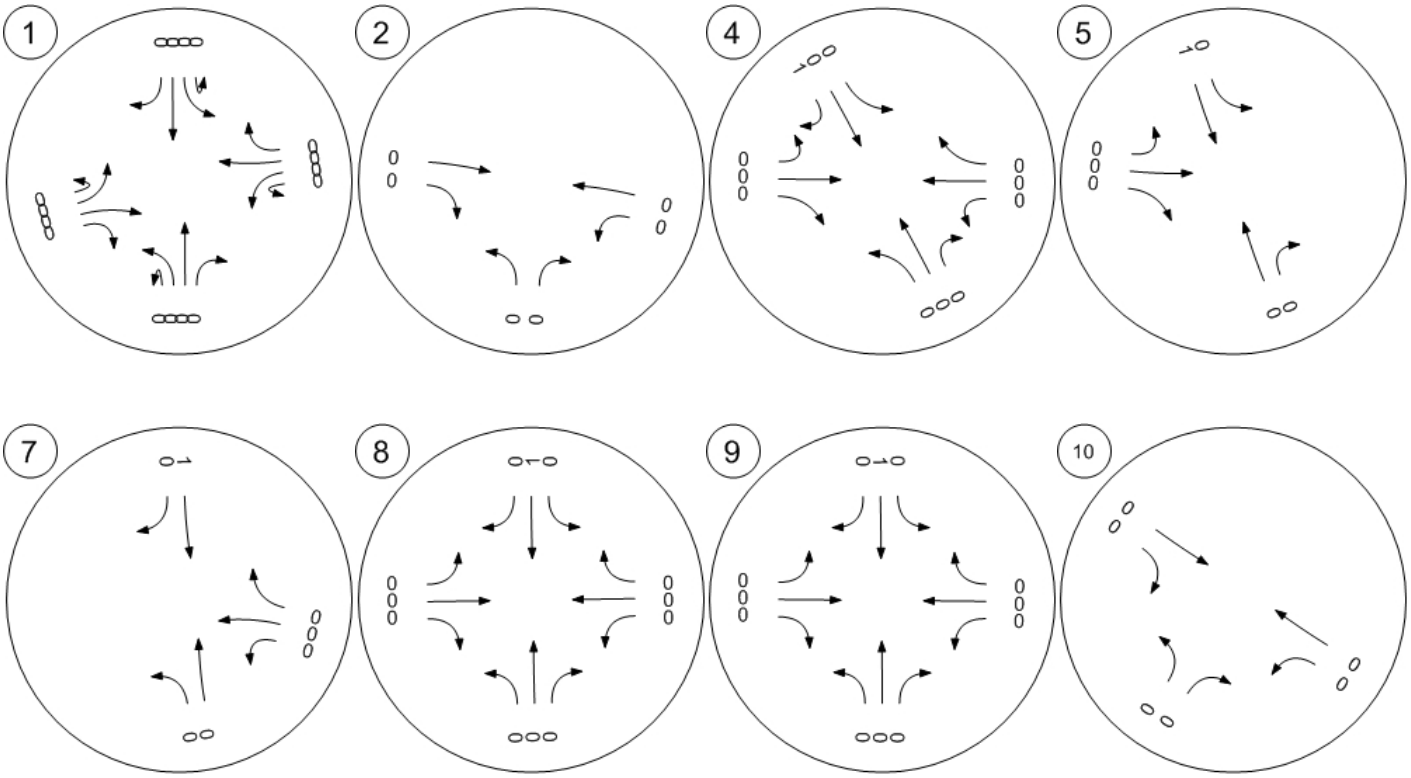


Fair Share - Fair Share Volumes - Zone 34: Atlas Res.

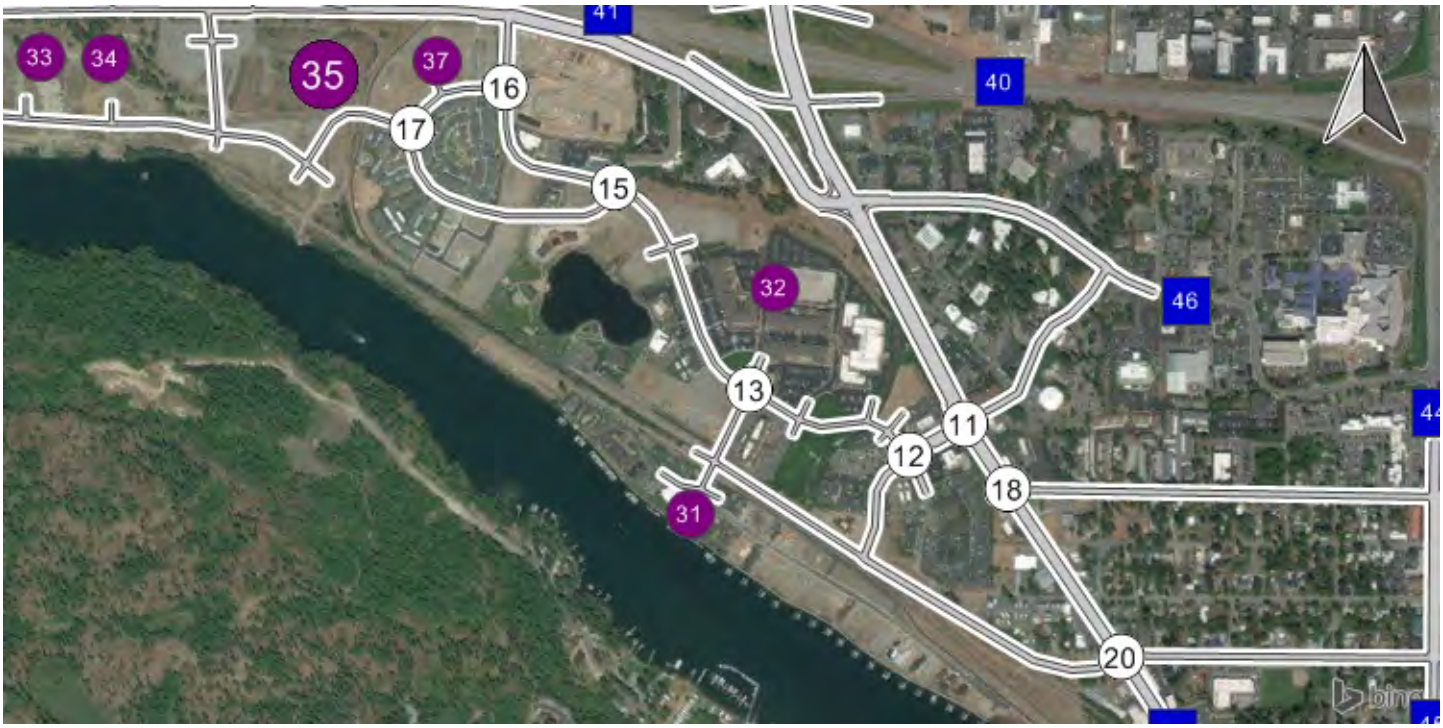


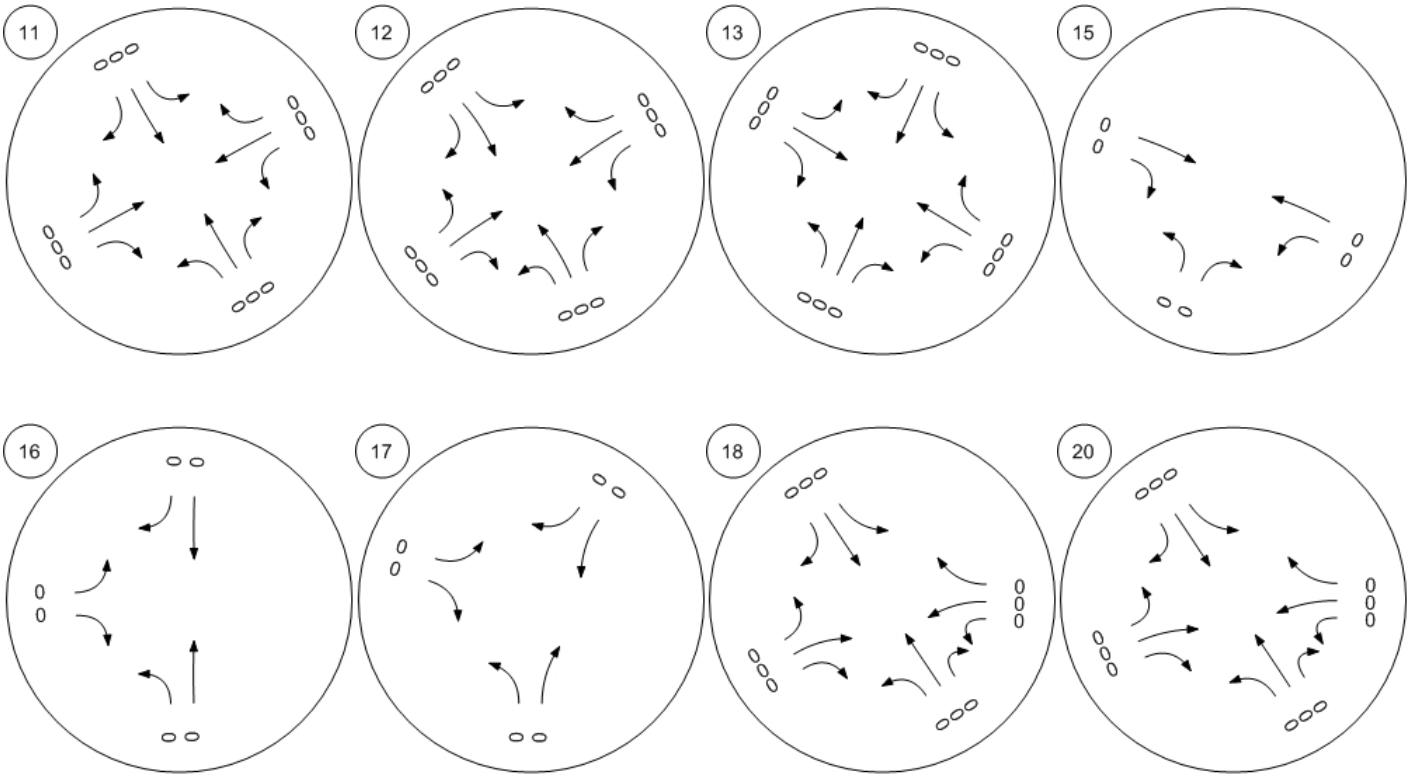
Fair Share - Fair Share Volumes - Zone 35: Open Space



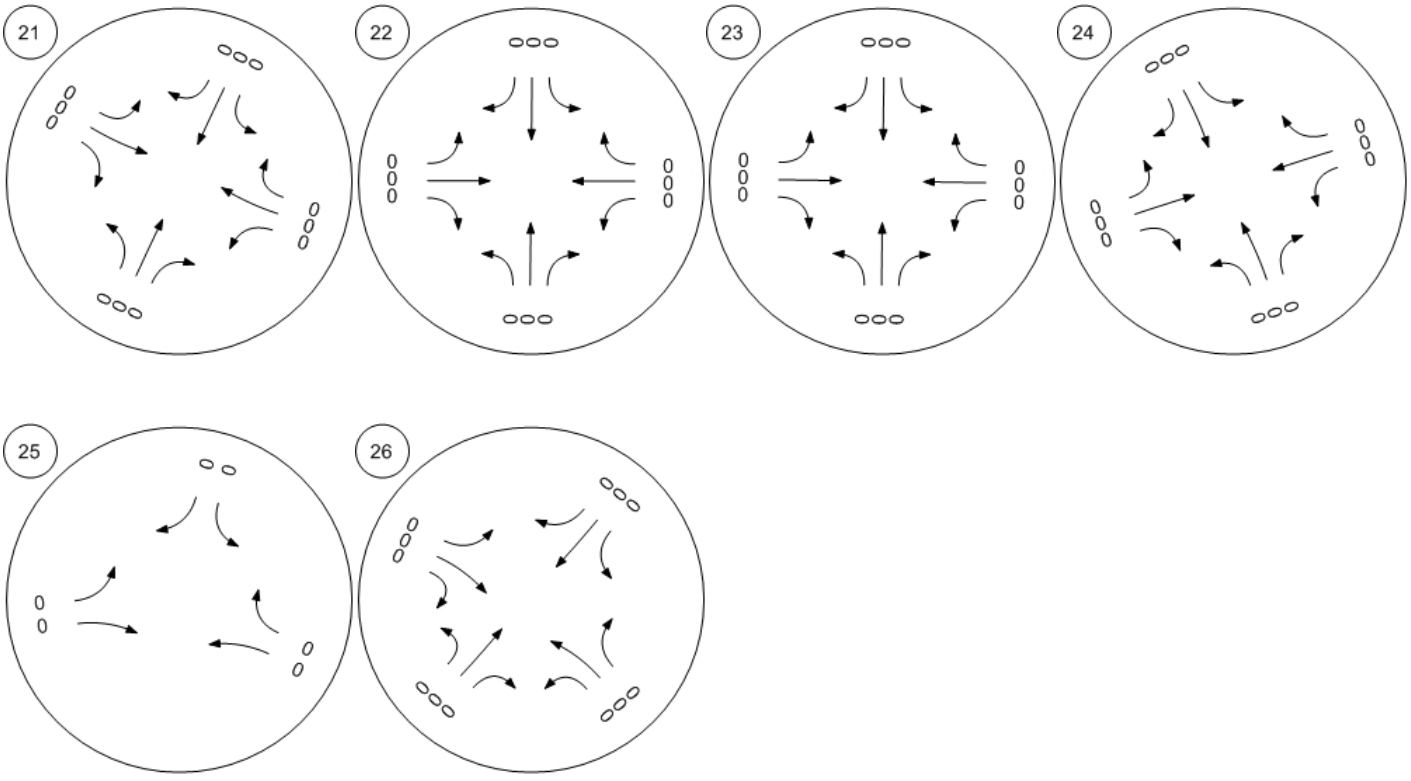


Fair Share - Fair Share Volumes - Zone 35: Open Space

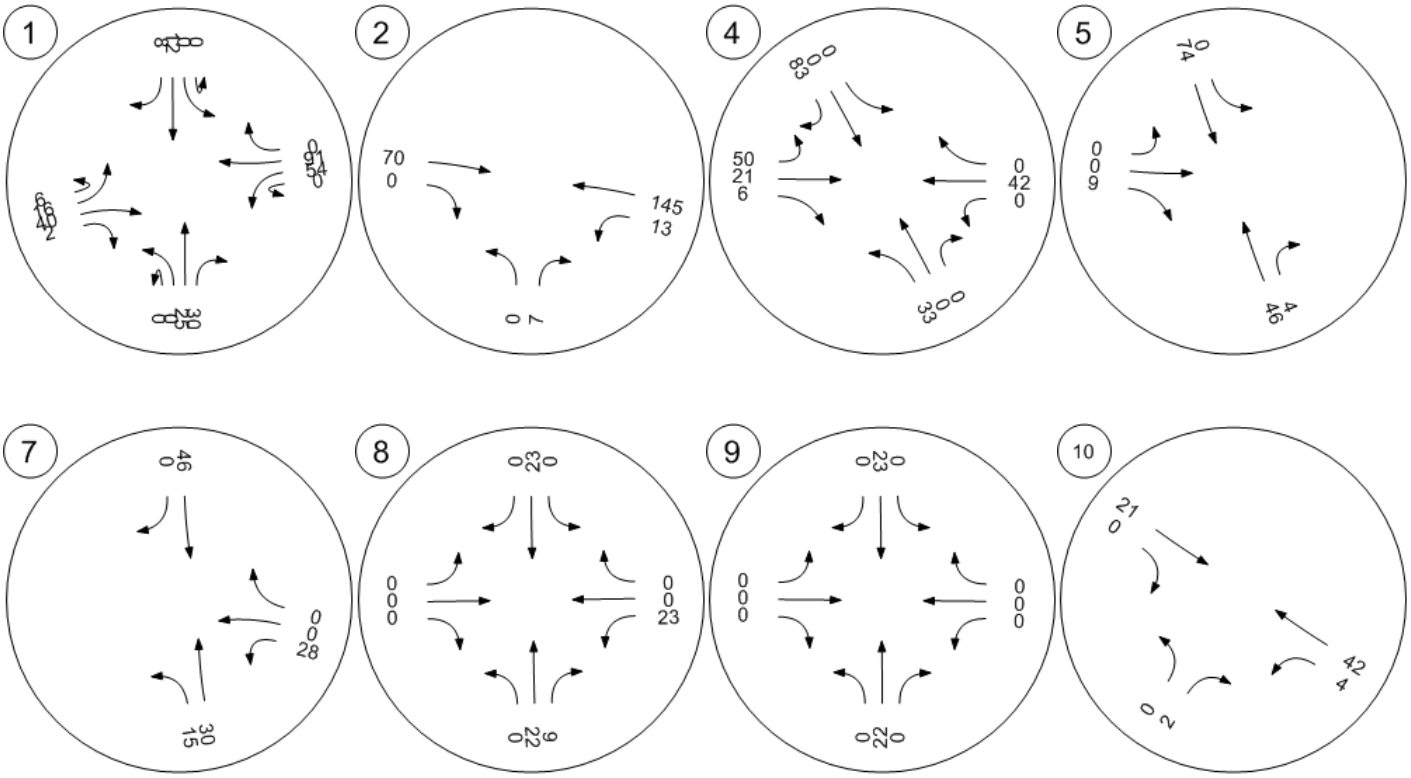




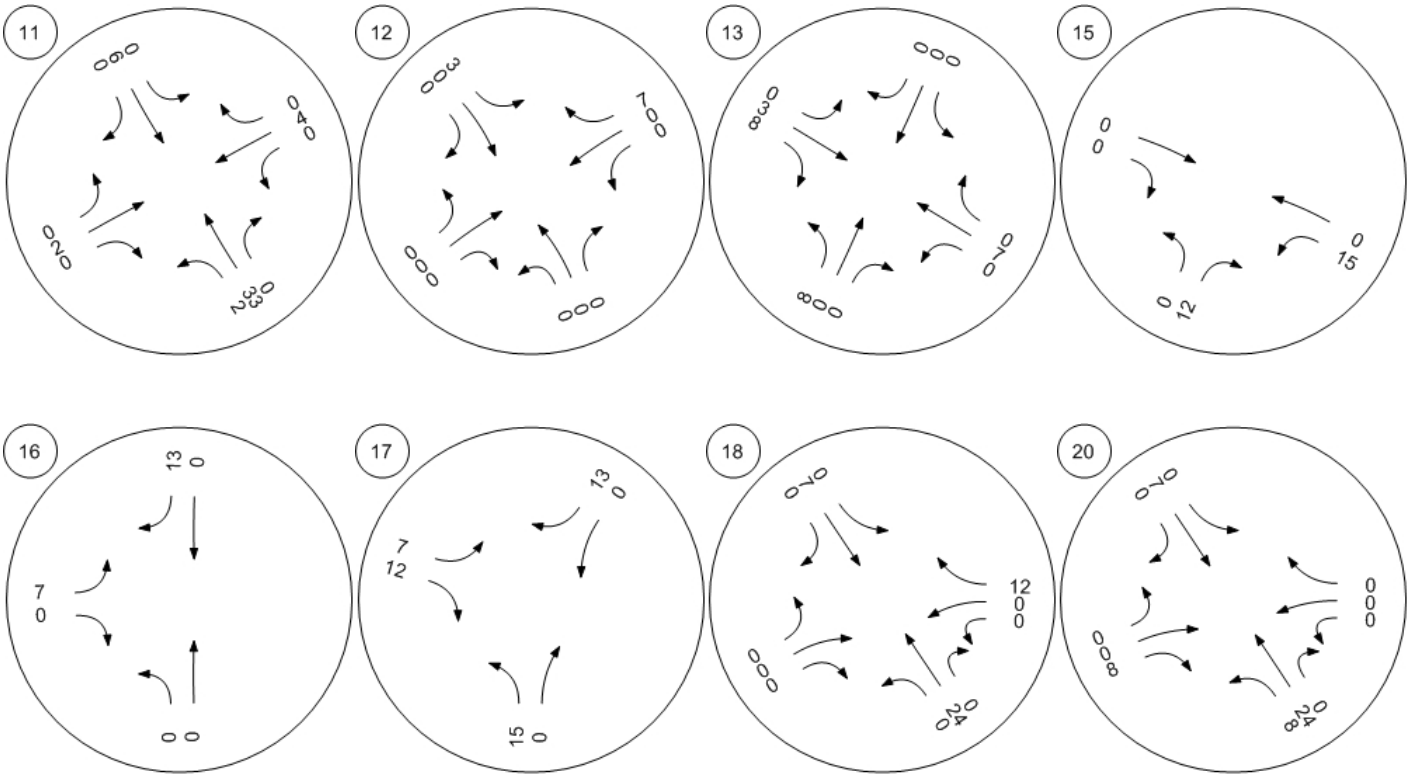
Fair Share - Fair Share Volumes - Zone 35: Open Space



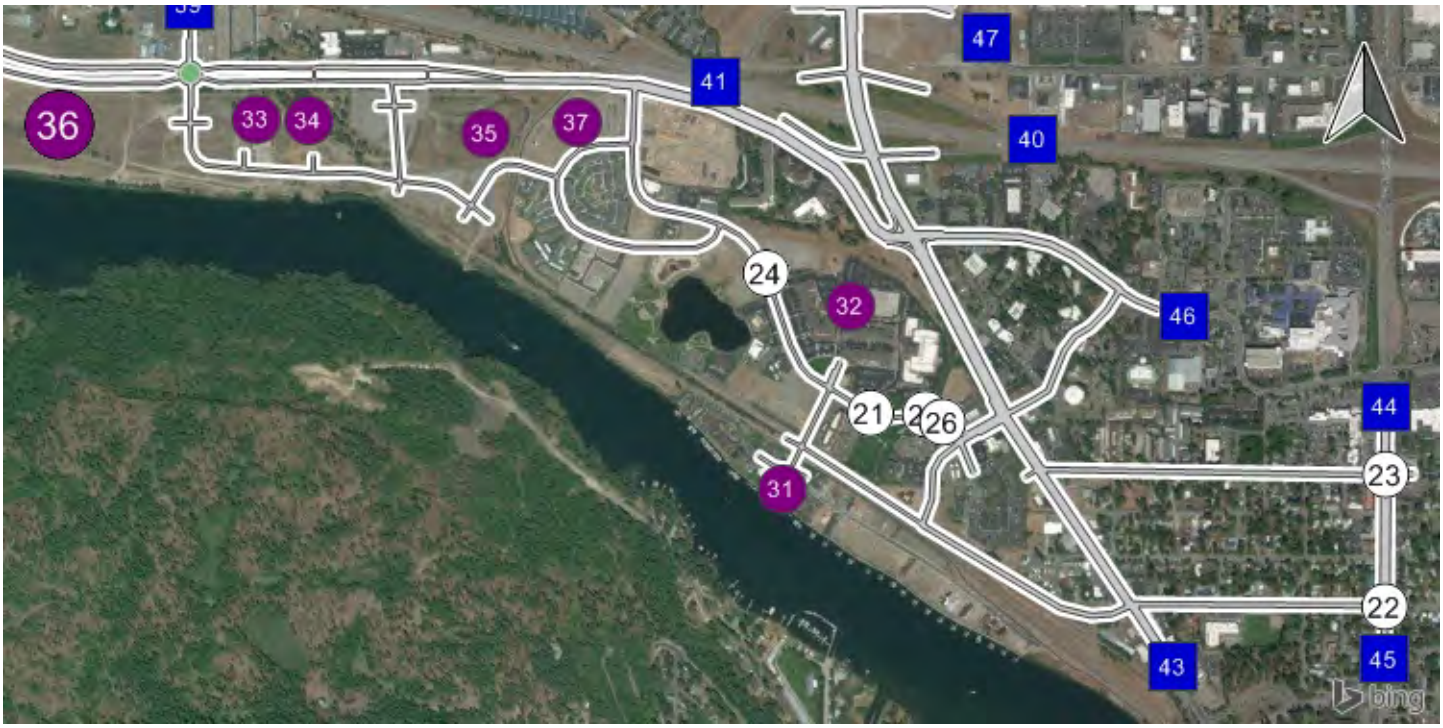
Fair Share - Fair Share Volumes - Zone 36: River's Edge

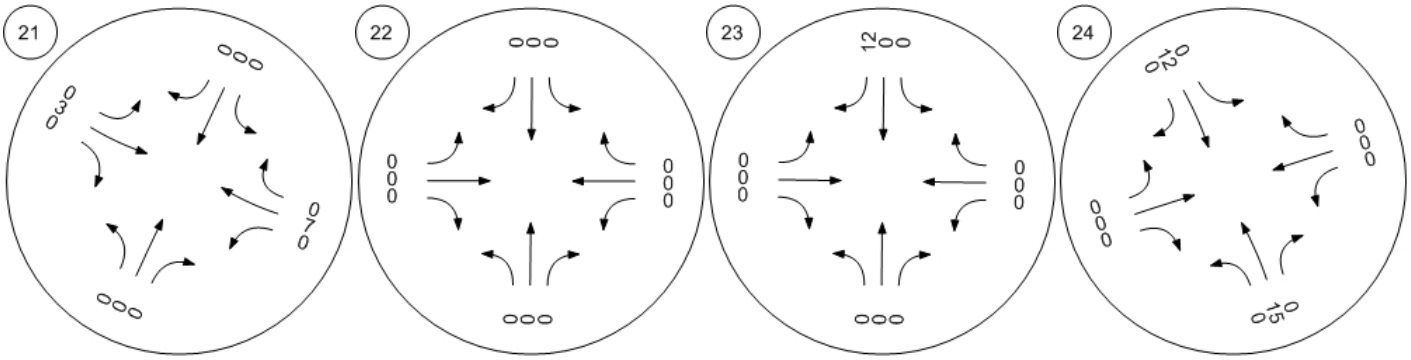


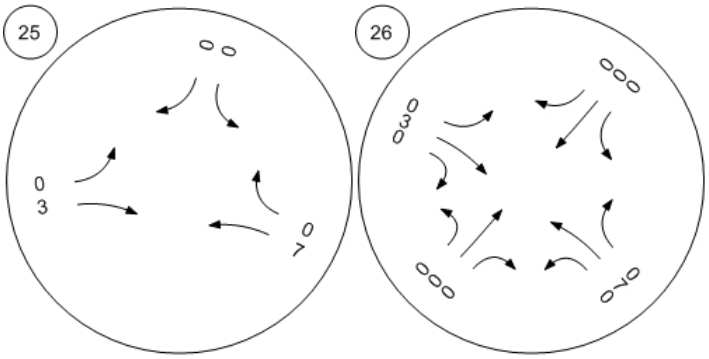
Fair Share - Fair Share Volumes - Zone 36: River's Edge



