NORTH/SOUTH CLINTON AVENUE
ST. PAUL STREET/SOUTH AVENUE
TWO-WAY CONVERSION STUDY

FINAL
EXISTING CONDITIONS ANALYSIS REPORT

Prepared for:

City of Rochester
30 Church Street
Rochester, New York 14614

JULY 2011

Prepared by:

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1.0 INTRODUCTION

Laberge Group has been retained by the City of Rochester to investigate the feasibility of converting the North/South Clinton Avenue and the St. Paul Street/South Avenue corridors from one-way to two-way traffic operations. This "Two-Way Conversion Study" will:

- Document existing conditions with regard to traffic operations, pedestrian and bicycle traffic, transit, safety and parking.
- Review future anticipated developments within the City and forecast one-way and two-way future peak hour traffic volumes that could result from those developments.
- Summarize the operational analysis and anticipated levels of service resulting from two-way conversion, providing information of pedestrian, bicycle and transit, as well as vehicular operations, and assessing the effect on parking and safety.
- List recommendations and requirements necessary, as well as potential impediments, to the conversion.

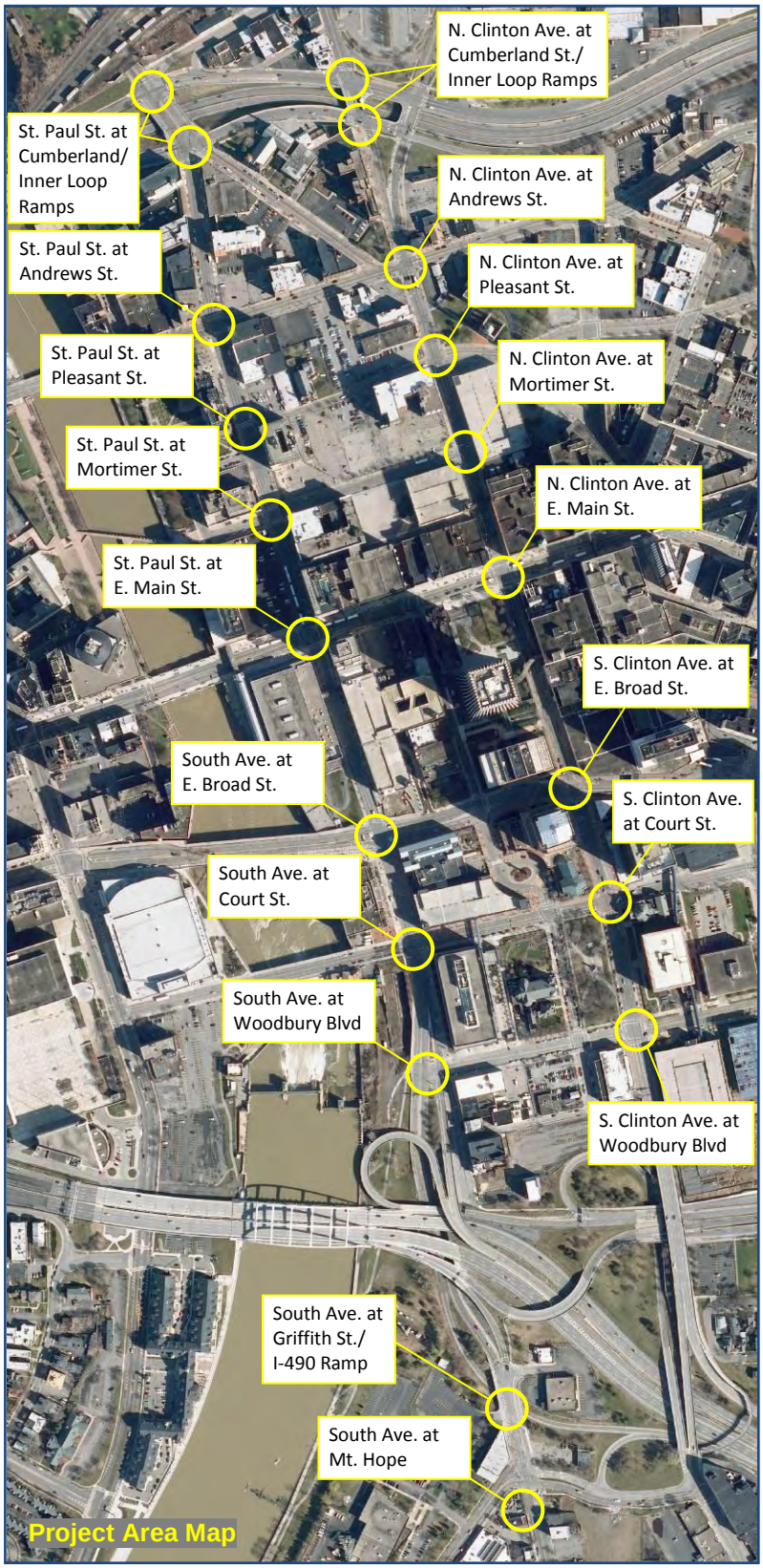
This Study will be comprised of three separate, but integrated reports, the first being this Existing Conditions Analysis Report. Once this report has been reviewed by the Project Advisory Committee (PAC) and an initial public meeting is held to ascertain public comment, the second report will be developed to document the traffic forecasts that will be used in the future conditions analysis. Once the forecasts are approved by the PAC, a Feasibility Assessment Report will be developed. The Feasibility Assessment will include all analyses and recommendations related to the two-way conversion. That report will be reviewed by the PAC and presented in a public forum to gather any comments on the recommendation. These comments will be reviewed, assessed and integrated into the final report.

2.0 PROJECT BACKGROUND

St. Paul Street, North Clinton Avenue and other downtown streets were converted to one-way traffic in the 1960s in order to reduce traffic congestion in the downtown area and to accommodate expressway ramp connections. With heavy industrialization in the northern neighborhoods and a number of large office developments in the southern downtown area, the need to efficiently process vehicles in and out of the City during commuter peaks was the City's primary objective and the one-way roadways achieved that goal.

By the 1980's many of the industrial businesses relocated from the downtown area, and residential and commercial land uses were on the rise. Today, in addition to the over 5 million square feet of office space that hosts over 18,000 workers, the eastern downtown area has nearly 5,000 residents, several college campuses (Eastman School of Music, Monroe Community College, SUNY Brockport Metrocenter,

SUNY EOC), a significant commercial presence and soon a major transit center. This mix of land uses has shifted the City's goals from the "get them in and out" attitude of the past to a "complete streets" approach that focuses on multi-modal transportation and gives importance to all modes of transportation including pedestrian, bicycle and transit. Although the current one-way street patterns efficiently served high traffic volumes for decades, these up to four-lane one-way arterials that dominate the downtown (St. Paul/South and North/South Clinton) are less hospitable to other modes of transportation. This raises safety concerns for the current land uses, which require increased walkability and bikeabilty throughout the downtown area.



Another concern with the one-way streets is the absence of a predictable grid street pattern, which makes it challenging to direct visitors to downtown destinations, and potentially hampers business development and retail viability.

Given the character change of the downtown area over the past few decades and the increasing need to provide better pedestrian and bicycle safety and accommodations, provide better access to commercial properties, improve wayfinding and reduce driver confusion, the City of Rochester desires to investigate the feasibility of converting St. Paul Street/South Avenue and North/South Clinton Avenue between Byron Street and the Inner Loop to two-way traffic. See the map to the right for specific intersections included in the study.

3.0 DATA GATHERING

3.1 Record Data and Previous Studies

Numerous traffic studies have been performed for various developments throughout the downtown area over the past several years. Data from these studies and record information from various Municipal Agencies were gathered and reviewed as part of this study.

Previously developed traffic reports examined and considered as part of the Two-Way Conversion Study include:

- Midtown Redevelopment Traffic Assessment, Fisher Associates, 2008
- Broad Street Aqueduct Traffic Impact Study, FRA Engineering, 2009
- Renaissance Square Traffic Analysis, Passero Associates & Kimley-Horn Associates, 2006
- Comprehensive Downtown Parking Study, Walker Parking Consultants, 2008
- Erie Harbor Park Master Plan, Ty-Lyn International, 2010

In addition, the following data was received from various other Agencies:

- Historical traffic count data and traffic signal timings, Monroe County DOT
- Historical accident data, City of Rochester
- Development Information and Market Summary, Rochester Downtown Development Corp.
- Transit ridership information, Rochester Genesee Regional Transportation Authority

3.2 Data Collection

In addition to the record data obtained, Laberge Group conducted peak hour turning movement and pedestrian/bicycle counts on April 12-14, 2011 at following four locations:

- South Clinton Avenue at Woodbury Blvd.
- North Clinton Avenue at Andrews Street
- St. Paul Street at East Main Street
- South Avenue at East Broad Street

In addition, Laberge Group, took field notes and pictures of the area, noting significant parking areas, road geometry, traffic signing and transit locations.

Based on the data collected, the AM Peak Hour for traffic within the downtown area generally occurs between the hours 7:30 am and 8:30 am, and the PM peak hour occurs from 5:00 pm to 6:00 pm.

These counts, along with previously collected traffic count data from past studies, were used in determining the existing traffic volumes for the analysis. A summary of all the peak hour intersection turn movement traffic counts available for use in this study are included in Table 1.

TABLE 1
Intersection Peak Hour Count Summary

Intersection	Count Year[source]
South Ave. at Mt. Hope Ave./Byron St.	1999[5], 2000[7], 2010[1]
South Ave. at Griffith /I-490 EB Off-Ramp	2000[7], 2011[1]
South Ave. at Woodbury Blvd	1996[8], 2000[7]
South Ave. at Court St.	2006[3]
South Ave. at E. Broad St.	1996[1], 2006[3], **2011[9]**
St. Paul St. at E. Main St.	1989[1], 2006[3], **2011[9]**
St. Paul St. at Mortimer St.	1989[1], 2006[2]
St. Paul St. at Pleasant St.	2006[2]
St. Paul St. at Andrews St.	1989[1], 2006[2]
St. Paul St. at Inner Loop EB/Bittner St.	1997[1], 2006[2]
St. Paul St. at Inner Loop WB/Cumberland St.	1997[1], 2006[2]
S. Clinton Ave. at Woodbury Blvd.	1999[5], **2011[9]**
S. Clinton Ave. at Court St.	2010[4]
S. Clinton Ave. at E. Broad St.	1996[6], 2006[2], 2010[4]
N. Clinton Ave. at E. Main St.	2006[2], 2010[4]
N. Clinton Ave. at Mortimer St.	2004[1]-PM Only, 2006[2]
N. Clinton Ave. at Pleasant St.	2006[2]
N. Clinton Ave. at Andrews St.	2006[2], **2011[9]**
N. Clinton Ave. at Inner Loop EB	2000[7], 2006[2]
N. Clinton Ave. at Cumberland St.	2000[7], 2006[2]

Sources:
[1] Monroe County Dept. of Transportation (MCDOT)
[2] Kimley-Horn (Renaissance Square Traffic Analysis)
[3] FRA (Broad Street Aqueduct Project)
[4] Fisher Associates (Midtown Redevelopment)
[5] SRF Engineering (SE Loop Garage Project)
[6] Bergmann Associates (Project Unknown)
[7] Sear Brown Group (Inner Loop Reconstruction)
[8] Sear Brown Group (Project Unknown)
[9] Laberge Group (2-Way Conversion Study) - **Shown in Bold**

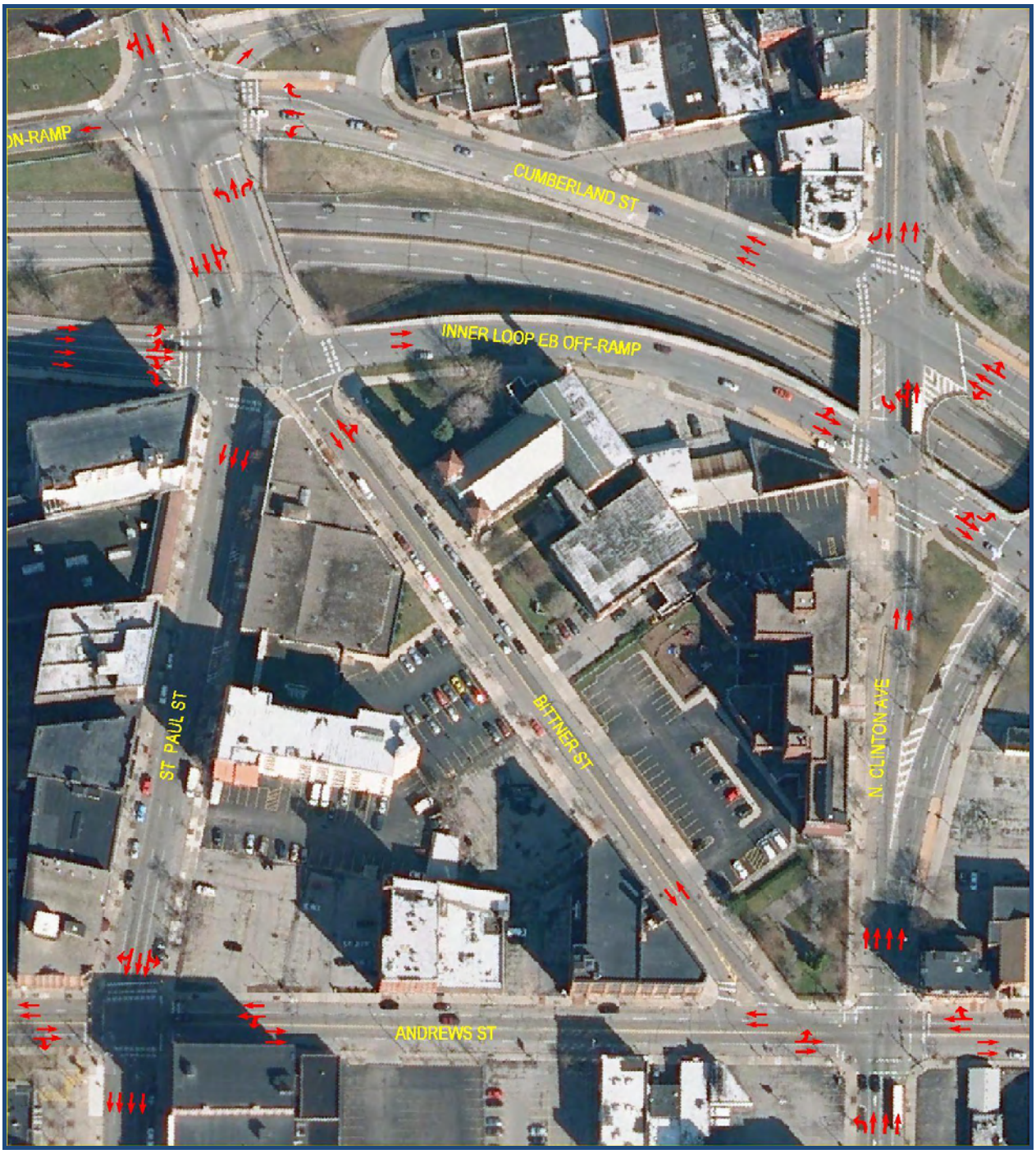
4.0 ROADWAY NETWORK

The Study Area is comprised of two major arterial corridors; the North/South Clinton Avenue corridor, a one-way roadway servicing northbound traffic; and the St. Paul Street/South Avenue corridor, a one-way roadway servicing southbound traffic. The speed limit on both these roadways is 30 mph and they range between two and four lanes wide between intersections. Both streets have intermittent on-street parking, several bus stops and are heavily traveled by bus traffic. There are pedestrian crossings at all intersections and at a couple of mid-block locations.

A description of the road network by blocks follows:

4.1 Cumberland Street to Andrews Street

Between Cumberland Street and Andrews Street, North Clinton splits from four lanes to two lanes with the other two lanes heading to Joseph Avenue. St. Paul Street is a three lane roadway with parking on both sides. Two-way traffic begins north of the Inner Loop Eastbound Ramp. Though Andrews Street has two lanes each direction, on-street parking effectively reduced the roadway to one lane per direction away from the intersections. Bittner Street is used as a significant cut-through route in the PM peak hour for commuters leaving the downtown area. See below for a graphical representation of the lane layout.



4.2 Andrews Street to Mortimer Street

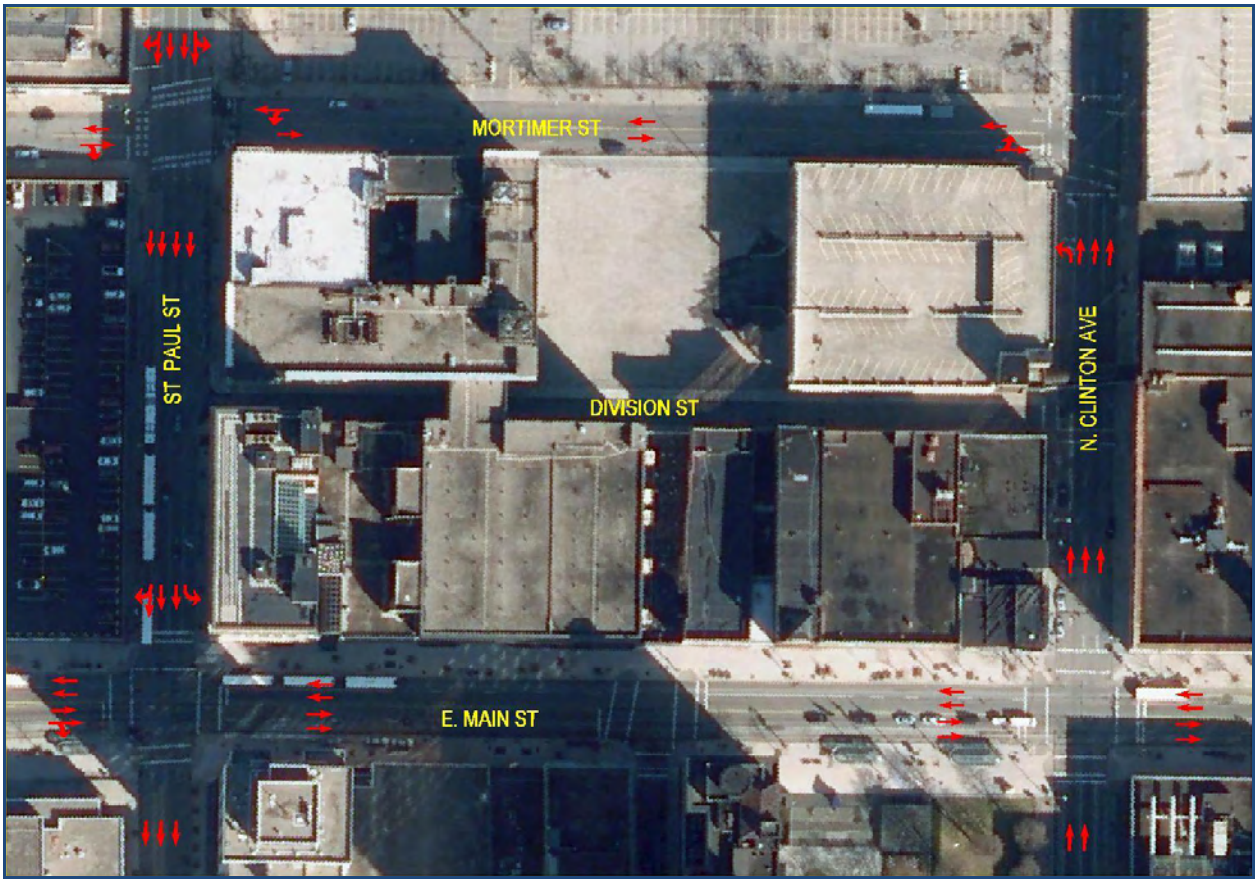
Between Andrews Street and Mortimer Street, North Clinton Avenue has three northbound through lanes with parking spread intermittently along the east side of the road. This parking ends near the intersections allowing for the formation of a small left turn lane at each. St. Paul Street has four lanes traveling southbound with parking on the east side of the roadway. However, transit vehicles stopped at bus stops and vehicles stopped to load and unload effectively limits any use of the rightmost lane (as you are traveling down the roadway) for through traffic. Both Pleasant Street and Mortimer Street are two lane roadways with one lane in either direction. Pleasant Street has no on-street parking, while Mortimer Street has parking on both sides of the roadway. The large parking lot between Mortimer and Pleasant is the proposed location for the new downtown transit center.

4.3 Mortimer Street to East Main Street

Between Mortimer Street and East Main Street, North Clinton Avenue has three full travel lanes with parking on the west side of the road between East Main Street and Division Street. Parking ends north of Division Street allowing for a short left turn lane to be formed at Mortimer Street. There is a heavily utilized bus stop along this block, which tends to reduce capacity of the rightmost lane. This stop was relocated from just south of East Main Street in Fall 2010 to accommodate Midtown Redevelopment construction. Service to this and other major stops in the vicinity of East Main Street will be relocated to the new RTS Transit Center when it opens in the Fall of 2013.