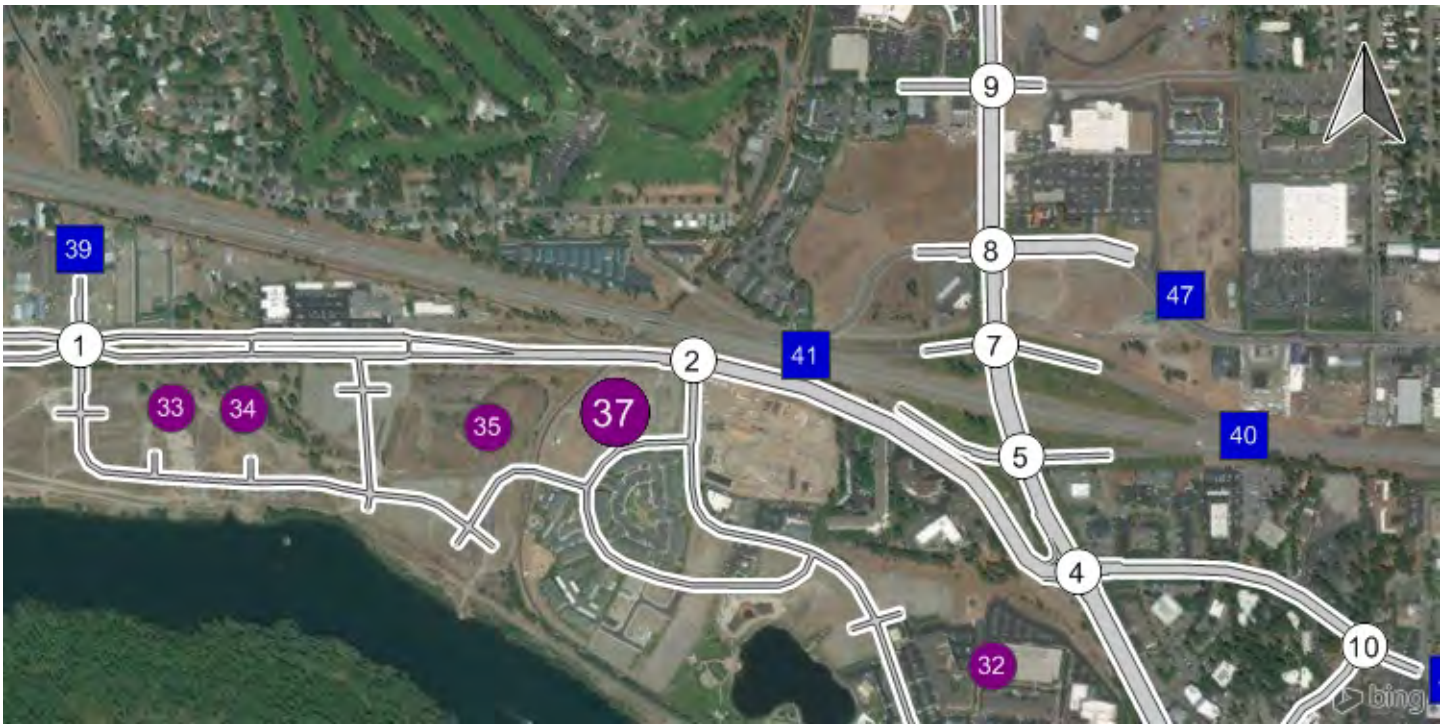
Fair Share - Fair Share Volumes - Zone 36: River's Edge

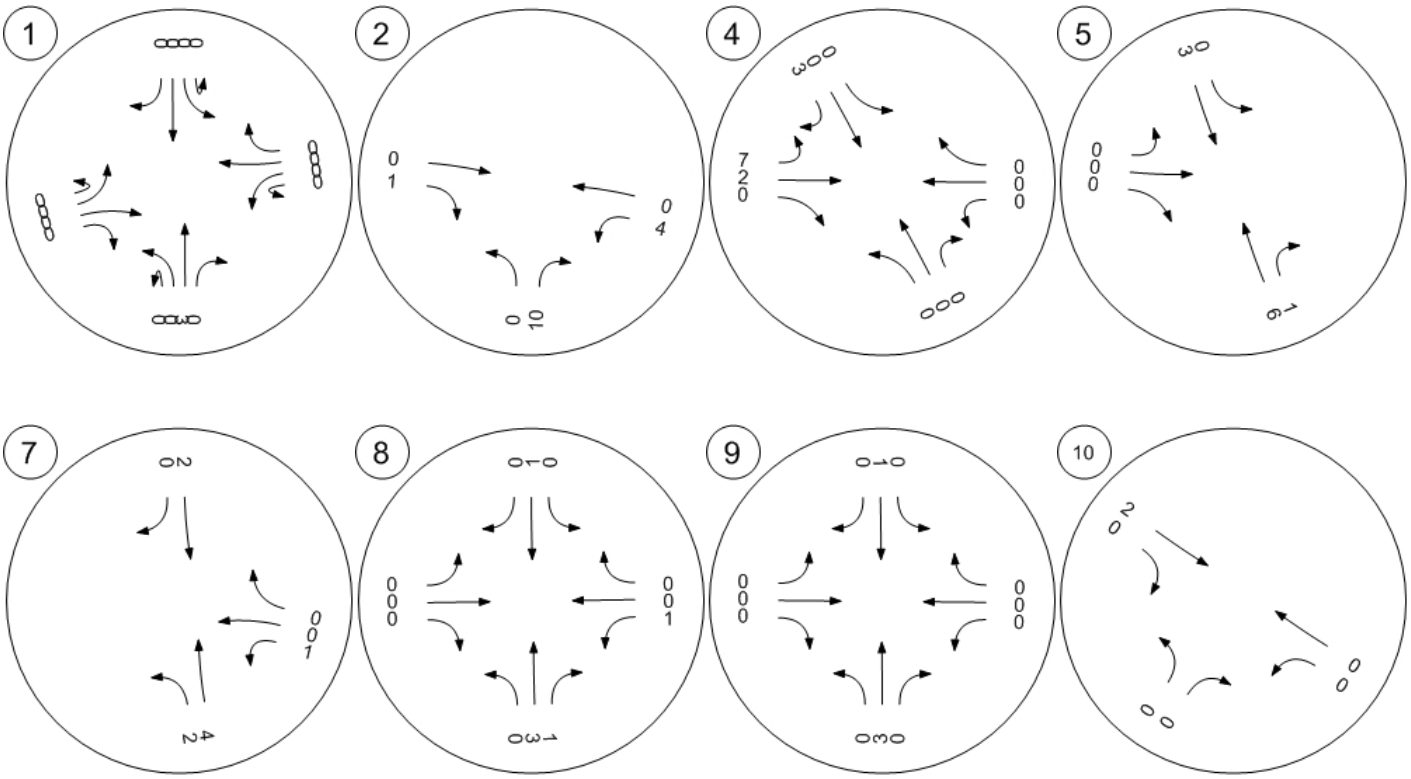




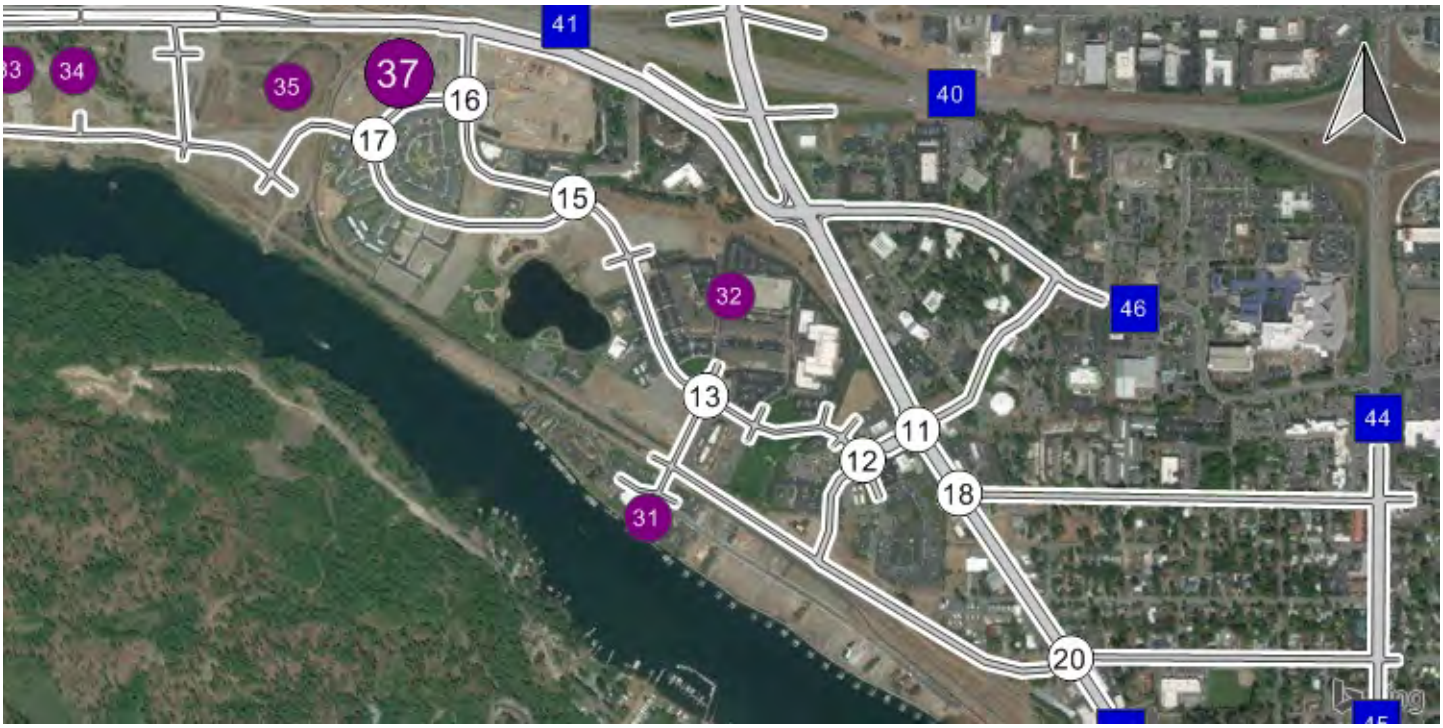


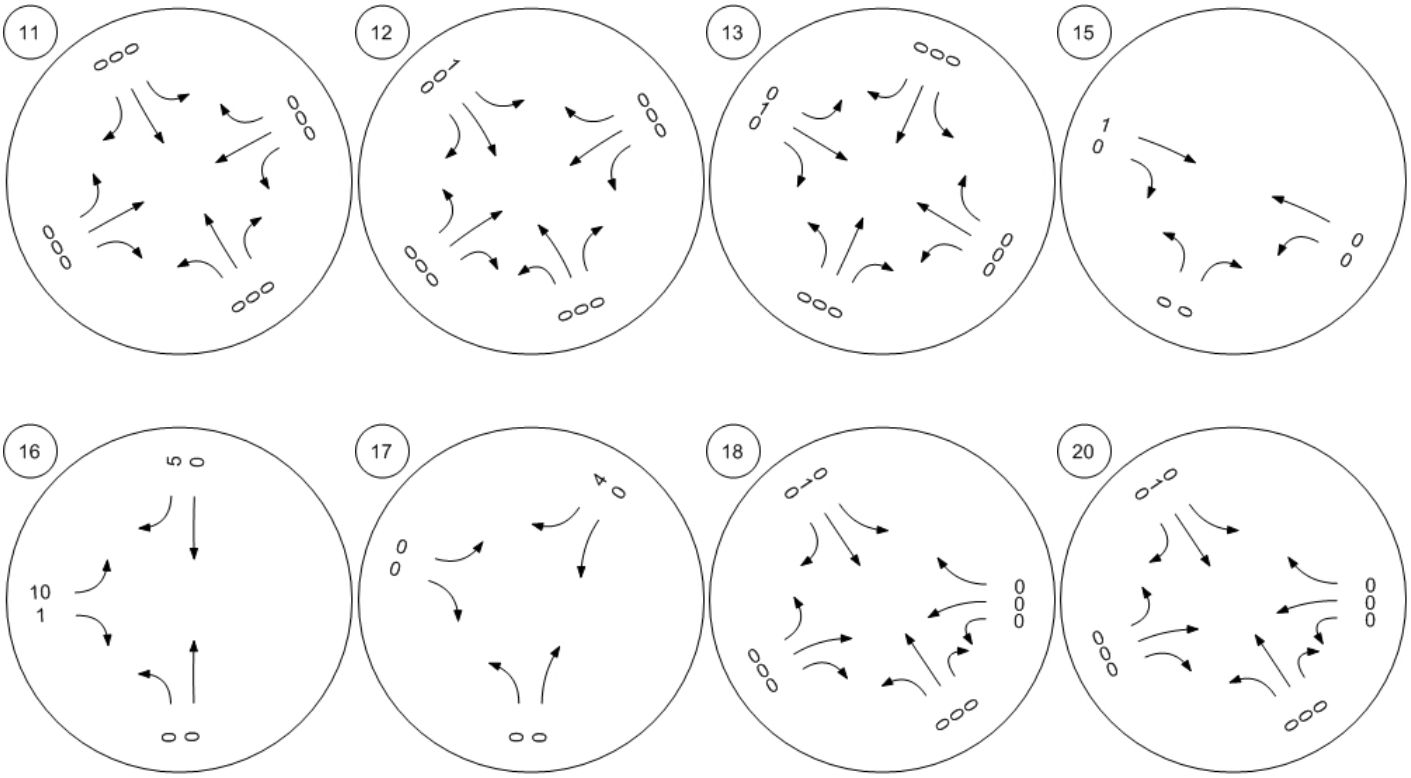
Fair Share - Fair Share Volumes - Zone 37: Park and Ride



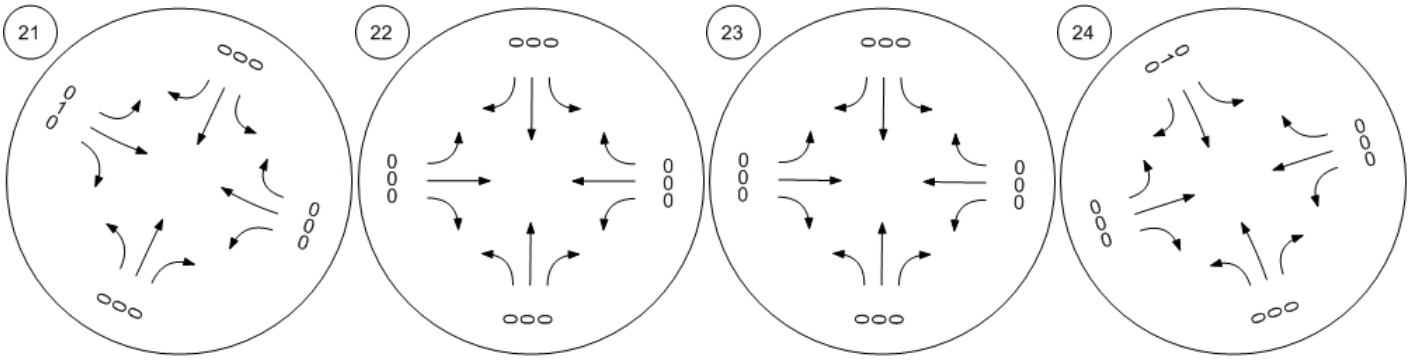


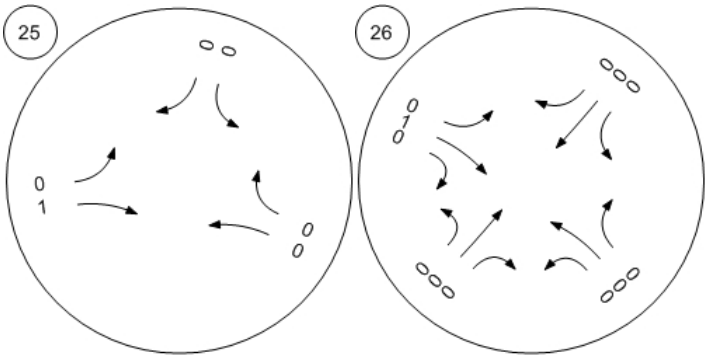
Fair Share - Fair Share Volumes - Zone 37: Park and Ride



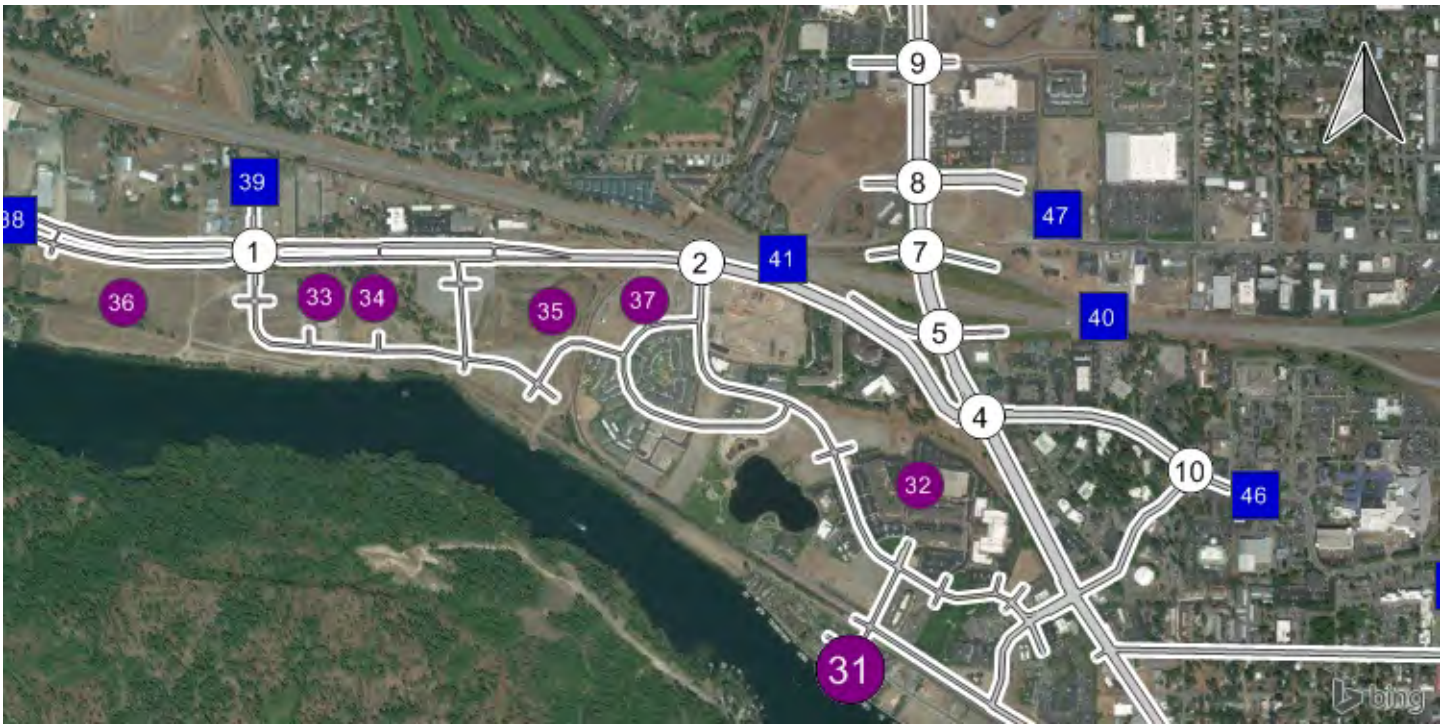


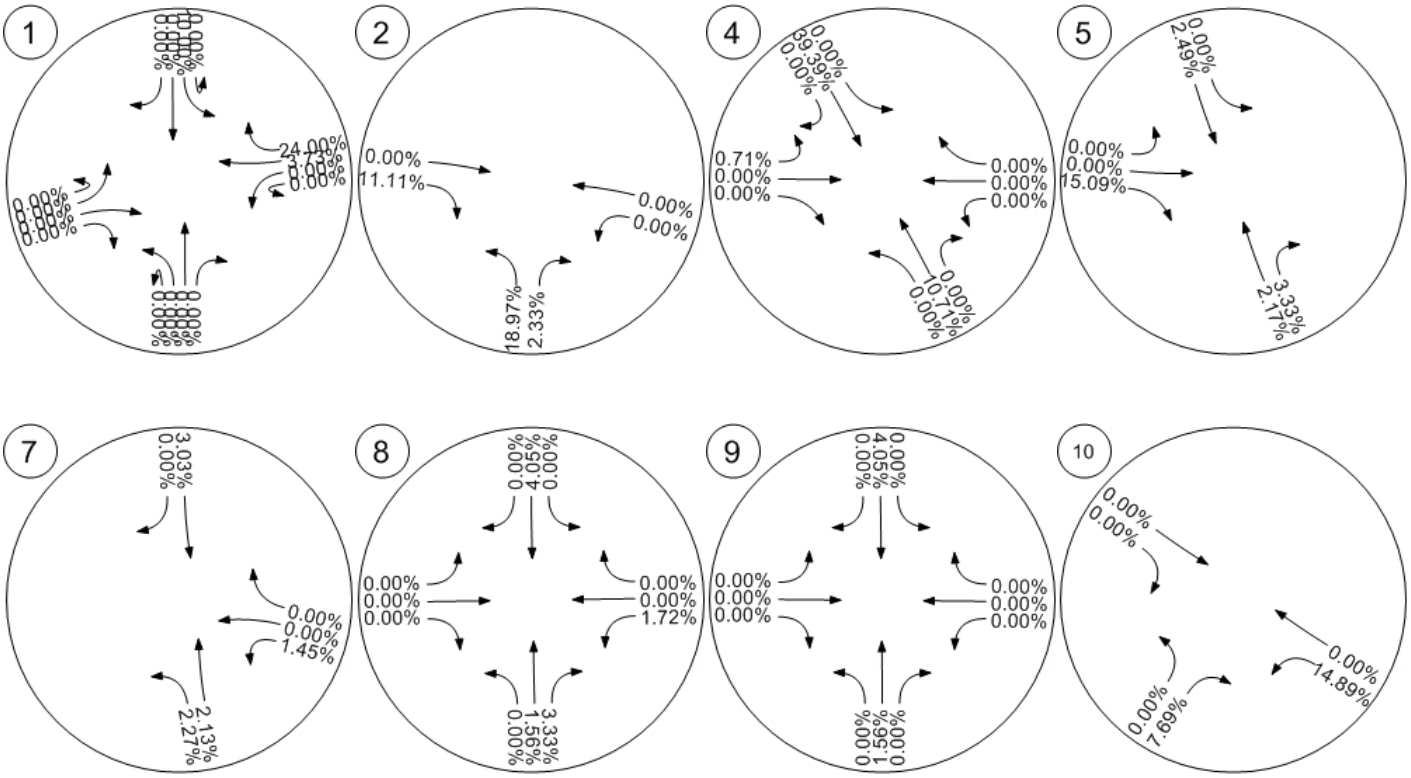
Fair Share - Fair Share Volumes - Zone 37: Park and Ride



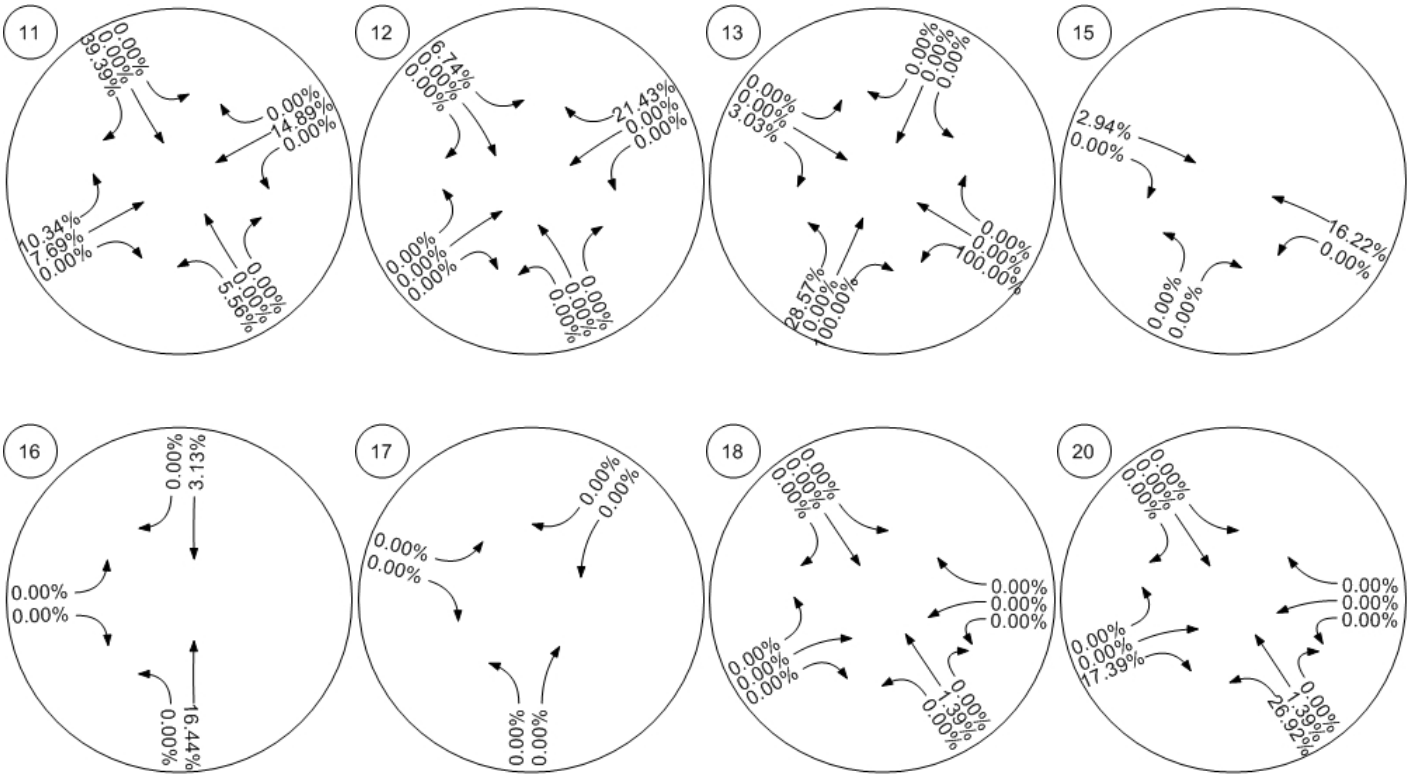


Fair Share - Fair Share % of Net New Site - Zone 31: Bellerive Res.

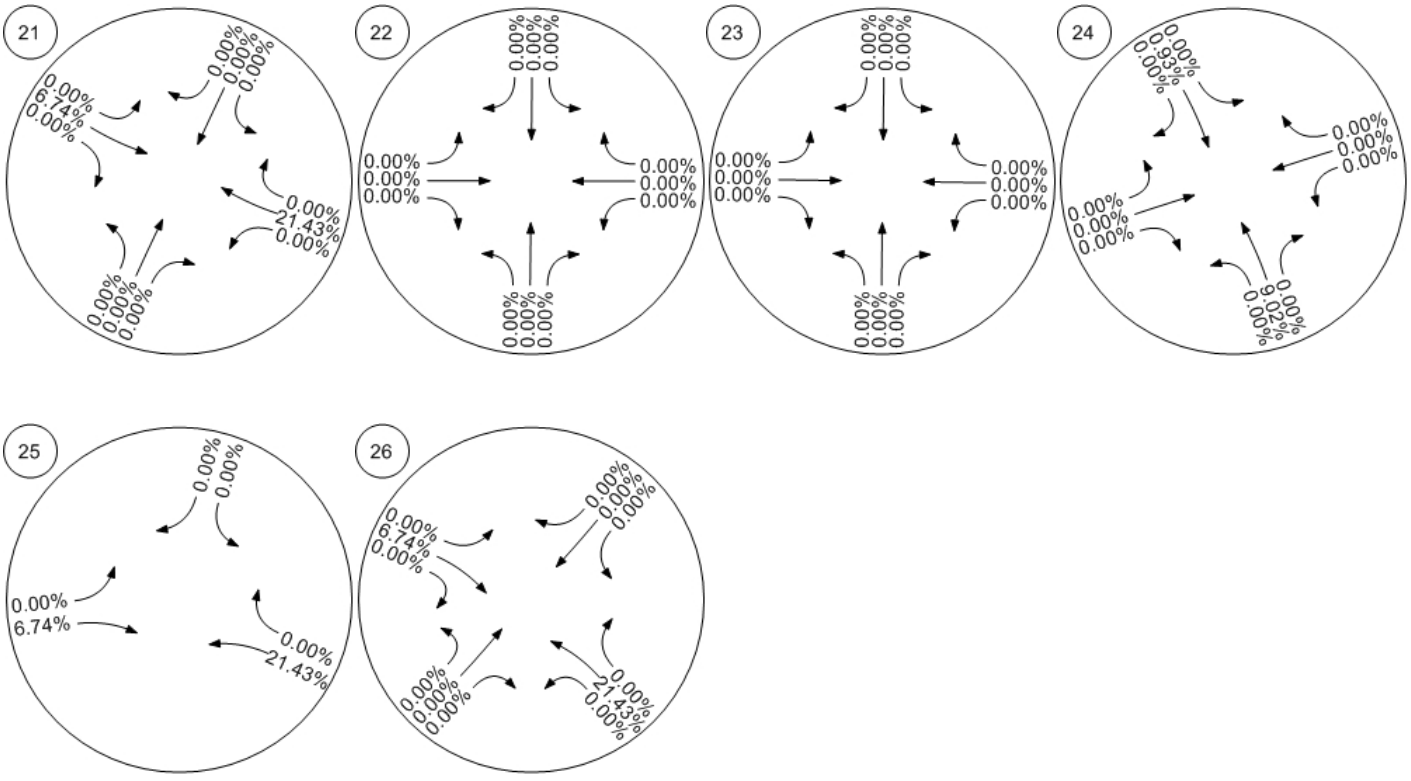




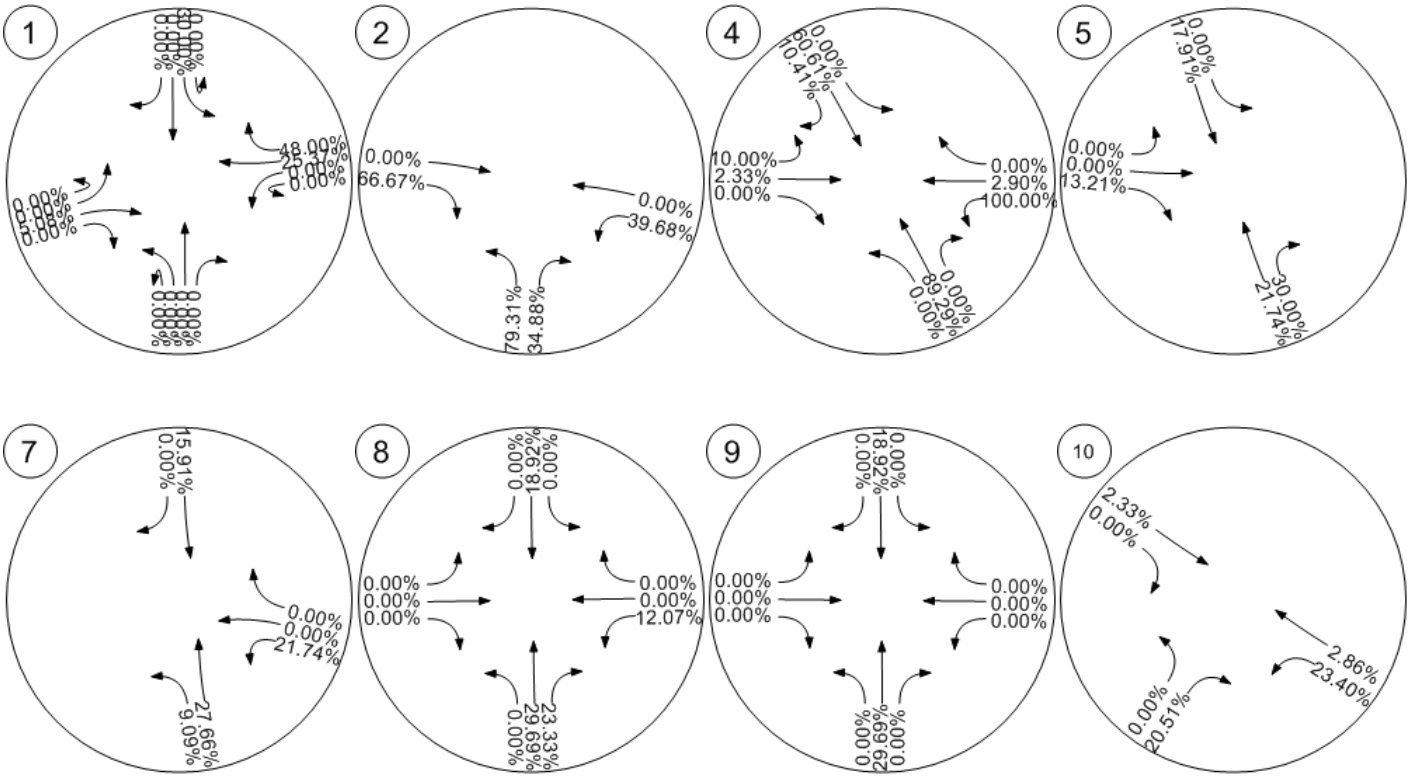
Fair Share - Fair Share % of Net New Site - Zone 31: Bellerive Res.



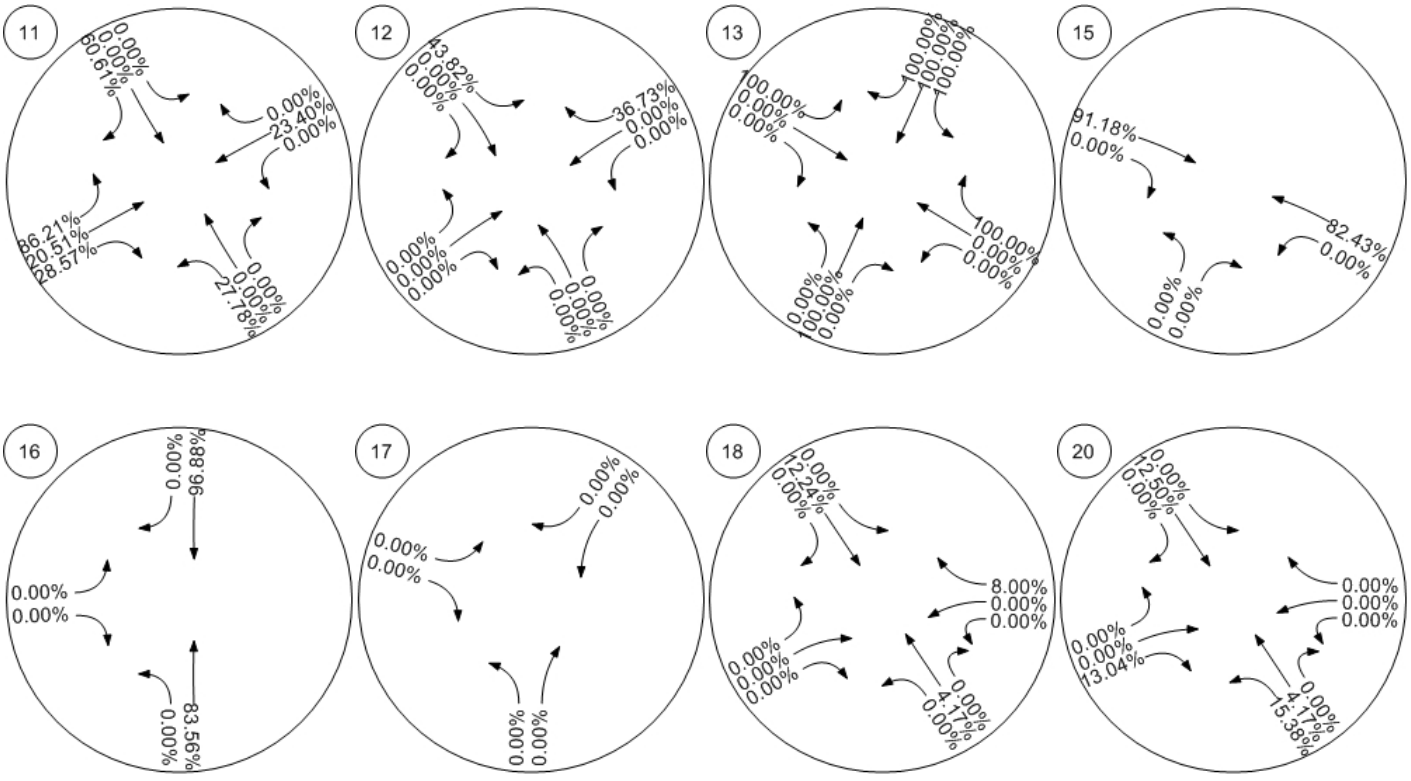
Fair Share - Fair Share % of Net New Site - Zone 31: Bellerive Res.



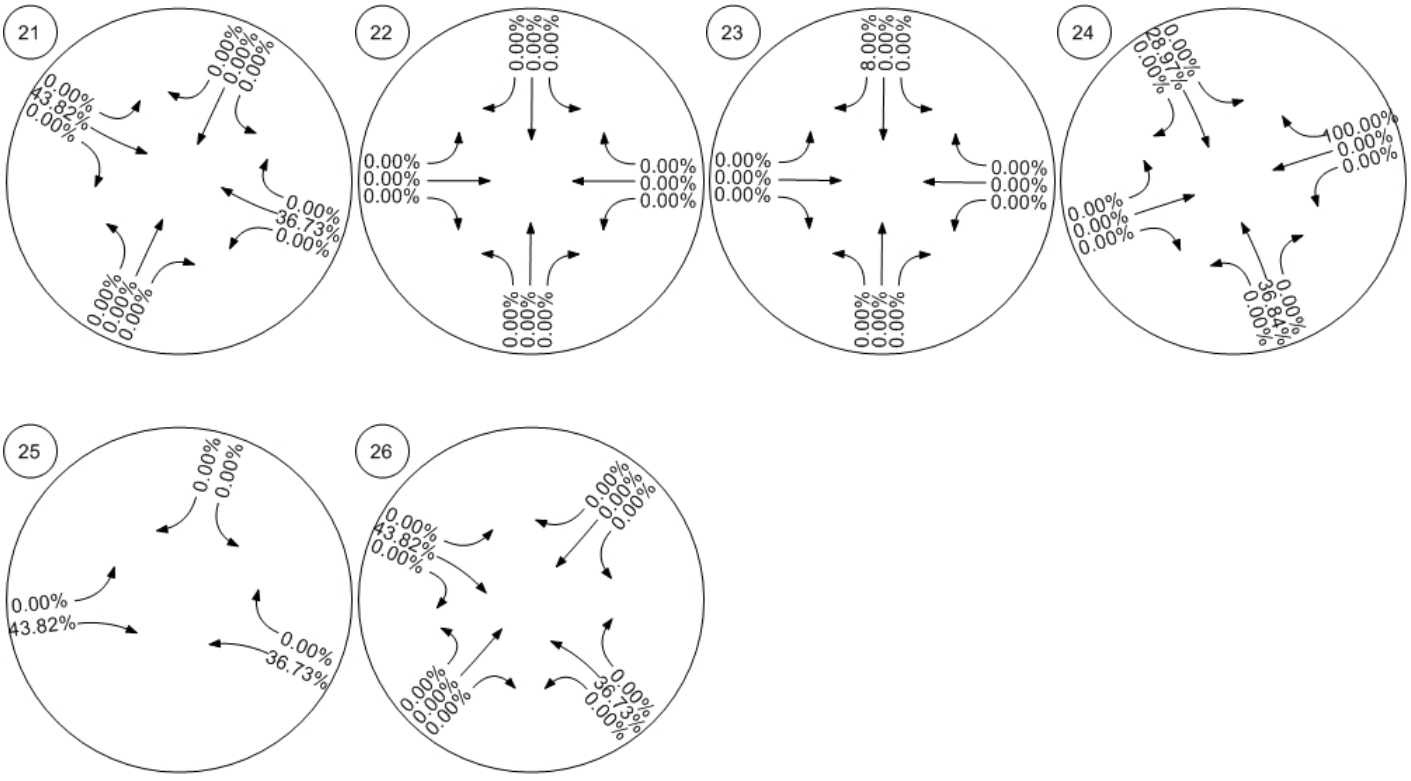
Fair Share - Fair Share % of Net New Site - Zone 32: Riverstone Comm.



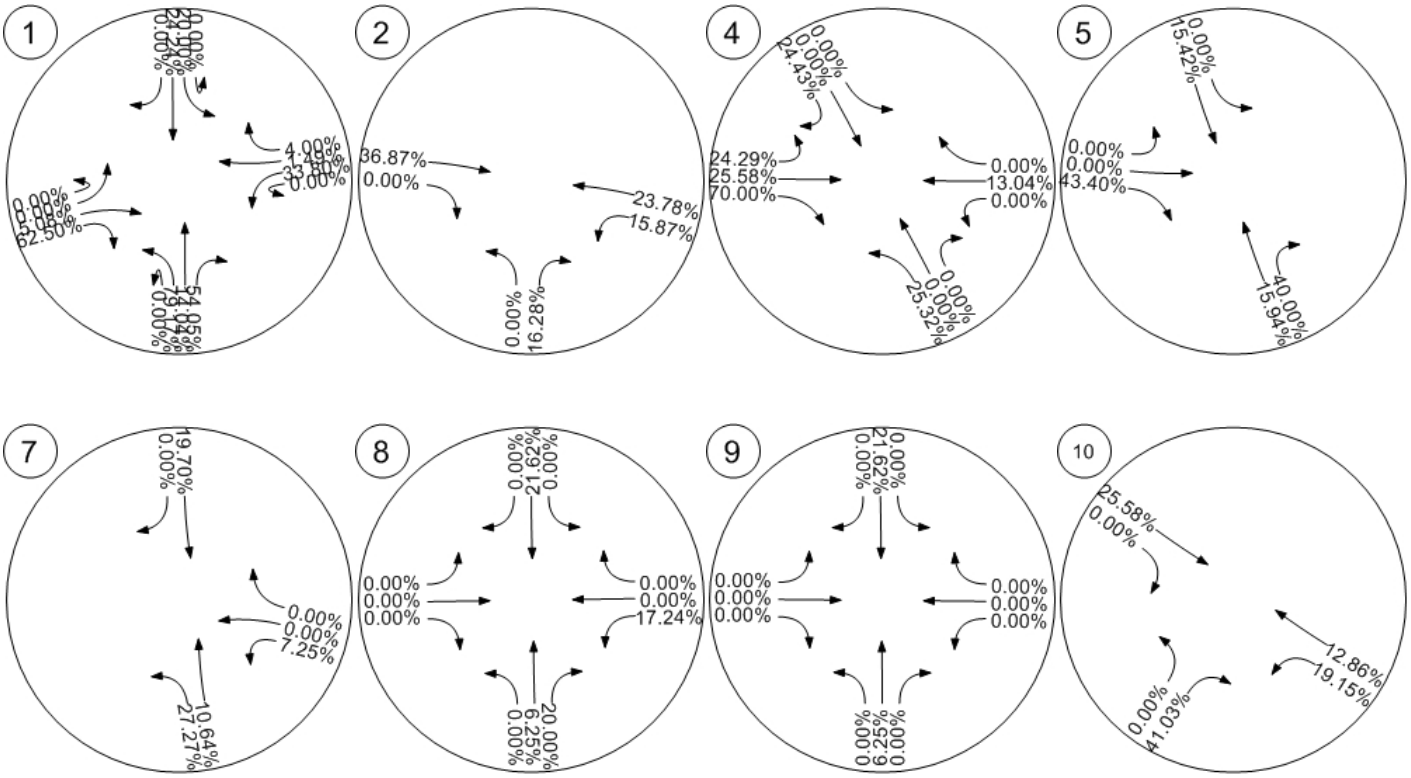
Fair Share - Fair Share % of Net New Site - Zone 32: Riverstone Comm.



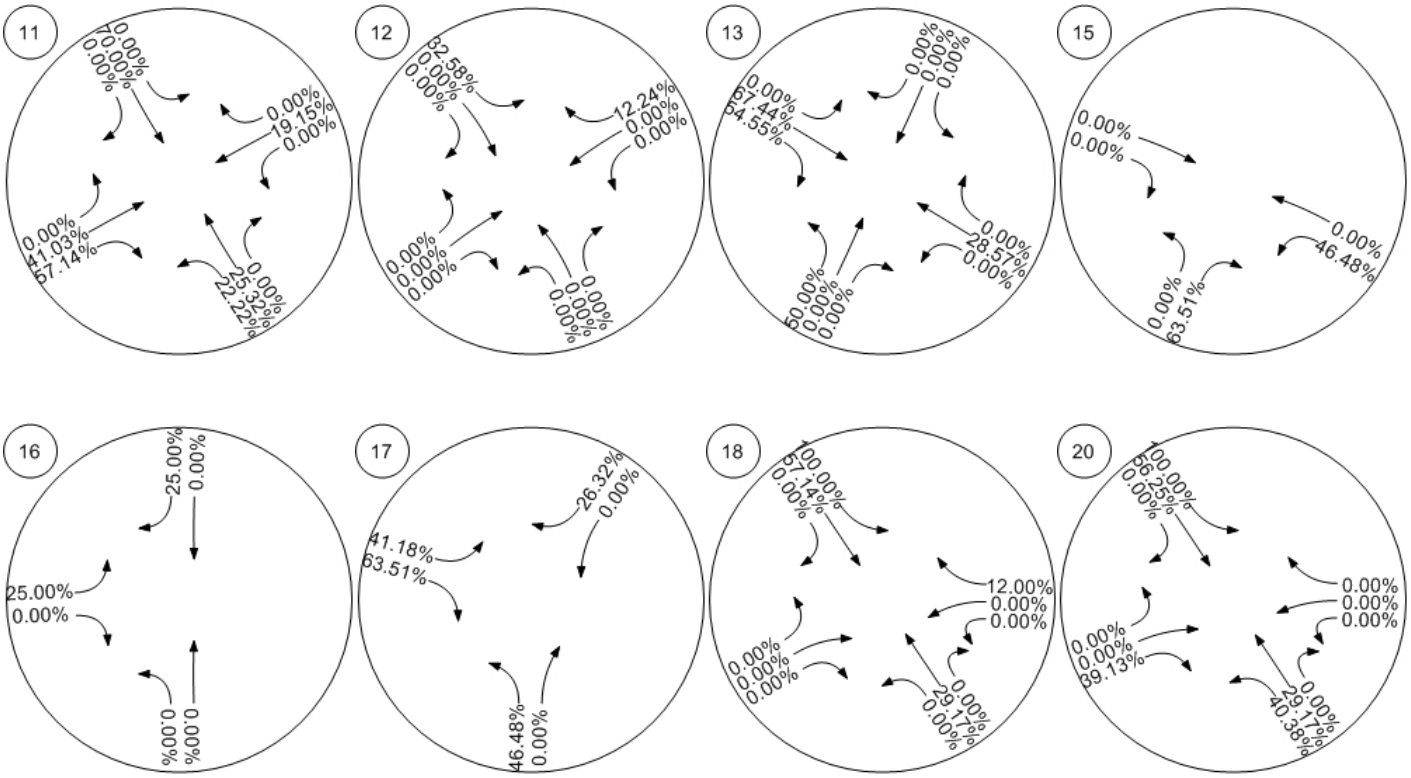
Fair Share - Fair Share % of Net New Site - Zone 32: Riverstone Comm.



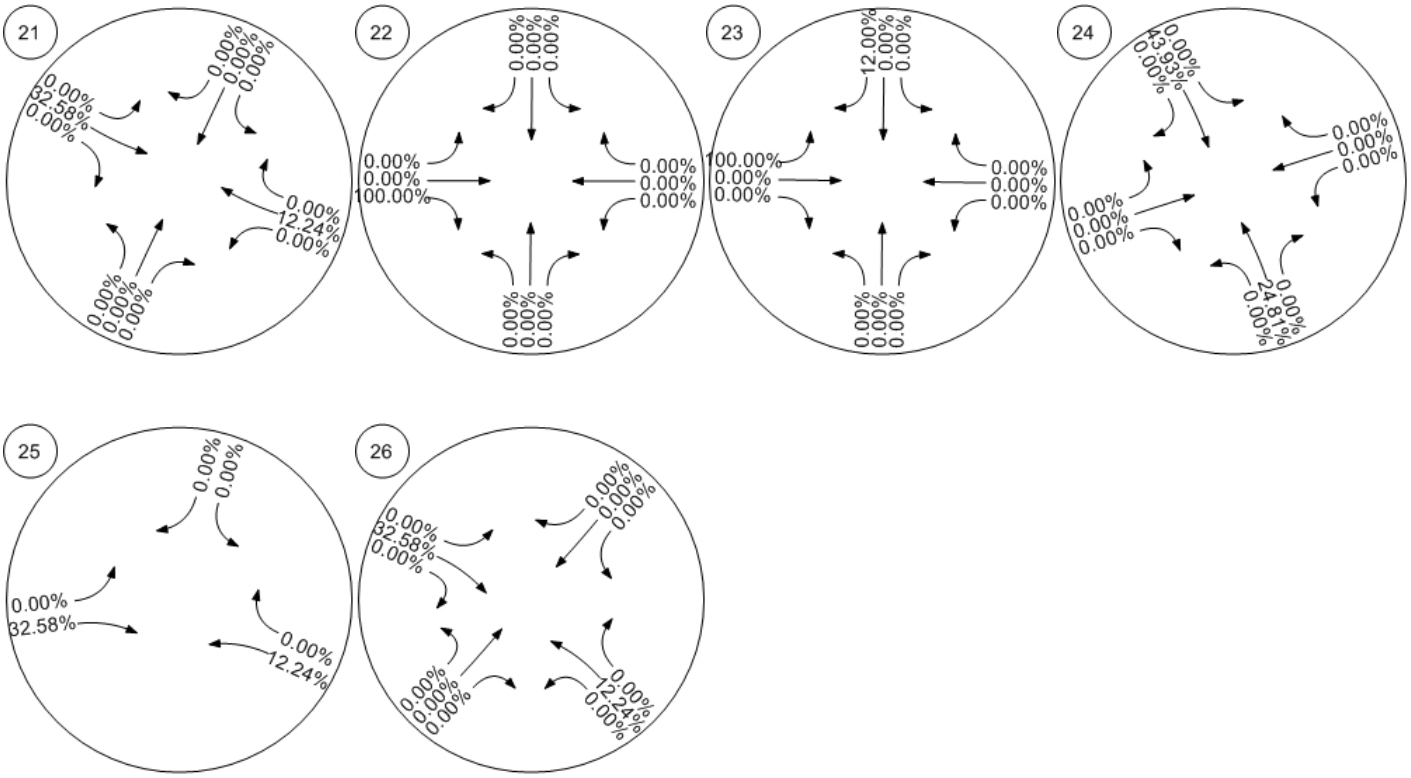
Fair Share - Fair Share % of Net New Site - Zone 33: Atlas Comm.



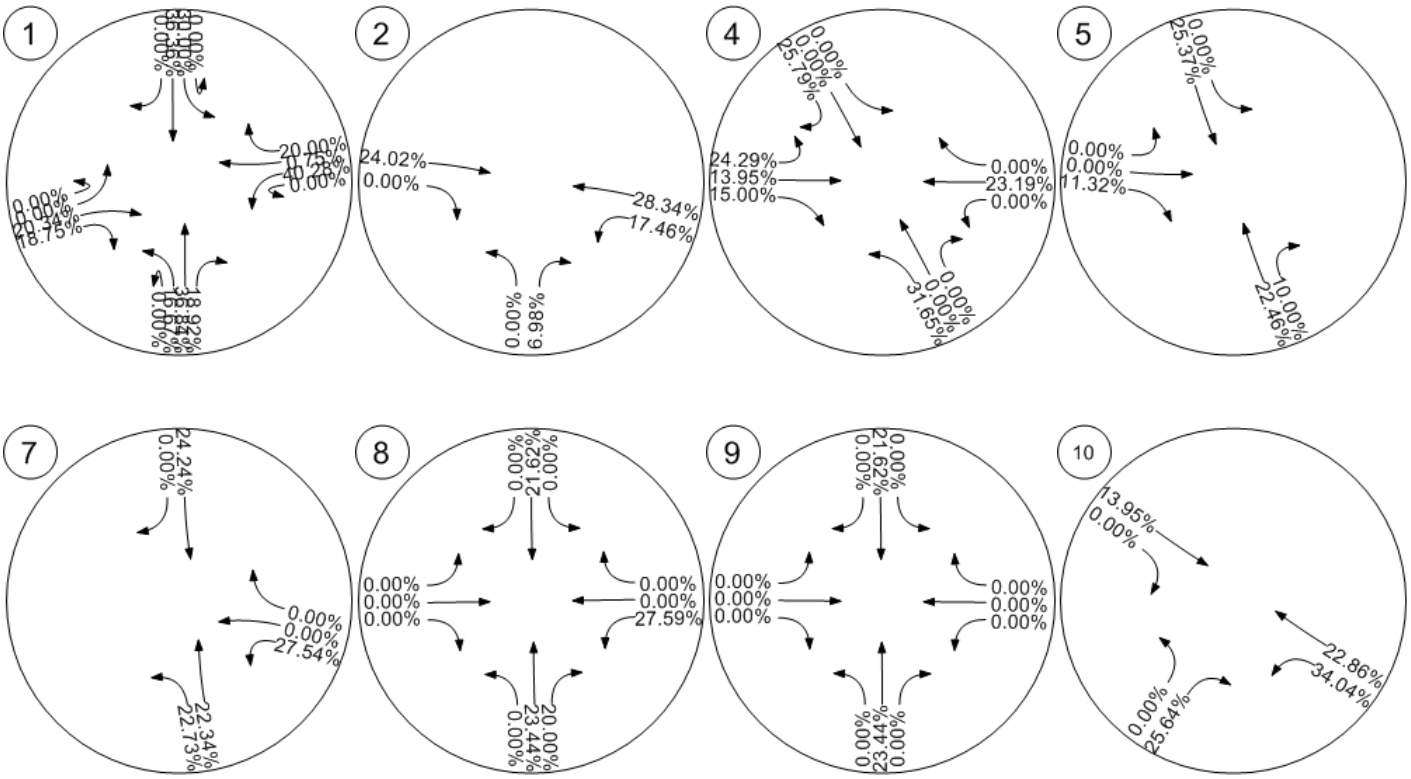
Fair Share - Fair Share % of Net New Site - Zone 33: Atlas Comm.



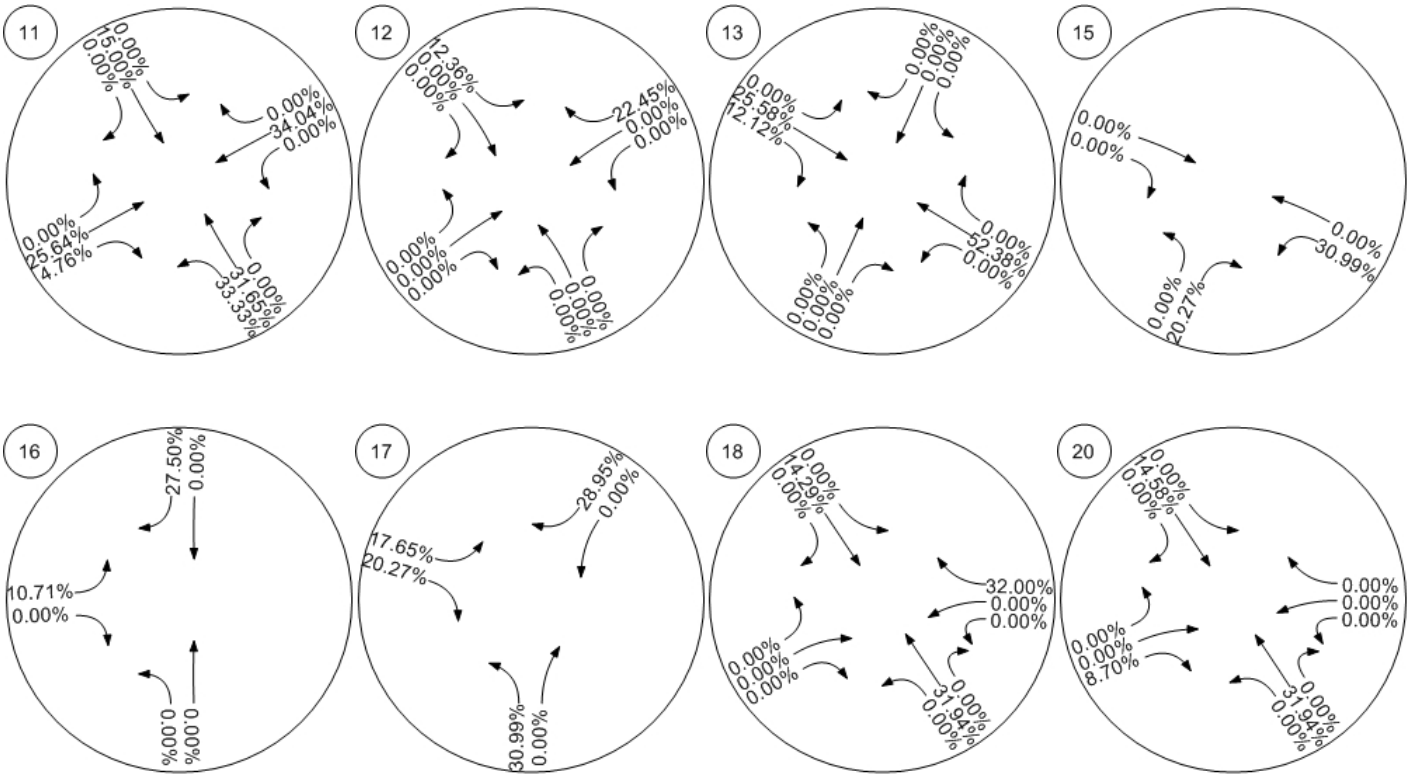
Fair Share - Fair Share % of Net New Site - Zone 33: Atlas Comm.