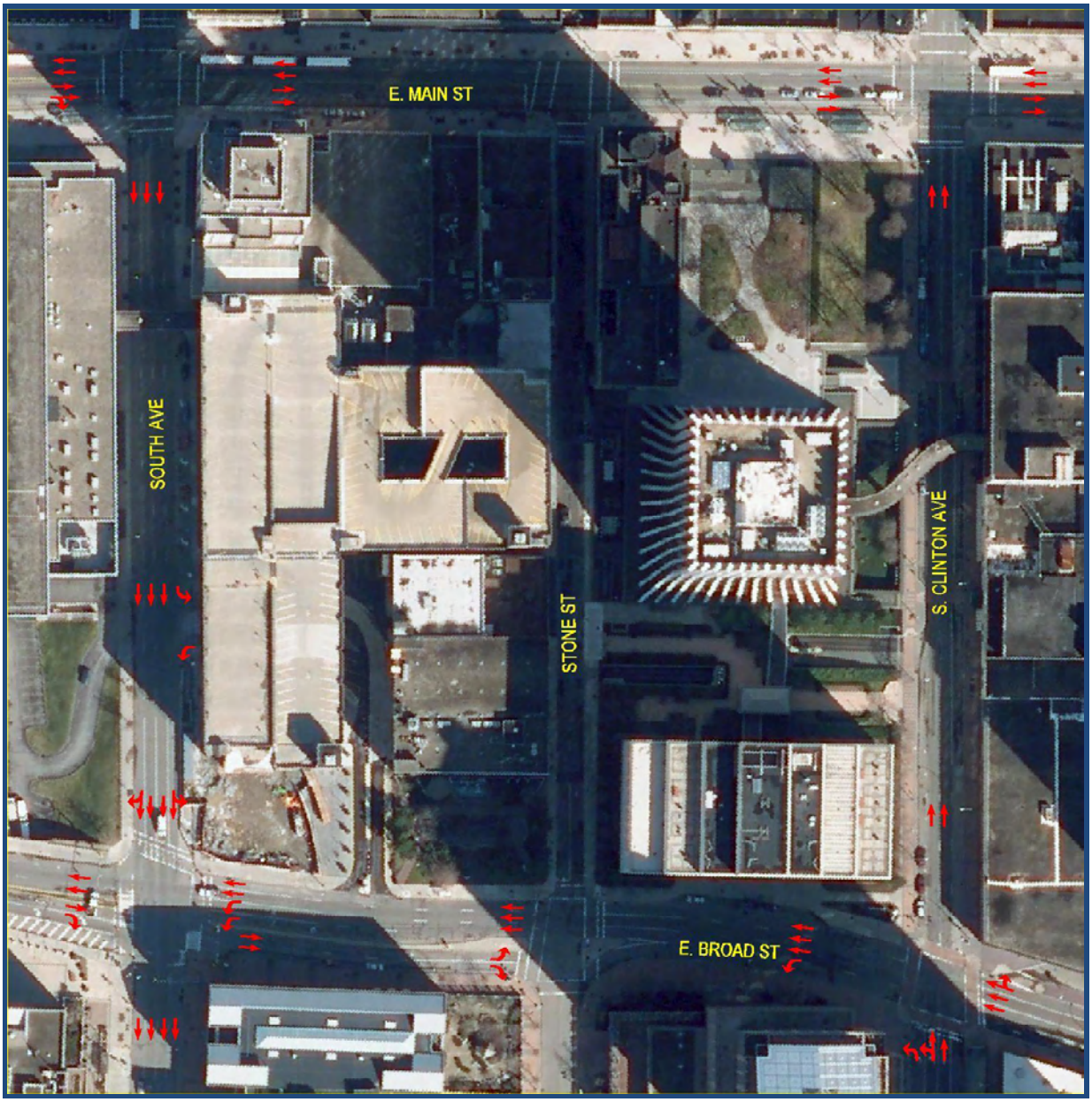
St. Paul Street has four lanes in this area. North of Division Street there is parking adjacent to the leftmost travel lane. This parking ends south of Division Street to form a left turn lane at the intersection. The roadway narrows at that point, so four lanes are still maintained (three through lanes and the left turn lane). There is a major transit stop along this block where buses routinely queue awaiting passengers. This effectively turns the rightmost travel lane into a bus lane that provides very little capacity for other vehicular traffic.

East Main Street is a four lane roadway, with two lanes in each direction. The rightmost lane in both directions has been designated as a bus lane/right turn lane leaving just one through lane per direction for through traffic. East Main Street is a major transit route and hosts the busiest bus stops within the downtown area. At the intersection of North Clinton Avenue and East Main Street signing has been placed to restrict any turning traffic between the hours of 7:30 am and 6:00 pm.



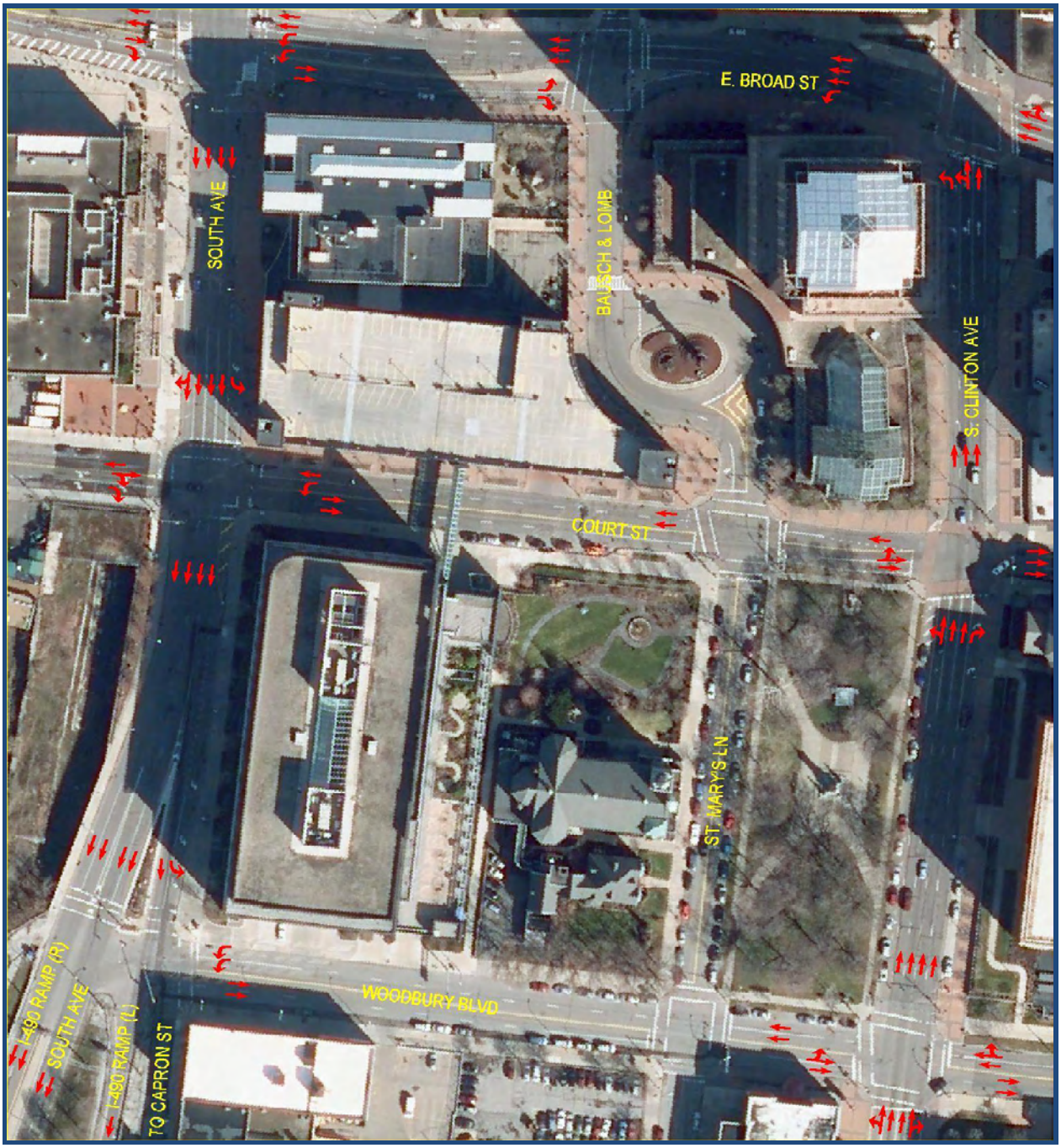
4.4 East Main Street to East Broad Street

South Clinton Street between East Main Street and East Broad Street is a two lane northbound roadway. There is parking on the west side of the road with curb bulbouts that provide some protection. On the east side of the road, construction on the new Midtown development is ongoing and concrete barriers line the roadway. It is anticipated that a parking lane with bulbouts will be present once construction is complete. There is a mid-block pedestrian crossing along this roadway segment. South Avenue along this block is a three lane southbound roadway. A left turn lane is picked up midblock to service the South Avenue Garage. This fourth lane is dropped at the garage, but reemerges from the garage exit to yield four lanes southbound at the East Broad Street Intersection. East Broad Street is a one way roadway at the South Clinton Avenue Intersection, but switches to two-way traffic from the Stone Street Intersection to the west. It should be noted that the Midtown Redevelopment project proposes to switch East Broad Street to two-way operations east of Clinton Avenue and possibly all the way to Stone Street in the future.



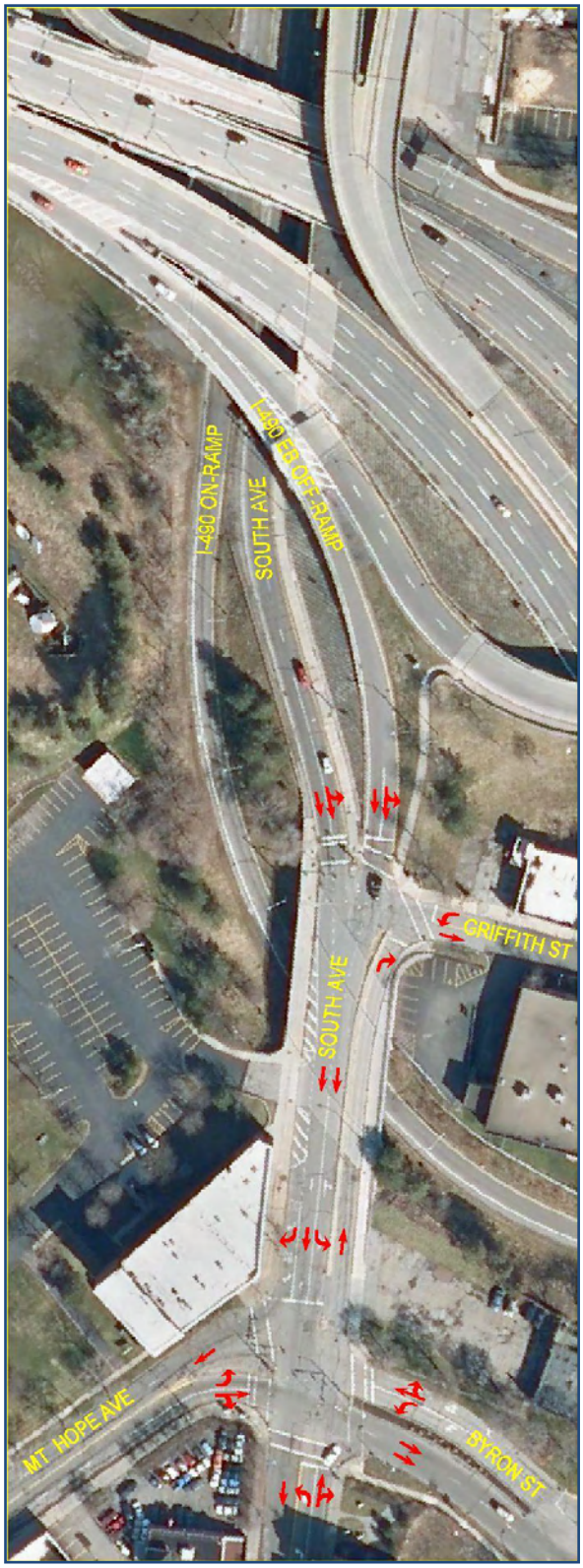
4.5 East Broad Street to Woodbury Boulevard

South Clinton Avenue between Woodbury Boulevard and Court Street is a four lane northbound roadway. It drops to three lanes between Court Street and East Broad Street. Parking on South Clinton occurs on the west side between Woodbury Boulevard and Court Street, and in a small bulbout on the east side of that block. South Avenue is a four lane southbound roadway between East Broad Street and Woodbury Boulevard, but an additional left turn lane is added at its intersection with Court Street. At the Intersection of South Avenue and Woodbury Boulevard, it splits into six southbound lanes; two lanes enter I-490 from on the right side, one lane enters I-490 on the left side, two lanes continue south on South Avenue and one lane is designated as a left turn lane onto Woodbury Boulevard.



4.6 Woodbury Boulevard to Mount Hope Avenue/Byron Street

South Avenue returns to two way operations south of Griffith Street. Between Woodbury Boulevard (located immediately to the north of the intersections shown in the figure to the right) and Byron St. is an interchange with I-490 eastbound, whose on and off ramps are directly accessed by South Avenue. At the South Avenue intersection with Griffith Street, both South Avenue and the I-490 Off-Ramp have two lanes southbound and Griffith Street has a single lane in each direction, though traffic from Griffith is only allowed to turn left at the intersection because of the northern roads being one way southbound. However,, future it is planned in the near future to restripe these lanes such that only one lane comes off of the I-490 ramp and only one through lane southbound will be present at the Mt. Hope Avenue/Byron Street intersection. This will change the second southbound through lane to an exclusive left turn lane in the future.



South Avenue in the area of I-490 loses its downtown character. Though there is an adjacent sidewalk for most of the length, the access point to that sidewalk at Woodbury Blvd. is away from the roadway and not readily apparent making pedestrian and bicycle access to the roadway more difficult.

There is no parking on South Avenue between Mt. Hope Avenue and Woodbury Blvd, but on-street parking is present on both Mt. Hope Avenue and South Avenue at points south of that location.

Please see figure to the right for a graphical depiction of the lane arrangement for this area.

Though not pictured to the right, South Clinton Avenue between Woodbury Blvd and Byron Street is a one-way northbound roadway. At Woodbury Blvd, four lanes exist on the northbound approach. Two of these lanes travel from Byron Street and the other two lanes are picked up mid-block from the I-490 westbound off-ramp.

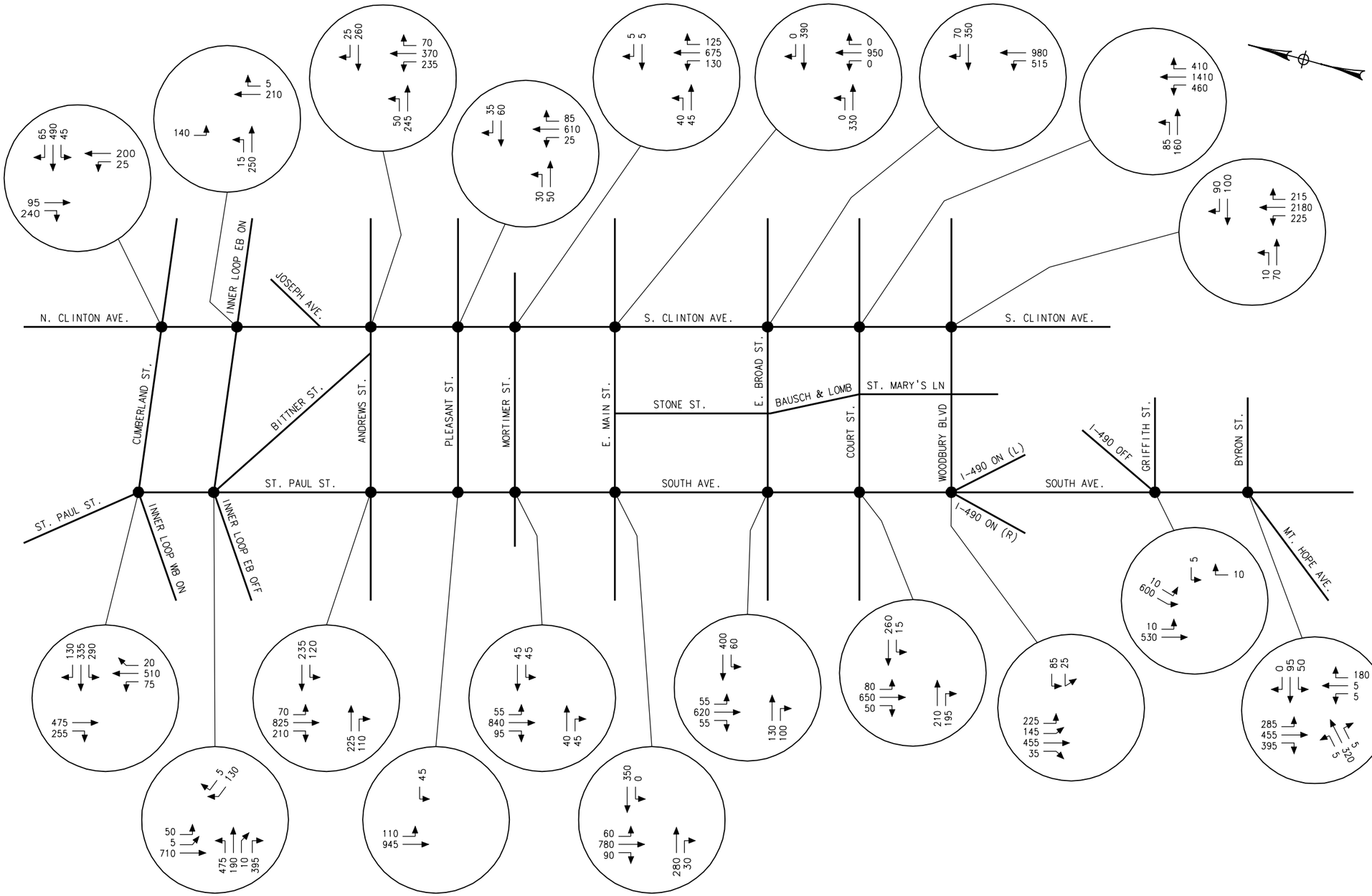
5.0 EXISTING TRAFFIC VOLUMES

As discussed in Section 3.2, traffic count data was obtained from a variety of sources and was collected over a number of years. Consolidating and adjusting this data to create peak hour traffic volumes that accurately reflect 2011 conditions involved several steps. First, the Genesee Transportation Council (GTC) was consulted and past counts were reviewed to determine historic and projected traffic growth rates for the area. The information examined indicated that traffic over the last decade has remained relatively constant, and has even declined at some locations. The GTC's projections for traffic growth appear to reflect this general trend as well. Based on their travel demand model, traffic growth in this area is projected to be about 0.2% per year over the next 25 years, exclusive of any major developments planned within the study area. This translates to an estimated increase of only 5% in the year 2035.

Recognizing that traffic volumes have not increased over the past few years and that traffic counts have been conducted at almost all the studied intersections over the last 5 years, no adjustments were made to the counts for annual traffic growth. Knowing that traffic volumes fluctuate on a daily basis and certain blocks should see little to no change in volume between adjacent intersections, the available traffic volume information was "balanced" to reflect volumes for the AM and PM peak hours on a typical day. For instance, South Avenue between Woodbury Boulevard and Griffith Street has no development that would draw or add traffic to the roadway. Thus, the magnitude of traffic volume leaving the Woodbury Boulevard intersection should equal what arrives at the Griffith Street intersection. This could be done for much of the St. Paul Street/South Avenue corridor except for between East Main Street and East Broad Street, where the South Avenue Garage causes a noticeable mid-block volume change. For the North/South Clinton Avenue corridor, the Clinton Square and Mortimer Street Parking Garages cause significant changes in mid-block traffic, but the other blocks of that corridor see little to no mid-block change and were balanced accordingly. All balancing considered the most recent counts as the most representative of current traffic volumes, so more weight was given to the traffic counts conducted in 2011.

As much of the parking access for the downtown occurs along the side streets, all side streets from the Inner Loop eastbound ramps to Woodbury Boulevard saw mid-block traffic variations and were not balanced as a result. For these locations, the available count data was reviewed to determine the most likely change in traffic volumes as a result of these mid-block locations, and adjustments were made accordingly.

The resulting AM Peak Hour Traffic Volumes and PM Peak Hour Traffic Volumes used in the analysis for this study are shown in Figures 1 and 2 respectively, on the following pages.