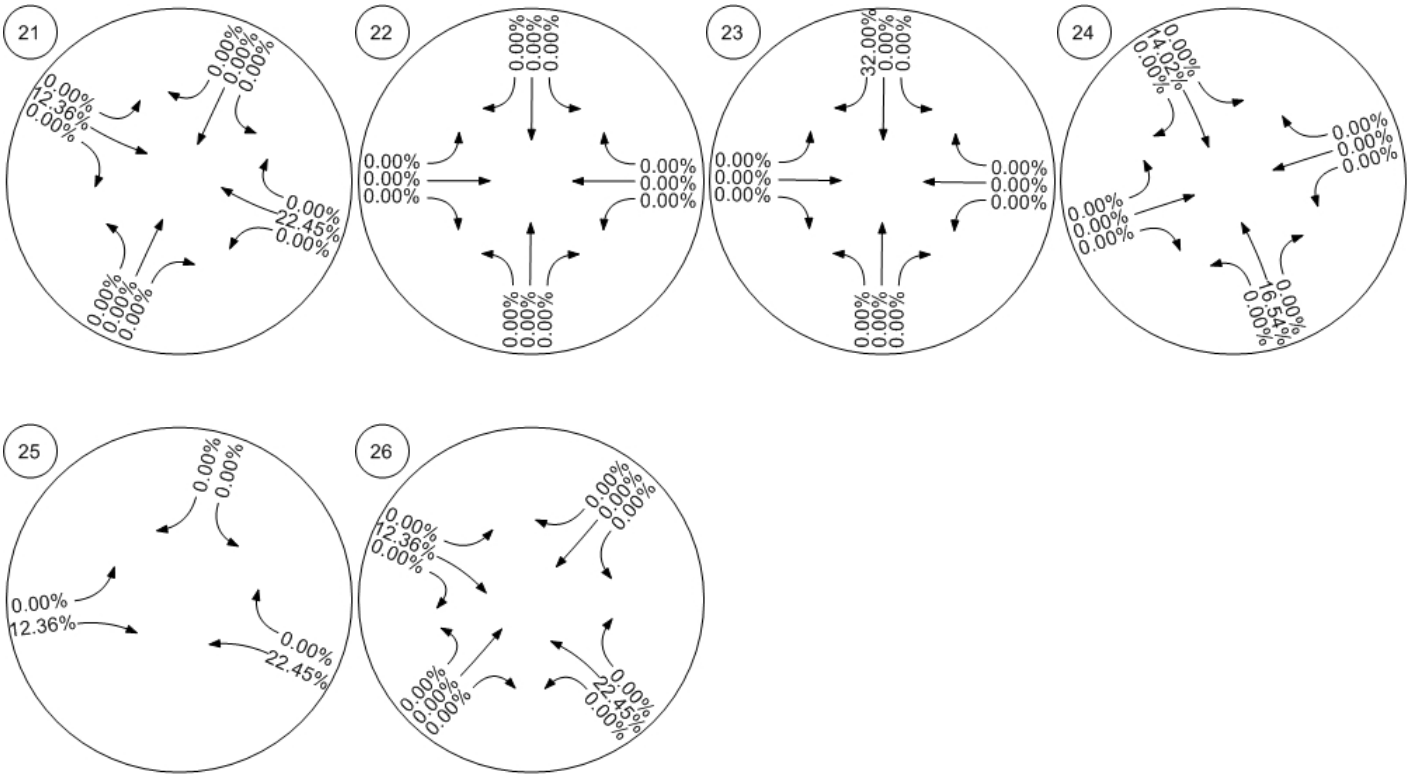
Fair Share - Fair Share % of Net New Site - Zone 34: Atlas Res.



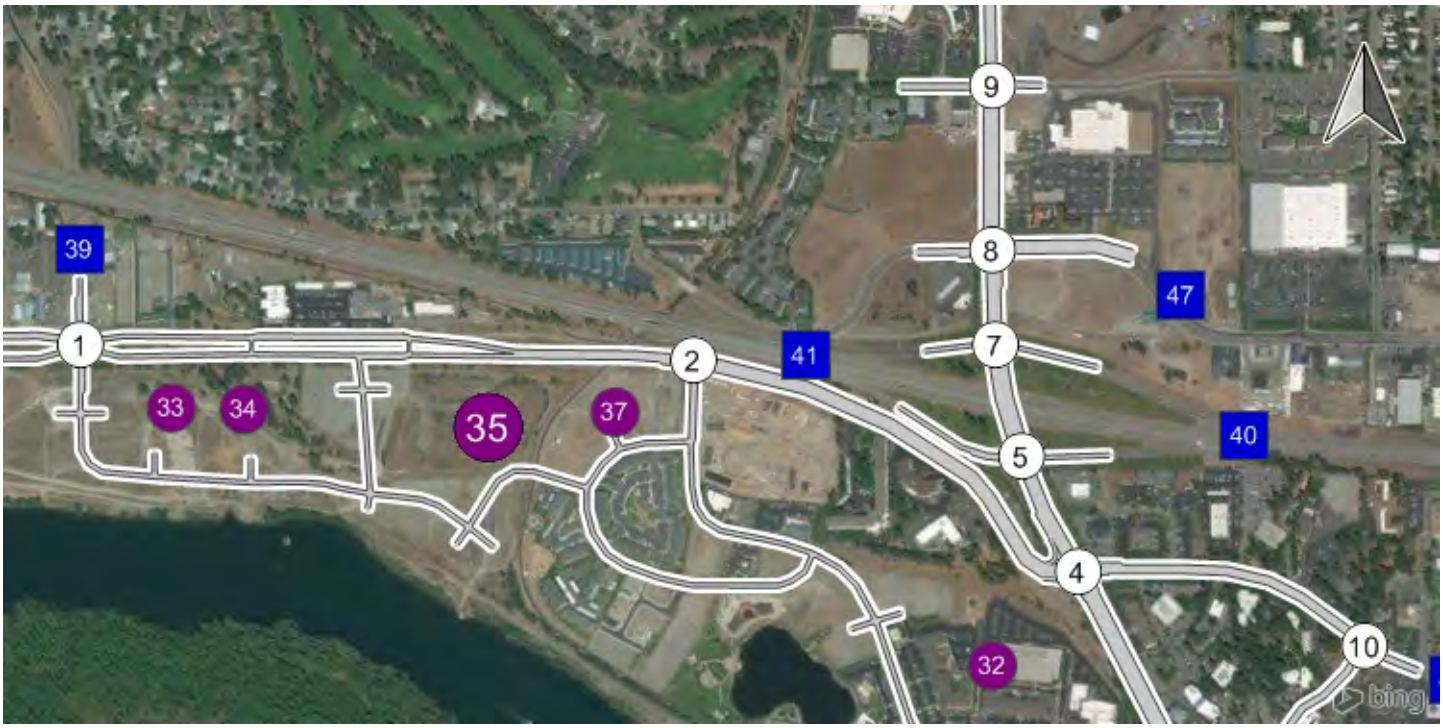
Fair Share - Fair Share % of Net New Site - Zone 34: Atlas Res.

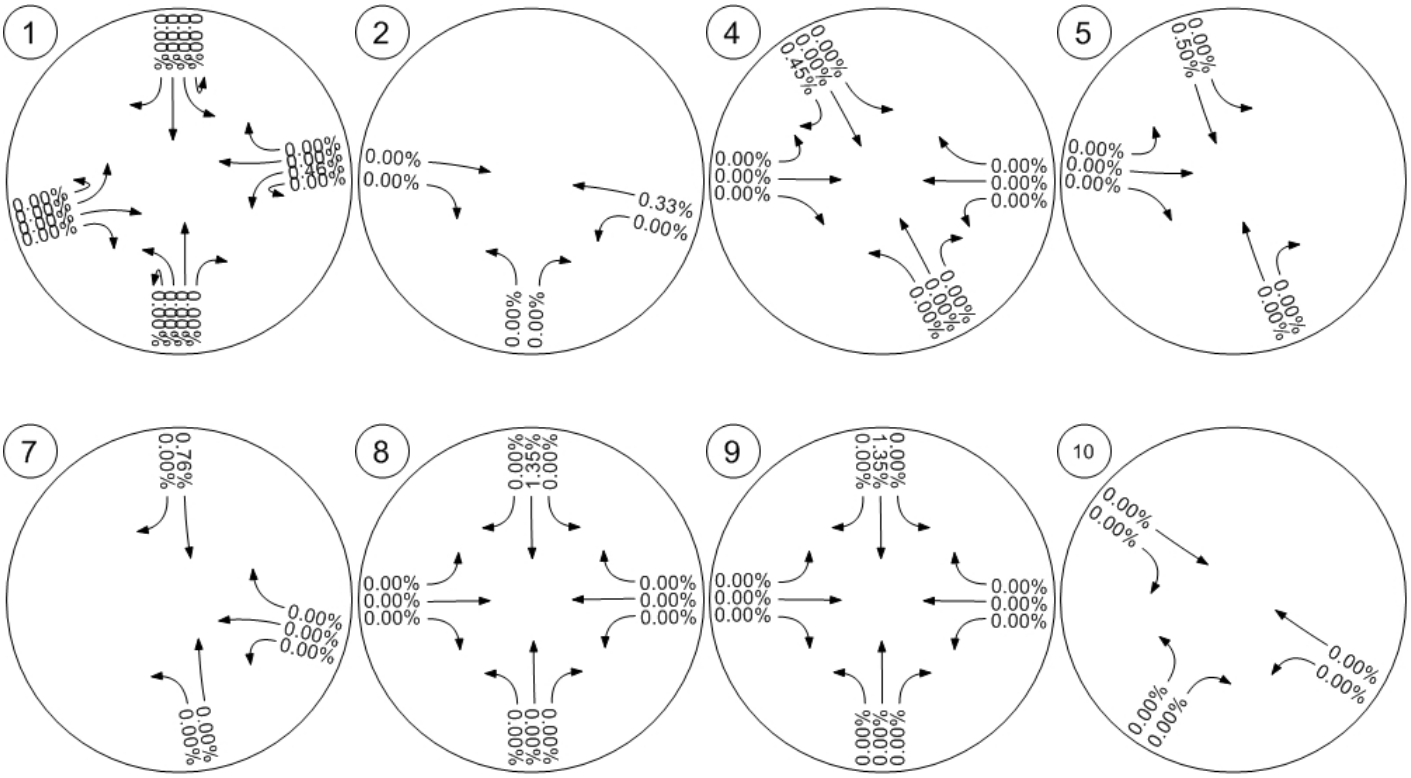


Fair Share - Fair Share % of Net New Site - Zone 34: Atlas Res.

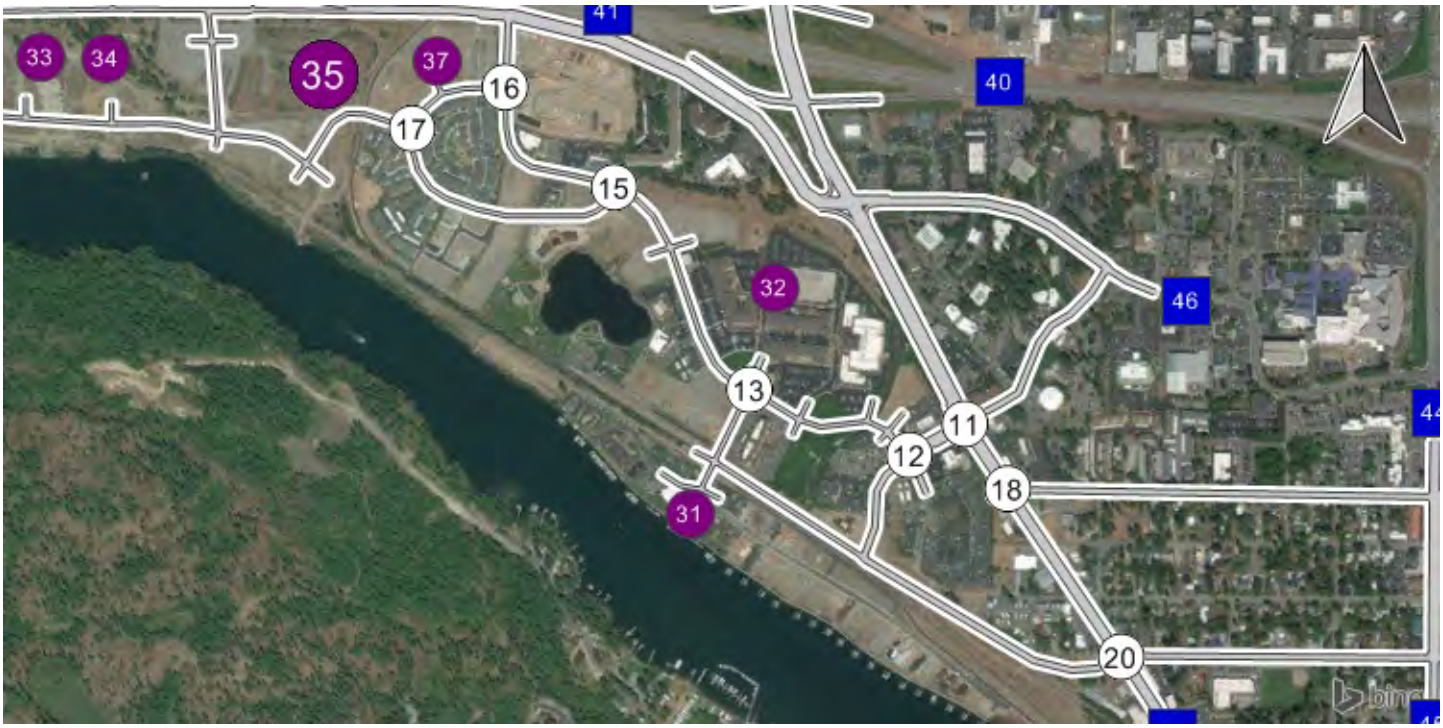


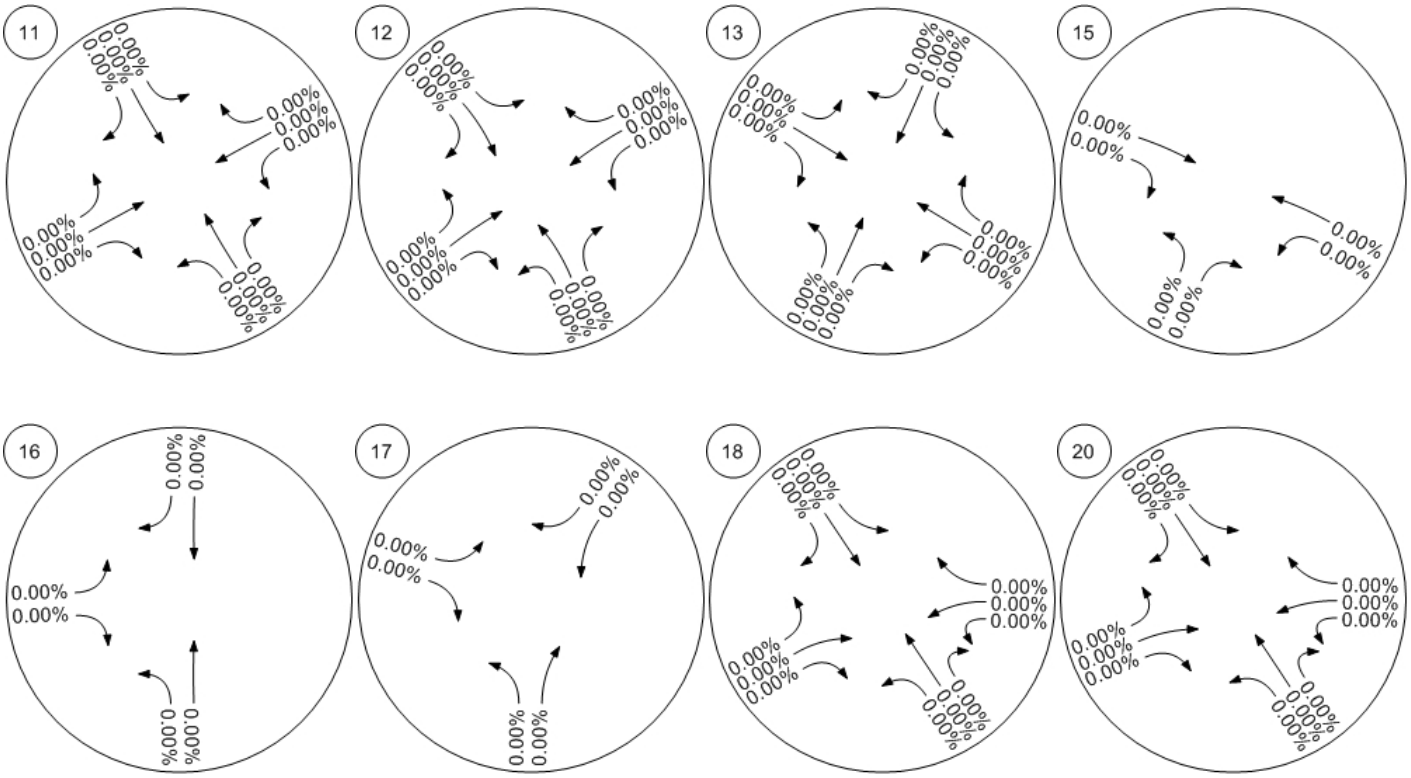
Fair Share - Fair Share % of Net New Site - Zone 35: Open Space



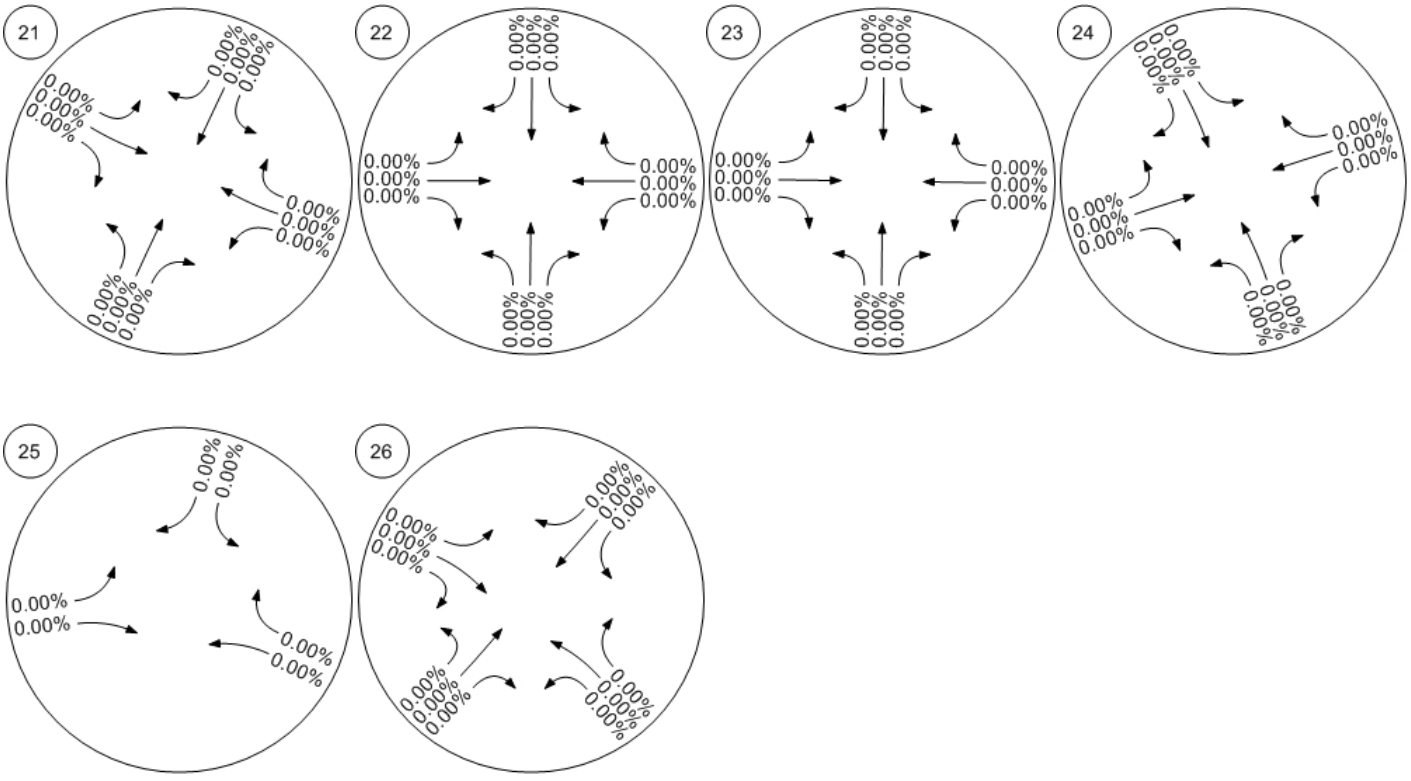


Fair Share - Fair Share % of Net New Site - Zone 35: Open Space

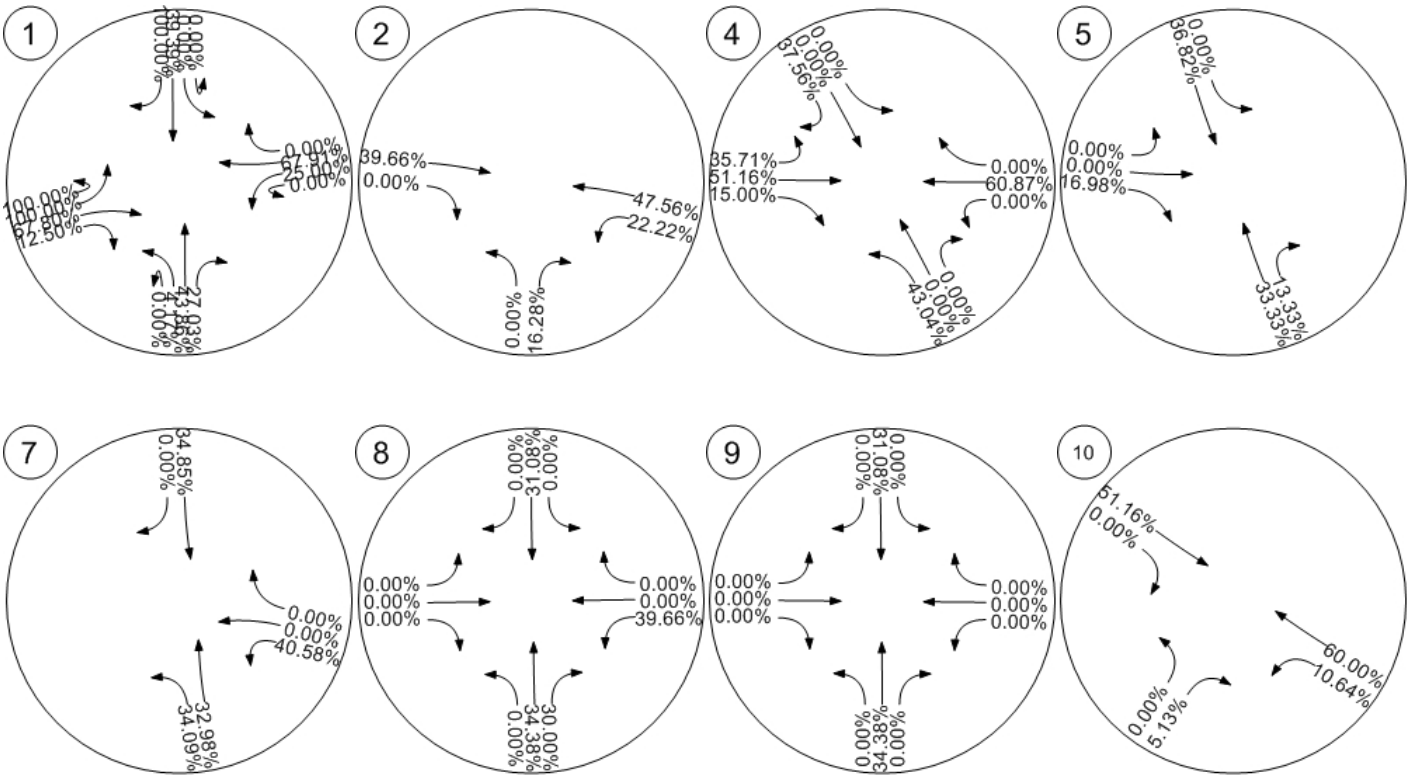




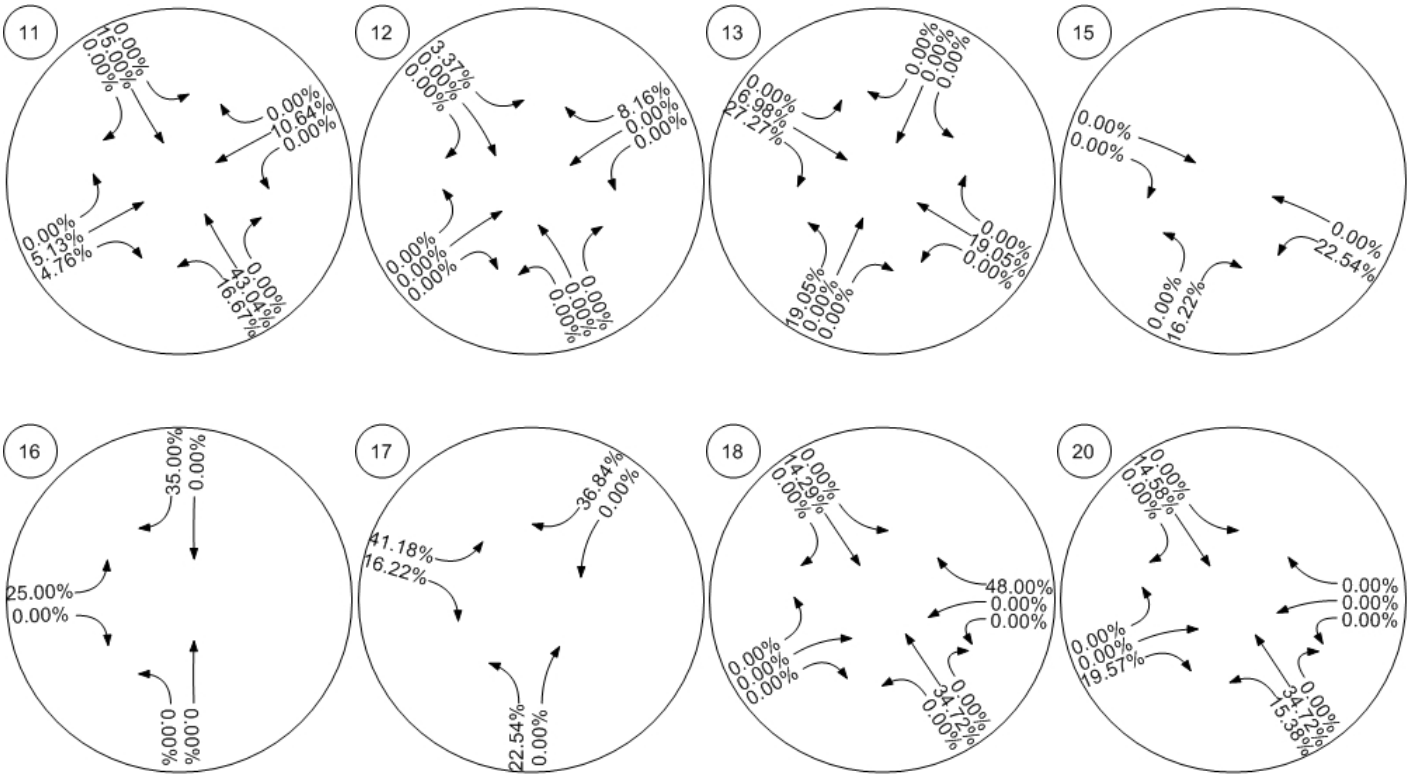
Fair Share - Fair Share % of Net New Site - Zone 35: Open Space