DATE: JUNE 27, 2011

SCALE: N/A

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FIGURE 1
2011 AM PEAK HOUR TRAFFIC VOLUMES

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ST. PAUL STREET/SOUTH AVENUE
CITY OF ROCHESTER, NEW YORK

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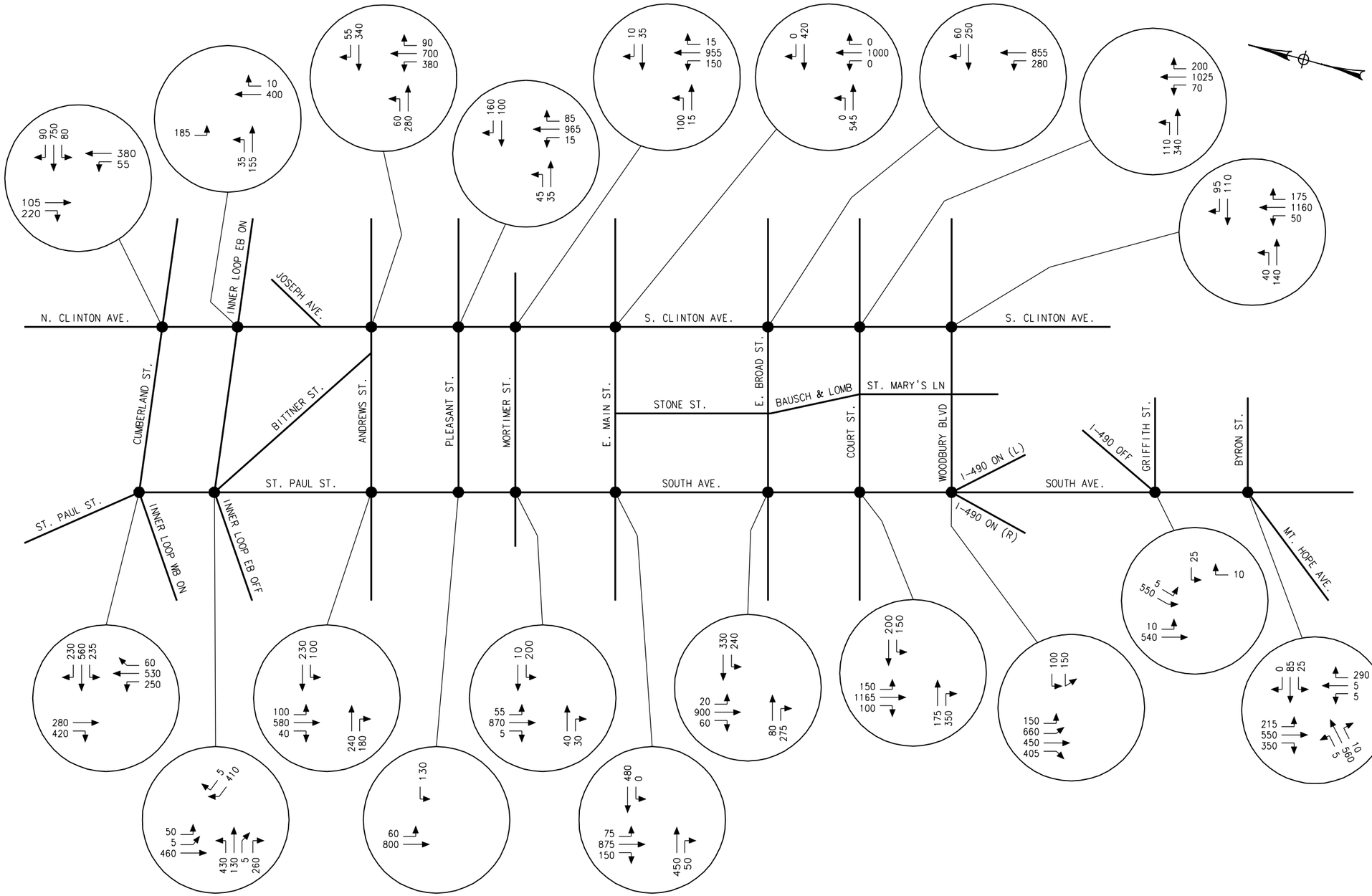

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SCALE:	N/A

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FIGURE 2
2011 PM PEAK HOUR TRAFFIC VOLUMES

TWO-WAY CONVERSION STUDY
NORTH/SOUTH CLINTON AVENUE &
ST. PAUL STREET/SOUTH AVENUE
CITY OF ROCHESTER, NEW YORK

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6.0 PEDESTRIANS AND BICYCLES

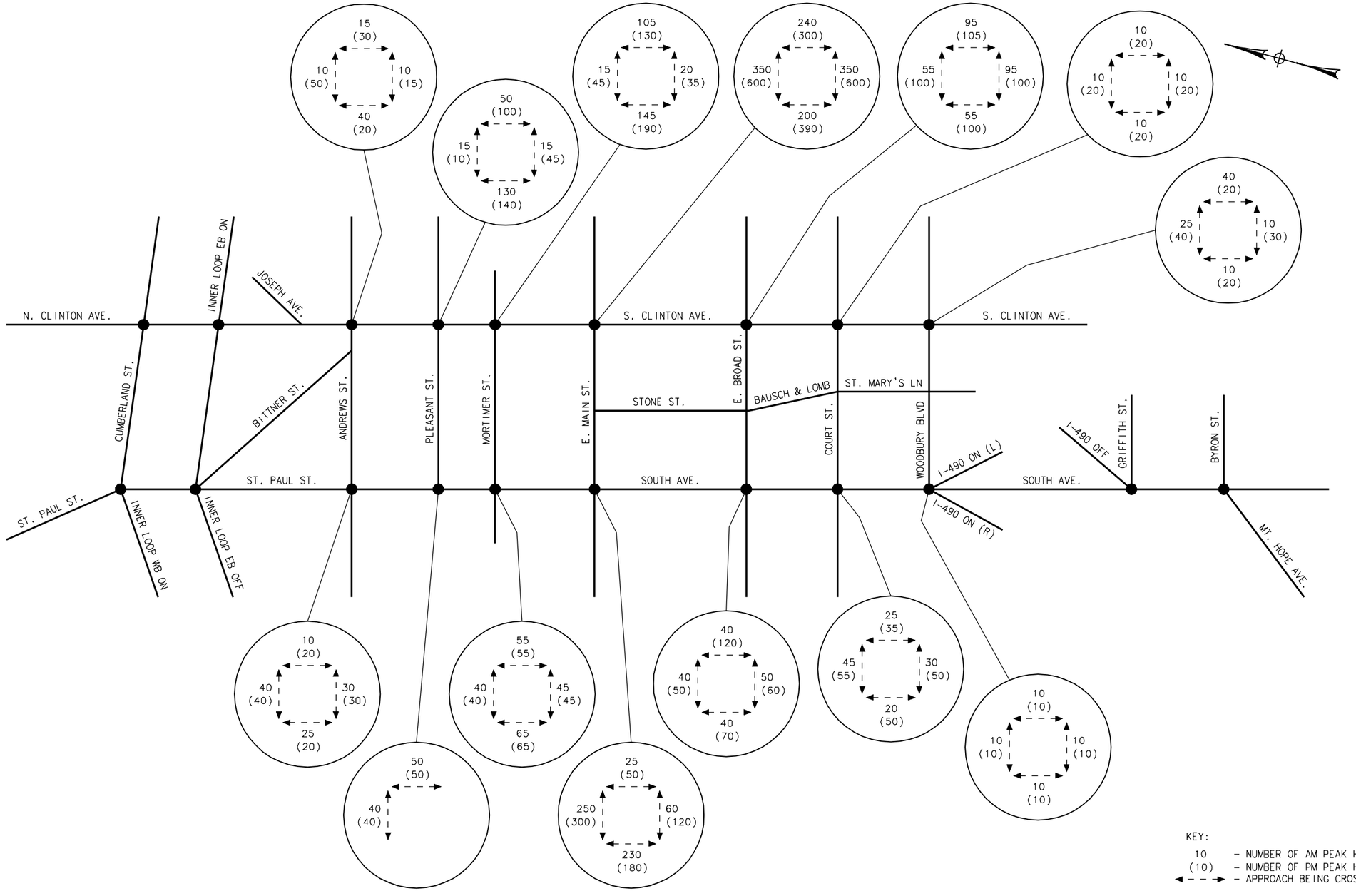
Pedestrian and bicycle counts were conducted at select locations in April 2011. Pedestrian volume information from other traffic studies was also reviewed. The data indicates that the Rochester Downtown area has significant pedestrian traffic with most intersections seeing between 100 and 500 pedestrians in the peak hours. The highest of these volumes occur where transit usage is the highest. In fact, at the East Main Street intersections, which see the highest downtown transit usage, the magnitude of pedestrians is extremely elevated with over 500 peak hour pedestrians at St. Paul Street and between 1,000 and 2,000 pedestrians at the North Clinton Avenue Intersection. However, this number of existing pedestrians is related to the use of these stops as bus transfer locations. The RTS Transit Center, once constructed in 2013, will eliminate the need for these transfers in the future, thus reducing the number of pedestrian crossings seen. The existing pedestrian traffic is shown on Figure 3.

Concerning bicycles, it was observed that between 2 and 18 bicycles crossings occurred per peak hour at each the four recently counted intersections. However, field conditions during the timeframe of the counts included sporadically rainy weather that may have skewed observations away from typical activity, as fewer pedestrians and bicycles are typically seen during inclement weather. A summary of the bicycle crossings observed is in Table 2 below.

TABLE 2
Peak Hour Bicycle Traffic Summary

Intersection	AM PEAK HOUR		PM PEAK HOUR	
	East-West Crossings	North-South Crossings	East-West Crossings	North-South Crossings
S. Clinton Ave. at Woodbury Blvd.	8	7	12	6
N. Clinton Ave. at Andrews St.	1	1	0	4
South Ave. at E. Broad St.	9	4	5	9
St. Paul St. at E. Main St.	5	1	2	3

As bicycle observations were not available for all of the other intersections being studied and the observations that were conducted were all generally similar in magnitude, it was assumed for the capacity analysis that all the studied intersections will experience the same level of bicycle activity during the peak hours. Given the bicycle volumes observed, it was determined that using 5 bicycle crossings per approach (20 crossings per 4-legged intersection) for each of the intersections during the peak hours would be a close and reasonable approximation of bicycle traffic at each and would account for any underrepresentation because of weather at the time of the observations.



KEY:

10 – NUMBER OF AM PEAK HOUR PEDESTRIAN CROSSINGS
(10) – NUMBER OF PM PEAK HOUR PEDESTRIAN CROSSINGS
◄ - - - ► – APPROACH BEING CROSSED

DATE: JUNE 27, 2011

SCALE: N/A

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FIGURE 3
2011 ESTIMATED PEDESTRIAN TRAFFIC

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ST. PAUL STREET/SOUTH AVENUE
CITY OF ROCHESTER, NEW YORK

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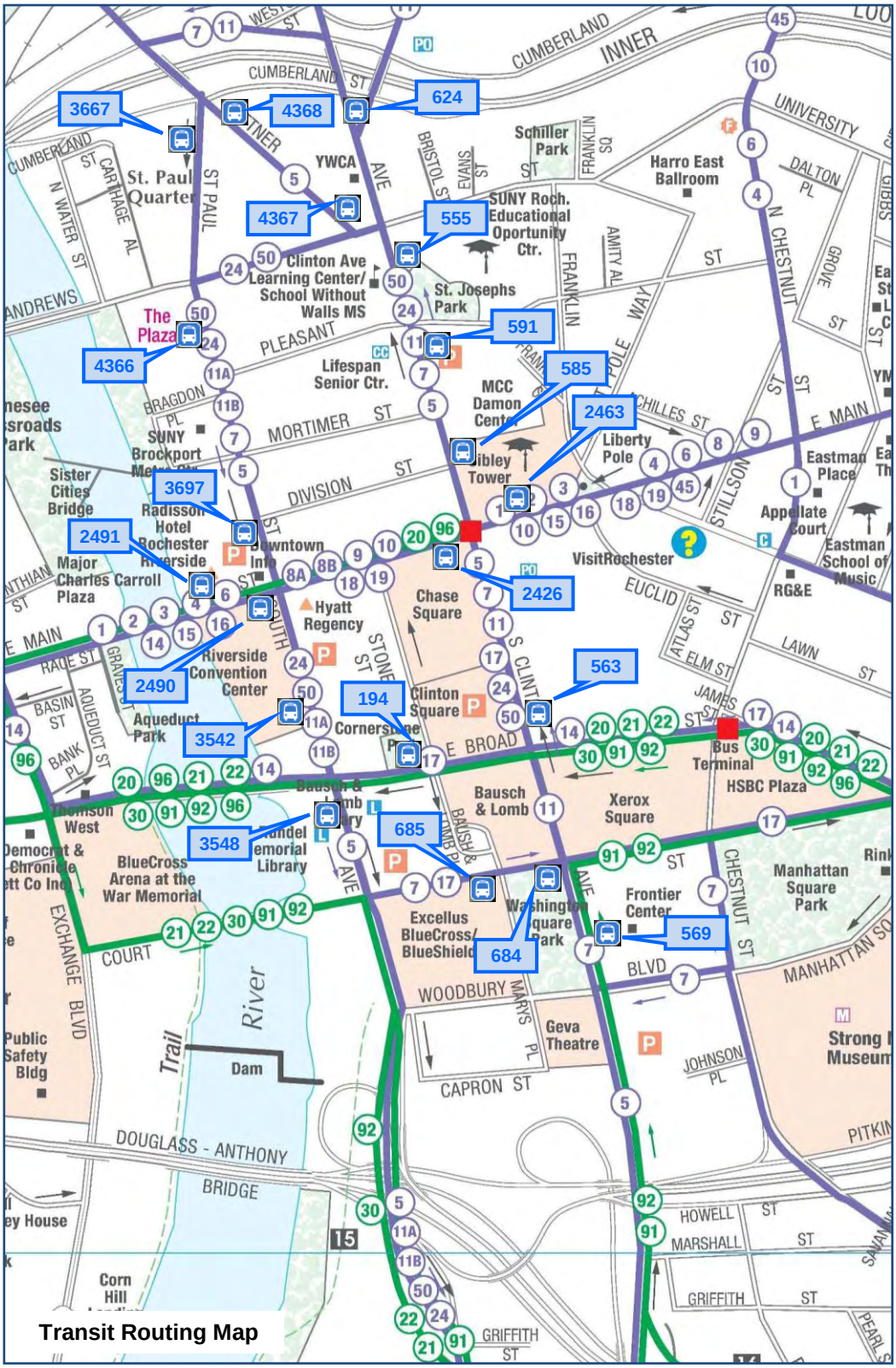
7.0 TRANSIT OPERATIONS

Significant transit activity occurs in downtown Rochester, with more than two dozen transit routes available. There are more than 20 bus stops within the study area and ridership accounts for nearly 10,000 boardings (people entering the bus) and over 8,500 alightings (people exiting the bus) at those stops each day. Much of the transit activity is centered around East Main Street, which serves as the route transfer area downtown with the Central Information Shelter for the Regional Transit Service (RTS) being located along East Main Street, just west of North Clinton Avenue. The current downtown bus stops and a summary of the average number of boardings and alightings at each are summarized in Table 3.

TABLE 3
Bus Stop Boardings/Alightings Summary

Stop Name	Stop ID	Average Daily Boardings	Average Daily Alightings
Clinton & Cumberland	624	1	4
Clinton & Andrews	555	14	6
Clinton & Pleasant	591	40	27
Clinton & Main Northbound (Shelter)	585	unk	unk
Clinton & Broad	563	0	1
Clinton & Court	569	43	242
Bittner & Andrews	4367	8	8
Bittner & Cumberland	4368	1	1
St Paul & Cumberland	3667	2	7
St Paul & Plaza Apts (Shelter)	4366	57	94
St Paul & Main (Shelter)	3697	1886	1473
South & Broad	3542	238	20
South & Court (Shelter)	3548	160	45
Main & South (Shelter)	2490	800	1867
Main & Clinton Eastbound (Shelter)	2426	2520	2864
Main & Clinton Westbound (Shelter)	2463	2261	1121
Main & St Paul (Shelter)	2491	1495	774
Broad & Stone (Shelter)	194	55	30
Court & Saint Marys	685	18	8
Court & Clinton	684	22	2

Of these boardings and alightings, between 6% and 8% will typically occur per peak hour in both the morning and afternoon. As indicated above, 9 of the 20 stops have shelters, the others do not. A map showing the general transit routing through the study area (by route number) and each of the stop locations listed above can be found on the next page. Bus Stops are shown in blue with their Stop ID.



Courtesy of Rochester Genesee Regional Transportation Authority

It should be noted though that the bus stops shown above will be changed in the future to accommodate the RTS Transit Center, which will be constructed along Mortimer Street by the Fall of 2013. Once completed, the Transit Center will serve as a central focal point for bus transfers. This will result in a reduced need for and possible elimination of Stops #2426, #2491, #3697, #2463, #585 & #591.

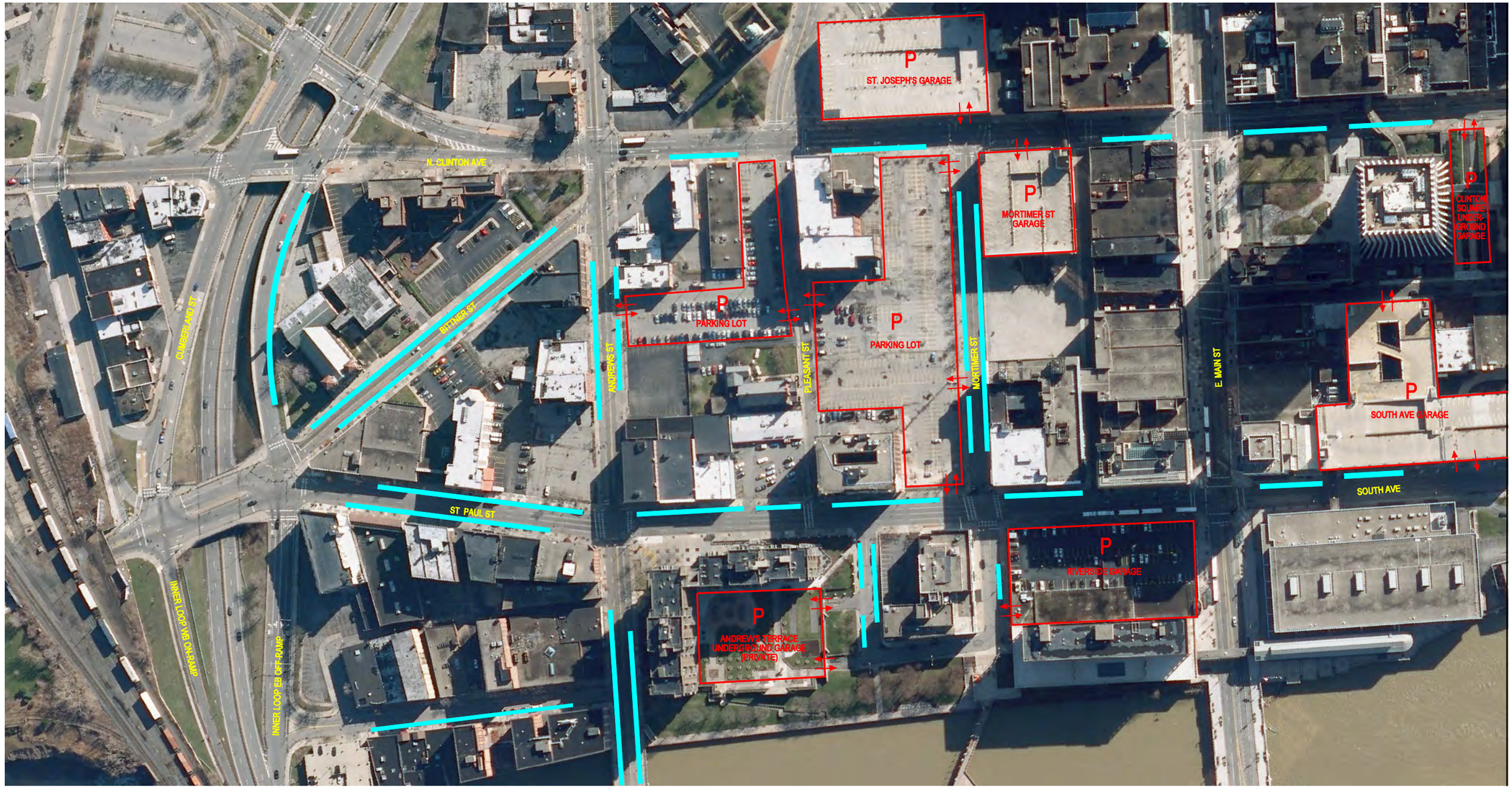
8.0 PARKING OPERATIONS

Parking within the Study Area is comprised of on-street public parking, off-street public parking (both surface lots and garages), and off-street private parking (both surface lots and garages). The on-street parking is predominantly pay parking, with a combination of on-street meters and "Pay and Display" being used. "Pay and Display" is a term to represent a pay parking system where a user would pay for parking at a designated on-street pay station and display the receipt in the front window of their vehicle during the valid period. On-Street parking is generally limited to a 2-hour parking limit.

For off-street parking, there are six garages available for public use and at least three additional garages restricted for private use, there are at least three major surface lots for public use and several smaller surface lots used for private businesses. There is also an expansion of the Washington Square Garage being proposed. In addition, once the Midtown Redevelopment is complete, another 1,800 space parking garage and additional on-street parking will also be available for use.

Overall, based on information from the Comprehensive Downtown Parking Study completed by Walker Parking Consultants in 2008, there are approximately 4,700 total existing parking spaces within the blocks designated as the Study Area for the Two-Way Conversion Study. Approximately 225 of those spaces are short term on-street parking and the remainder is comprised of a combination of public and private off-street locations. Based on data from that 2008 Parking Study, the difference between parking supply and parking demand within the Study Area is over 1,900 spaces on a typical weekday, meaning parking is generally only 60% occupied within the Study Area. This does varies by block though, with some blocks seeing parking occupancy over 80%, and with some individual parking garages being at capacity. In addition, the future RTS Transit Center will replace one of the larger surface lots within the north side of the study area (along Mortimer St.). This will reduce the parking capacity in that area.

Figures 4A & 4B depict the general locations of on-street parking as well as the locations of the major parking garages and surface lots within the Study Area.



MATCHLINE A

KEY:

- GENERAL AREA OF ON-STREET PARKING
- P — MAJOR PARKING GARAGE OR SURFACE LOT
- ACCESS POINT TO PARKING AREA

DATE: JULY 22, 2011

SCALE: 1"=200' APPROX.