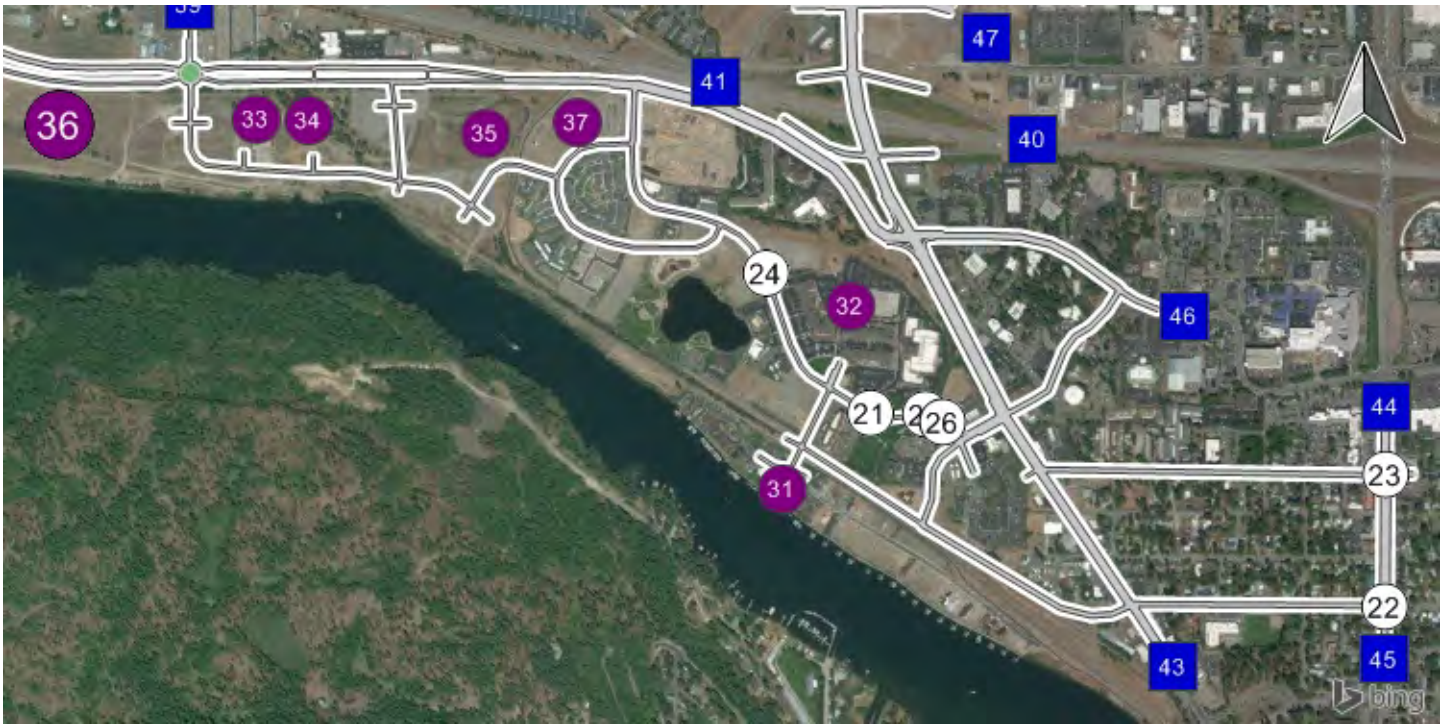
Fair Share - Fair Share % of Net New Site - Zone 36: River's Edge

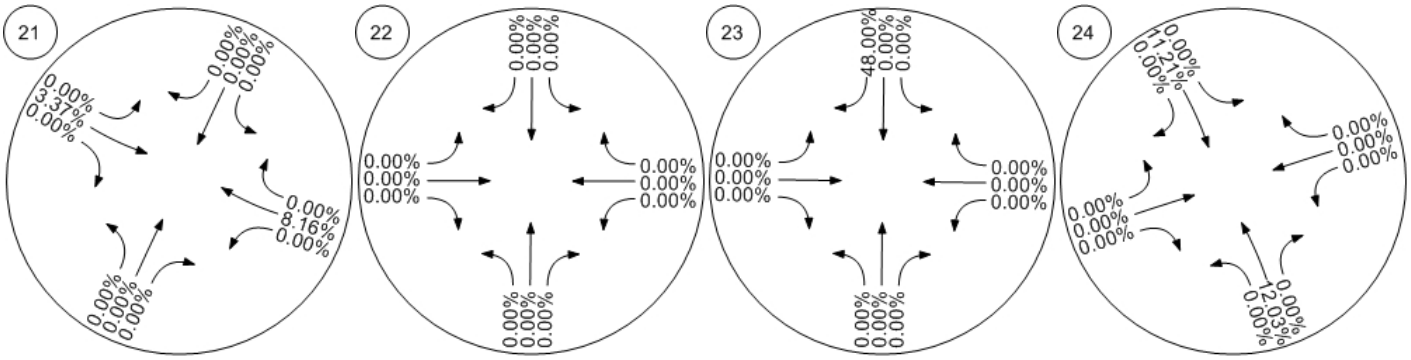


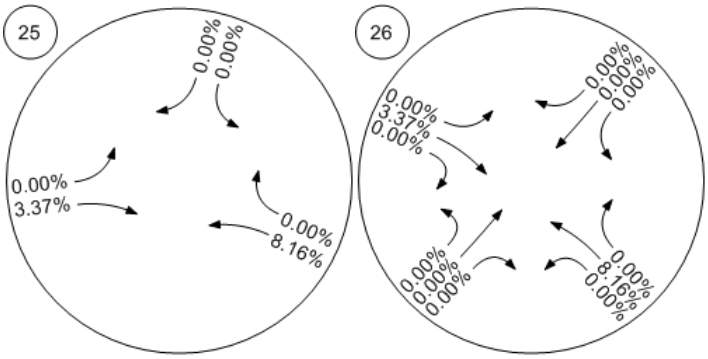
Fair Share - Fair Share % of Net New Site - Zone 36: River's Edge



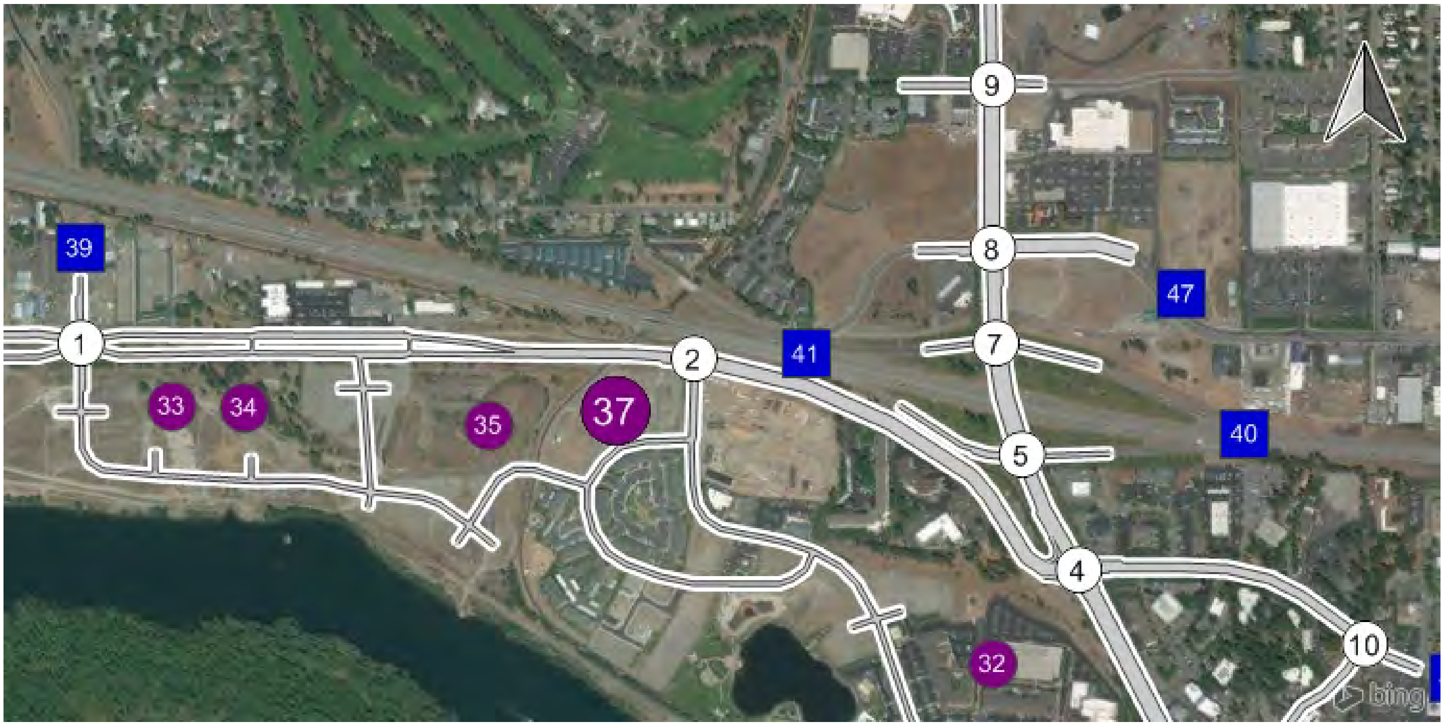
Fair Share - Fair Share % of Net New Site - Zone 36: River's Edge

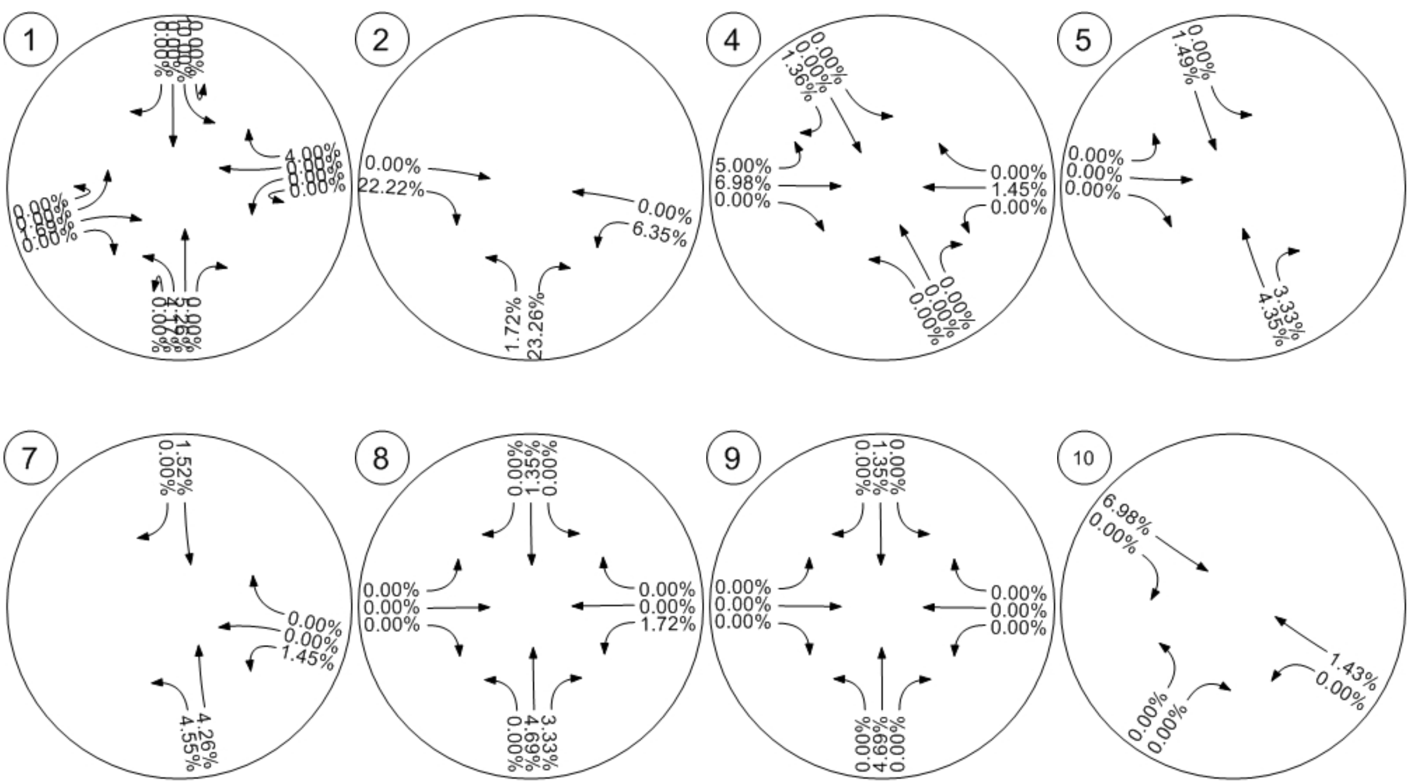




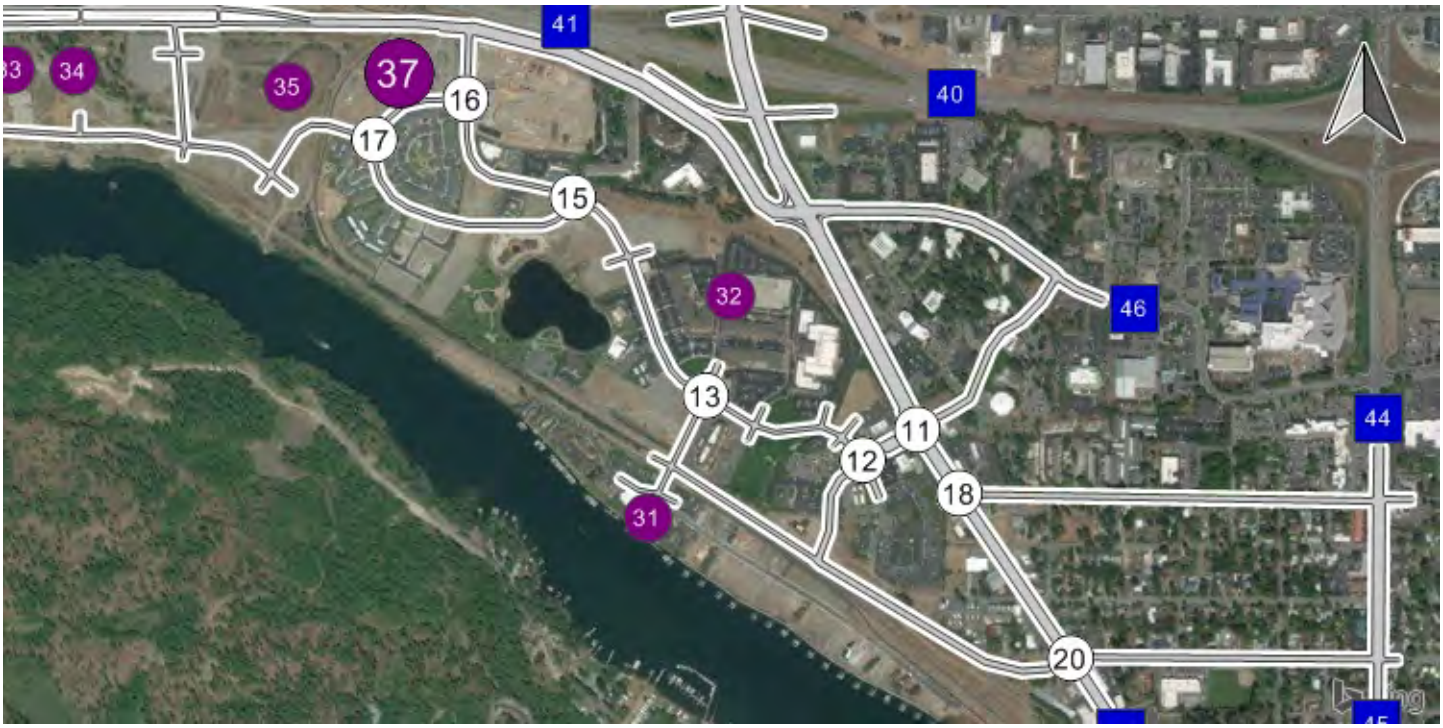


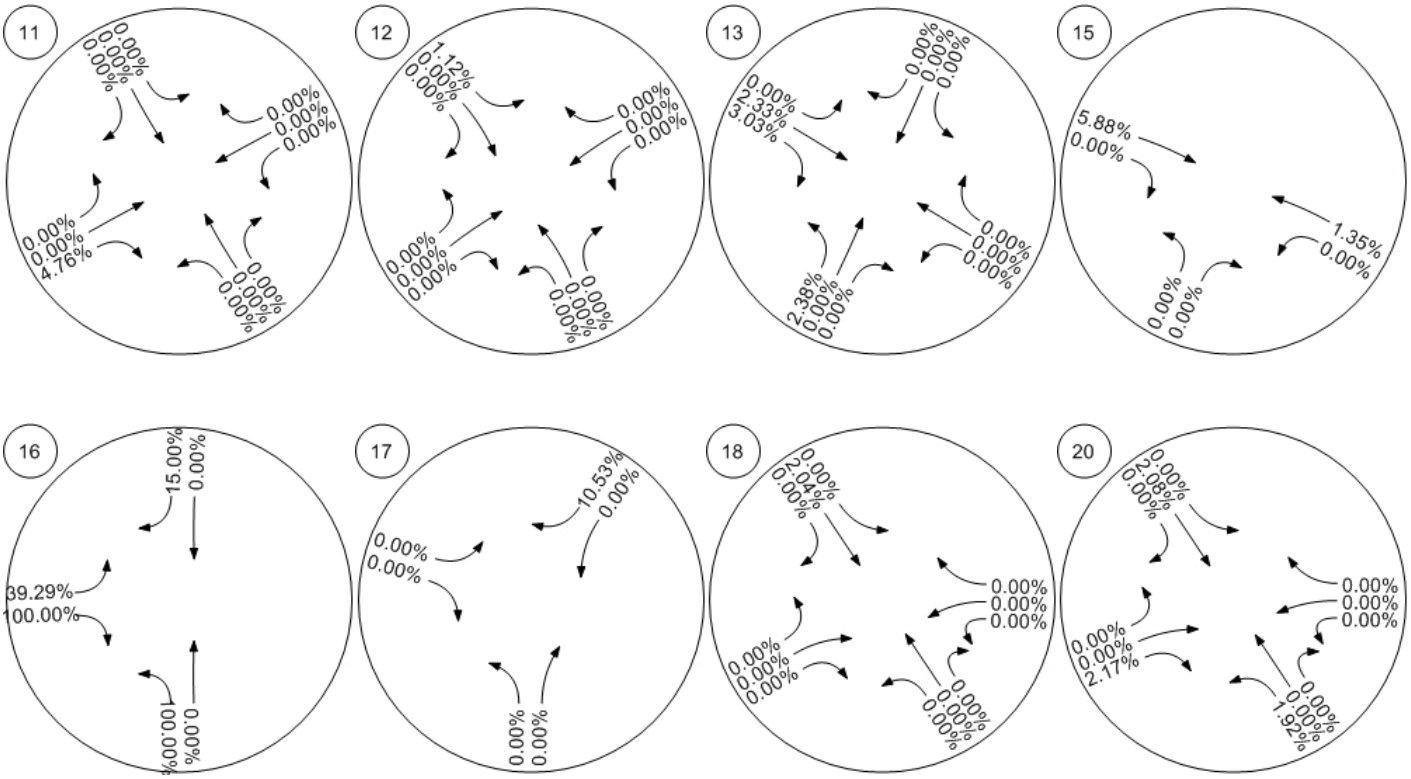
Fair Share - Fair Share % of Net New Site - Zone 37: Park and Ride



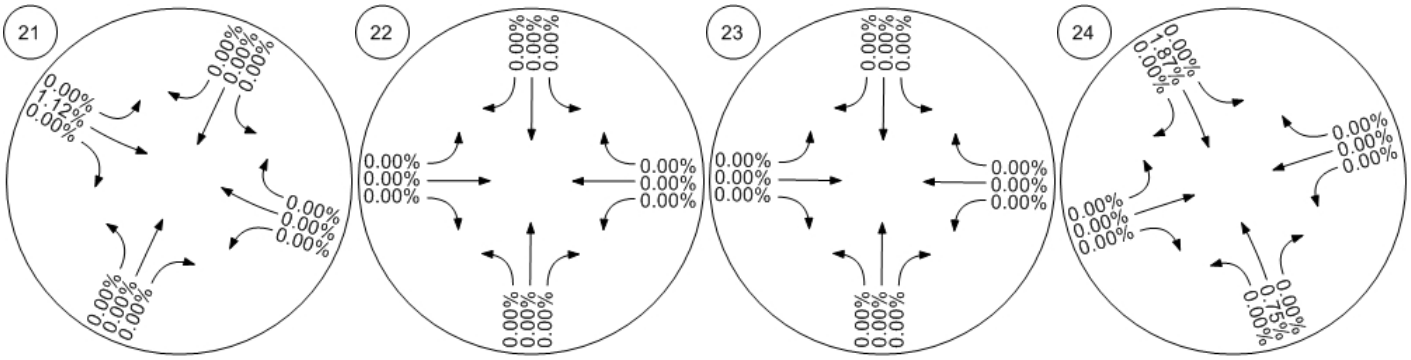


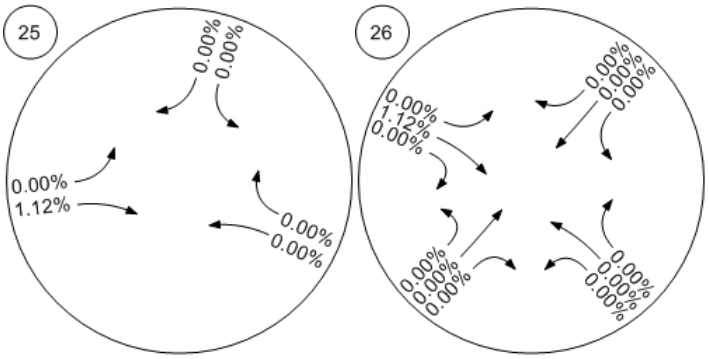
Fair Share - Fair Share % of Net New Site - Zone 37: Park and Ride



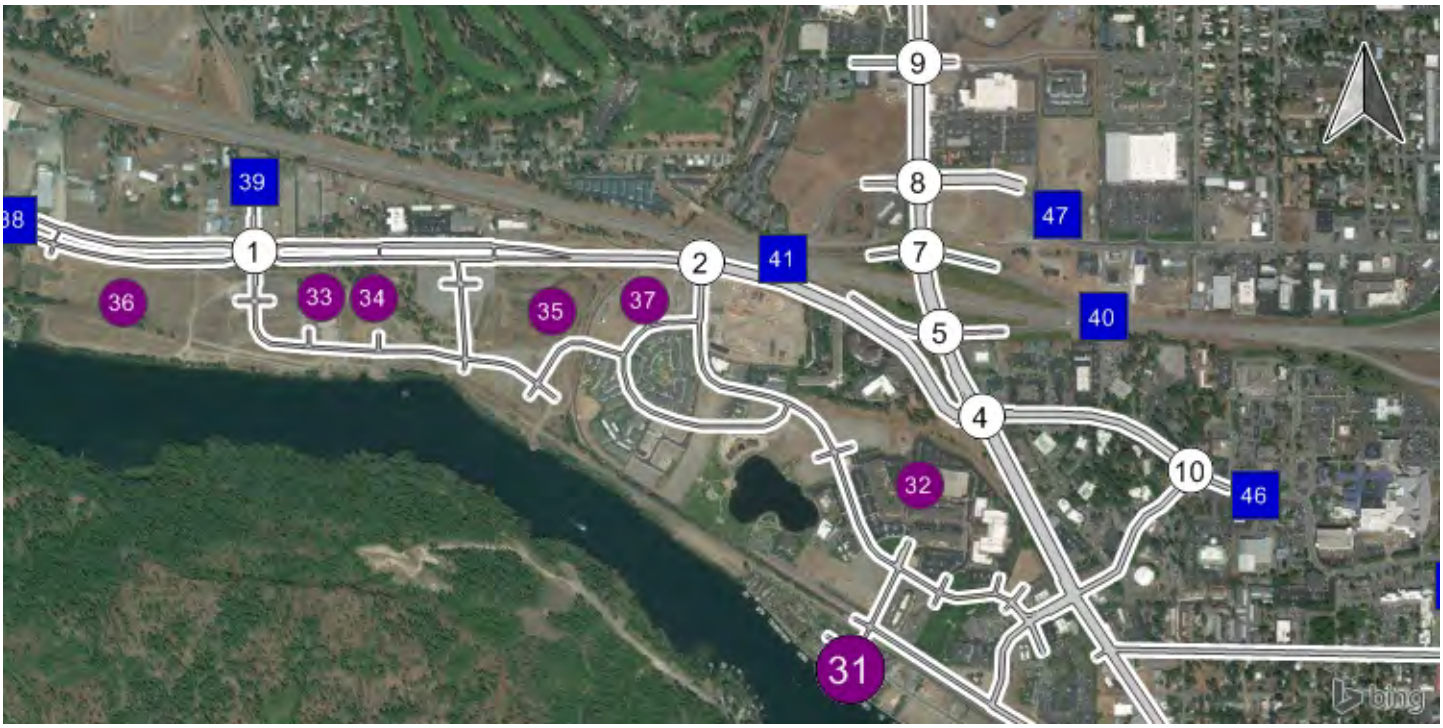


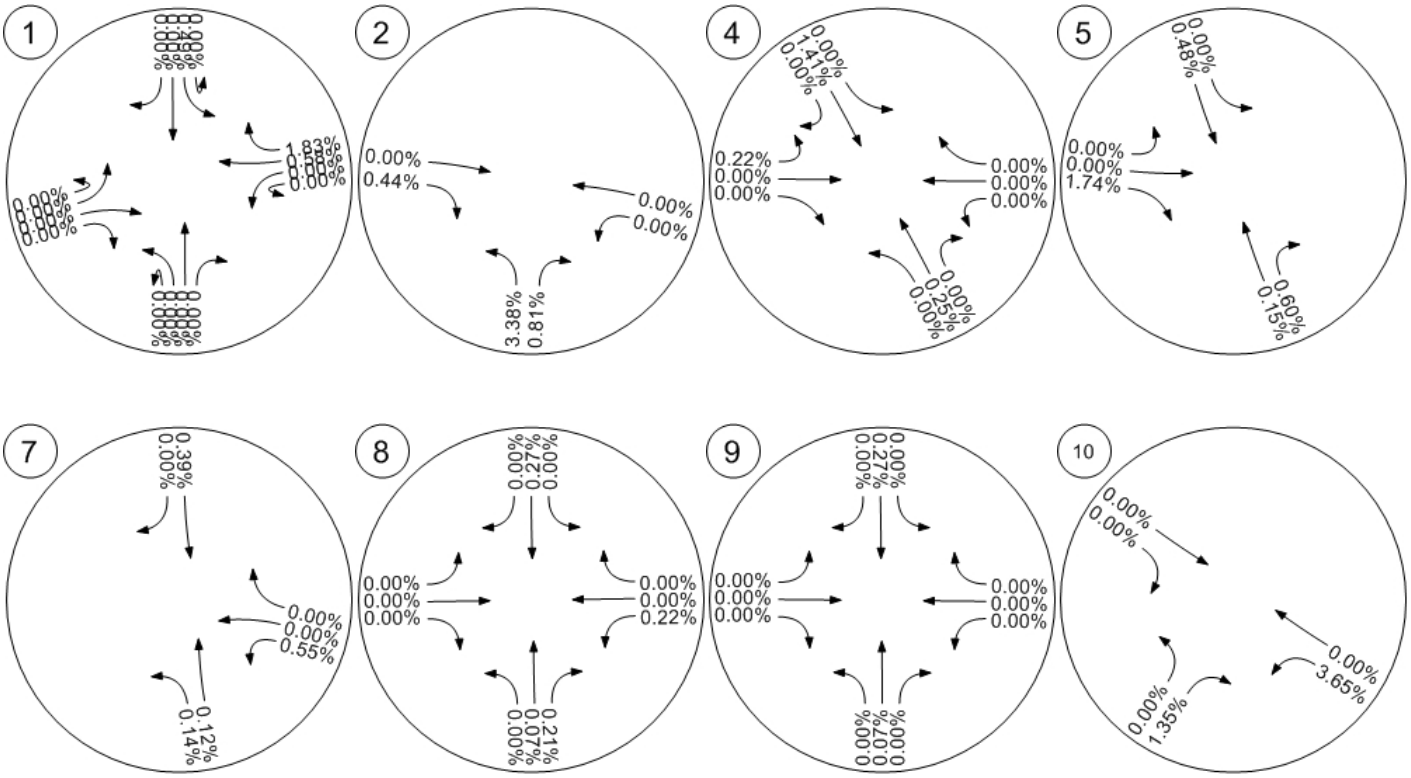
Fair Share - Fair Share % of Net New Site - Zone 37: Park and Ride



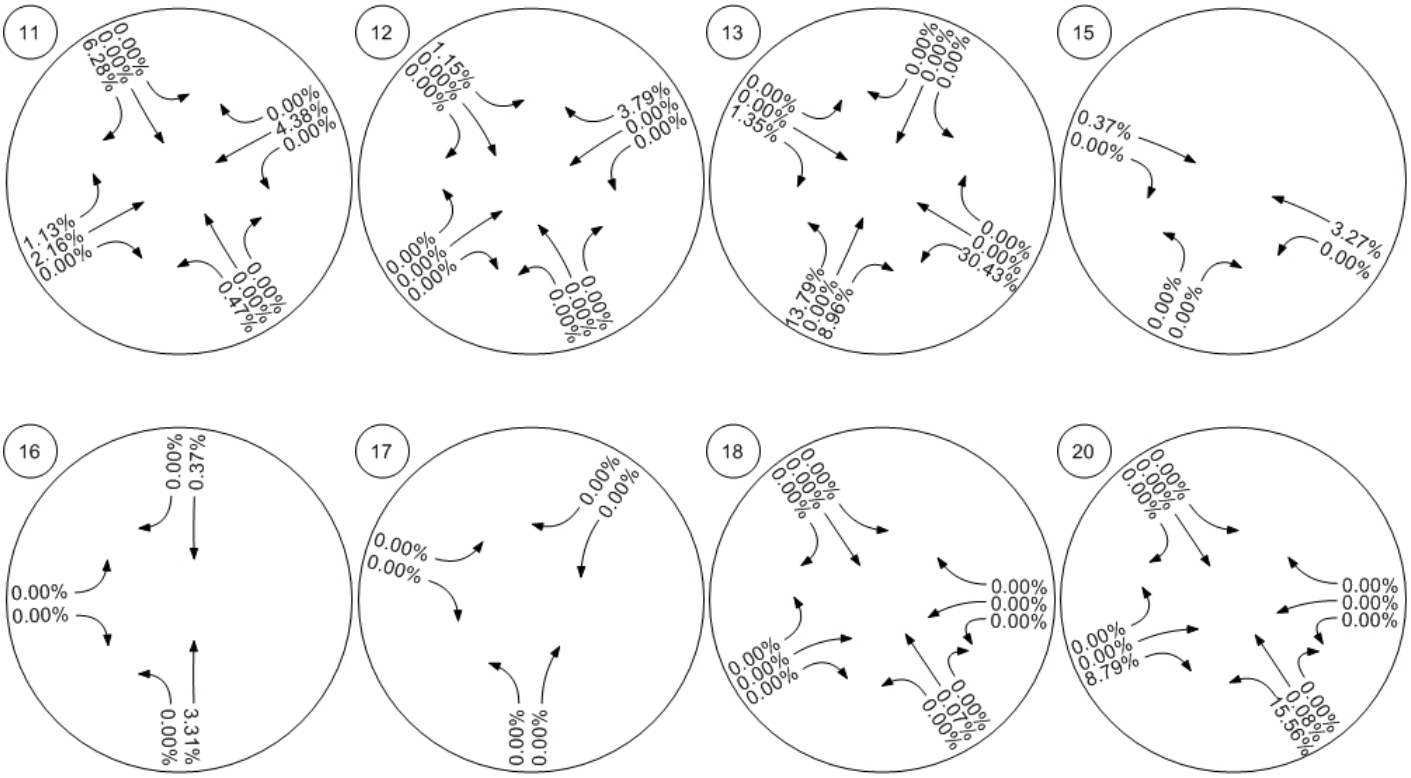


Fair Share - Fair Share % of Future Total - Zone 31: Bellerive Res.

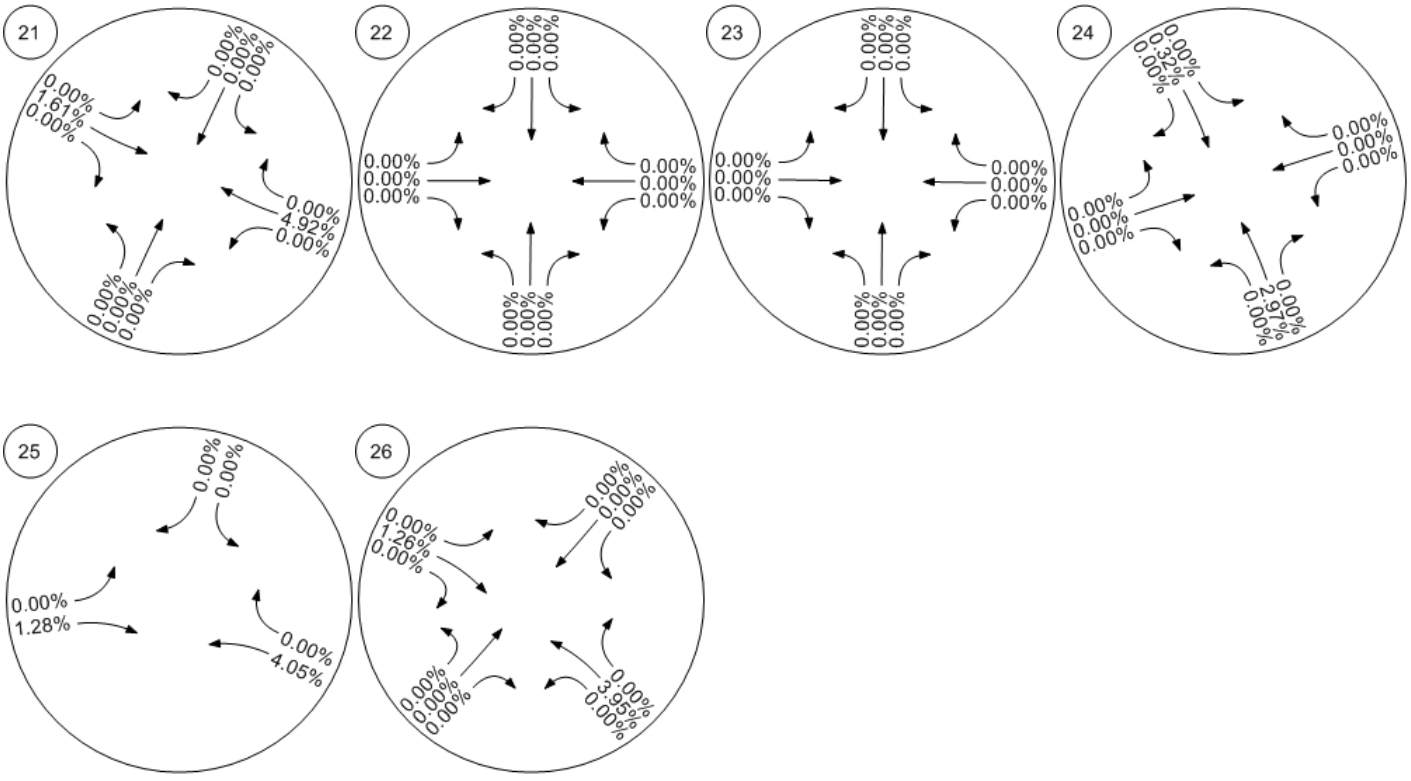




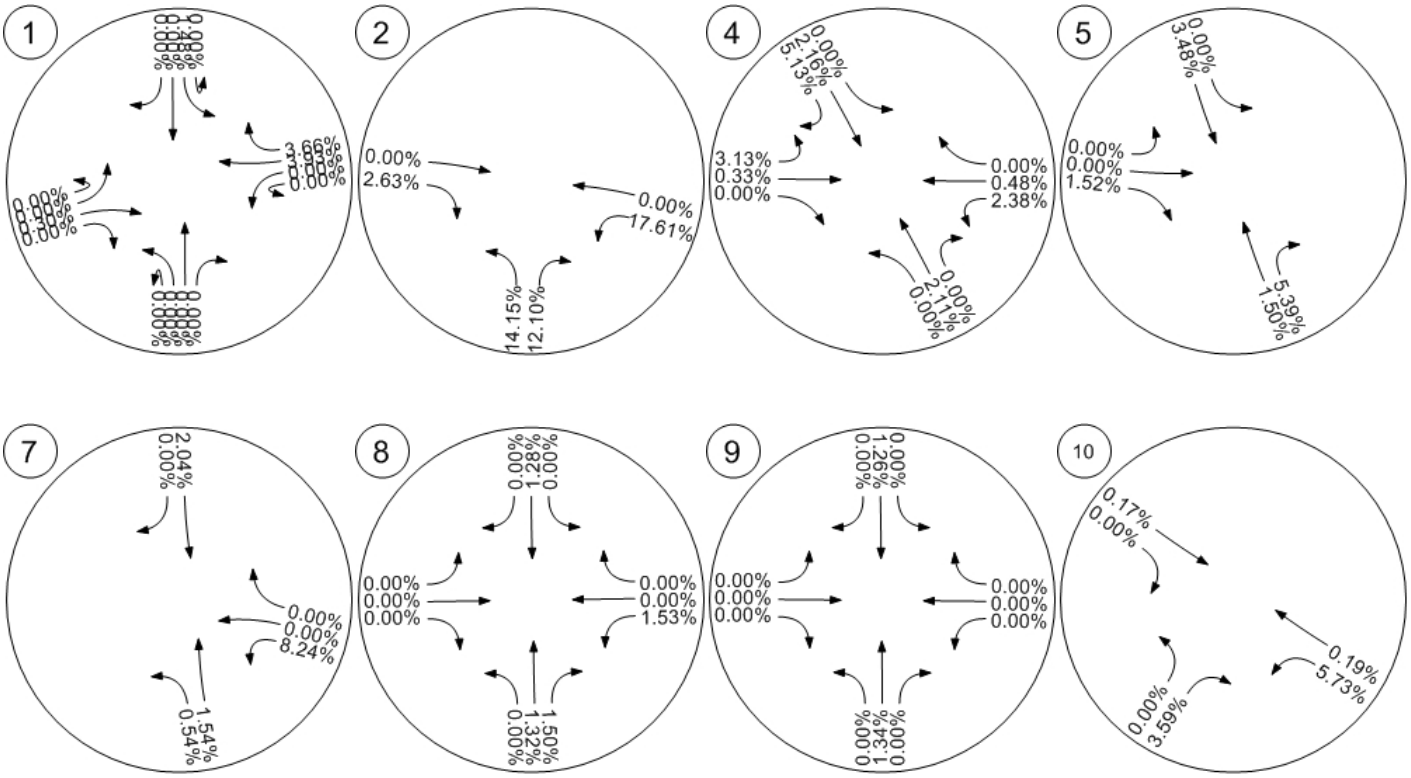
Fair Share - Fair Share % of Future Total - Zone 31: Bellerive Res.



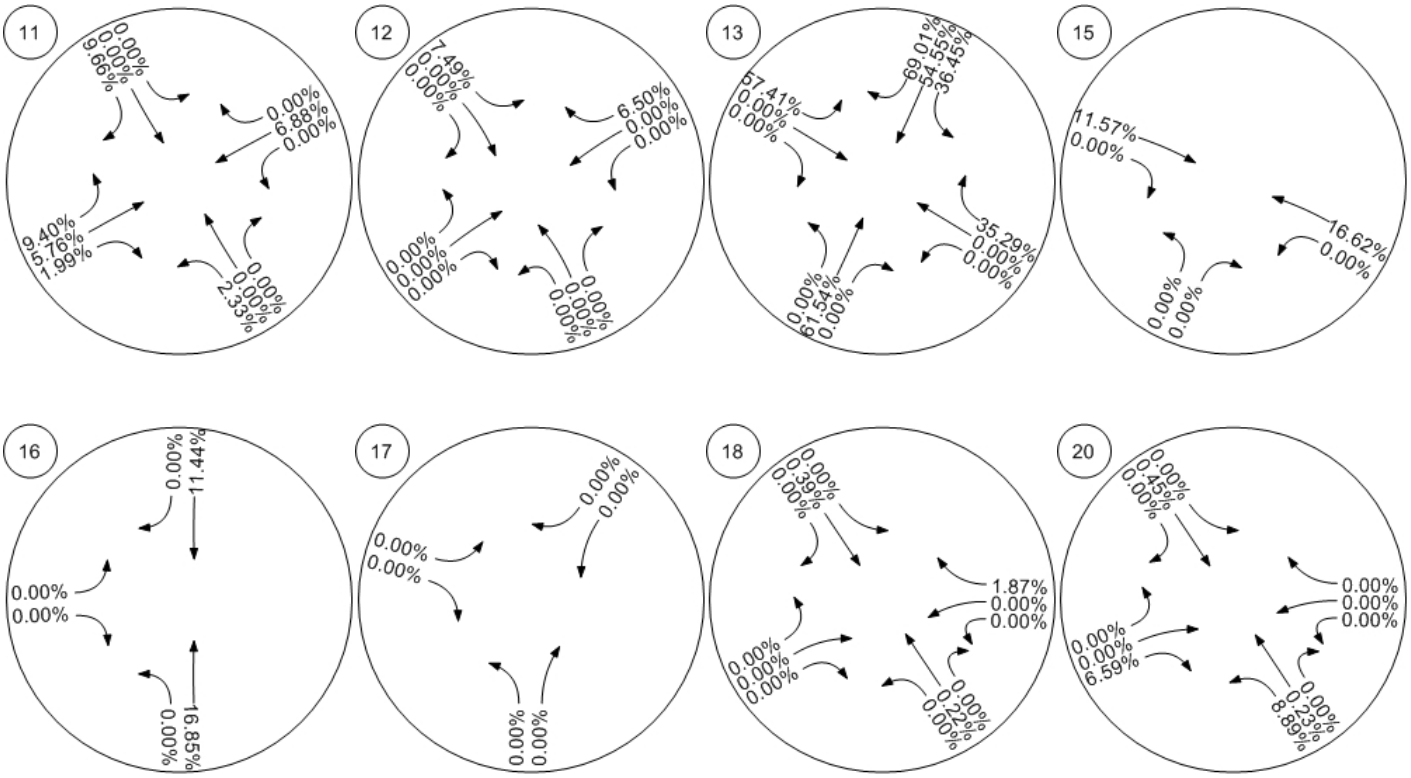
Fair Share - Fair Share % of Future Total - Zone 31: Bellerive Res.



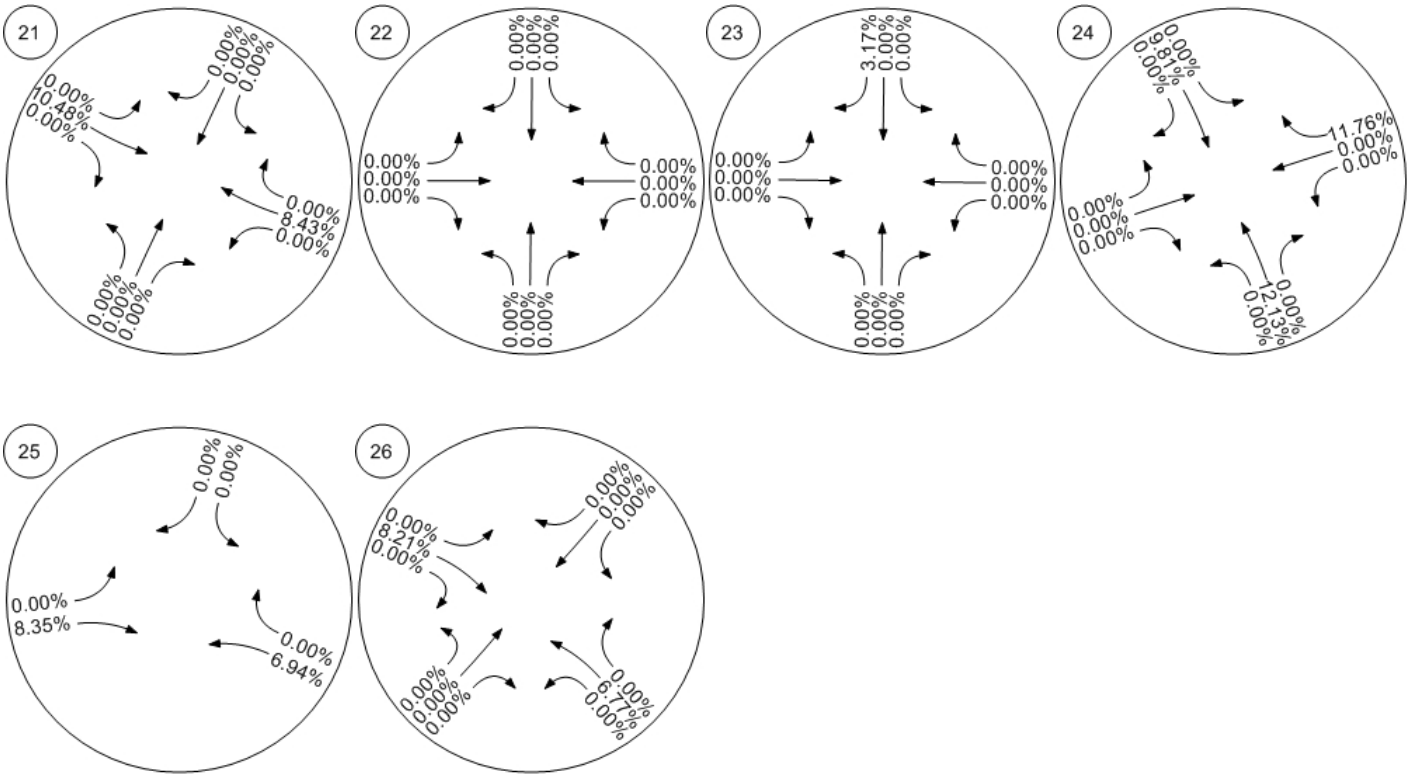
Fair Share - Fair Share % of Future Total - Zone 32: Riverstone Comm.



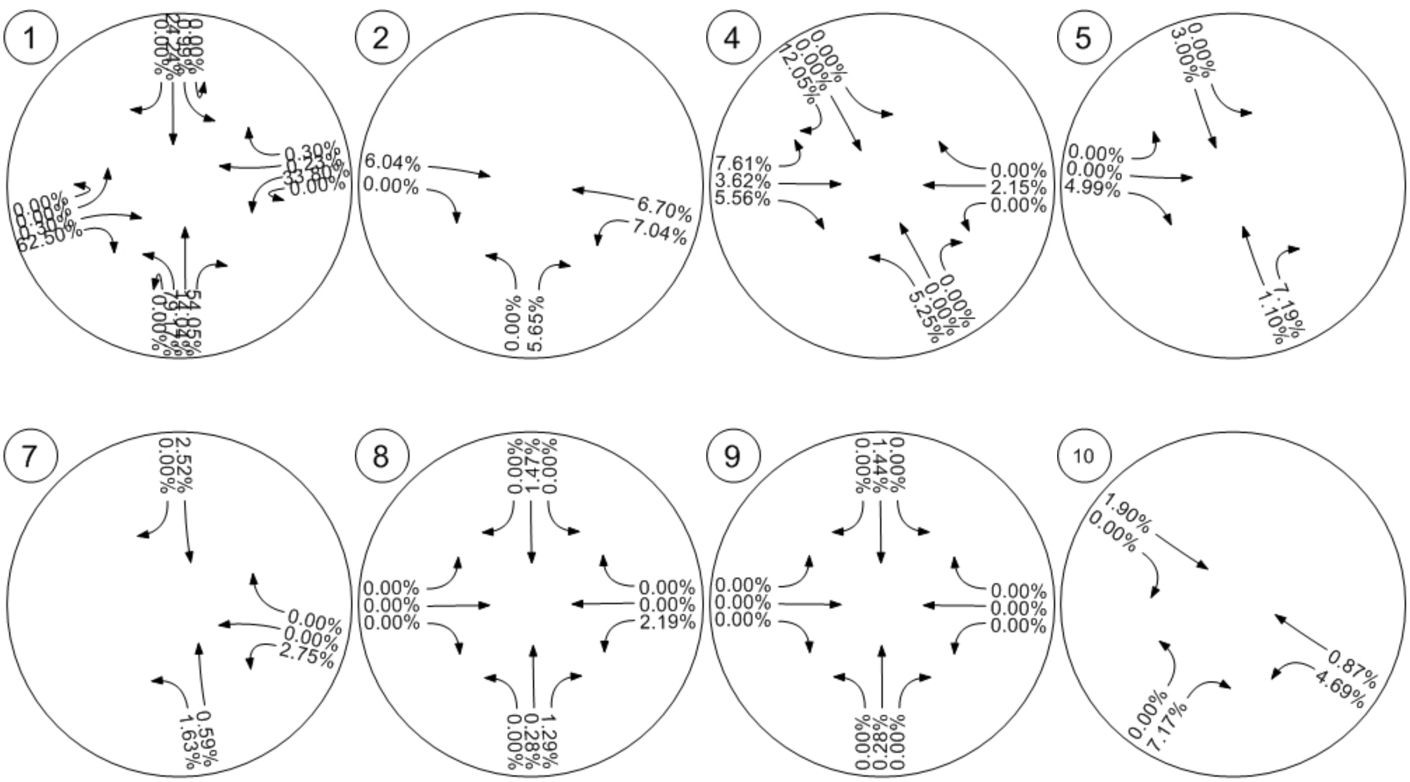
Fair Share - Fair Share % of Future Total - Zone 32: Riverstone Comm.



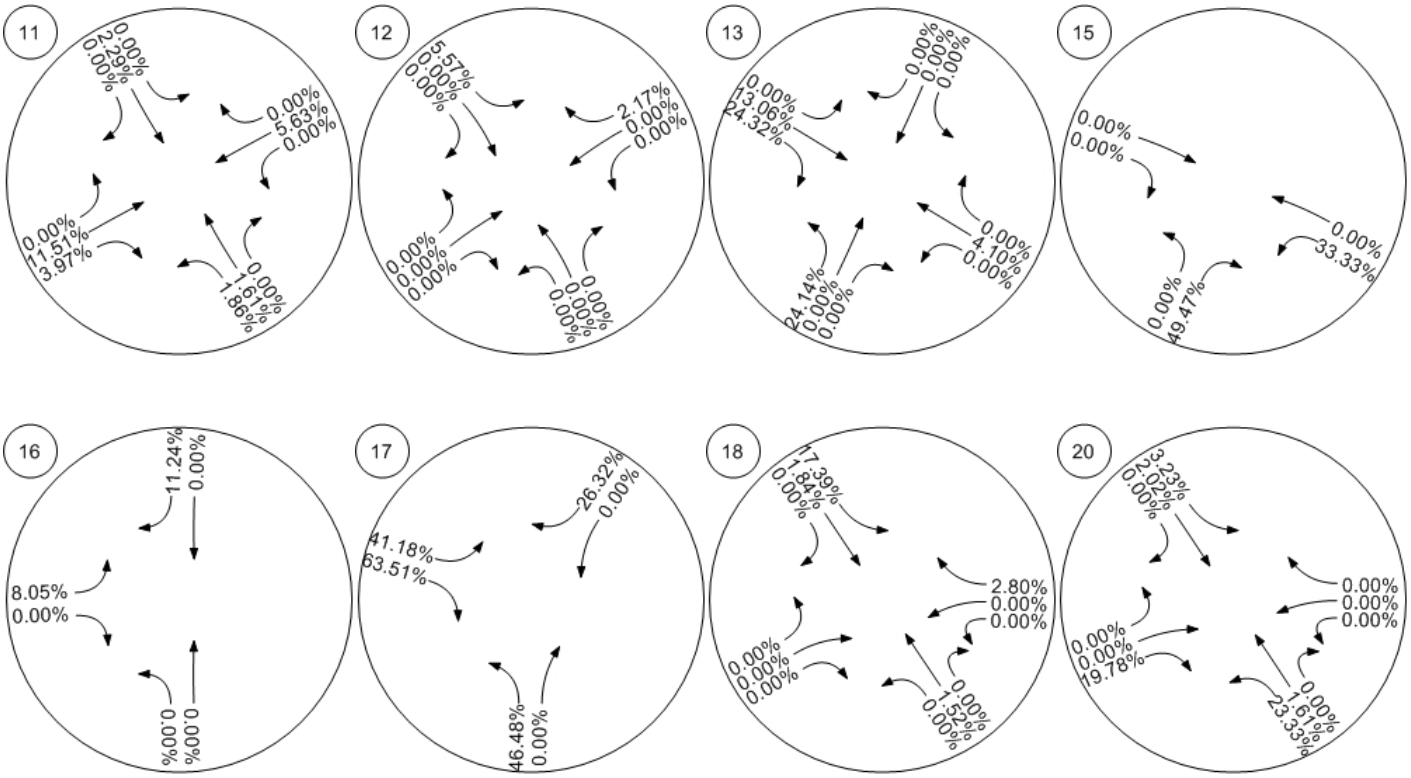
Fair Share - Fair Share % of Future Total - Zone 32: Riverstone Comm.



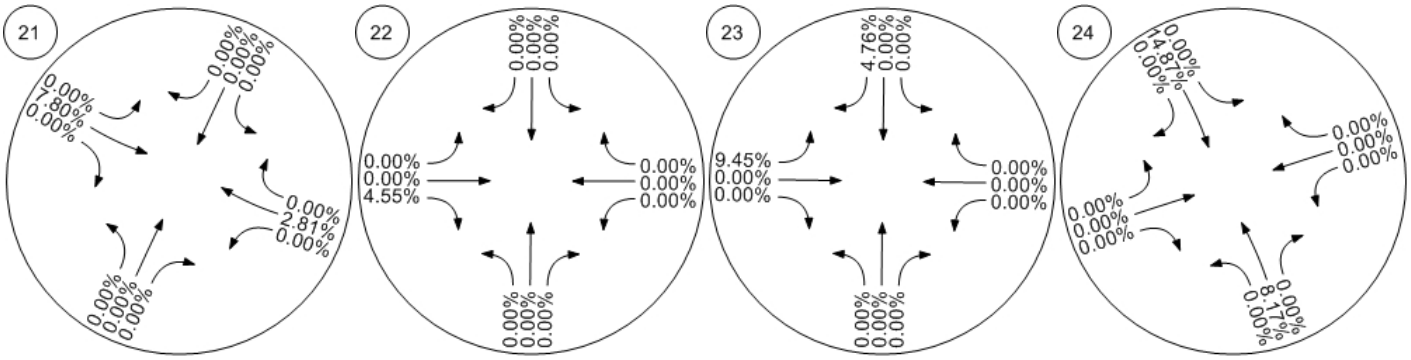
Fair Share - Fair Share % of Future Total - Zone 33: Atlas Comm.