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FIGURE 4A – NORTHERN SECTION PARKING OVERVIEW

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ST. PAUL STREET/SOUTH AVENUE
CITY OF ROCHESTER, NEW YORK

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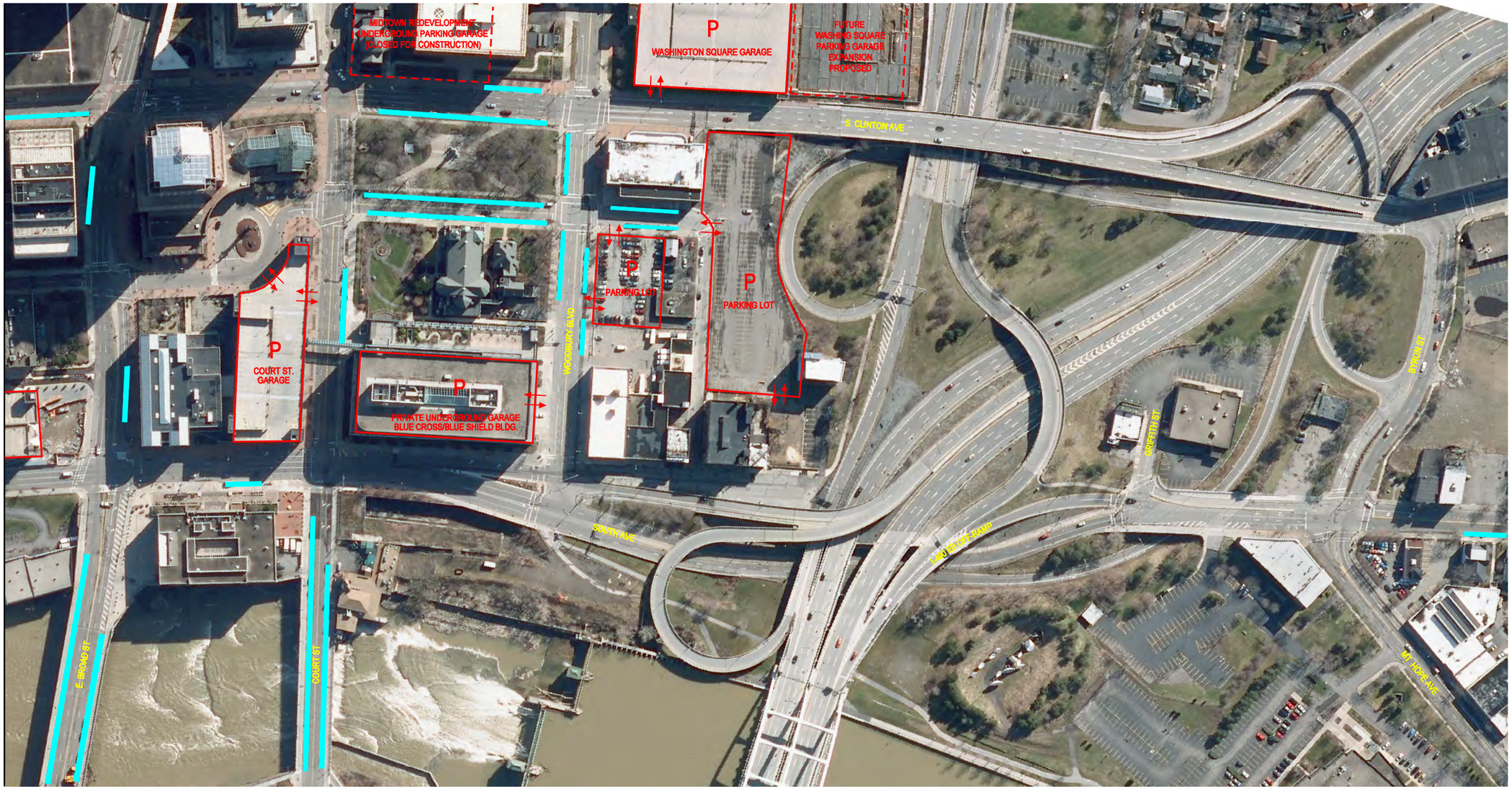

MATCHLINE A

KEY:

- GENERAL AREA OF ON-STREET PARKING
- P — MAJOR PARKING GARAGE OR SURFACE LOT
- ACCESS POINT TO PARKING AREA
- FUTURE DEVELOPMENT OF MAJOR PARKING GARAGE

DATE: JULY 22, 2011

SCALE: 1"=200' APPROX.

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FIGURE 4B – SOUTHERN SECTION PARKING OVERVIEW

TWO-WAY CONVERSION STUDY
NORTH/SOUTH CLINTON AVENUE &
ST. PAUL STREET/SOUTH AVENUE
CITY OF ROCHESTER, NEW YORK

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9.0 ACCIDENT HISTORY

A review of accidents within the project area was conducted to assess areas where a change from one-way to two-way operations may be problematic with regards to safety. The review included accident data for the full three year period from January 1, 2008 through December 31, 2010. The data shows that 305 accidents occurred at the 20 intersections being studied. Of those accidents, there were no fatalities, 99 involved an injury, 115 involved property damage only (PDO) and 91 were non-reportable, meaning there was less than $400 of property damage. A breakdown of the Accident Severity by intersection is found in Table 4.

TABLE 4
Intersection Accident Severity Summary

Intersection	Total Accidents	Fatality	Injury	PDO	Non-Reportable
South Ave. at Mt. Hope Ave./Byron St.	16	0	5	7	4
South Ave. at Griffith /I-490 EB Off-Ramp	1	0	0	0	1
South Ave. at Woodbury Blvd	9	0	5	4	0
South Ave. at Court St.	22	0	7	7	8
South Ave. at E. Broad St.	16	0	7	8	1
St. Paul St. at E. Main St.	38	0	10	13	15
St. Paul St. at Mortimer St.	4	0	0	2	2
St. Paul St. at Pleasant St.	10	0	3	6	1
St. Paul St. at Andrews St.	18	0	4	6	8
St. Paul St. at Inner Loop EB/Bittner St.	25	0	9	8	8
St. Paul St. at Inner Loop WB/Cumberland St.	4	0	0	4	0
S. Clinton Ave. at Woodbury Blvd.	21	0	7	9	5
S. Clinton Ave. at Court St.	27	0	8	11	8
S. Clinton Ave. at E. Broad St.	6	0	1	2	3
N. Clinton Ave. at E. Main St.	35	0	14	10	11
N. Clinton Ave. at Mortimer St.	5	0	1	2	2
N. Clinton Ave. at Pleasant St.	14	0	4	5	5
N. Clinton Ave. at Andrews St.	22	0	9	4	9
N. Clinton Ave. at Inner Loop EB	1	0	1	0	0
N. Clinton Ave. at Cumberland St.	11	0	4	7	0

Investigating these accidents in more detail, they can be grouped by accident type to help identify any patterns that may indicate a geometric or operational concern. The accident types at each of the studied intersections are summarized in Table 5.

TABLE 5
Intersection Accident Type Summary

Intersection	Head-on	Rear End	Turning (Left or Right)	Right Angle	Overtaking	Sideswipe	Fixed Object	Pedestrian/Bicycle	Other/Unknown
South Ave. at Mt. Hope Ave./Byron St.	0	4	1	2	3	0	2	0	4
South Ave. at Griffith /I-490 EB Off-Ramp	0	0	0	0	0	0	1	0	0
South Ave. at Woodbury Blvd	0	0	0	2	1	0	1	0	5
South Ave. at Court St.	0	1	3	3	7	0	0	3	5
South Ave. at E. Broad St.	0	3	1	3	5	0	0	2	2
St. Paul St. at E. Main St.	1	11	2	6	7	1	0	3	7
St. Paul St. at Mortimer St.	0	0	0	0	2	0	1	0	1
St. Paul St. at Pleasant St.	0	0	1	0	5	0	0	0	4
St. Paul St. at Andrews St.	0	2	4	1	2	1	0	1	7
St. Paul St. at Inner Loop EB/Bittner St.	0	6	4	5	2	0	4	0	4
St. Paul St. at Inner Loop WB/Cumberland St.	0	0	0	0	1	0	3	0	0
S. Clinton Ave. at Woodbury Blvd.	0	3	2	4	3	1	0	2	6
S. Clinton Ave. at Court St.	0	2	1	9	10	0	0	0	5
S. Clinton Ave. at E. Broad St.	0	0	0	4	1	0	0	0	1
N. Clinton Ave. at E. Main St.	0	9	1	3	5	0	1	7	9
N. Clinton Ave. at Mortimer St.	0	0	0	0	1	0	0	0	4
N. Clinton Ave. at Pleasant St.	0	3	1	2	1	0	0	1	6
N. Clinton Ave. at Andrews St.	0	2	1	6	4	0	1	1	7
N. Clinton Ave. at Inner Loop EB	0	0	1	0	0	0	0	0	0
N. Clinton Ave. at Cumberland St.	0	0	2	1	2	0	0	0	6

The main indicator of potential concern would be the accident rate at a particular location. Accident rates are measured in terms of number of accidents per million entering vehicles (MEV) at an intersection. Accident rates can also be calculated along roadway links in terms of accidents per million vehicle miles (MVM) traveled, but because of the short block lengths within a downtown area, even a small number of accidents can result in extremely high rates that may not be indicative of any real problem. The accident rate for links is better considered when applied to longer stretches of roadway with few intersections. Because of this, this study will focus on the intersection accident rates only. Intersection accident rates within a downtown area will still tend to be much higher than similar intersections outside of a central business district because of the numerous conflicts (parked cars, pedestrians, bicycles, etc.) associated with these areas, but comparing the intersection accident rates from intersection to intersection, and to the

average rate within the downtown area, the intersections with the highest rates can be identified. Intersection accident rates calculated for the Study Area intersections are shown in Table 6 below.

TABLE 6
Intersection Accident Rate Summary

Intersection	Total Accidents	Accident Rate (Accidents/MEV)
South Ave. at Mt. Hope Ave./Byron St.	16	0.68
South Ave. at Griffith /I-490 EB Off-Ramp	1	0.08
South Ave. at Woodbury Blvd	9	0.29
South Ave. at Court St.	22	0.77
South Ave. at E. Broad St.	16	0.75
St. Paul St. at E. Main St.	**38**	**1.30**
St. Paul St. at Mortimer St.	4	0.28
St. Paul St. at Pleasant St.	10	0.76
St. Paul St. at Andrews St.	18	0.69
St. Paul St. at Inner Loop EB/Bittner St.	25	1.01
St. Paul St. at Inner Loop WB/Cumberland St.	4	0.14
S. Clinton Ave. at Woodbury Blvd.	21	0.77
S. Clinton Ave. at Court St.	27	0.95
S. Clinton Ave. at E. Broad St.	6	0.29
N. Clinton Ave. at E. Main St.	**35**	**1.36**
N. Clinton Ave. at Mortimer St.	5	0.35
N. Clinton Ave. at Pleasant St.	14	0.90
N. Clinton Ave. at Andrews St.	22	0.96
N. Clinton Ave. at Inner Loop EB	1	0.10
N. Clinton Ave. at Cumberland St.	11	0.59

The average accident rate for the studied intersections within the downtown area is 0.65 accidents per million entering vehicles. Though 12 of the 20 intersections exceed this rate, only two of the intersections stand out as twice the area's average rate or more. Those intersections are:

- St. Paul Street at East Main Street
- North Clinton Avenue at East Main Street

In looking at the accident types present, these intersections both see a high number of both rear end and pedestrian/bicycle accidents. Given the significant transit activity at these locations and the pedestrians associated with that activity, it appears that pedestrian conflicts and vehicles stopping unexpectedly for those conflicts may be the contributing factor to the increased rates. The only other noteworthy rate, is at St. Paul St. and the Inner Loop/Bittner Street intersection. The elevated rate at that location can most likely be attributed to the 5-legged intersection geometry and the confusion it may present.

10.0 OPERATIONAL ANALYSIS

The operating conditions of transportation facilities are evaluated based on the relationship of existing or projected traffic volumes to the theoretical capacity of the highway facility. Various factors affect capacity including traffic volume, travel speed, roadway geometry, grade, number and width of travel lanes and intersection control. The current standards for evaluating capacity and operating conditions are contained in the *Highway Capacity Manual*, published by the Transportation Research Board. The procedures describe operating conditions in terms of Level of Service (LOS). In general, "A" represents the best operating condition and "F" represents the worst. Level of service "D" or better normally represents acceptable operating conditions during peak periods.

To determine the impact of the proposed two-way conversion on the operations of the adjacent transportation system, traffic operations will be analyzed for both the weekday AM and PM peak hour conditions under existing, future no-build and future build conditions. The traffic operations for the existing conditions within the study area are presented in this report. The operational analyses for the future conditions will be presented in the Feasibility Assessment Report which will subsequently be developed. The existing traffic conditions for the intersections within the study area are discussed below and capacity analysis results are summarized in 2011 Existing Peak Hour Level of Service Summary shown in Table 7 at the end of this section. The computation worksheets for the capacity analysis are provided in Appendix A.

10.1 St. Paul Street/South Avenue Corridor Operations

Operations at the intersections within this corridor are all within an acceptable range. Overall intersection levels of service range between LOS A and LOS C in the AM Peak Hour, and LOS B to LOS D in the PM Peak Hour. For the individual approaches to the intersections, all but one approach within the entire corridor operate at LOS D or better in both peak hours. The only approach that shows a poor level of service is the northwest-bound Bittner Street approach at St. Paul Street, which operated at LOS E with an estimated average delay of 65.4 seconds per vehicle in the PM Peak Hour.

The Corridor itself was evaluated as an urban street using the methodologies outlined in the *Highway Capacity Manual* to get an overall Arterial Level of Service based on average travel speed through the corridor. The result was that the St. Paul Street/South Avenue corridor as a whole experiences LOS D in both peak hours with an average travel speed of 12.7 miles per hour (mph) in the AM Peak Hour and 11.2 mph in the PM Peak Hour.

10.2 North/South Clinton Corridor Operations

Operations at the intersections within this corridor also operate within acceptable ranges for both the AM and PM Peak Hours. Overall the intersections experience LOS A to LOS D in the AM Peak Hour and LOS A to LOS C in the PM Peak Hour. All intersection approaches within this corridor operate at LOS D or better. The corridor overall experiences an arterial level of service of LOS C in the AM Peak Hour and LOS D in the PM Peak hour with average travel speeds of 13.6 mph and 12.1 mph respectively.

TABLE 7
2011 Existing Peak Hour Level of Service Summary

Intersection	Approach	AM Peak Hour LOS(delay)	PM Peak Hour LOS(delay)
South Ave. at Mt. Hope Ave./ Byron St.	NB	A (6.2)	B (10.8)
	SB	A (8.5)	C (20.3)
	EB	C (20.8)	B (19.6)
	WB	B (19.7)	B (15.8)
	Overall	**B (11.5)**	**B (18.4)**
South Ave. at Griffith/I-490 EB Off-Ramp	NB	C (27.4)	C (27.5)
	SB	B (11.1)	B (14.4)
	SW	C (21.8)	B (17.9)
	WB	C (28.9)	C (29.0)
	Overall	**B (16.9)**	**B (16.6)**
South Ave. at Woodbury Blvd	SB	A (1.4)	A (8.9)
	WB	D (40.0)	D (44.8)
	Overall	**A (5.8)**	**B (13.6)**
South Ave. at Court St.	SB	A (6.5)	B (15.2)
	EB	B (17.2)	D (39.2)
	WB	A (7.9)	C (20.8)
	Overall	**A (9.7)**	**C (21.6)**
South Ave. at E. Broad St.	SB	A (8.8)	B (11.9)
	EB	C (28.9)	D (43.6)
	WB	B (17.1)	B (17.5)
	Overall	**B (14.7)**	**B (19.5)**
St. Paul St. at E. Main St.	SB	A (7.8)	B (13.0)
	EB	D (35.7)	D (36.2)
	WB	B (16.7)	C (23.3)
	Overall	**B (15.2)**	**C (21.0)**
St. Paul St. at Mortimer St.	SB	A (1.1)	B (10.7)
	EB	C (31.8)	C (22.3)
	WB	D (50.8)	C (27.3)
	Overall	**A (7.1)**	**B (14.1)**
St. Paul St. at Pleasant St.	SB	A (5.1)	A (4.9)
	WB	D (49.6)	D (46.6)
	Overall	**A (6.9)**	**B (10.4)**
St. Paul St. at Andrews St.	SB	C (20.2)	C (21.7)
	EB	C (20.8)	B (19.8)
	WB	C (28.9)	C (23.9)
	Overall	**C (22.0)**	**C (21.6)**
St. Paul St. at Inner Loop EB/ Bittner St.	SB	A (1.9)	A (0.9)
	EB	D (46.1)	D (37.6)
	NW	C (22.3)	E (65.4)
	Overall	**C (27.3)**	**C (33.4)**
St. Paul St. at Inner Loop WB/ Cumberland St.	NB	A (9.2)	A (7.7)
	SB	C (32.3)	D (44.1)
	WB	D (37.3)	D (38.1)
	Overall	**C (27.3)**	**C (29.7)**
S. Clinton Ave. at Woodbury Blvd.	NB	B (13.8)	C (24.5)
	EB	D (41.8)	B (19.3)
	WB	C (32.7)	B (15.2)
	Overall	**B (15.9)**	**C (22.6)**
S. Clinton Ave. at Court St.	NB	A (6.1)	A (7.2)
	EB	C (22.4)	B (19.7)
	Overall	**A (7.7)**	**B (10.8)**
S. Clinton Ave. at E. Broad St.	NB	A (3.8)	A (8.2)
	WB	C (26.6)	B (17.2)
	Overall	**A (9.0)**	**B (10.1)**
N. Clinton Ave. at E. Main St.	NB	A (8.7)	B (17.8)
	EB	D (54.8)	C (21.0)
	WB	D (47.6)	C (27.1)
	Overall	**C (27.6)**	**C (20.7)**
N. Clinton Ave. at Mortimer St.	NB	A (0.2)	A (0.6)
	EB	D (54.7)	D (49.2)
	WB	D (39.4)	D (36.0)
	Overall	**A (5.1)**	**A (6.2)**
N. Clinton Ave. at Pleasant St.	NB	A (5.1)	A (4.8)
	EB	D (52.9)	C (34.9)
	WB	C (31.9)	C (31.6)
	Overall	**B (12.2)**	**B (11.5)**
N. Clinton Ave. at Andrews St.	NB	B (10.9)	A (4.0)
	EB	B (17.2)	C (28.3)
	WB	B (18.6)	C (29.3)
	Overall	**B (14.2)**	**B (13.7)**
N. Clinton Ave. at Inner Loop EB	NB	B (10.9)	B (11.6)
	SB	A (4.9)	A (9.5)
	EB	C (21.2)	B (15.2)
	Overall	**B (13.9)**	**B (12.0)**
N. Clinton Ave. at Cumberland St.	NB	A (3.0)	A (4.3)
	SB	C (25.9)	C (30.9)
	WB	C (20.7)	C (20.4)
	Overall	**B (18.8)**	**B (18.3)**

Notes:
Delay = Seconds per Vehicle
NB=northbound, NW=northwestbound, SB=southbound, SW=southwestbound, EB=eastbound, WB= westbound

11.0 SUMMARY AND CONCLUSIONS

This report presents the existing conditions analysis for the North/ South Clinton Avenue and the St. Paul Street/South Avenue corridors within the City of Rochester's Central Business District. These are one-way roadways that are being evaluated to see if conversion to two-way traffic is feasible. The overall study will consist of this Existing Conditions Analysis Report, a Future Conditions Forecast Report and a Feasibility Assessment Report.

This Existing Conditions Analysis Report includes the following:

- Summary of existing roadway geometry and lane arrangements
- Existing peak hour traffic volume information
- Existing pedestrian and bicycle traffic volume information
- Summary of transit operations and shelter locations
- Summary of parking locations
- Analysis of accident history
- Analysis of existing traffic operations

Items of note concerning the analyses contained in this report include:

- Existing Traffic Volumes were estimated from traffic counts conducted over the past 5 years from previous studies supplements by select traffic counts recently conducted for this study.
- Traffic growth has been minimal over the last decade and in some cases traffic volumes have dropped. GTC anticipates traffic growth within the study area will be only 5% over the next 25 years (0.2% annually), exclusive of any major development within the study area.
- A significant pedestrian presence can be found at most of the intersections within the study area. Pedestrian traffic is particularly high where transit is prevalent, especially along East Main Street.
- Transit activity within the study area is extensive with many routes traveling along both the North/South Clinton Avenue and the St. Paul Street/South Avenue corridors, and several of the side street, most notably East Main Street, where the RTS Central Information Shelter can be found.
- Over 4,700 parking spaces exist within the study area with approximately 225 being on-street parking. Parking overall is generally 60% occupied during a typical weekday leaving approximately 1,900 spaces available for use at any given time.
- The average accident rate within the study area is 0.65 accidents per million entering vehicles at the intersections. Two intersections stand out as high accident locations, both along East Main Street. The accident types found at these locations indicate that high pedestrian volume and transit activity at these locations may be a contributing factor.
- Both the North/South Clinton Avenue and St. Paul Street/South Avenue corridors operate at an arterial LOS D or better in the peak hours, and all intersections within the study area operate at LOS D or better as well. No significant operational deficiencies exist with either corridor.
- The addition of the Midtown Redevelopment and the RTS Transit Center over the next couple years will cause changes in vehicular and pedestrian volumes, parking and lane geometry which were only touched upon in this report. They will be addressed in the feasibility report for this project.

APPENDIX A

CAPACITY ANALYSIS WORKSHEETS

Arterial Level of Service: NB Clinton

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Woodbury	IV	30	18.8	13.8	32.6	0.13	13.8	C
Court	IV	30	14.7	7.3	22.0	0.08	13.4	C
Broad	IV	30	14.5	4.3	18.8	0.08	15.4	C
Main	IV	30	21.6	8.9	30.5	0.14	17.0	C
Mortimer	IV	30	15.0	0.1	15.1	0.08	19.9	B
Pleasant	IV	30	14.0	4.8	18.8	0.06	11.8	D
Andrews	IV	30	16.0	8.3	24.3	0.07	10.4	D
IL EB	IV	30	11.5	9.9	21.4	0.05	8.5	E
IL WB	IV	30	9.2	3.0	12.2	0.04	12.0	D
Total	IV		135.3	60.4	195.7	0.74	13.6	C

Arterial Level of Service: SB St Paul

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
IL WB	IV	30	22.0	38.4	60.4	0.15	8.7	E
IL EB	IV	30	10.2	2.1	12.3	0.04	13.1	C
Andrews	IV	30	20.5	19.2	39.7	0.11	10.3	D
Pleasant	IV	30	16.4	5.2	21.6	0.07	12.0	D
Mortimer	IV	30	13.5	1.1	14.6	0.06	14.7	C
Main	IV	30	14.6	7.9	22.5	0.08	13.0	D
Total	IV		97.2	73.9	171.1	0.52	10.9	D

Arterial Level of Service: SB South

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Broad	IV	30	20.4	9.2	29.6	0.14	16.5	C
Court	IV	30	16.9	6.4	23.3	0.07	11.5	D
Woodbury	IV	30	15.4	1.7	17.1	0.09	18.0	C
Griffith	IV	30	27.1	10.6	37.7	0.19	18.5	C
Mt Hope	IV	30	16.8	10.4	27.2	0.07	9.8	D
Total	IV		96.6	38.3	134.9	0.56	15.0	C
				Overall SB arterial:	306.0	1.08	12.7	D

Arterial Level of Service: NB Clinton

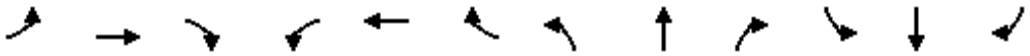
Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Woodbury	IV	30	18.8	24.0	42.8	0.13	10.5	D
Court	IV	30	14.7	8.5	23.2	0.08	12.7	D
Broad	IV	30	14.5	10.4	24.9	0.08	11.7	D
Main	IV	30	21.6	18.2	39.8	0.14	13.0	C
Mortimer	IV	30	15.0	0.6	15.6	0.08	19.2	B
Pleasant	IV	30	14.0	4.8	18.8	0.06	11.8	D
Andrews	IV	30	16.0	3.2	19.2	0.07	13.2	C
IL EB	IV	30	11.5	10.4	21.9	0.05	8.3	E
IL WB	IV	30	9.2	4.4	13.6	0.04	10.7	D
Total	IV		135.3	84.5	219.8	0.74	12.1	D

Arterial Level of Service: SB St Paul

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
IL WB	IV	30	22.0	36.3	58.3	0.15	9.1	D
IL EB	IV	30	10.2	1.1	11.3	0.04	14.3	C
Andrews	IV	30	20.5	21.5	42.0	0.11	9.8	D
Pleasant	IV	30	16.4	4.9	21.3	0.07	12.2	D
Mortimer	IV	30	13.5	10.7	24.2	0.06	8.9	E
Main	IV	30	14.6	13.5	28.1	0.08	10.4	D
Total	IV		97.2	88.0	185.2	0.52	10.1	D

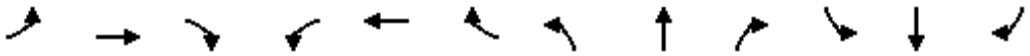
Arterial Level of Service: SB South

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Broad	IV	30	20.4	12.8	33.2	0.14	14.7	C
Court	IV	30	16.9	15.4	32.3	0.07	8.3	E
Woodbury	IV	30	15.4	5.6	21.0	0.09	14.6	C
Griffith	IV	30	27.1	14.0	41.1	0.19	17.0	C
Mt Hope	IV	30	16.8	17.2	34.0	0.07	7.8	E
Total	IV		96.6	65.0	161.6	0.56	12.5	D
			Overall SB arterial:		346.8	1.08	11.2	D



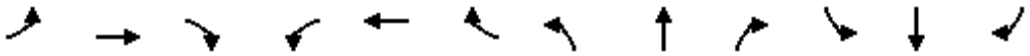
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	70	0	0	100	90	225	2180	215	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0				
Lane Util. Factor		0.95			0.95			0.86				
Frpb, ped/bikes		1.00			0.98			1.00				
Flpb, ped/bikes		1.00			1.00			1.00				
Frt		1.00			0.93			0.99				
Flt Protected		0.99			1.00			1.00				
Satd. Flow (prot)		3157			2892			5589				
Flt Permitted		0.91			1.00			1.00				
Satd. Flow (perm)		2895			2892			5589				
Peak-hour factor, PHF	0.90	0.90	0.90	1.00	0.80	0.80	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	11	78	0	0	125	112	250	2422	239	0	0	0
RTOR Reduction (vph)	0	0	0	0	5	0	0	14	0	0	0	0
Lane Group Flow (vph)	0	89	0	0	232	0	0	2897	0	0	0	0
Confl. Peds. (#/hr)	25		10	10		25	10		40			
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	2%	2%	2%
Turn Type	Perm						Split					
Protected Phases		2			2		1	1				
Permitted Phases	2											
Actuated Green, G (s)		24.0			24.0			66.0				
Effective Green, g (s)		24.0			24.0			66.0				
Actuated g/C Ratio		0.24			0.24			0.66				
Clearance Time (s)		5.0			5.0			5.0				
Lane Grp Cap (vph)		695			694			3689				
v/s Ratio Prot					c0.08			c0.52				
v/s Ratio Perm		0.03										
v/c Ratio		0.13			0.33			0.79				
Uniform Delay, d1		29.8			31.4			12.0				
Progression Factor		1.39			1.00			1.00				
Incremental Delay, d2		0.4			1.3			1.8				
Delay (s)		41.8			32.7			13.8				
Level of Service		D			C			B				
Approach Delay (s)		41.8			32.7			13.8			0.0	
Approach LOS		D			C			B			A	

Intersection Summary			
HCM Average Control Delay	15.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	70.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



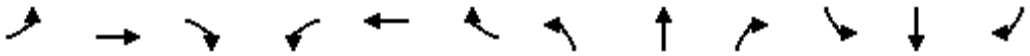
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	85	160	0	0	0	0	460	1410	410	0	0	0
Ideal Flow (vphpl)	1900	1200	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0						5.0	5.0			
Lane Util. Factor		0.95						0.91	1.00			
Frpb, ped/bikes		1.00						1.00	0.97			
Flpb, ped/bikes		1.00						1.00	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		0.98						0.99	1.00			
Satd. Flow (prot)		1978						4477	1374			
Flt Permitted		0.98						0.99	1.00			
Satd. Flow (perm)		1978						4477	1374			
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	94	178	0	0	0	0	511	1567	456	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	187	0	0	0
Lane Group Flow (vph)	0	272	0	0	0	0	0	2078	269	0	0	0
Confl. Peds. (#/hr)	10		10	10		10	10		10			
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	2%	2%	2%
Turn Type	Split						Split		Perm			
Protected Phases	2	2					1	1				
Permitted Phases									1			
Actuated Green, G (s)		31.0						59.0	59.0			
Effective Green, g (s)		31.0						59.0	59.0			
Actuated g/C Ratio		0.31						0.59	0.59			
Clearance Time (s)		5.0						5.0	5.0			
Lane Grp Cap (vph)		613						2641	811			
v/s Ratio Prot		c0.14						c0.46				
v/s Ratio Perm									0.20			
v/c Ratio		0.44						0.79	0.33			
Uniform Delay, d1		27.6						15.7	10.5			
Progression Factor		0.73						0.36	0.04			
Incremental Delay, d2		2.3						1.5	0.7			
Delay (s)		22.4						7.2	1.1			
Level of Service		C						A	A			
Approach Delay (s)		22.4			0.0			6.1			0.0	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	7.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	67.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	350	70	515	980	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					6.0		6.0	6.0				
Lane Util. Factor					0.91		0.91	0.91				
Frpb, ped/bikes					0.98		1.00	1.00				
Flpb, ped/bikes					1.00		1.00	1.00				
Frt					0.98		1.00	1.00				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					4269		1435	3014				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					4269		1435	3014				
Peak-hour factor, PHF	0.90	0.90	0.90	0.86	0.86	0.86	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	0	407	81	572	1089	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	30	0	40	4	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	458	0	475	1142	0	0	0	0
Confl. Peds. (#/hr)				95		55	55		95			
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	5%	5%	5%	3%	3%	3%	2%	2%	2%
Turn Type							Split					
Protected Phases					2		1	1				
Permitted Phases												
Actuated Green, G (s)					32.0		56.0	56.0				
Effective Green, g (s)					32.0		56.0	56.0				
Actuated g/C Ratio					0.32		0.56	0.56				
Clearance Time (s)					6.0		6.0	6.0				
Lane Grp Cap (vph)					1366		804	1688				
v/s Ratio Prot					c0.11		0.33	c0.38				
v/s Ratio Perm												
v/c Ratio					0.34		0.59	0.68				
Uniform Delay, d1					25.9		14.5	15.6				
Progression Factor					1.00		0.06	0.18				
Incremental Delay, d2					0.7		2.0	1.4				
Delay (s)					26.6		2.8	4.2				
Level of Service					C		A	A				
Approach Delay (s)		0.0			26.6			3.8			0.0	
Approach LOS		A			C			A			A	

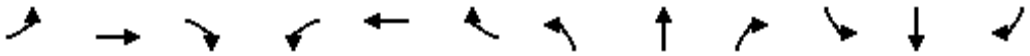
Intersection Summary			
HCM Average Control Delay	9.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	58.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑	↱		↑↑				
Volume (vph)	0	330	0	0	390	0	0	950	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0				
Lane Util. Factor		*0.55			1.00			0.95				
Frpb, ped/bikes		1.00			1.00			1.00				
Flpb, ped/bikes		1.00			1.00			1.00				
Frt		1.00			1.00			1.00				
Flt Protected		1.00			1.00			1.00				
Satd. Flow (prot)		1679			1527			2997				
Flt Permitted		1.00			1.00			1.00				
Satd. Flow (perm)		1679			1527			2997				
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	393	0	0	464	0	0	1056	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	393	0	0	464	0	0	1056	0	0	0	0
Confl. Peds. (#/hr)	350		350	350		350	200		240			
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	12%	2%	2%	12%	2%	3%	3%	3%	2%	2%	2%
Parking (#/hr)								0				
Turn Type						Perm						
Protected Phases		1			1			2				
Permitted Phases						1						
Actuated Green, G (s)		35.0			35.0			55.0				
Effective Green, g (s)		35.0			35.0			55.0				
Actuated g/C Ratio		0.35			0.35			0.55				
Clearance Time (s)		5.0			5.0			5.0				
Lane Grp Cap (vph)		588			534			1648				
v/s Ratio Prot		0.23			c0.30			c0.35				
v/s Ratio Perm												
v/c Ratio		0.67			0.87			0.64				
Uniform Delay, d1		27.6			30.4			15.6				
Progression Factor		1.78			1.00			0.46				
Incremental Delay, d2		5.8			17.3			1.4				
Delay (s)		54.8			47.6			8.7				
Level of Service		D			D			A				
Approach Delay (s)		54.8			47.6			8.7			0.0	
Approach LOS		D			D			A			A	

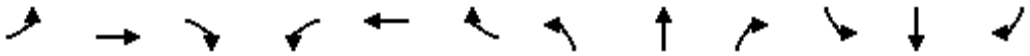
Intersection Summary			
HCM Average Control Delay	27.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	60.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	45	0	0	5	5	130	675	125	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		5.0	5.0				
Lane Util. Factor		1.00			1.00		1.00	0.91				
Frpb, ped/bikes		1.00			0.98		1.00	0.97				
Flpb, ped/bikes		0.99			1.00		1.00	1.00				
Frt		1.00			0.93		1.00	0.98				
Flt Protected		0.98			1.00		0.95	1.00				
Satd. Flow (prot)		1619			1543		1433	4232				
Flt Permitted		0.84			1.00		0.95	1.00				
Satd. Flow (perm)		1400			1543		1433	4232				
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	44	50	0	0	6	6	144	750	139	0	0	0
RTOR Reduction (vph)	0	0	0	0	5	0	0	18	0	0	0	0
Lane Group Flow (vph)	0	94	0	0	7	0	144	871	0	0	0	0
Confl. Peds. (#/hr)	15		20	20		15	145		105			
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	5%	1%	2%	2%	2%
Parking (#/hr)							0					
Turn Type	Perm						Split					
Protected Phases		2			2		1	1				
Permitted Phases	2											
Actuated Green, G (s)		11.5			11.5		78.5	78.5				
Effective Green, g (s)		11.5			11.5		78.5	78.5				
Actuated g/C Ratio		0.12			0.12		0.78	0.78				
Clearance Time (s)		5.0			5.0		5.0	5.0				
Vehicle Extension (s)		3.0			3.0		2.0	2.0				
Lane Grp Cap (vph)		161			177		1125	3322				
v/s Ratio Prot					0.00		0.10	c0.21				
v/s Ratio Perm		c0.07										
v/c Ratio		0.58			0.04		0.13	0.26				
Uniform Delay, d1		42.0			39.3		2.6	2.9				
Progression Factor		1.18			1.00		0.00	0.00				
Incremental Delay, d2		5.2			0.1		0.2	0.1				
Delay (s)		54.7			39.4		0.2	0.1				
Level of Service		D			D		A	A				
Approach Delay (s)		54.7			39.4			0.2			0.0	
Approach LOS		D			D			A			A	

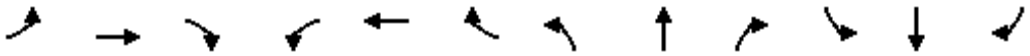
Intersection Summary			
HCM Average Control Delay	5.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	45.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	50	0	0	60	35	25	610	85	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		5.0	5.0				
Lane Util. Factor		1.00			1.00		1.00	0.91				
Frpb, ped/bikes		1.00			0.99		1.00	0.99				
Flpb, ped/bikes		0.99			1.00		1.00	1.00				
Frt		1.00			0.95		1.00	0.98				
Flt Protected		0.98			1.00		0.95	1.00				
Satd. Flow (prot)		1635			1571		1433	4172				
Flt Permitted		0.87			1.00		0.95	1.00				
Satd. Flow (perm)		1453			1571		1433	4172				
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	33	56	0	0	67	39	28	678	94	0	0	0
RTOR Reduction (vph)	0	0	0	0	21	0	0	18	0	0	0	0
Lane Group Flow (vph)	0	89	0	0	85	0	28	754	0	0	0	0
Confl. Peds. (#/hr)	15		15	15		15	130		50			
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	5%	2%	2%	2%	2%
Parking (#/hr)							0	0				
Turn Type	Perm						Split					
Protected Phases		2			2		1	1				
Permitted Phases	2											
Actuated Green, G (s)		24.0			24.0		66.0	66.0				
Effective Green, g (s)		24.0			24.0		66.0	66.0				
Actuated g/C Ratio		0.24			0.24		0.66	0.66				
Clearance Time (s)		5.0			5.0		5.0	5.0				
Lane Grp Cap (vph)		349			377		946	2754				
v/s Ratio Prot					0.05		0.02	c0.18				
v/s Ratio Perm		c0.06										
v/c Ratio		0.26			0.22		0.03	0.27				
Uniform Delay, d1		30.8			30.5		5.9	7.1				
Progression Factor		1.67			1.00		0.52	0.70				
Incremental Delay, d2		1.7			1.4		0.1	0.2				
Delay (s)		52.9			31.9		3.1	5.2				
Level of Service		D			C		A	A				
Approach Delay (s)		52.9			31.9			5.1			0.0	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	12.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		

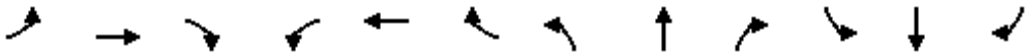
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	245	0	0	260	25	235	370	70	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		5.0	5.0				
Lane Util. Factor		0.95			0.95		1.00	0.91				
Frpb, ped/bikes		1.00			1.00		1.00	0.99				
Flpb, ped/bikes		1.00			1.00		1.00	1.00				
Frt		1.00			0.99		1.00	0.98				
Flt Protected		0.99			1.00		0.95	1.00				
Satd. Flow (prot)		3123			3106		1419	4186				
Flt Permitted		0.83			1.00		0.95	1.00				
Satd. Flow (perm)		2623			3106		1419	4186				
Peak-hour factor, PHF	0.84	0.84	0.84	0.85	0.85	0.85	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	60	292	0	0	306	29	261	411	78	0	0	0
RTOR Reduction (vph)	0	0	0	0	7	0	0	28	0	0	0	0
Lane Group Flow (vph)	0	352	0	0	328	0	261	461	0	0	0	0
Confl. Peds. (#/hr)	10		10	10		10	40		15			
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	5%	3%	2%	2%	2%
Parking (#/hr)							0	0				
Turn Type	Perm						Split					
Protected Phases		2			2		1	1				
Permitted Phases	2							1				
Actuated Green, G (s)		43.0			43.0		47.0	47.0				
Effective Green, g (s)		43.0			43.0		47.0	47.0				
Actuated g/C Ratio		0.43			0.43		0.47	0.47				
Clearance Time (s)		5.0			5.0		5.0	5.0				
Lane Grp Cap (vph)		1128			1336		667	1967				
v/s Ratio Prot					0.11		c0.18	0.11				
v/s Ratio Perm		c0.13										
v/c Ratio		0.31			0.25		0.39	0.23				
Uniform Delay, d1		18.8			18.2		17.2	15.8				
Progression Factor		0.88			1.00		0.72	0.57				
Incremental Delay, d2		0.7			0.4		1.7	0.3				
Delay (s)		17.2			18.6		14.0	9.2				
Level of Service		B			B		B	A				
Approach Delay (s)		17.2			18.6			10.9			0.0	
Approach LOS		B			B			B			A	

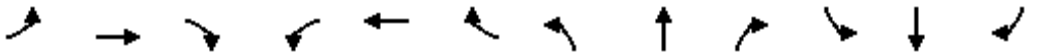
Intersection Summary			
HCM Average Control Delay	14.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	250	0	0	0	0	0	210	5	140	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0						6.0		5.0		
Lane Util. Factor		0.95						0.95		1.00		
Frpb, ped/bikes		1.00						1.00		1.00		
Flpb, ped/bikes		1.00						1.00		0.99		
Frt		1.00						1.00		1.00		
Flt Protected		1.00						1.00		0.95		
Satd. Flow (prot)		3529						3524		1760		
Flt Permitted		1.00						1.00		0.60		
Satd. Flow (perm)		3529						3524		1117		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	17	278	0	0	0	0	0	233	6	156	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	295	0	0	0	0	0	237	0	156	0	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			2			2			2			2
Turn Type	Split									custom		
Protected Phases	3	3						1 4		2		
Permitted Phases										1 2		
Actuated Green, G (s)		17.3						47.8		49.3		
Effective Green, g (s)		17.3						42.8		49.3		
Actuated g/C Ratio		0.17						0.43		0.49		
Clearance Time (s)		6.0								5.0		
Vehicle Extension (s)		4.0								4.0		
Lane Grp Cap (vph)		611						1508		666		
v/s Ratio Prot		c0.08						c0.07		c0.04		
v/s Ratio Perm										c0.07		
v/c Ratio		0.48						0.16		0.23		
Uniform Delay, d1		37.3						17.5		14.9		
Progression Factor		0.55						0.62		0.31		
Incremental Delay, d2		0.7						0.1		0.2		
Delay (s)		21.2						10.9		4.9		
Level of Service		C						B		A		
Approach Delay (s)		21.2			0.0			10.9			4.9	
Approach LOS		C			A			B			A	

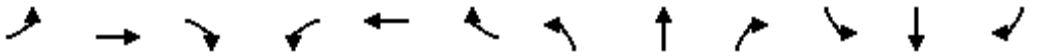
Intersection Summary			
HCM Average Control Delay	13.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	51.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	45	490	65	25	200	0	0	95	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.0			6.0			6.0	6.0
Lane Util. Factor					0.91			0.95			1.00	1.00
Frpb, ped/bikes					1.00			1.00			1.00	0.97
Flpb, ped/bikes					1.00			1.00			1.00	1.00
Frt					0.98			1.00			1.00	0.85
Flt Protected					1.00			0.99			1.00	1.00
Satd. Flow (prot)					4960			3515			1863	1387
Flt Permitted					1.00			0.93			1.00	1.00
Satd. Flow (perm)					4960			3271			1863	1387
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	50	544	72	28	222	0	0	106	267
RTOR Reduction (vph)	0	0	0	0	17	0	0	0	0	0	0	183
Lane Group Flow (vph)	0	0	0	0	649	0	0	250	0	0	106	84
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			2			2			2			2
Parking (#/hr)												0
Turn Type				Perm			D.P+P					Perm
Protected Phases					2 3		4	1 4			1	
Permitted Phases				2 3			1					1
Actuated Green, G (s)					40.2			42.8			31.4	31.4
Effective Green, g (s)					40.2			42.8			31.4	31.4
Actuated g/C Ratio					0.40			0.43			0.31	0.31
Clearance Time (s)											6.0	6.0
Vehicle Extension (s)											2.0	2.0
Lane Grp Cap (vph)					1994			1428			585	436
v/s Ratio Prot								c0.02			0.06	
v/s Ratio Perm					0.13			0.05				c0.06
v/c Ratio					0.33			0.18			0.18	0.19
Uniform Delay, d1					20.6			17.7			24.9	25.0
Progression Factor					1.00			0.17			1.00	1.00
Incremental Delay, d2					0.1			0.1			0.7	1.0
Delay (s)					20.7			3.0			25.6	26.0
Level of Service					C			A			C	C
Approach Delay (s)		0.0			20.7			3.0			25.9	
Approach LOS		A			C			A			C	