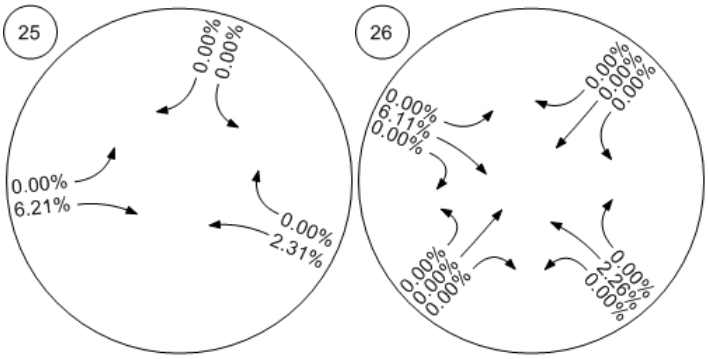


Fair Share - Fair Share % of Future Total - Zone 33: Atlas Comm.

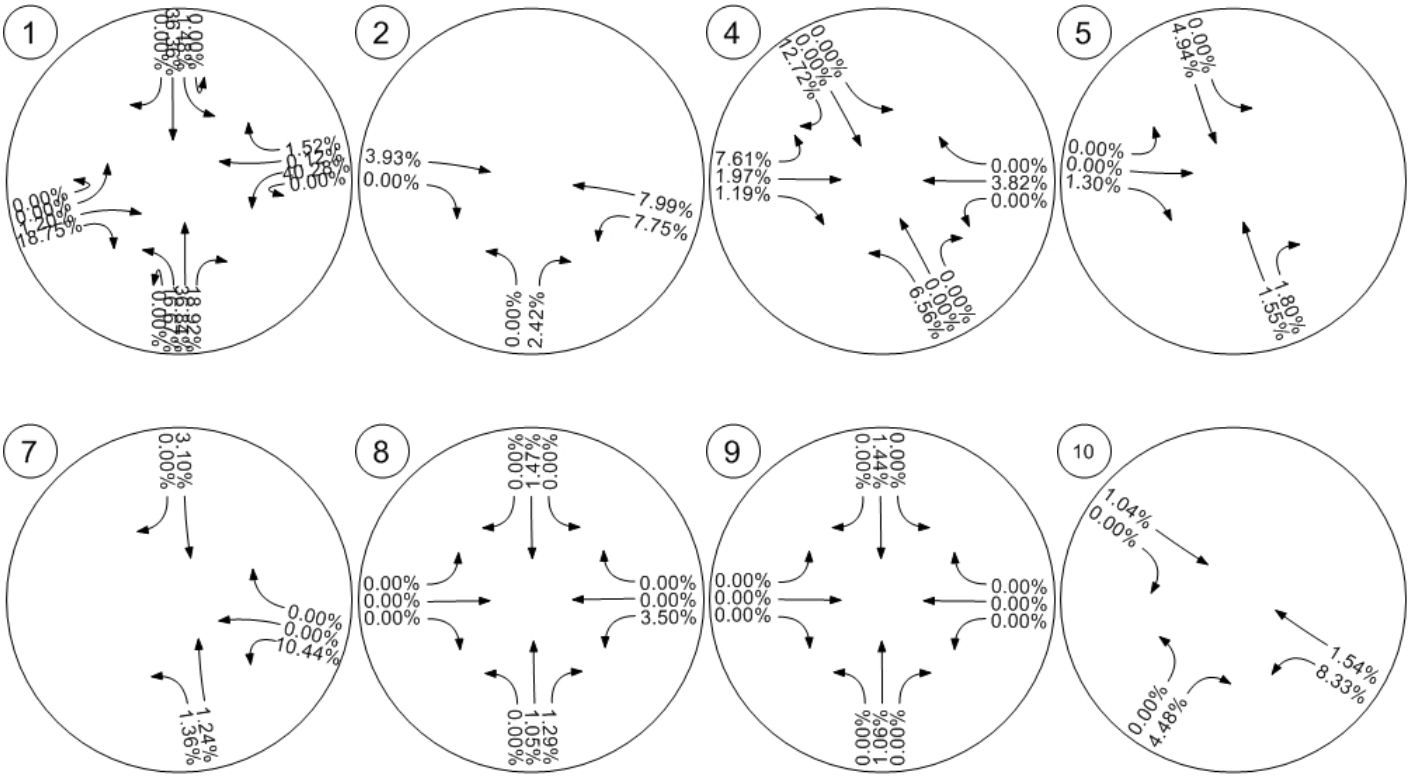


Fair Share - Fair Share % of Future Total - Zone 33: Atlas Comm.

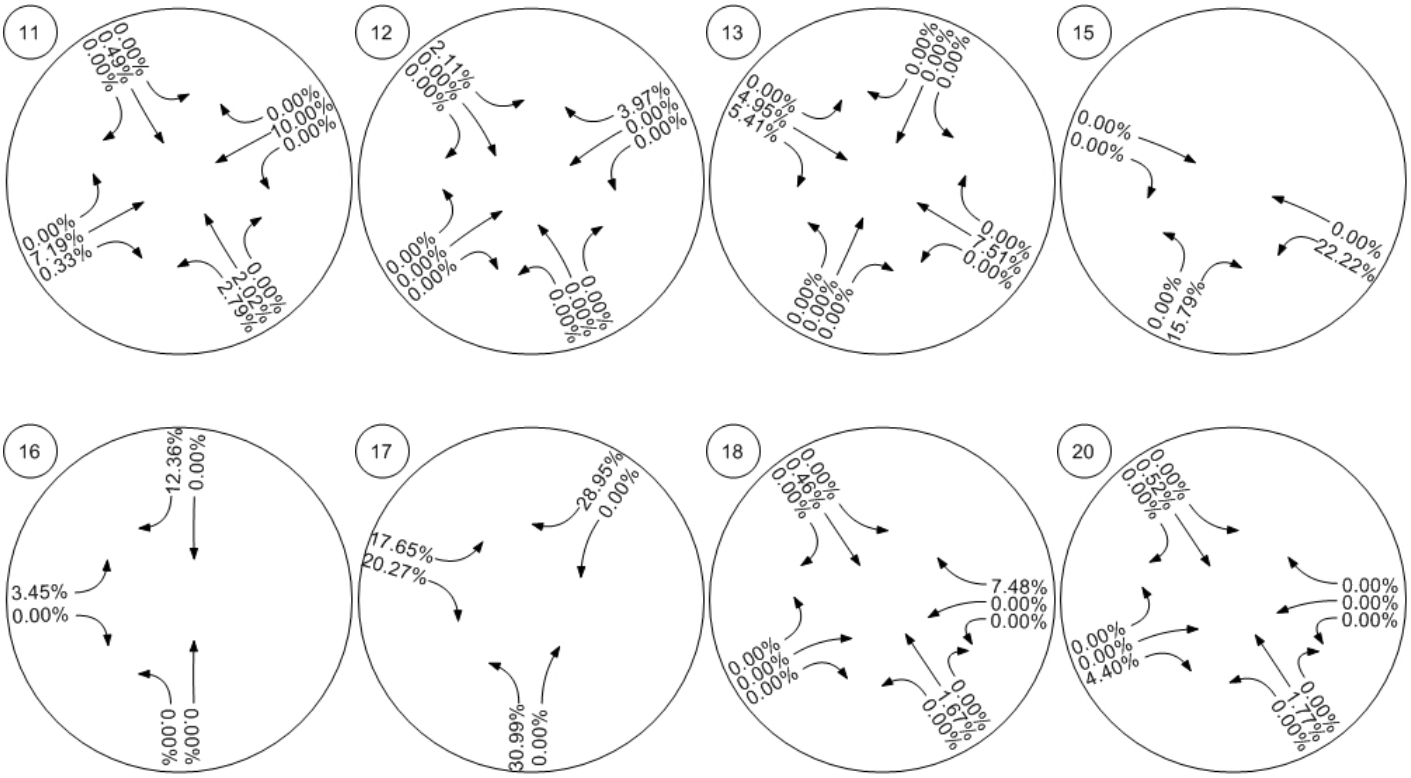




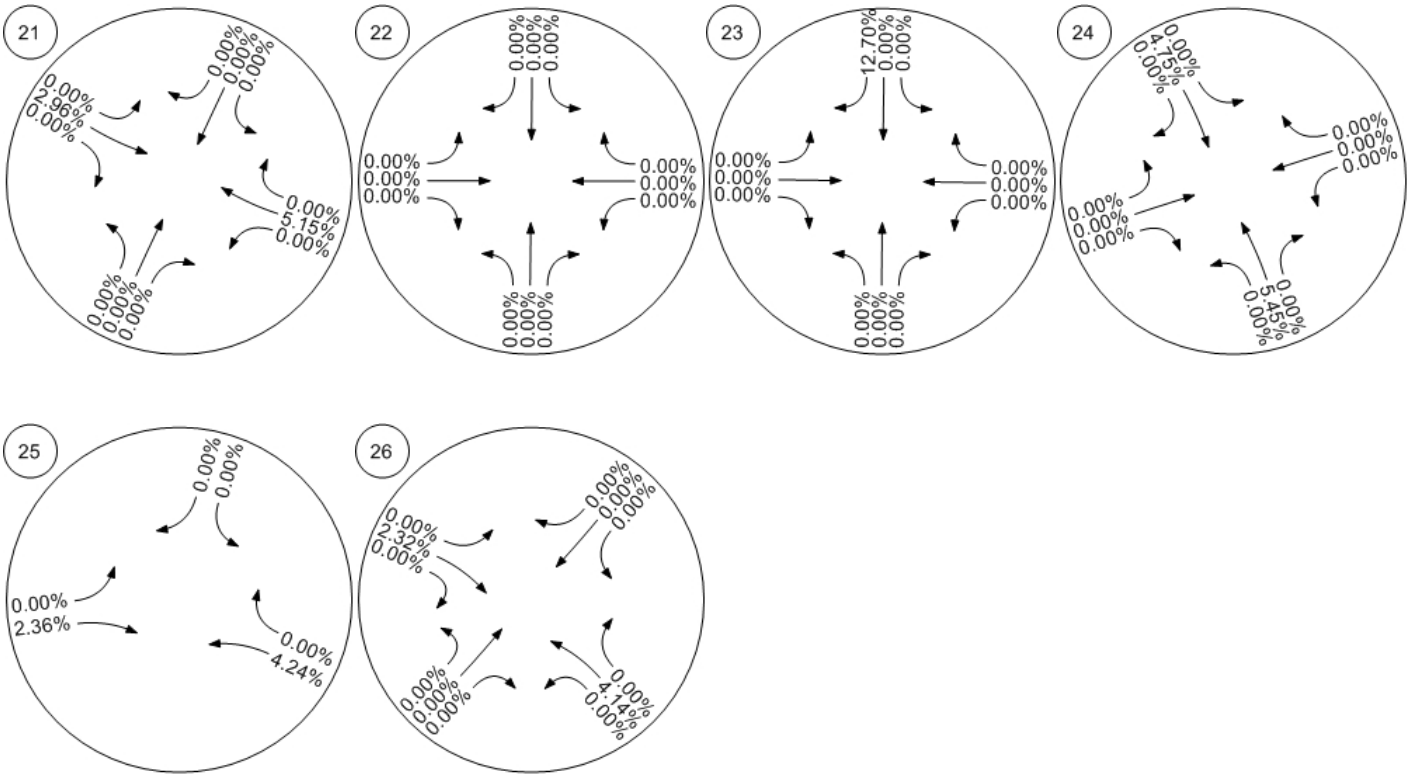
Fair Share - Fair Share % of Future Total - Zone 34: Atlas Res.



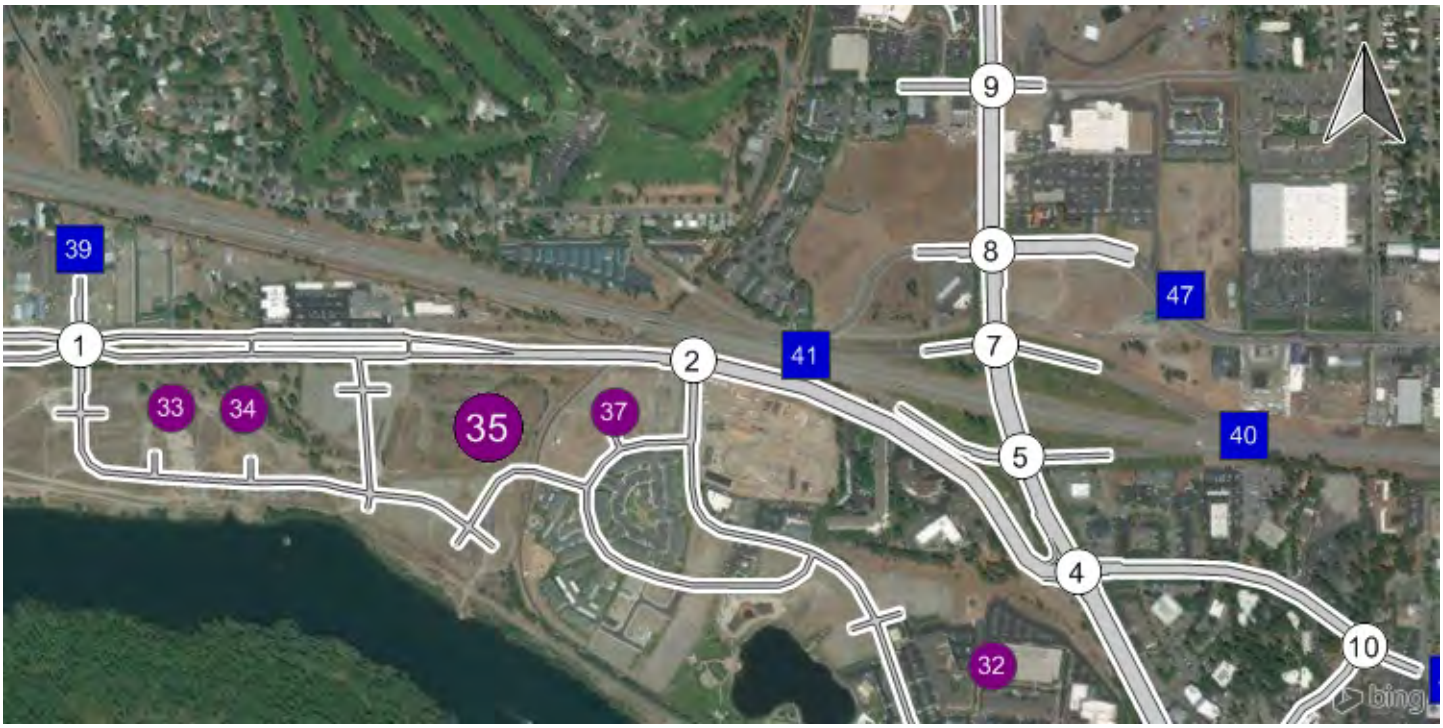
Fair Share - Fair Share % of Future Total - Zone 34: Atlas Res.

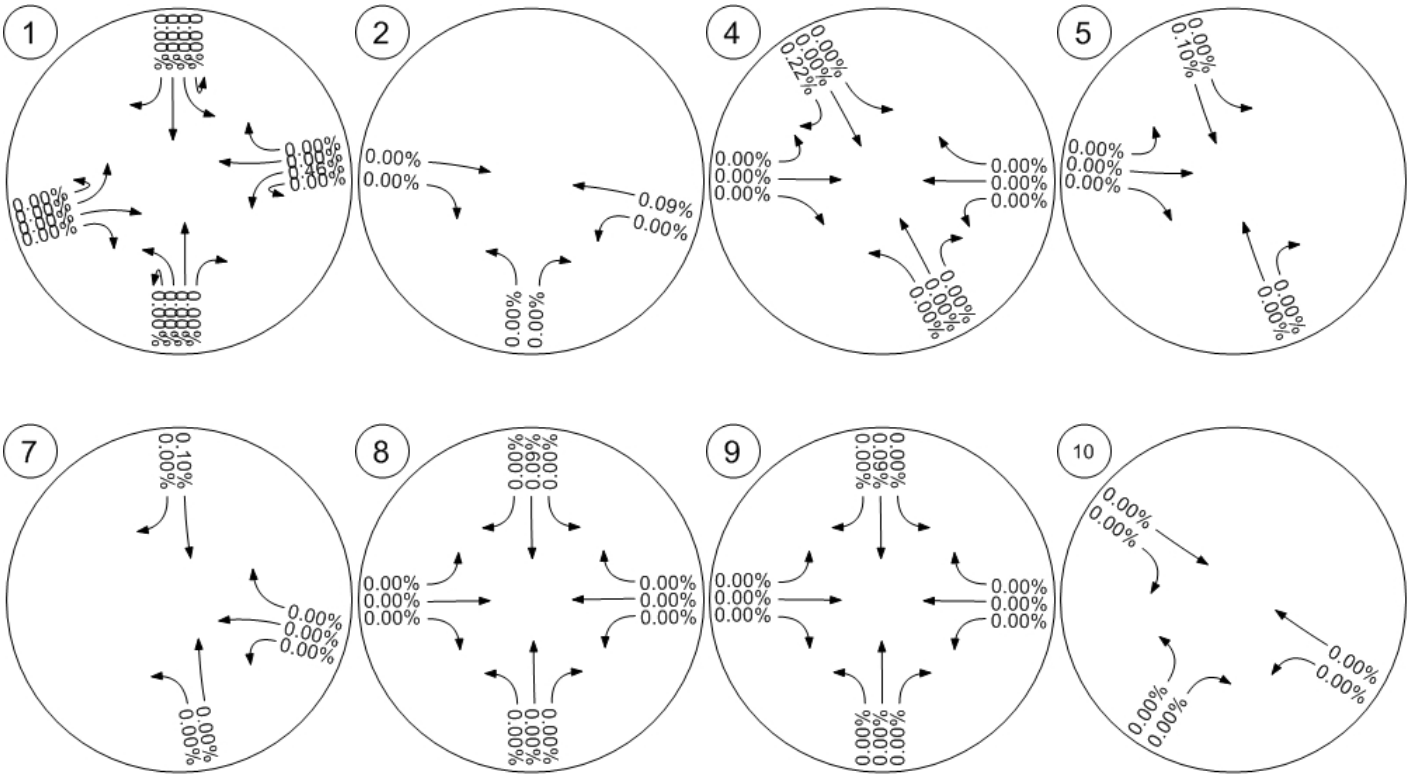


Fair Share - Fair Share % of Future Total - Zone 34: Atlas Res.

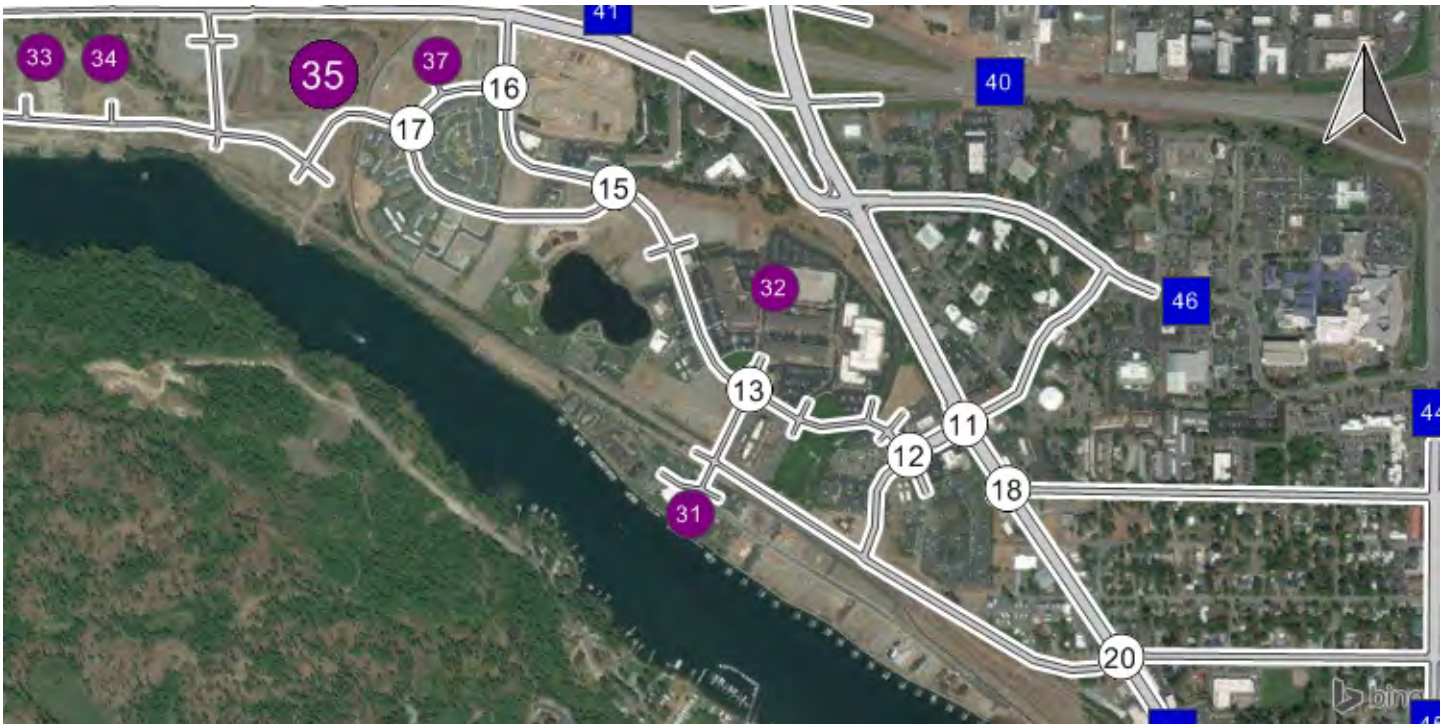


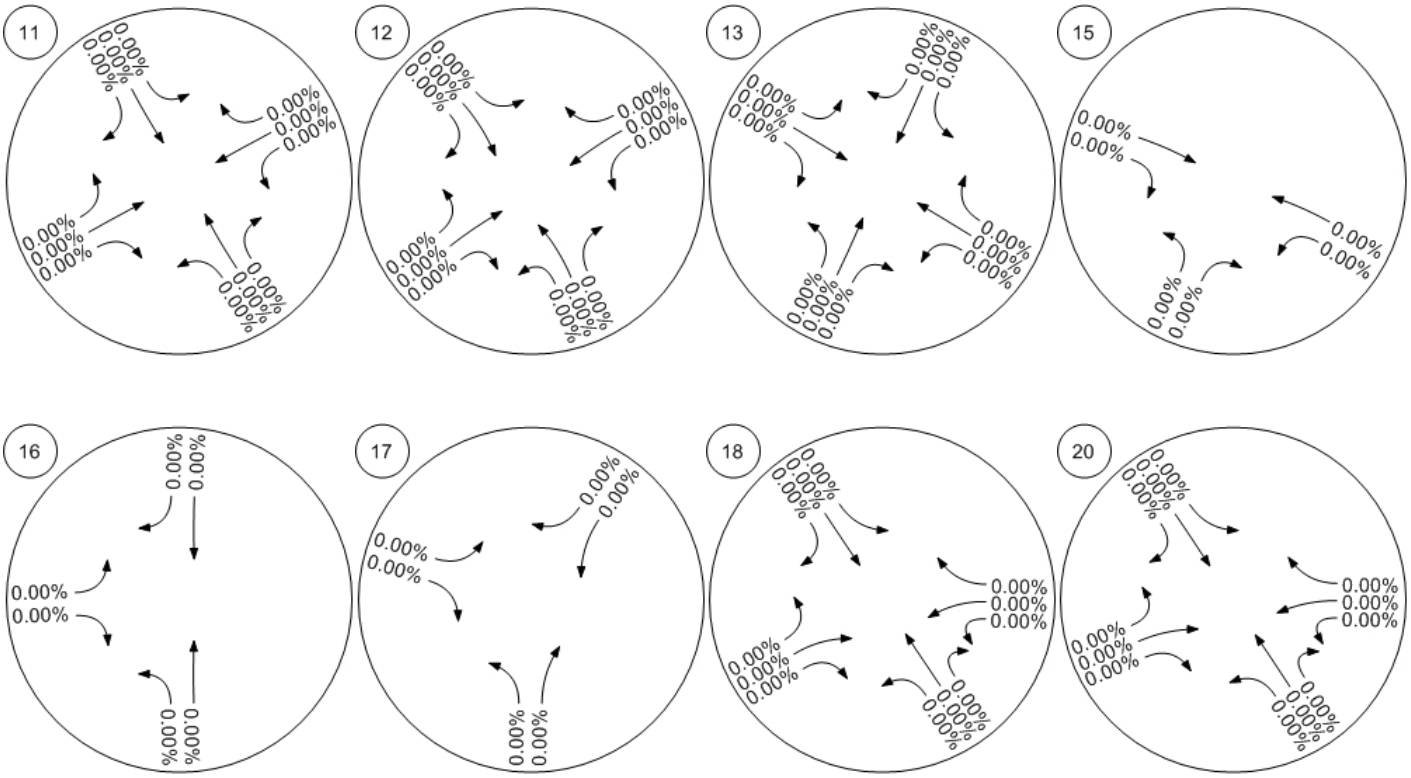
Fair Share - Fair Share % of Future Total - Zone 35: Open Space



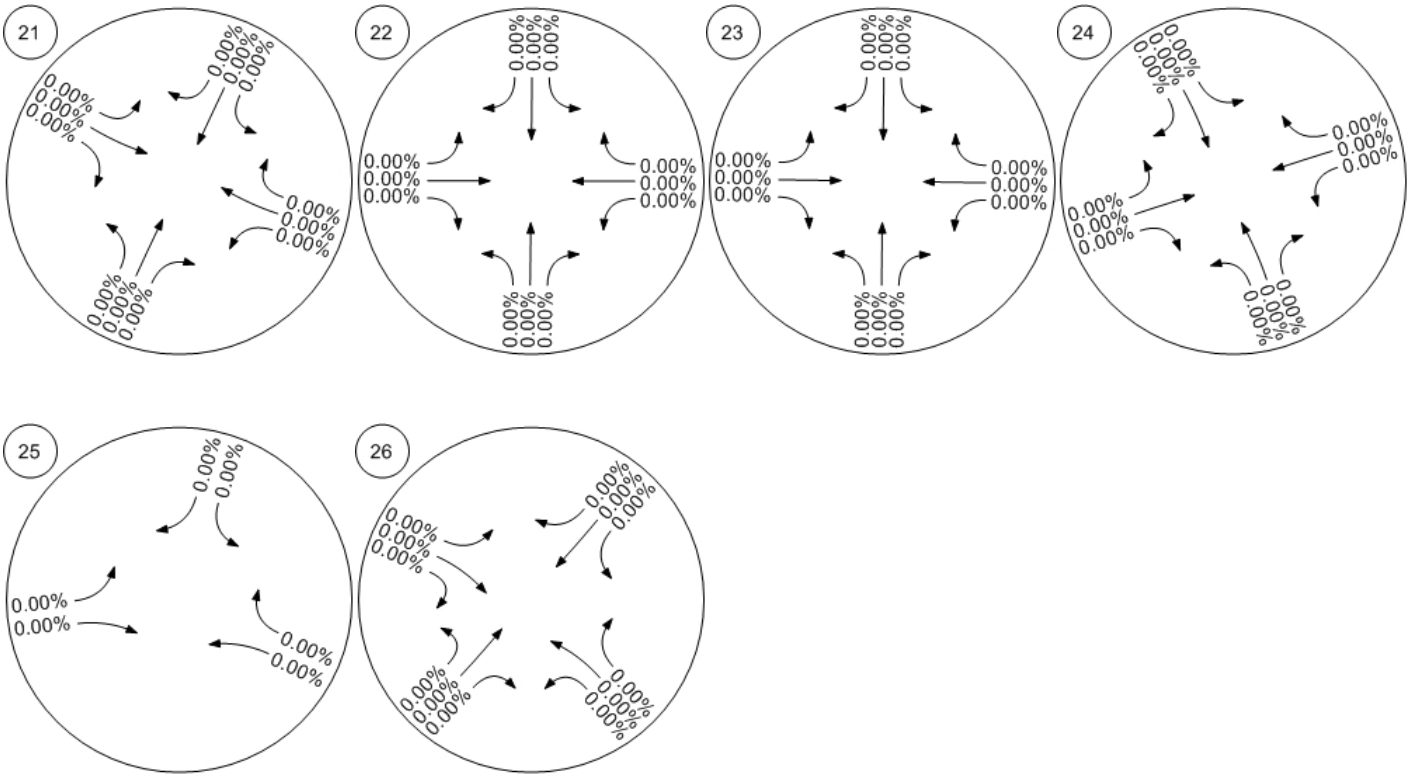


Fair Share - Fair Share % of Future Total - Zone 35: Open Space

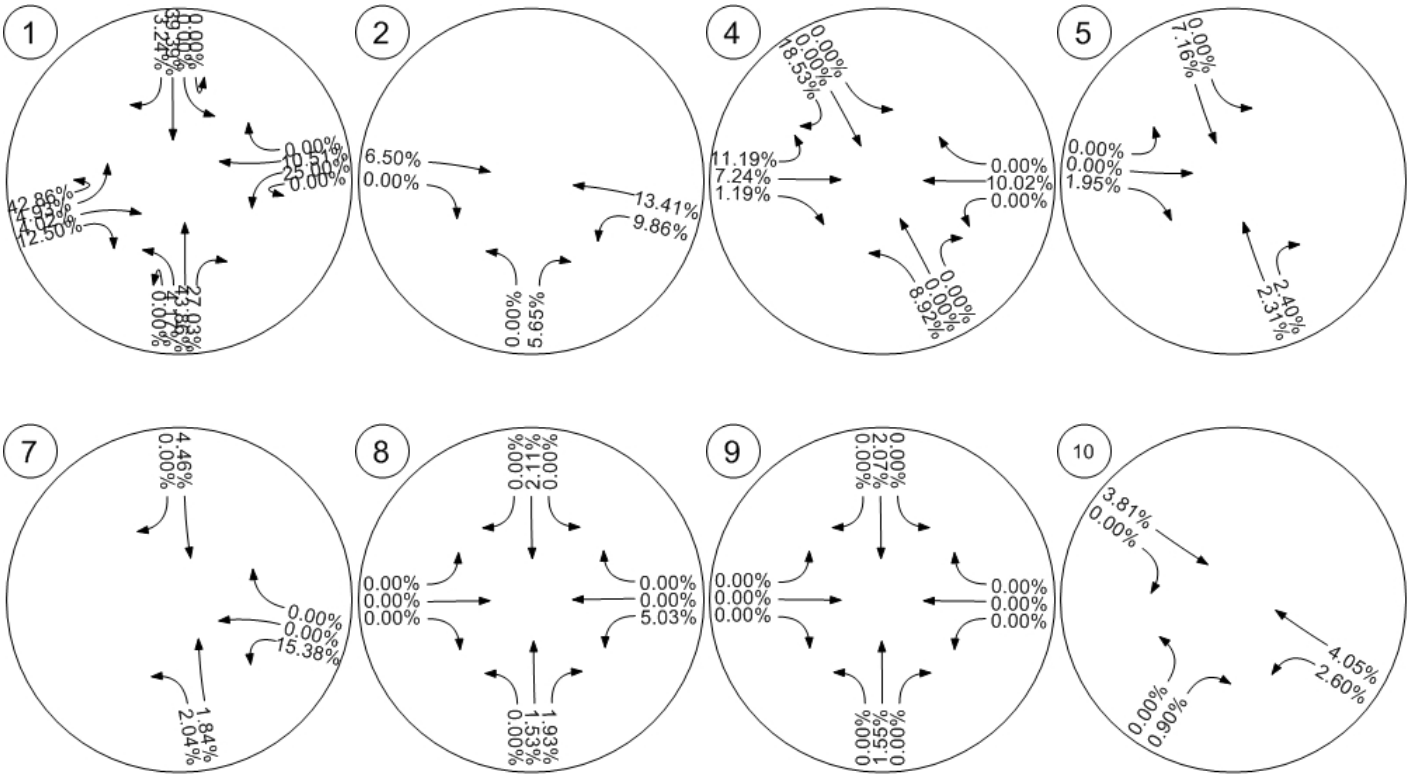




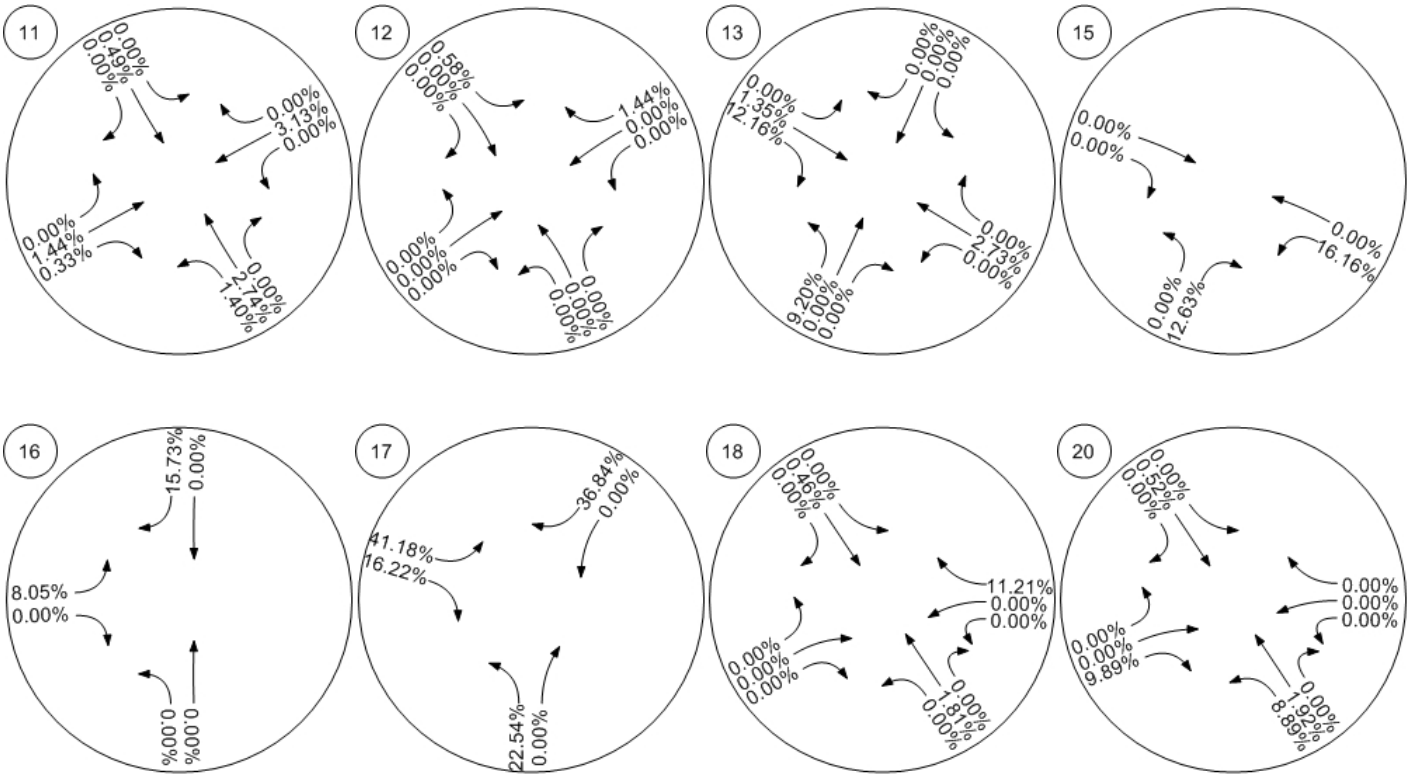
Fair Share - Fair Share % of Future Total - Zone 35: Open Space



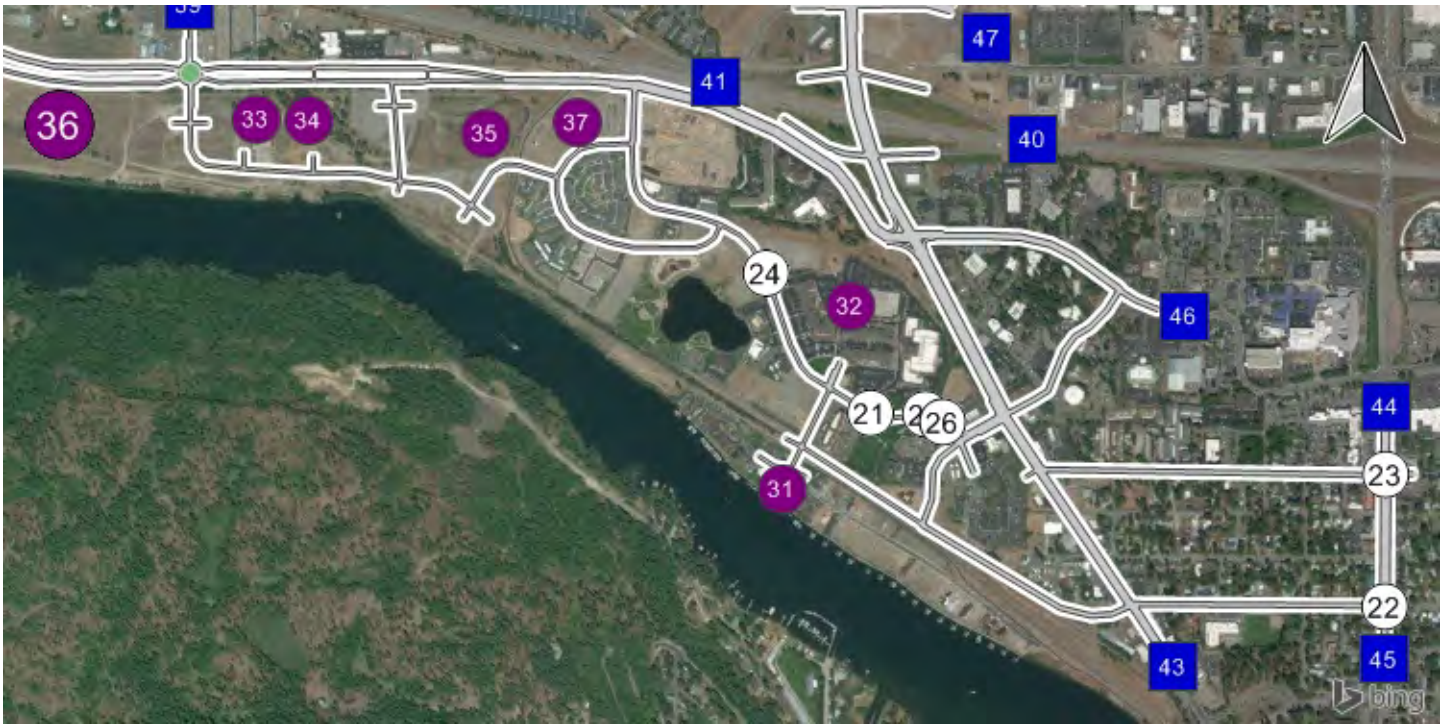
Fair Share - Fair Share % of Future Total - Zone 36: River's Edge

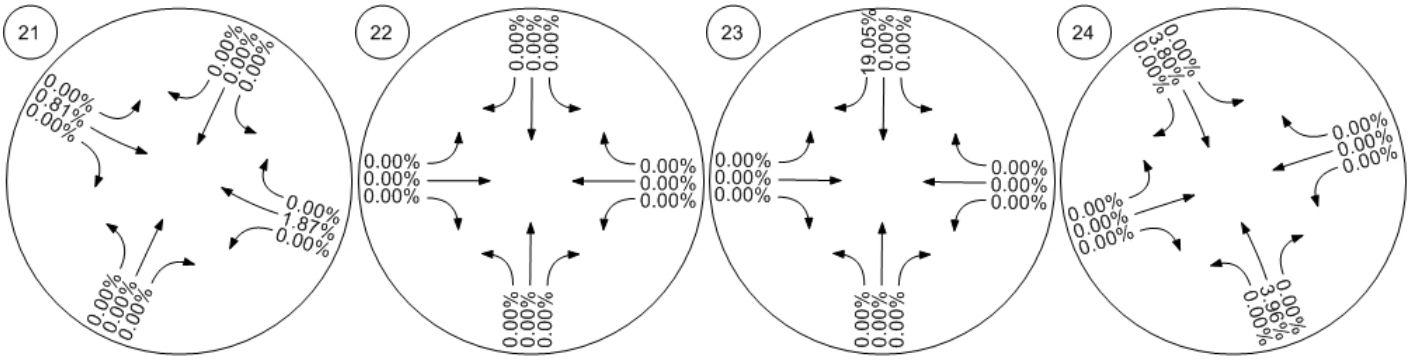


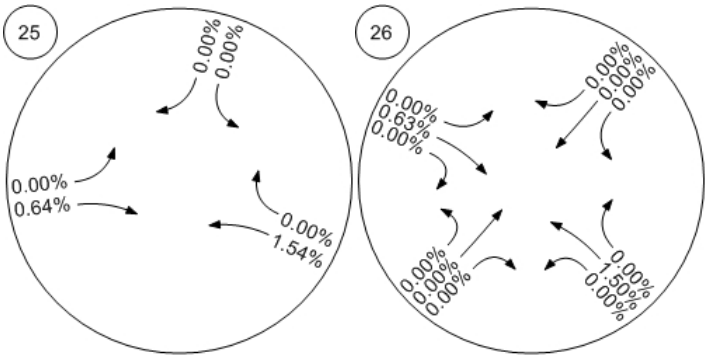
Fair Share - Fair Share % of Future Total - Zone 36: River's Edge



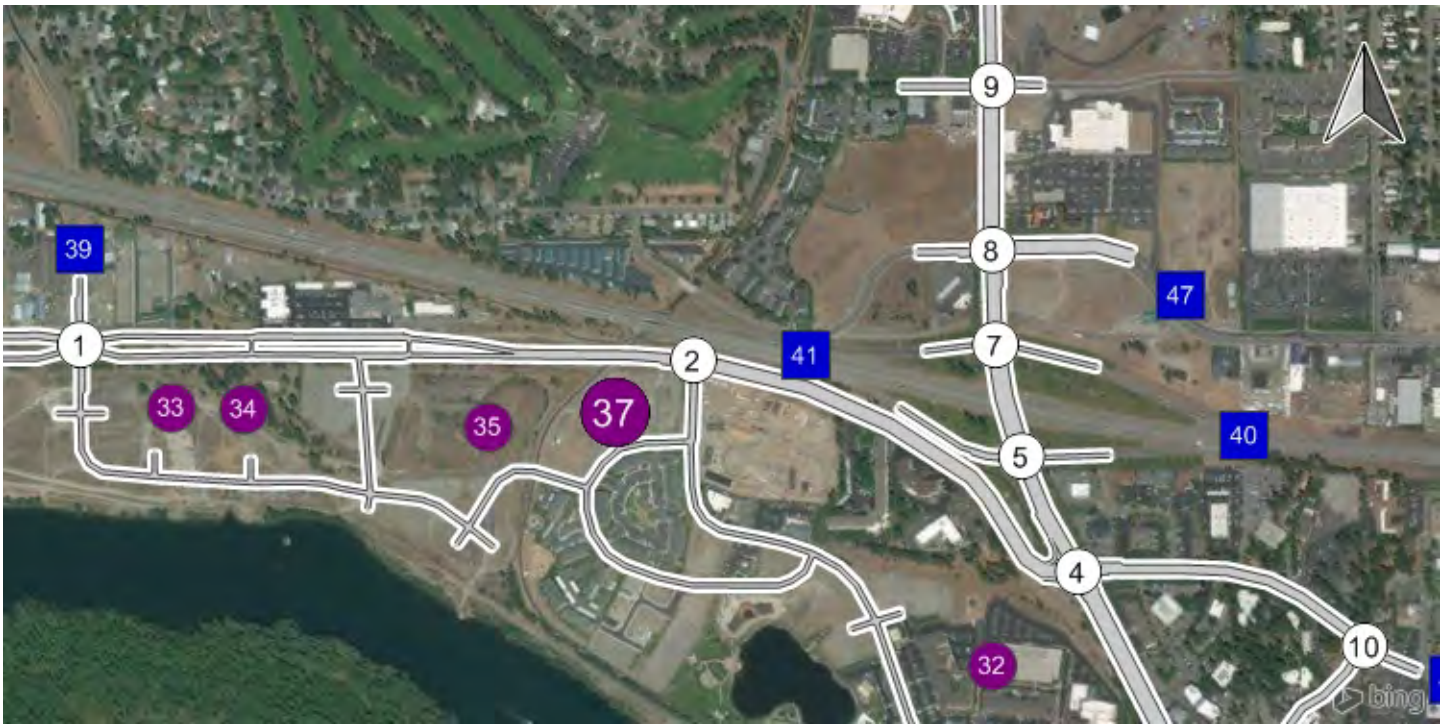
Fair Share - Fair Share % of Future Total - Zone 36: River's Edge

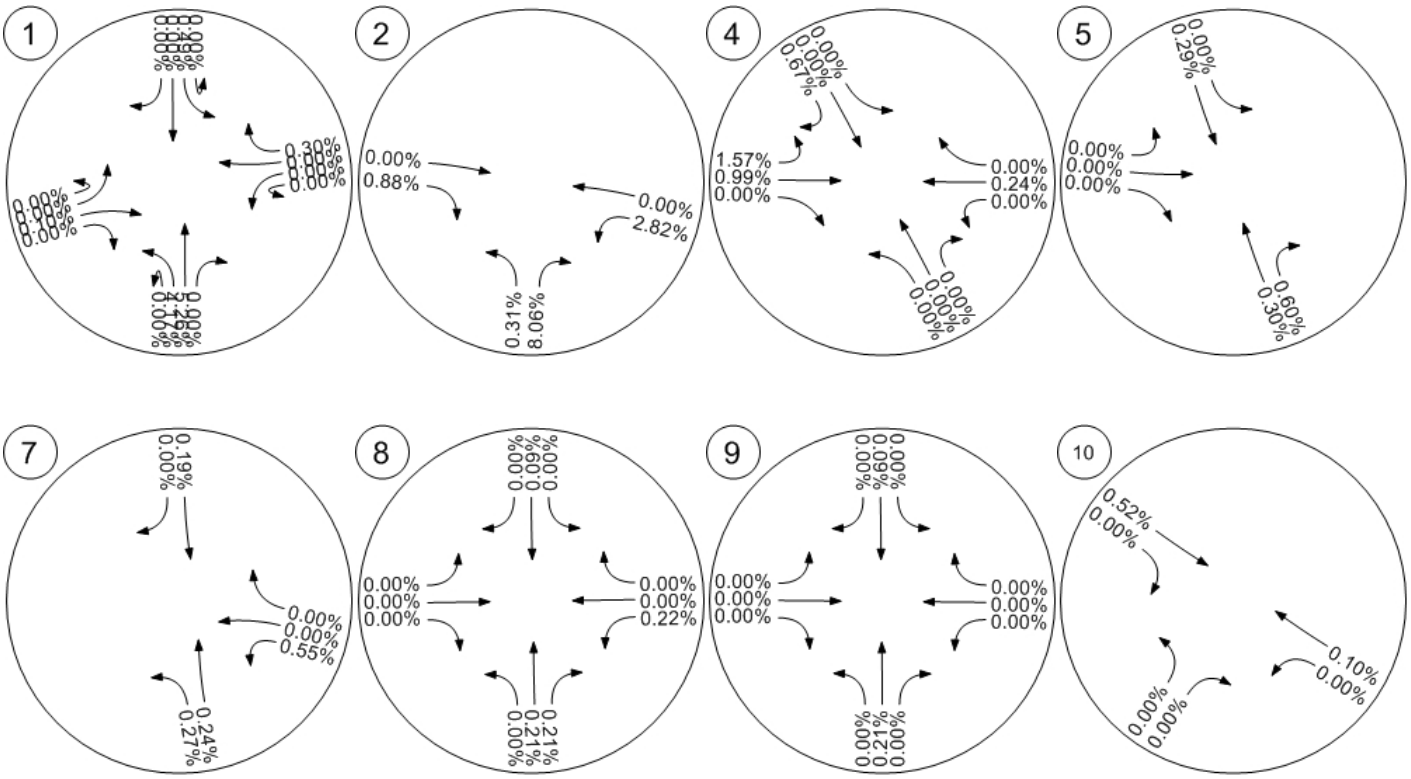




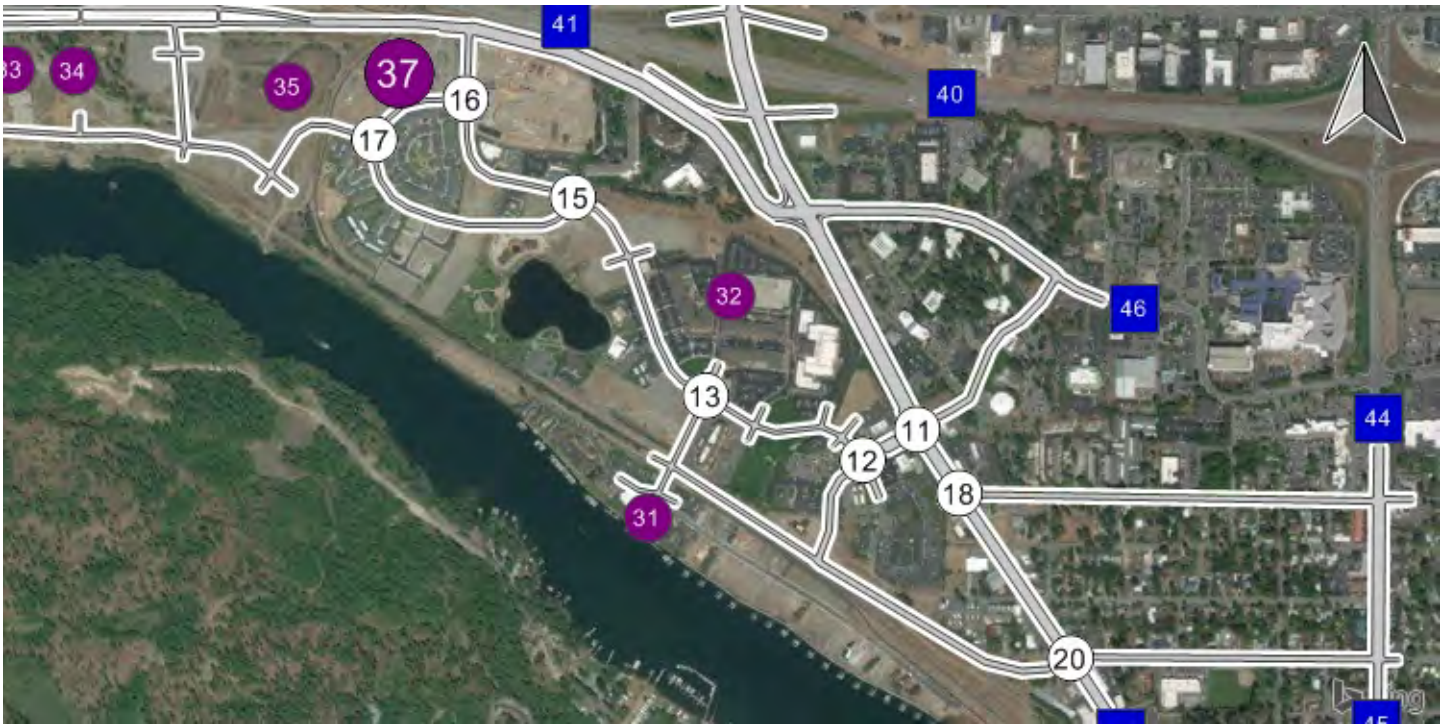


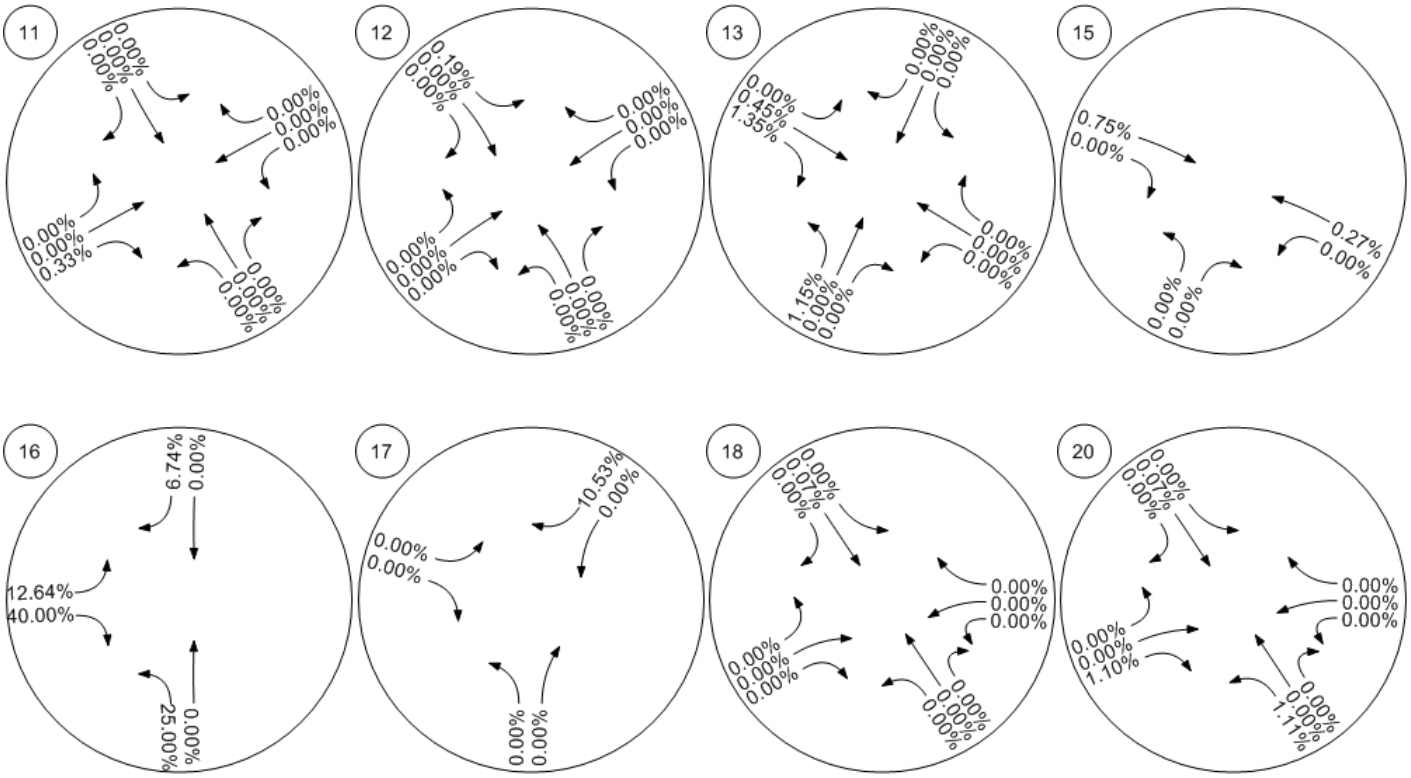
Fair Share - Fair Share % of Future Total - Zone 37: Park and Ride





Fair Share - Fair Share % of Future Total - Zone 37: Park and Ride





Fair Share - Fair Share % of Future Total - Zone 37: Park and Ride