Intersection Summary			
HCM Average Control Delay	18.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	320	5	50	95	0	5	5	180	285	455	395
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		6.0	6.0		6.0	6.0			6.0	6.0
Lane Util. Factor		0.95		1.00	1.00		1.00	1.00			0.95	1.00
Frt		1.00		1.00	1.00		1.00	0.85			1.00	0.85
Flt Protected		1.00		0.95	1.00		0.95	1.00			0.98	1.00
Satd. Flow (prot)		3528		1770	1863		1593	1591			3472	1583
Flt Permitted		0.95		0.53	1.00		0.32	1.00			0.76	1.00
Satd. Flow (perm)		3354		992	1863		537	1591			2678	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.84	0.84	0.84	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	6	356	6	60	113	0	6	6	200	317	506	439
RTOR Reduction (vph)	0	2	0	0	0	0	0	86	0	0	0	188
Lane Group Flow (vph)	0	366	0	60	113	0	6	120	0	0	823	251
Parking (#/hr)							0					
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		1
Actuated Green, G (s)		13.7		13.7	13.7		34.3	34.3			34.3	34.3
Effective Green, g (s)		13.7		13.7	13.7		34.3	34.3			34.3	34.3
Actuated g/C Ratio		0.23		0.23	0.23		0.57	0.57			0.57	0.57
Clearance Time (s)		6.0		6.0	6.0		6.0	6.0			6.0	6.0
Vehicle Extension (s)		4.0		4.0	4.0		4.0	4.0			4.0	4.0
Lane Grp Cap (vph)		766		227	425		307	910			1531	905
v/s Ratio Prot					0.06			0.08				
v/s Ratio Perm		c0.11		0.06			0.01				c0.31	0.16
v/c Ratio		0.48		0.26	0.27		0.02	0.13			0.54	0.28
Uniform Delay, d1		20.0		19.0	19.0		5.6	6.0			7.9	6.5
Progression Factor		1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2		0.6		0.9	0.5		0.1	0.3			1.4	0.8
Delay (s)		20.7		19.9	19.5		5.7	6.3			9.3	7.3
Level of Service		C		B	B		A	A			A	A
Approach Delay (s)		20.7			19.6			6.2			8.6	
Approach LOS		C			B			A			A	

Intersection Summary			
HCM Average Control Delay	11.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

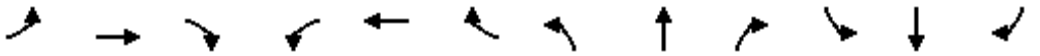
Movement	WBL	WBR	NBT	NBR	NBR2	SBL	SBT	SWL2	SWL	SWR
Lane Configurations										
Volume (vph)	5	0	0	0	10	10	530	10	600	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0				5.0		5.0		5.0	
Lane Util. Factor	1.00				1.00		0.95		0.97	
Frt	1.00				0.86		1.00		1.00	
Flt Protected	0.95				1.00		1.00		0.95	
Satd. Flow (prot)	1770				1611		3469		3433	
Flt Permitted	0.95				1.00		1.00		0.95	
Satd. Flow (perm)	1770				1611		3469		3433	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	6	0	0	0	11	11	589	11	667	0
RTOR Reduction (vph)	0	0	0	0	11	0	0	0	0	0
Lane Group Flow (vph)	6	0	0	0	0	0	600	0	678	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	4%	2%	2%	2%
Turn Type					custom	Perm		Perm		
Protected Phases	2				2		1		3	
Permitted Phases					2	1		3		
Actuated Green, G (s)	0.9				0.9		25.4		15.3	
Effective Green, g (s)	0.9				0.9		25.4		15.3	
Actuated g/C Ratio	0.02				0.02		0.45		0.27	
Clearance Time (s)	5.0				5.0		5.0		5.0	
Vehicle Extension (s)	2.0				2.0		3.0		3.0	
Lane Grp Cap (vph)	28				26		1557		928	
v/s Ratio Prot	c0.00				0.00					
v/s Ratio Perm							0.17		0.20	
v/c Ratio	0.21				0.01		0.39		0.73	
Uniform Delay, d1	27.5				27.4		10.4		18.8	
Progression Factor	1.00				1.00		1.00		1.00	
Incremental Delay, d2	1.4				0.0		0.7		3.0	
Delay (s)	28.9				27.4		11.1		21.8	
Level of Service	C				C		B		C	
Approach Delay (s)	28.9		27.4				11.1		21.8	
Approach LOS	C		C				B		C	

Intersection Summary			
HCM Average Control Delay	16.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	56.6	Sum of lost time (s)	15.0
Intersection Capacity Utilization	48.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

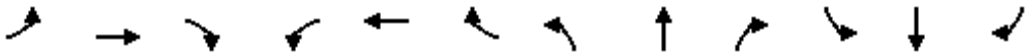
Movement	WBL2	WBL	SBL2	SBL	SBT	SBR
Lane Configurations						
Volume (vph)	25	85	225	145	455	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.88
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.96
Flpb, ped/bikes	0.98	1.00	0.99	0.98	1.00	1.00
Frt	1.00	1.00	1.00	1.00	1.00	0.85
Flt Protected	0.95	0.95	0.95	0.95	1.00	1.00
Satd. Flow (prot)	1569	1593	1545	1533	3124	2366
Flt Permitted	0.95	0.95	0.95	0.95	1.00	1.00
Satd. Flow (perm)	1569	1593	1545	1533	3124	2366
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	28	94	250	161	506	39
RTOR Reduction (vph)	0	0	0	0	0	8
Lane Group Flow (vph)	28	94	250	161	506	31
Confl. Peds. (#/hr)	10	10	10	10		10
Heavy Vehicles (%)	2%	2%	4%	4%	4%	4%
Turn Type	Perm		Perm	Perm		Perm
Protected Phases		2			1	
Permitted Phases	2		1	1		1
Actuated Green, G (s)	10.2	10.2	79.8	79.8	79.8	79.8
Effective Green, g (s)	10.2	10.2	79.8	79.8	79.8	79.8
Actuated g/C Ratio	0.10	0.10	0.80	0.80	0.80	0.80
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	160	162	1233	1223	2493	1888
v/s Ratio Prot		c0.06			c0.16	
v/s Ratio Perm	0.02		0.16	0.11		0.01
v/c Ratio	0.18	0.58	0.20	0.13	0.20	0.02
Uniform Delay, d1	41.1	42.9	2.4	2.3	2.4	2.1
Progression Factor	0.87	0.88	0.49	0.52	0.49	0.37
Incremental Delay, d2	0.2	3.4	0.4	0.2	0.2	0.0
Delay (s)	36.0	41.2	1.5	1.4	1.4	0.8
Level of Service	D	D	A	A	A	A
Approach Delay (s)		40.0			1.4	
Approach LOS		D			A	

Intersection Summary			
HCM Average Control Delay	5.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	39.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



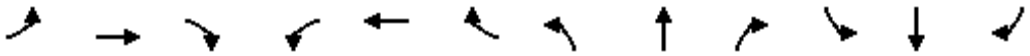
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	210	195	15	260	0	0	0	0	80	650	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0	4.0	4.0					3.0	3.0	
Lane Util. Factor		0.95	0.95	1.00	1.00					1.00	*0.76	
Frpb, ped/bikes		0.99	0.94	1.00	1.00					1.00	1.00	
Flpb, ped/bikes		1.00	1.00	0.97	1.00					1.00	1.00	
Frt		0.99	0.85	1.00	1.00					1.00	0.99	
Flt Protected		1.00	1.00	0.95	1.00					0.95	1.00	
Satd. Flow (prot)		1563	1268	1547	1676					1593	4841	
Flt Permitted		1.00	1.00	0.51	1.00					0.95	1.00	
Satd. Flow (perm)		1563	1268	835	1676					1593	4841	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	233	217	17	289	0	0	0	0	89	722	56
RTOR Reduction (vph)	0	3	80	0	0	0	0	0	0	0	10	0
Lane Group Flow (vph)	0	252	116	17	289	0	0	0	0	89	768	0
Confl. Peds. (#/hr)	45		30	30		45				25		20
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	6%	2%
Parking (#/hr)	0											
Turn Type			Perm	Perm						Split		
Protected Phases		4			4					1	1	
Permitted Phases			4	4								
Actuated Green, G (s)		44.0	44.0	44.0	44.0					40.0	40.0	
Effective Green, g (s)		47.0	47.0	46.0	46.0					43.0	43.0	
Actuated g/C Ratio		0.47	0.47	0.46	0.46					0.43	0.43	
Clearance Time (s)		6.0	6.0	6.0	6.0					6.0	6.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0					2.0	2.0	
Lane Grp Cap (vph)		735	596	384	771					685	2082	
v/s Ratio Prot		0.16			c0.17					0.06	c0.16	
v/s Ratio Perm			0.09	0.02								
v/c Ratio		0.34	0.19	0.04	0.37					0.13	0.37	
Uniform Delay, d1		16.7	15.5	14.9	17.6					17.2	19.3	
Progression Factor		1.00	1.00	0.38	0.37					0.35	0.31	
Incremental Delay, d2		1.3	0.7	0.2	1.4					0.4	0.5	
Delay (s)		18.0	16.2	5.9	8.0					6.5	6.5	
Level of Service		B	B	A	A					A	A	
Approach Delay (s)		17.2			7.9			0.0			6.5	
Approach LOS		B			A			A			A	

Intersection Summary					
HCM Average Control Delay	9.7	HCM Level of Service		A	
HCM Volume to Capacity ratio	0.37				
Actuated Cycle Length (s)	100.0	Sum of lost time (s)		11.0	
Intersection Capacity Utilization	47.5%	ICU Level of Service		A	
Analysis Period (min)	15				
c Critical Lane Group					



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	130	100	60	400	0	0	0	0	55	620	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0						5.5	
Lane Util. Factor		1.00	1.00	0.97	0.95						*0.69	
Frpb, ped/bikes		1.00	0.90	1.00	1.00						0.99	
Flpb, ped/bikes		1.00	1.00	0.96	1.00						1.00	
Frt		1.00	0.85	1.00	1.00						0.99	
Flt Protected		1.00	1.00	0.95	1.00						1.00	
Satd. Flow (prot)		1629	1250	2880	3094						4364	
Flt Permitted		1.00	1.00	0.64	1.00						1.00	
Satd. Flow (perm)		1629	1250	1926	3094						4364	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	144	111	67	444	0	0	0	0	61	689	61
RTOR Reduction (vph)	0	0	79	0	0	0	0	0	0	0	9	0
Lane Group Flow (vph)	0	144	32	67	444	0	0	0	0	0	802	0
Confl. Peds. (#/hr)	40		50	50		40				40		40
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	2%	2%	2%	3%	6%	3%
Turn Type			Perm	custom						Prot		
Protected Phases		3		4	3 4 7					2	2 6	
Permitted Phases			3	3 4								
Actuated Green, G (s)		28.0	28.0	39.0	48.0						41.5	
Effective Green, g (s)		28.0	28.0	39.0	48.0						41.5	
Actuated g/C Ratio		0.28	0.28	0.39	0.48						0.42	
Clearance Time (s)		5.0	5.0	5.0								
Lane Grp Cap (vph)		456	350	856	1485						1811	
v/s Ratio Prot		0.09		0.01	c0.14						c0.17	
v/s Ratio Perm			0.03	0.02							0.02	
v/c Ratio		0.32	0.09	0.08	0.30						0.44	
Uniform Delay, d1		28.4	26.6	20.0	15.8						21.0	
Progression Factor		1.00	1.00	1.03	1.02						0.38	
Incremental Delay, d2		1.8	0.5	0.2	0.5						0.7	
Delay (s)		30.2	27.1	20.8	16.6						8.8	
Level of Service		C	C	C	B						A	
Approach Delay (s)		28.9			17.1			0.0			8.8	
Approach LOS		C			B			A			A	

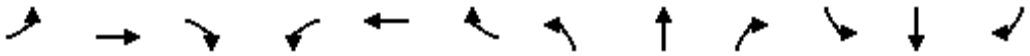
Intersection Summary			
HCM Average Control Delay	14.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	280	30	0	350	0	0	0	0	60	780	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0					5.0	5.0	
Lane Util. Factor		1.00	1.00		*0.55					1.00	0.91	
Frpb, ped/bikes		1.00	0.91		1.00					1.00	0.97	
Flpb, ped/bikes		1.00	1.00		1.00					0.97	1.00	
Frt		1.00	0.85		1.00					1.00	0.98	
Flt Protected		1.00	1.00		1.00					0.95	1.00	
Satd. Flow (prot)		1527	1254		1679					1336	4204	
Flt Permitted		1.00	1.00		1.00					0.95	1.00	
Satd. Flow (perm)		1527	1254		1679					1336	4204	
Peak-hour factor, PHF	0.90	0.90	0.90	0.84	0.84	0.84	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	311	33	0	417	0	0	0	0	67	867	100
RTOR Reduction (vph)	0	0	23	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	311	10	0	417	0	0	0	0	67	967	0
Confl. Peds. (#/hr)	250		60	60		250				25		230
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	12%	6%	2%	12%	2%	2%	2%	2%	6%	6%	6%
Parking (#/hr)										0		
Turn Type			Perm							Perm		
Protected Phases		1			1						3	
Permitted Phases			1							3		
Actuated Green, G (s)		31.0	31.0		31.0					51.0	51.0	
Effective Green, g (s)		31.0	31.0		31.0					51.0	51.0	
Actuated g/C Ratio		0.31	0.31		0.31					0.51	0.51	
Clearance Time (s)		5.0	5.0		5.0					5.0	5.0	
Lane Grp Cap (vph)		473	389		520					681	2144	
v/s Ratio Prot		0.20			c0.25						c0.23	
v/s Ratio Perm			0.01							0.05		
v/c Ratio		0.66	0.03		0.80					0.10	0.45	
Uniform Delay, d1		29.9	24.0		31.7					12.6	15.6	
Progression Factor		1.00	1.00		0.14					0.53	0.46	
Incremental Delay, d2		7.0	0.1		12.2					0.3	0.7	
Delay (s)		36.9	24.1		16.7					7.0	7.8	
Level of Service		D	C		B					A	A	
Approach Delay (s)		35.7			16.7			0.0			7.8	
Approach LOS		D			B			A			A	

Intersection Summary			
HCM Average Control Delay	15.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	49.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	40	45	45	45	0	0	0	0	55	840	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0						5.0	
Lane Util. Factor		1.00			1.00						0.86	
Frpb, ped/bikes		0.96			1.00						0.99	
Flpb, ped/bikes		1.00			0.97						1.00	
Frt		0.93			1.00						0.99	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		1490			1592						5409	
Flt Permitted		1.00			0.83						1.00	
Satd. Flow (perm)		1490			1350						5409	
Peak-hour factor, PHF	0.90	0.90	0.90	0.95	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	44	50	47	50	0	0	0	0	61	933	106
RTOR Reduction (vph)	0	39	0	0	0	0	0	0	0	0	18	0
Lane Group Flow (vph)	0	56	0	0	97	0	0	0	0	0	1082	0
Confl. Peds. (#/hr)	40		45	45		40			56	55		65
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	6%	2%
Parking (#/hr)										0		
Turn Type				Perm						Split		
Protected Phases		2			2					1	1	
Permitted Phases				2								
Actuated Green, G (s)		23.0			23.0						67.0	
Effective Green, g (s)		23.0			23.0						67.0	
Actuated g/C Ratio		0.23			0.23						0.67	
Clearance Time (s)		5.0			5.0						5.0	
Lane Grp Cap (vph)		343			311						3624	
v/s Ratio Prot		0.04									c0.20	
v/s Ratio Perm					c0.07							
v/c Ratio		0.16			0.31						0.30	
Uniform Delay, d1		30.8			31.9						6.8	
Progression Factor		1.00			1.51						0.14	
Incremental Delay, d2		1.0			2.6						0.2	
Delay (s)		31.8			50.8						1.1	
Level of Service		C			D						A	
Approach Delay (s)		31.8			50.8			0.0			1.1	
Approach LOS		C			D			A			A	

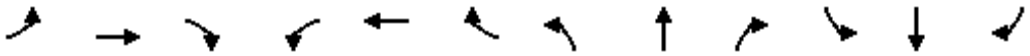
Intersection Summary			
HCM Average Control Delay	7.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	47.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	45	0	0	0	110	945
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5					5.5
Lane Util. Factor	1.00					0.86
Frpb, ped/bikes	1.00					1.00
Flpb, ped/bikes	1.00					1.00
Frt	1.00					1.00
Flt Protected	0.95					0.99
Satd. Flow (prot)	1593					5542
Flt Permitted	0.95					0.99
Satd. Flow (perm)	1593					5542
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	50	0	0	0	122	1050
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	50	0	0	0	0	1172
Confl. Peds. (#/hr)					50	
Confl. Bikes (#/hr)		5		5		
Heavy Vehicles (%)	2%	2%	2%	2%	2%	6%
Parking (#/hr)					0	
Turn Type					Split	
Protected Phases	2				1	1
Permitted Phases						
Actuated Green, G (s)	25.5					63.5
Effective Green, g (s)	25.5					63.5
Actuated g/C Ratio	0.26					0.64
Clearance Time (s)	5.5					5.5
Lane Grp Cap (vph)	406					3519
v/s Ratio Prot	c0.03					c0.21
v/s Ratio Perm						
v/c Ratio	0.12					0.33
Uniform Delay, d1	28.7					8.4
Progression Factor	1.71					0.58
Incremental Delay, d2	0.6					0.2
Delay (s)	49.6					5.1
Level of Service	D					A
Approach Delay (s)	49.6		0.0			5.1
Approach LOS	D		A			A

Intersection Summary			
HCM Average Control Delay	6.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	34.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	225	110	120	235	0	0	0	0	70	825	210
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0						5.0	
Lane Util. Factor		0.95			0.95						0.91	
Frpb, ped/bikes		0.98			1.00						0.99	
Flpb, ped/bikes		1.00			0.99						1.00	
Frt		0.95			1.00						0.97	
Flt Protected		1.00			0.98						1.00	
Satd. Flow (prot)		2796			2923						4113	
Flt Permitted		1.00			0.69						1.00	
Satd. Flow (perm)		2796			2056						4113	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	250	122	133	261	0	0	0	0	78	917	233
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	39	0
Lane Group Flow (vph)	0	372	0	0	394	0	0	0	0	0	1189	0
Confl. Peds. (#/hr)	40		30	30		40				10		25
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	2%	2%	2%	3%	6%	3%
Parking (#/hr)	0	0	0	0	0	0				0	0	0
Turn Type				Perm						Split		
Protected Phases		2			2					1	1	
Permitted Phases				2								
Actuated Green, G (s)		41.0			41.0						49.0	
Effective Green, g (s)		41.0			41.0						49.0	
Actuated g/C Ratio		0.41			0.41						0.49	
Clearance Time (s)		5.0			5.0						5.0	
Lane Grp Cap (vph)		1146			843						2015	
v/s Ratio Prot		0.13									c0.29	
v/s Ratio Perm					c0.19							
v/c Ratio		0.32			0.47						0.59	
Uniform Delay, d1		20.1			21.5						18.3	
Progression Factor		1.00			1.26						1.04	
Incremental Delay, d2		0.8			1.8						1.1	
Delay (s)		20.8			28.9						20.2	
Level of Service		C			C						C	
Approach Delay (s)		20.8			28.9			0.0			20.2	
Approach LOS		C			C			A			C	

Intersection Summary			
HCM Average Control Delay	22.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	72.4%	ICU Level of Service	C
Analysis Period (min)	15		

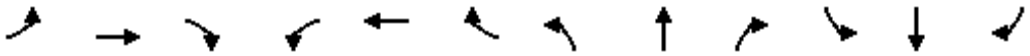
c Critical Lane Group

Movement	EBL	EBT	EBR	EBR2	NBT	NBR	SBL2	SBL	SBT
Lane Configurations									
Volume (vph)	475	190	10	395	130	5	50	5	710
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0		5.0				5.0
Lane Util. Factor	0.91	0.86	0.91		1.00				0.91
Frpb, ped/bikes	1.00	1.00	0.96		1.00				1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00				1.00
Frt	1.00	1.00	0.85		0.99				1.00
Flt Protected	0.95	0.97	1.00		1.00				1.00
Satd. Flow (prot)	1610	3108	1330		1853				4967
Flt Permitted	0.95	0.97	1.00		1.00				0.90
Satd. Flow (perm)	1610	3108	1330		1853				4500
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	528	211	11	439	144	6	56	6	789
RTOR Reduction (vph)	0	0	164	0	0	0	0	0	0
Lane Group Flow (vph)	264	485	276	0	150	0	0	0	851
Confl. Peds. (#/hr)	10		10	10			10	10	
Confl. Bikes (#/hr)			2	2					
Heavy Vehicles (%)	2%	2%	2%	6%	2%	2%	2%	2%	4%
Parking (#/hr)									
Turn Type	Split		Perm				pm+pt	Perm	
Protected Phases	2	2			1		3		1 3
Permitted Phases			2		1		1 3	1 3	
Actuated Green, G (s)	23.6	23.6	23.6		37.0				66.4
Effective Green, g (s)	23.6	23.6	23.6		37.0				66.4
Actuated g/C Ratio	0.24	0.24	0.24		0.37				0.66
Clearance Time (s)	5.0	5.0	5.0		5.0				
Vehicle Extension (s)	3.0	3.0	3.0		2.0				
Lane Grp Cap (vph)	380	733	314		686				2988
v/s Ratio Prot	0.16	0.16			0.08				
v/s Ratio Perm			c0.21						c0.19
v/c Ratio	0.69	0.66	0.88		0.22				0.28
Uniform Delay, d1	34.9	34.6	36.8		21.6				7.0
Progression Factor	1.00	1.00	1.00		1.00				0.27
Incremental Delay, d2	5.4	2.3	23.0		0.7				0.0
Delay (s)	40.3	36.8	59.9		22.3				1.9
Level of Service	D	D	E		C				A
Approach Delay (s)		46.1			22.3				1.9
Approach LOS		D			C				A

Intersection Summary			
HCM Average Control Delay	27.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

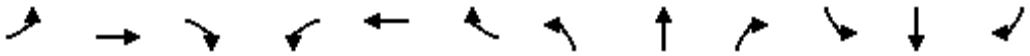
Movement	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR	SWR2
Lane Configurations									
Volume (vph)	290	335	130	75	510	20	475	255	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.95	1.00	0.95	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85	0.86
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	1770	1863	1515	1770	1863	1509	1863	1508	1570
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)	1770	1863	1515	1770	1863	1509	1863	1508	1570
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	322	372	144	83	567	22	528	283	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	40	0
Lane Group Flow (vph)	322	372	144	83	567	22	528	243	11
Confl. Peds. (#/hr)	10		10	10		10		10	10
Confl. Bikes (#/hr)			2			2		2	2
Turn Type	Split		Perm	custom		Perm		Perm	Free
Protected Phases	3	3		2	1 2		1		
Permitted Phases			3	2		1 2	1	1	Free
Actuated Green, G (s)	24.4	24.4	24.4	23.6	65.6	65.6	37.0	37.0	100.0
Effective Green, g (s)	24.4	24.4	24.4	23.6	65.6	65.6	37.0	37.0	100.0
Actuated g/C Ratio	0.24	0.24	0.24	0.24	0.66	0.66	0.37	0.37	1.00
Clearance Time (s)	5.0	5.0	5.0	5.0			5.0	5.0	
Vehicle Extension (s)	2.0	2.0	2.0	3.0			2.0	2.0	
Lane Grp Cap (vph)	432	455	370	418	1222	990	689	558	1570
v/s Ratio Prot	0.18	c0.20		0.05	c0.30		c0.28		
v/s Ratio Perm			0.10			0.01		0.16	0.01
v/c Ratio	0.75	0.82	0.39	0.20	0.46	0.02	0.77	0.44	0.01
Uniform Delay, d1	34.9	35.7	31.6	30.6	8.5	6.0	27.7	23.7	0.0
Progression Factor	0.89	0.89	0.87	0.34	1.06	0.34	1.00	1.00	1.00
Incremental Delay, d2	5.8	9.9	0.2	0.2	0.2	0.0	8.0	2.5	0.0
Delay (s)	36.7	41.6	27.6	10.7	9.2	2.0	35.7	26.1	0.0
Level of Service	D	D	C	B	A	A	D	C	A
Approach Delay (s)		37.3			9.2		32.3		
Approach LOS		D			A		C		

Intersection Summary			
HCM Average Control Delay	27.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	69.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



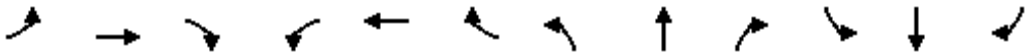
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	140	0	0	110	95	50	1160	175	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0				
Lane Util. Factor		0.95			0.95			0.86				
Frpb, ped/bikes		1.00			0.97			1.00				
Flpb, ped/bikes		0.99			1.00			1.00				
Frt		1.00			0.93			0.98				
Flt Protected		0.99			1.00			1.00				
Satd. Flow (prot)		3126			2874			5566				
Flt Permitted		0.83			1.00			1.00				
Satd. Flow (perm)		2628			2874			5566				
Peak-hour factor, PHF	0.75	0.75	0.75	0.75	0.75	0.75	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	53	187	0	0	147	127	56	1289	194	0	0	0
RTOR Reduction (vph)	0	0	0	0	8	0	0	26	0	0	0	0
Lane Group Flow (vph)	0	240	0	0	266	0	0	1513	0	0	0	0
Confl. Peds. (#/hr)	40		30	30		40	20		20			
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	2%	2%	2%
Turn Type	Perm						Split					
Protected Phases		2			2		1	1				
Permitted Phases	2											
Actuated Green, G (s)		48.0			48.0			42.0				
Effective Green, g (s)		48.0			48.0			42.0				
Actuated g/C Ratio		0.48			0.48			0.42				
Clearance Time (s)		5.0			5.0			5.0				
Lane Grp Cap (vph)		1261			1380			2338				
v/s Ratio Prot					c0.09			c0.27				
v/s Ratio Perm		0.09										
v/c Ratio		0.19			0.19			0.65				
Uniform Delay, d1		14.9			14.9			23.1				
Progression Factor		1.27			1.00			1.00				
Incremental Delay, d2		0.3			0.3			1.4				
Delay (s)		19.3			15.2			24.5				
Level of Service		B			B			C				
Approach Delay (s)		19.3			15.2			24.5			0.0	
Approach LOS		B			B			C			A	

Intersection Summary			
HCM Average Control Delay	22.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	68.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



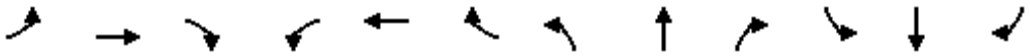
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	110	340	0	0	0	0	70	1025	200	0	0	0
Ideal Flow (vphpl)	1900	1200	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0						5.0	5.0			
Lane Util. Factor		0.95						0.91	1.00			
Frpb, ped/bikes		1.00						1.00	0.96			
Flpb, ped/bikes		1.00						1.00	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		0.99						1.00	1.00			
Satd. Flow (prot)		1987						4518	1356			
Flt Permitted		0.99						1.00	1.00			
Satd. Flow (perm)		1987						4518	1356			
Peak-hour factor, PHF	0.78	0.78	0.78	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	141	436	0	0	0	0	78	1139	222	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	127	0	0	0
Lane Group Flow (vph)	0	577	0	0	0	0	0	1217	95	0	0	0
Confl. Peds. (#/hr)	20		20	20		20	20		20			
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	2%	2%	2%
Turn Type	Split						Split		Perm			
Protected Phases	2	2					1	1				
Permitted Phases									1			
Actuated Green, G (s)		47.0						43.0	43.0			
Effective Green, g (s)		47.0						43.0	43.0			
Actuated g/C Ratio		0.47						0.43	0.43			
Clearance Time (s)		5.0						5.0	5.0			
Lane Grp Cap (vph)		934						1943	583			
v/s Ratio Prot		c0.29						c0.27				
v/s Ratio Perm									0.07			
v/c Ratio		0.62						0.63	0.16			
Uniform Delay, d1		19.8						22.2	17.5			
Progression Factor		0.84						0.32	0.03			
Incremental Delay, d2		3.0						1.2	0.5			
Delay (s)		19.7						8.4	1.1			
Level of Service		B						A	A			
Approach Delay (s)		19.7			0.0			7.2			0.0	
Approach LOS		B			A			A			A	

Intersection Summary			
HCM Average Control Delay	10.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	57.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	250	60	280	855	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					6.0		6.0	6.0				
Lane Util. Factor					0.91		0.91	0.91				
Frpb, ped/bikes					0.97		1.00	1.00				
Flpb, ped/bikes					1.00		1.00	1.00				
Frt					0.97		1.00	1.00				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					4253		1435	3017				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					4253		1435	3017				
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.83	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	0	278	72	311	950	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	17	0	148	2	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	333	0	132	979	0	0	0	0
Confl. Peds. (#/hr)				100		100	100		105			
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	3%	3%	3%	2%	2%	2%
Turn Type							Split					
Protected Phases					2		1	1				
Permitted Phases												
Actuated Green, G (s)					44.0		44.0	44.0				
Effective Green, g (s)					44.0		44.0	44.0				
Actuated g/C Ratio					0.44		0.44	0.44				
Clearance Time (s)					6.0		6.0	6.0				
Lane Grp Cap (vph)					1871		631	1327				
v/s Ratio Prot					c0.08		0.09	c0.32				
v/s Ratio Perm												
v/c Ratio					0.18		0.21	0.74				
Uniform Delay, d1					17.0		17.3	23.2				
Progression Factor					1.00		0.00	0.32				
Incremental Delay, d2					0.2		0.6	2.9				
Delay (s)					17.2		0.6	10.3				
Level of Service					B		A	B				
Approach Delay (s)		0.0			17.2			8.2			0.0	
Approach LOS		A			B			A			A	

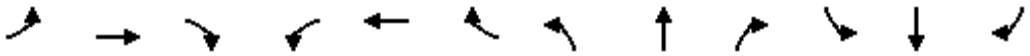
Intersection Summary			
HCM Average Control Delay	10.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑	↱		↑↑				
Volume (vph)	0	545	0	0	420	0	0	1000	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0				
Lane Util. Factor		*0.55			1.00			0.95				
Frpb, ped/bikes		1.00			1.00			1.00				
Flpb, ped/bikes		1.00			1.00			1.00				
Frt		1.00			1.00			1.00				
Flt Protected		1.00			1.00			1.00				
Satd. Flow (prot)		1710			1555			2997				
Flt Permitted		1.00			1.00			1.00				
Satd. Flow (perm)		1710			1555			2997				
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	619	0	0	477	0	0	1111	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	619	0	0	477	0	0	1111	0	0	0	0
Confl. Peds. (#/hr)	600		600	600		600	390		300			
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	10%	2%	2%	10%	2%	3%	3%	3%	2%	2%	2%
Parking (#/hr)								0				
Turn Type						Perm						
Protected Phases		1			1			2				
Permitted Phases						1						
Actuated Green, G (s)		45.0			45.0			45.0				
Effective Green, g (s)		45.0			45.0			45.0				
Actuated g/C Ratio		0.45			0.45			0.45				
Clearance Time (s)		5.0			5.0			5.0				
Lane Grp Cap (vph)		770			700			1349				
v/s Ratio Prot		c0.36			0.31			c0.37				
v/s Ratio Perm												
v/c Ratio		0.80			0.68			0.82				
Uniform Delay, d1		23.7			21.8			24.0				
Progression Factor		0.55			1.00			0.55				
Incremental Delay, d2		7.9			5.3			4.5				
Delay (s)		21.0			27.1			17.8				
Level of Service		C			C			B				
Approach Delay (s)		21.0			27.1			17.8			0.0	
Approach LOS		C			C			B			A	

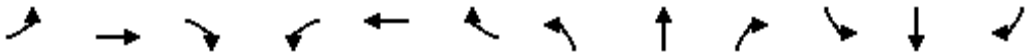
Intersection Summary			
HCM Average Control Delay	20.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	63.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	15	0	0	35	10	150	955	15	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		5.0	5.0				
Lane Util. Factor		1.00			1.00		1.00	0.91				
Frpb, ped/bikes		1.00			0.98		1.00	1.00				
Flpb, ped/bikes		0.94			1.00		1.00	1.00				
Frt		1.00			0.97		1.00	1.00				
Flt Protected		0.96			1.00		0.95	1.00				
Satd. Flow (prot)		1509			1610		1433	4506				
Flt Permitted		0.72			1.00		0.95	1.00				
Satd. Flow (perm)		1132			1610		1433	4506				
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	111	17	0	0	39	11	167	1061	17	0	0	0
RTOR Reduction (vph)	0	0	0	0	9	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	128	0	0	41	0	167	1077	0	0	0	0
Confl. Peds. (#/hr)	45		35	35		45	190		130			
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	3%	1%	2%	2%	2%
Parking (#/hr)							0					
Turn Type	Perm						Split					
Protected Phases		2			2		1	1				
Permitted Phases	2											
Actuated Green, G (s)		16.6			16.6		73.4	73.4				
Effective Green, g (s)		16.6			16.6		73.4	73.4				
Actuated g/C Ratio		0.17			0.17		0.73	0.73				
Clearance Time (s)		5.0			5.0		5.0	5.0				
Vehicle Extension (s)		3.0			3.0		2.0	2.0				
Lane Grp Cap (vph)		188			267		1052	3307				
v/s Ratio Prot					0.03		0.12	c0.24				
v/s Ratio Perm		c0.11										
v/c Ratio		0.68			0.15		0.16	0.33				
Uniform Delay, d1		39.2			35.7		4.0	4.6				
Progression Factor		1.01			1.00		0.09	0.08				
Incremental Delay, d2		9.6			0.3		0.2	0.2				
Delay (s)		49.2			36.0		0.6	0.5				
Level of Service		D			D		A	A				
Approach Delay (s)		49.2			36.0			0.6			0.0	
Approach LOS		D			D			A			A	

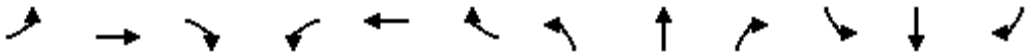
Intersection Summary			
HCM Average Control Delay	6.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	47.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	45	35	0	0	100	160	15	965	85	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		5.0	5.0				
Lane Util. Factor		1.00			1.00		1.00	0.91				
Frpb, ped/bikes		1.00			0.98		1.00	0.98				
Flpb, ped/bikes		1.00			1.00		1.00	1.00				
Frt		1.00			0.92		1.00	0.99				
Flt Protected		0.97			1.00		0.95	1.00				
Satd. Flow (prot)		1624			1509		1433	4255				
Flt Permitted		0.70			1.00		0.95	1.00				
Satd. Flow (perm)		1163			1509		1433	4255				
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	50	39	0	0	111	178	17	1072	94	0	0	0
RTOR Reduction (vph)	0	0	0	0	39	0	0	10	0	0	0	0
Lane Group Flow (vph)	0	89	0	0	250	0	17	1156	0	0	0	0
Confl. Peds. (#/hr)	10		45	45		10	140		100			
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%	2%	2%
Parking (#/hr)							0	0				
Turn Type	Perm						Split					
Protected Phases		2			2		1	1				
Permitted Phases	2											
Actuated Green, G (s)		32.0			32.0		58.0	58.0				
Effective Green, g (s)		32.0			32.0		58.0	58.0				
Actuated g/C Ratio		0.32			0.32		0.58	0.58				
Clearance Time (s)		5.0			5.0		5.0	5.0				
Lane Grp Cap (vph)		372			483		831	2468				
v/s Ratio Prot					c0.17		0.01	c0.27				
v/s Ratio Perm		0.08										
v/c Ratio		0.24			0.52		0.02	0.47				
Uniform Delay, d1		25.0			27.7		8.9	12.1				
Progression Factor		1.33			1.00		0.41	0.35				
Incremental Delay, d2		1.5			3.9		0.0	0.6				
Delay (s)		34.9			31.6		3.7	4.8				
Level of Service		C			C		A	A				
Approach Delay (s)		34.9			31.6			4.8			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	11.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	70.8%	ICU Level of Service	C
Analysis Period (min)	15		

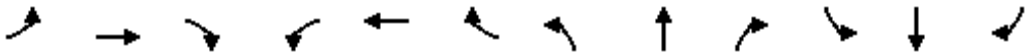
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	280	0	0	340	55	380	700	90	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		5.0	5.0				
Lane Util. Factor		0.95			0.95		1.00	0.91				
Frpb, ped/bikes		1.00			0.99		1.00	0.99				
Flpb, ped/bikes		0.99			1.00		1.00	1.00				
Frt		1.00			0.98		1.00	0.98				
Flt Protected		0.99			1.00		0.95	1.00				
Satd. Flow (prot)		3139			3082		1419	4282				
Flt Permitted		0.76			1.00		0.95	1.00				
Satd. Flow (perm)		2404			3082		1419	4282				
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	68	318	0	0	386	62	422	778	100	0	0	0
RTOR Reduction (vph)	0	0	0	0	13	0	0	16	0	0	0	0
Lane Group Flow (vph)	0	386	0	0	435	0	422	862	0	0	0	0
Confl. Peds. (#/hr)	50		15	15		50	20		30			
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	2%	2%	2%
Parking (#/hr)							0	0				
Turn Type	Perm						Split					
Protected Phases		2			2		1	1				
Permitted Phases	2							1				
Actuated Green, G (s)		31.0			31.0		59.0	59.0				
Effective Green, g (s)		31.0			31.0		59.0	59.0				
Actuated g/C Ratio		0.31			0.31		0.59	0.59				
Clearance Time (s)		5.0			5.0		5.0	5.0				
Lane Grp Cap (vph)		745			955		837	2526				
v/s Ratio Prot					0.14		c0.30	0.20				
v/s Ratio Perm		c0.16										
v/c Ratio		0.52			0.46		0.50	0.34				
Uniform Delay, d1		28.4			27.7		12.0	10.5				
Progression Factor		0.91			1.00		0.28	0.29				
Incremental Delay, d2		2.4			1.6		1.9	0.3				
Delay (s)		28.3			29.3		5.3	3.4				
Level of Service		C			C		A	A				
Approach Delay (s)		28.3			29.3			4.0			0.0	
Approach LOS		C			C			A			A	

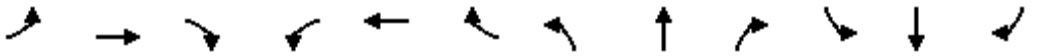
Intersection Summary			
HCM Average Control Delay	13.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	70.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	35	155	0	0	0	0	0	400	10	185	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0						6.0		5.0		
Lane Util. Factor		0.95						0.95		1.00		
Frpb, ped/bikes		1.00						1.00		1.00		
Flpb, ped/bikes		1.00						1.00		1.00		
Frt		1.00						1.00		1.00		
Flt Protected		0.99						1.00		0.95		
Satd. Flow (prot)		3507						3524		1765		
Flt Permitted		0.99						1.00		0.43		
Satd. Flow (perm)		3507						3524		791		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	39	172	0	0	0	0	0	444	11	206	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	211	0	0	0	0	0	453	0	206	0	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			2			2			2			2
Turn Type	Split									custom		
Protected Phases	3	3						1 4		2		
Permitted Phases										1 2		
Actuated Green, G (s)		17.3						44.7		45.9		
Effective Green, g (s)		17.3						39.7		45.9		
Actuated g/C Ratio		0.17						0.40		0.46		
Clearance Time (s)		6.0								5.0		
Vehicle Extension (s)		4.0								4.0		
Lane Grp Cap (vph)		607						1399		568		
v/s Ratio Prot		c0.06						c0.13		c0.08		
v/s Ratio Perm										c0.09		
v/c Ratio		0.35						0.32		0.36		
Uniform Delay, d1		36.4						20.9		21.3		
Progression Factor		0.41						0.55		0.42		
Incremental Delay, d2		0.4						0.2		0.5		
Delay (s)		15.2						11.6		9.5		
Level of Service		B						B		A		
Approach Delay (s)		15.2			0.0			11.6			9.5	
Approach LOS		B			A			B			A	

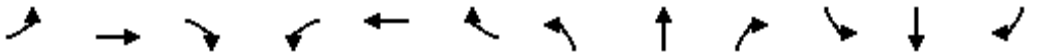
Intersection Summary			
HCM Average Control Delay	12.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	52.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	80	750	90	55	380	0	0	105	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.0			6.0			6.0	6.0
Lane Util. Factor					0.91			0.95			1.00	1.00
Frpb, ped/bikes					1.00			1.00			1.00	0.97
Flpb, ped/bikes					1.00			1.00			1.00	1.00
Frt					0.99			1.00			1.00	0.85
Flt Protected					1.00			0.99			1.00	1.00
Satd. Flow (prot)					4965			3512			1863	1386
Flt Permitted					1.00			0.90			1.00	1.00
Satd. Flow (perm)					4965			3191			1863	1386
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	89	833	100	61	422	0	0	117	244
RTOR Reduction (vph)	0	0	0	0	14	0	0	0	0	0	0	183
Lane Group Flow (vph)	0	0	0	0	1008	0	0	483	0	0	117	61
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			2			2			2			2
Parking (#/hr)												0
Turn Type				Perm			D.P+P					Perm
Protected Phases					2 3		4	1 4			1	
Permitted Phases				2 3			1					1
Actuated Green, G (s)					43.3			39.7			24.9	24.9
Effective Green, g (s)					43.3			39.7			24.9	24.9
Actuated g/C Ratio					0.43			0.40			0.25	0.25
Clearance Time (s)											6.0	6.0
Vehicle Extension (s)											2.0	2.0
Lane Grp Cap (vph)					2150			1314			464	345
v/s Ratio Prot								c0.05			0.06	
v/s Ratio Perm					0.20			c0.09				0.04
v/c Ratio					0.47			0.37			0.25	0.18
Uniform Delay, d1					20.2			21.3			30.1	29.5
Progression Factor					1.00			0.19			1.00	1.00
Incremental Delay, d2					0.2			0.2			1.3	1.1
Delay (s)					20.4			4.3			31.4	30.6
Level of Service					C			A			C	C
Approach Delay (s)		0.0			20.4			4.3			30.9	
Approach LOS		A			C			A			C	

Intersection Summary			
HCM Average Control Delay	18.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	69.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	560	10	25	85	0	5	5	290	215	550	350
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		6.0	6.0		6.0	6.0			6.0	6.0
Lane Util. Factor		0.95		1.00	1.00		1.00	1.00			0.95	1.00
Frt		1.00		1.00	1.00		1.00	0.85			1.00	0.85
Flt Protected		1.00		0.95	1.00		0.95	1.00			0.99	1.00
Satd. Flow (prot)		3528		1770	1863		1593	1588			3490	1583
Flt Permitted		0.95		0.33	1.00		0.28	1.00			0.72	1.00
Satd. Flow (perm)		3363		608	1863		477	1588			2561	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.88	0.88	0.88	0.80	0.80	0.80	0.89	0.89	0.89
Adj. Flow (vph)	6	622	11	28	97	0	6	6	362	242	618	393
RTOR Reduction (vph)	0	2	0	0	0	0	0	52	0	0	0	197
Lane Group Flow (vph)	0	637	0	28	97	0	6	316	0	0	860	197
Parking (#/hr)							0					
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		1
Actuated Green, G (s)		18.0		18.0	18.0		30.0	30.0			30.0	30.0
Effective Green, g (s)		18.0		18.0	18.0		30.0	30.0			30.0	30.0
Actuated g/C Ratio		0.30		0.30	0.30		0.50	0.50			0.50	0.50
Clearance Time (s)		6.0		6.0	6.0		6.0	6.0			6.0	6.0
Vehicle Extension (s)		4.0		4.0	4.0		4.0	4.0			4.0	4.0
Lane Grp Cap (vph)		1009		182	559		239	794			1281	792
v/s Ratio Prot					0.05			0.20				
v/s Ratio Perm		c0.19		0.05			0.01				c0.34	0.12
v/c Ratio		0.63		0.15	0.17		0.03	0.40			0.67	0.25
Uniform Delay, d1		18.1		15.4	15.5		7.6	9.4			11.3	8.6
Progression Factor		1.00		1.00	1.00		1.00	1.00			1.16	3.49
Incremental Delay, d2		1.5		0.5	0.2		0.2	1.5			2.5	0.7
Delay (s)		19.6		15.9	15.7		7.8	10.9			15.7	30.6
Level of Service		B		B	B		A	B			B	C
Approach Delay (s)		19.6			15.8			10.8			20.3	
Approach LOS		B			B			B			C	

Intersection Summary			
HCM Average Control Delay	18.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

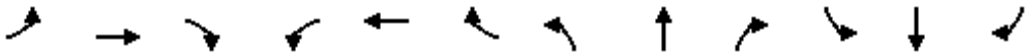
Movement	WBL	WBR	NBT	NBR	NBR2	SBL	SBT	SWL2	SWL	SWR
Lane Configurations										
Volume (vph)	25	0	0	0	10	10	540	5	550	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0				5.0		5.0		5.0	
Lane Util. Factor	1.00				1.00		0.95		0.97	
Frt	1.00				0.86		1.00		1.00	
Flt Protected	0.95				1.00		1.00		0.95	
Satd. Flow (prot)	1770				1611		3536		3433	
Flt Permitted	0.95				1.00		1.00		0.95	
Satd. Flow (perm)	1770				1611		3536		3433	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	28	0	0	0	11	11	600	6	611	0
RTOR Reduction (vph)	0	0	0	0	11	0	0	0	0	0
Lane Group Flow (vph)	28	0	0	0	0	0	611	0	617	0
Turn Type					custom	Perm		Perm		
Protected Phases	2				2		1		3	
Permitted Phases					2	1		3		
Actuated Green, G (s)	2.6				2.6		23.5		18.9	
Effective Green, g (s)	2.6				2.6		23.5		18.9	
Actuated g/C Ratio	0.04				0.04		0.39		0.32	
Clearance Time (s)	5.0				5.0		5.0		5.0	
Vehicle Extension (s)	2.0				2.0		3.0		3.0	
Lane Grp Cap (vph)	77				70		1385		1081	
v/s Ratio Prot	c0.02				0.00					
v/s Ratio Perm							0.17		0.18	
v/c Ratio	0.36				0.01		0.44		0.57	
Uniform Delay, d1	27.9				27.5		13.4		17.2	
Progression Factor	1.00				1.00		1.00		1.00	
Incremental Delay, d2	1.1				0.0		1.0		0.7	
Delay (s)	29.0				27.5		14.4		17.9	
Level of Service	C				C		B		B	
Approach Delay (s)	29.0		27.5				14.4		17.9	
Approach LOS	C		C				B		B	

Intersection Summary			
HCM Average Control Delay	16.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	46.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL2	WBL	SBL2	SBL	SBT	SBR
Lane Configurations						
Volume (vph)	150	100	150	660	450	405
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.88
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.96
Flpb, ped/bikes	0.98	1.00	0.99	0.98	1.00	1.00
Frt	1.00	1.00	1.00	1.00	1.00	0.85
Flt Protected	0.95	0.95	0.95	0.95	1.00	1.00
Satd. Flow (prot)	1569	1593	1575	1563	3185	2412
Flt Permitted	0.95	0.95	0.95	0.95	1.00	1.00
Satd. Flow (perm)	1569	1593	1575	1563	3185	2412
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	167	111	167	733	500	450
RTOR Reduction (vph)	0	0	0	0	0	112
Lane Group Flow (vph)	167	111	167	733	500	338
Confl. Peds. (#/hr)	10	10	10	10		10
Turn Type	Perm		Perm	Perm		Perm
Protected Phases		2			1	
Permitted Phases	2		1	1		1
Actuated Green, G (s)	14.9	14.9	75.1	75.1	75.1	75.1
Effective Green, g (s)	14.9	14.9	75.1	75.1	75.1	75.1
Actuated g/C Ratio	0.15	0.15	0.75	0.75	0.75	0.75
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	234	237	1183	1174	2392	1811
v/s Ratio Prot		0.07			0.16	
v/s Ratio Perm	c0.11		0.11	c0.47		0.14
v/c Ratio	0.71	0.47	0.14	0.62	0.21	0.19
Uniform Delay, d1	40.5	38.9	3.5	5.8	3.7	3.6
Progression Factor	0.99	0.98	1.33	1.45	1.31	3.45
Incremental Delay, d2	8.3	0.5	0.2	1.9	0.2	0.2
Delay (s)	48.2	38.6	4.8	10.3	5.0	12.6
Level of Service	D	D	A	B	A	B
Approach Delay (s)		44.4			8.9	
Approach LOS		D			A	

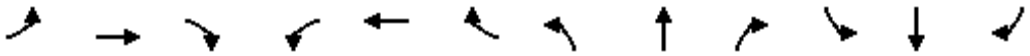
Intersection Summary			
HCM Average Control Delay	13.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	60.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



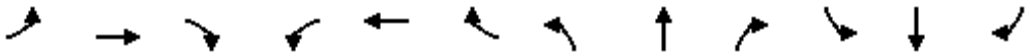
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	175	350	150	200	0	0	0	0	150	1165	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0	2.0	2.0					3.0	3.0	
Lane Util. Factor		0.95	0.95	1.00	1.00					1.00	*0.76	
Frpb, ped/bikes		0.96	0.90	1.00	1.00					1.00	0.99	
Flpb, ped/bikes		1.00	1.00	0.99	1.00					1.00	1.00	
Frt		0.94	0.85	1.00	1.00					1.00	0.99	
Flt Protected		1.00	1.00	0.95	1.00					0.95	1.00	
Satd. Flow (prot)		1451	1222	1579	1676					1593	4940	
Flt Permitted		1.00	1.00	0.28	1.00					0.95	1.00	
Satd. Flow (perm)		1451	1222	470	1676					1593	4940	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	194	389	167	222	0	0	0	0	167	1294	111
RTOR Reduction (vph)	0	21	147	0	0	0	0	0	0	0	11	0
Lane Group Flow (vph)	0	286	129	167	222	0	0	0	0	167	1394	0
Confl. Peds. (#/hr)	55		50	50		55				35		50
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Parking (#/hr)	0											
Turn Type			Perm	pm+pt						Split		
Protected Phases		4		2	2 4					1	1	
Permitted Phases			4	2 4								
Actuated Green, G (s)		24.0	24.0	36.6	36.6					38.0	38.0	
Effective Green, g (s)		27.0	27.0	40.6	40.6					41.0	41.0	
Actuated g/C Ratio		0.27	0.27	0.41	0.41					0.41	0.41	
Clearance Time (s)		6.0	6.0	4.0						6.0	6.0	
Vehicle Extension (s)		3.0	3.0	3.0						2.0	2.0	
Lane Grp Cap (vph)		392	330	353	680					653	2025	
v/s Ratio Prot		c0.20		c0.07	0.13					0.10	c0.28	
v/s Ratio Perm			0.11	0.12								
v/c Ratio		0.73	0.39	0.47	0.33					0.26	0.69	
Uniform Delay, d1		33.2	29.8	20.8	20.3					19.4	24.2	
Progression Factor		1.00	1.00	1.00	0.98					0.66	0.58	
Incremental Delay, d2		11.3	3.4	1.0	0.3					0.7	1.4	
Delay (s)		44.5	33.2	21.7	20.2					13.6	15.4	
Level of Service		D	C	C	C					B	B	
Approach Delay (s)		39.2			20.8			0.0			15.2	
Approach LOS		D			C			A			B	

Intersection Summary					
HCM Average Control Delay	21.6	HCM Level of Service		C	
HCM Volume to Capacity ratio	0.66				
Actuated Cycle Length (s)	100.0	Sum of lost time (s)		17.4	
Intersection Capacity Utilization	60.2%	ICU Level of Service		B	
Analysis Period (min)	15				
c Critical Lane Group					



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	80	275	240	330	0	0	0	0	20	900	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0						5.5	
Lane Util. Factor		1.00	1.00	0.97	0.95						*0.72	
Frpb, ped/bikes		1.00	0.89	1.00	1.00						0.99	
Flpb, ped/bikes		1.00	1.00	0.94	1.00						1.00	
Frt		1.00	0.85	1.00	1.00						0.99	
Flt Protected		1.00	1.00	0.95	1.00						1.00	
Satd. Flow (prot)		1660	1251	2875	3154						4685	
Flt Permitted		1.00	1.00	0.70	1.00						1.00	
Satd. Flow (perm)		1660	1251	2116	3154						4685	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	89	306	267	367	0	0	0	0	22	1000	67
RTOR Reduction (vph)	0	0	83	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	89	224	267	367	0	0	0	0	0	1082	0
Confl. Peds. (#/hr)	50		60	60		50				120		70
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	2%	2%	2%	3%	3%	3%
Turn Type			Perm	custom						Prot		
Protected Phases		3		4	3 4 7					2	2 6	
Permitted Phases			3	3 4								
Actuated Green, G (s)		25.0	25.0	48.0	57.0						32.5	
Effective Green, g (s)		25.0	25.0	48.0	57.0						32.5	
Actuated g/C Ratio		0.25	0.25	0.48	0.57						0.32	
Clearance Time (s)		5.0	5.0	5.0								
Lane Grp Cap (vph)		415	313	1190	1798						1523	
v/s Ratio Prot		0.05		0.05	c0.12						c0.20	
v/s Ratio Perm			c0.18	0.06							0.03	
v/c Ratio		0.21	0.71	0.22	0.20						0.71	
Uniform Delay, d1		29.7	34.2	15.5	10.5						29.6	
Progression Factor		1.00	1.00	1.35	1.38						0.33	
Incremental Delay, d2		1.2	13.0	0.4	0.3						2.3	
Delay (s)		30.9	47.3	21.4	14.7						11.9	
Level of Service		C	D	C	B						B	
Approach Delay (s)		43.6			17.5			0.0			11.9	
Approach LOS		D			B			A			B	

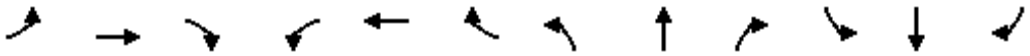
Intersection Summary			
HCM Average Control Delay	19.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	62.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	450	50	0	480	0	0	0	0	75	875	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0					5.0	5.0	
Lane Util. Factor		1.00	1.00		*0.55					1.00	0.91	
Frpb, ped/bikes		1.00	0.84		1.00					1.00	0.97	
Flpb, ped/bikes		1.00	1.00		1.00					0.94	1.00	
Frt		1.00	0.85		1.00					1.00	0.98	
Flt Protected		1.00	1.00		1.00					0.95	1.00	
Satd. Flow (prot)		1555	1116		1710					1331	4281	
Flt Permitted		1.00	1.00		1.00					0.95	1.00	
Satd. Flow (perm)		1555	1116		1710					1331	4281	
Peak-hour factor, PHF	0.85	0.85	0.85	0.90	0.90	0.90	0.90	0.90	0.90	0.86	0.86	0.86
Adj. Flow (vph)	0	529	59	0	533	0	0	0	0	87	1017	174
RTOR Reduction (vph)	0	0	35	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	529	24	0	533	0	0	0	0	87	1191	0
Confl. Peds. (#/hr)	300		120	120		300				50		180
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	10%	10%	2%	10%	2%	2%	2%	2%	3%	3%	3%
Parking (#/hr)										0		
Turn Type			Perm							Perm		
Protected Phases		1			1						3	
Permitted Phases			1							3		
Actuated Green, G (s)		41.0	41.0		41.0					41.0	41.0	
Effective Green, g (s)		41.0	41.0		41.0					41.0	41.0	
Actuated g/C Ratio		0.41	0.41		0.41					0.41	0.41	
Clearance Time (s)		5.0	5.0		5.0					5.0	5.0	
Lane Grp Cap (vph)		638	458		701					546	1755	
v/s Ratio Prot		c0.34			0.31						c0.28	
v/s Ratio Perm			0.02							0.07		
v/c Ratio		0.83	0.05		0.76					0.16	0.68	
Uniform Delay, d1		26.4	17.8		25.3					18.6	24.1	
Progression Factor		1.00	1.00		0.62					0.40	0.47	
Incremental Delay, d2		11.9	0.2		7.5					0.6	2.0	
Delay (s)		38.2	18.0		23.3					8.1	13.4	
Level of Service		D	B		C					A	B	
Approach Delay (s)		36.2			23.3			0.0			13.0	
Approach LOS		D			C			A			B	

Intersection Summary			
HCM Average Control Delay	21.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	58.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	40	30	200	10	0	0	0	0	55	870	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0						5.0	
Lane Util. Factor		1.00			1.00						0.86	
Frpb, ped/bikes		0.97			1.00						1.00	
Flpb, ped/bikes		1.00			0.95						1.00	
Frt		0.94			1.00						1.00	
Flt Protected		1.00			0.95						1.00	
Satd. Flow (prot)		1527			1513						5688	
Flt Permitted		1.00			0.68						1.00	
Satd. Flow (perm)		1527			1079						5688	
Peak-hour factor, PHF	0.90	0.90	0.90	0.95	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	44	33	211	11	0	0	0	0	61	967	6
RTOR Reduction (vph)	0	21	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	56	0	0	222	0	0	0	0	0	1033	0
Confl. Peds. (#/hr)	40		45	45		40			56	55		65
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%
Parking (#/hr)										0		
Turn Type				Perm						Split		
Protected Phases		2			2					1	1	
Permitted Phases				2								
Actuated Green, G (s)		35.0			35.0						55.0	
Effective Green, g (s)		35.0			35.0						55.0	
Actuated g/C Ratio		0.35			0.35						0.55	
Clearance Time (s)		5.0			5.0						5.0	
Lane Grp Cap (vph)		534			378						3128	
v/s Ratio Prot		0.04									c0.18	
v/s Ratio Perm					c0.21							
v/c Ratio		0.10			0.59						0.33	
Uniform Delay, d1		21.9			26.6						12.4	
Progression Factor		1.00			0.78						0.84	
Incremental Delay, d2		0.4			6.5						0.3	
Delay (s)		22.3			27.3						10.7	
Level of Service		C			C						B	
Approach Delay (s)		22.3			27.3			0.0			10.7	
Approach LOS		C			C			A			B	

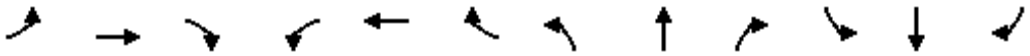
Intersection Summary			
HCM Average Control Delay	14.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	49.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	130	0	0	0	60	800
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5					5.5
Lane Util. Factor	1.00					0.86
Frpb, ped/bikes	1.00					1.00
Flpb, ped/bikes	1.00					1.00
Frt	1.00					1.00
Flt Protected	0.95					1.00
Satd. Flow (prot)	1593					5695
Flt Permitted	0.95					1.00
Satd. Flow (perm)	1593					5695
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	144	0	0	0	67	889
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	144	0	0	0	0	956
Confl. Peds. (#/hr)					50	
Confl. Bikes (#/hr)		5		5		
Heavy Vehicles (%)	2%	2%	2%	2%	2%	3%
Parking (#/hr)					0	
Turn Type					Split	
Protected Phases	2				1	1
Permitted Phases						
Actuated Green, G (s)	25.5					63.5
Effective Green, g (s)	25.5					63.5
Actuated g/C Ratio	0.26					0.64
Clearance Time (s)	5.5					5.5
Lane Grp Cap (vph)	406					3616
v/s Ratio Prot	c0.09					c0.17
v/s Ratio Perm						
v/c Ratio	0.35					0.26
Uniform Delay, d1	30.5					8.0
Progression Factor	1.45					0.59
Incremental Delay, d2	2.2					0.2
Delay (s)	46.6					4.9
Level of Service	D					A
Approach Delay (s)	46.6		0.0			4.9
Approach LOS	D		A			A

Intersection Summary			
HCM Average Control Delay	10.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	31.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	240	180	100	230	0	0	0	0	100	580	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0						5.0	
Lane Util. Factor		0.95			0.95						0.91	
Frpb, ped/bikes		0.98			1.00						1.00	
Flpb, ped/bikes		1.00			0.99						1.00	
Frt		0.94			1.00						0.99	
Flt Protected		1.00			0.99						0.99	
Satd. Flow (prot)		2763			2963						4305	
Flt Permitted		1.00			0.68						0.99	
Satd. Flow (perm)		2763			2050						4305	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	267	200	111	256	0	0	0	0	111	644	44
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	467	0	0	367	0	0	0	0	0	793	0
Confl. Peds. (#/hr)	40		30	30		40				20		20
Confl. Bikes (#/hr)			5			5			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Parking (#/hr)	0	0	0	0	0	0				0	0	0
Turn Type				Perm						Split		
Protected Phases		2			2					1	1	
Permitted Phases				2								
Actuated Green, G (s)		44.0			44.0						46.0	
Effective Green, g (s)		44.0			44.0						46.0	
Actuated g/C Ratio		0.44			0.44						0.46	
Clearance Time (s)		5.0			5.0						5.0	
Lane Grp Cap (vph)		1216			902						1980	
v/s Ratio Prot		0.17									c0.18	
v/s Ratio Perm					c0.18							
v/c Ratio		0.38			0.41						0.40	
Uniform Delay, d1		18.9			19.1						17.9	
Progression Factor		1.00			1.19						1.18	
Incremental Delay, d2		0.9			1.2						0.6	
Delay (s)		19.8			23.9						21.7	
Level of Service		B			C						C	
Approach Delay (s)		19.8			23.9			0.0			21.7	
Approach LOS		B			C			A			C	

Intersection Summary			
HCM Average Control Delay	21.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	64.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	EBR2	NBT	NBR	SBL2	SBL	SBT
Lane Configurations									
Volume (vph)	430	130	5	260	410	5	50	5	460
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0		5.0				5.0
Lane Util. Factor	0.91	0.86	0.91		1.00				0.91
Frpb, ped/bikes	1.00	1.00	0.96		1.00				1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00				1.00
Frt	1.00	1.00	0.85		1.00				1.00
Flt Protected	0.95	0.97	1.00		1.00				0.99
Satd. Flow (prot)	1610	3101	1351		1673				5005
Flt Permitted	0.95	0.97	1.00		1.00				0.84
Satd. Flow (perm)	1610	3101	1351		1673				4252
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	478	144	6	289	456	6	56	6	511
RTOR Reduction (vph)	0	0	229	0	0	0	0	0	0
Lane Group Flow (vph)	239	388	61	0	462	0	0	0	573
Confl. Peds. (#/hr)	10		10	10		10	10	10	
Confl. Bikes (#/hr)			2	2					
Heavy Vehicles (%)	2%	2%	2%	4%	2%	2%	2%	2%	3%
Parking (#/hr)					0	0			
Turn Type	Split		Perm				pm+pt	Perm	
Protected Phases	2	2			1		3		1 3
Permitted Phases			2		1		1 3	1 3	
Actuated Green, G (s)	20.9	20.9	20.9		29.0				69.1
Effective Green, g (s)	20.9	20.9	20.9		29.0				69.1
Actuated g/C Ratio	0.21	0.21	0.21		0.29				0.69
Clearance Time (s)	5.0	5.0	5.0		5.0				
Vehicle Extension (s)	3.0	3.0	3.0		2.0				
Lane Grp Cap (vph)	336	648	282		485				2938
v/s Ratio Prot	c0.15	0.13			c0.28				
v/s Ratio Perm			0.05						c0.13
v/c Ratio	0.71	0.60	0.22		0.95				0.20
Uniform Delay, d1	36.7	35.8	32.8		34.8				5.5
Progression Factor	1.00	1.00	1.00		1.00				0.17
Incremental Delay, d2	6.9	1.5	0.4		30.6				0.0
Delay (s)	43.7	37.3	33.2		65.4				0.9
Level of Service	D	D	C		E				A
Approach Delay (s)		37.6			65.4				0.9
Approach LOS		D			E				A

Intersection Summary			
HCM Average Control Delay	33.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR	SWR2
Lane Configurations									
Volume (vph)	235	560	230	250	530	60	280	420	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.95	1.00	0.95	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85	0.86
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	1770	1863	1526	1770	1863	1509	1863	1507	1570
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)	1770	1863	1526	1770	1863	1509	1863	1507	1570
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	261	622	256	278	589	67	311	467	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	102	0
Lane Group Flow (vph)	261	622	256	278	589	67	311	365	11
Confl. Peds. (#/hr)	10		10	10		10		10	10
Confl. Bikes (#/hr)			2			2		2	2
Turn Type	Split		Perm	custom		Perm		Perm	Free
Protected Phases	3	3		2	1 2		1		
Permitted Phases			3	2		1 2	1	1	Free
Actuated Green, G (s)	35.1	35.1	35.1	20.9	54.9	54.9	29.0	29.0	100.0
Effective Green, g (s)	35.1	35.1	35.1	20.9	54.9	54.9	29.0	29.0	100.0
Actuated g/C Ratio	0.35	0.35	0.35	0.21	0.55	0.55	0.29	0.29	1.00
Clearance Time (s)	5.0	5.0	5.0	5.0			5.0	5.0	
Vehicle Extension (s)	2.0	2.0	2.0	3.0			2.0	2.0	
Lane Grp Cap (vph)	621	654	536	370	1023	828	540	437	1570
v/s Ratio Prot	0.15	c0.33		c0.16	0.32		0.17		
v/s Ratio Perm			0.17			0.04		c0.24	0.01
v/c Ratio	0.42	0.95	0.48	0.75	0.58	0.08	0.58	0.84	0.01
Uniform Delay, d1	24.7	31.6	25.3	37.1	14.9	10.6	30.3	33.3	0.0
Progression Factor	0.87	0.93	0.88	0.36	0.19	0.18	1.00	1.00	1.00
Incremental Delay, d2	0.2	22.1	0.2	5.1	0.5	0.0	4.4	17.1	0.0
Delay (s)	21.7	51.4	22.6	18.6	3.3	2.0	34.7	50.4	0.0
Level of Service	C	D	C	B	A	A	C	D	A
Approach Delay (s)		38.1			7.7		44.1		
Approach LOS		D			A		D		

Intersection Summary			
HCM Average Control Delay	29.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	82.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			