
Final Report

De Pere Mulva Cultural Center Traffic Impact Analysis

Prepared for

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Contents

De Pere Mulva Cultural Center Traffic Impact Analysis Executive Summary	i
Overview.....	i
Evaluation	i
Summary	ii
De Pere Mulva Cultural Center Traffic Impact Analysis	1
Background.....	1
Purpose of this Study	1
Analysis Approach	1
Proposed Development.....	2
Intersection Evaluation	2
Traffic Operations.....	2
2020 Existing Conditions	3
2021 Build Conditions	6
2021 Build Conditions with Right-In/Right-Out Only Access at S. Broadway & Lewis Street	8
Summary.....	9

De Pere Mulva Cultural Center Traffic Impact Analysis

Executive Summary

Overview

This Traffic Impact Analysis (TIA) is an effort to evaluate the potential traffic impacts as a result of the proposed Mulva Cultural Center development. The proposed development will be in the SE quadrant of the roundabout at Main Avenue and S. Broadway and will occupy what is currently two separate parcels – an undeveloped parcel on the west side of Wisconsin Street and Notre Dame Middle School on the east side of Wisconsin Street. This segment of Wisconsin Street between the two parcels will be eliminated and Notre Dame Middle School will be moving to a new location. See the Project Location Map and Proposed Development Map in Appendix A for details.

The hours of operation of the proposed Mulva Cultural Center will be from 9:00 AM to 6:00 PM, six or seven days a week with occasional private receptions in the evening. Included within the center will be a 224-seat auditorium; a 2,730 square foot, 71-seat restaurant; two classrooms totaling 1,700 square feet and seating 48; a 10,180 square foot exhibit space; and an 1,840 square foot gift shop.

The study area was defined collectively by the developer, the City and JT Engineering. This report details the analysis performed to evaluate the potential impacts to the following intersections as a result of the proposed Mulva Cultural Center development:

- 1) S. Broadway & Lewis Street
- 2) S. Broadway & Merrill Street
- 3) Merrill Street & Chicago Street
- 4) Chicago Street & S. Wisconsin Street
- 5) George Street & Michigan Street
- 6) Lewis Street & Erie Street

Evaluation

The intersections were analyzed using Synchro software. Analysis times included the AM, Midday, PM, and Saturday peak periods for the 2020 Existing Conditions scenario plus the Midday, PM, and Saturday peak periods for the following scenarios:

- Future year 2021 Build (Total Traffic) Conditions
- Future year 2021 Build (Total Traffic) Conditions with right-in/right-out only access westbound at the intersection of S. Broadway and Lewis Street

The existing base traffic volumes used were generated from the video counts taken utilizing Miovision cameras. The videos also allowed for an analysis of existing conditions and driver behavior at the intersections.

The 2021 projected traffic volumes were based on a growth rate of approximately 0.5% per year. This was based on the WisDOT Planning Forecast Unit data for the Hwy 32 crossing of the Fox River and Hwy 57 (Broadway). The 2021 build scenario included the traffic expected to be generated by the proposed development, which was determined based on the number of available parking

spaces. See Appendix A for the Proposed Development Map which provides details for the on-site parking and driveway locations.

There was no commonality between the Notre Dame Middle School TIA and the Mulva Cultural Center TIA so therefore changes resulting from the school moving to a new location were not incorporated into the report.

Summary

The analysis of the Existing Conditions shows that all six intersections operate at Level of Service (LOS) A during the AM, midday, PM, and Saturday peak periods. All movements operate at LOS C or better.

The analysis of the Build Conditions shows that all six intersections operate at LOS A during the midday, PM, and Saturday peak periods. All movements operate at LOS C or better during the midday and Saturday peak periods. During the PM peak period, the stop-controlled northbound approach at the intersection of Michigan Street and George Street operates at a LOS D and the stop-controlled westbound approach at the intersection of S. Broadway and Lewis Street operates at a LOS F based on HCM two-way stop-controlled (TWSC) delay output.

During the Existing AM peak, review of the Miovision videos showed network operations were largely affected by the roundabout at Main Avenue and S. Broadway. Since this intersection was not part of the study area, these impacts were not seen through the Synchro analysis. Northbound traffic from the roundabout was viewed queueing back on S. Broadway through the intersection of S. Broadway and Lewis Street for the entire observed 15-minute peak and at times the queue reached back to the center of the intersection of S. Broadway and Merrill Street. Although queued traffic left gaps at the intersection of S. Broadway and Lewis Street, this poses a safety issue for westbound left-turning traffic due to the inability to see past the northbound queued traffic to observe vehicles coming southbound in the right lane.

During the Existing PM peak, review of the Miovision videos showed similar effects from the roundabout at Main Avenue and S. Broadway, including long northbound queues through the intersection of S. Broadway and Lewis Street posing a safety issue for left-turning traffic. The 95th percentile queue length for the southbound through/left movement at the intersection of S. Broadway and Lewis Street, as reported from SimTraffic, extends 170 feet. This is within 12 feet of the crosswalk on the south leg of the roundabout at Main Avenue and S. Broadway. During the 2021 PM peak under Build conditions, the 95th percentile queue length at this same location extends 204 feet and the queue would now back up through the crosswalk. The proximity of these two intersections, in conjunction with southbound queuing at Lewis Street, poses a safety issue for westbound left-turning traffic at Lewis Street due to the inability to easily see past the queuing to observe the large volume of southbound traffic coming from the roundabout in the right lane. It also poses a safety issue for southbound traffic exiting the roundabout with the potential lane changes required to avoid the stopped traffic wishing to turn left at Lewis Street. And finally, it poses a safety issue for pedestrians wishing to cross the south leg of the roundabout.

To address the proximity of the intersection of S. Broadway and Lewis Street with the roundabout at Main Avenue, an analysis was completed for the PM peak with the westbound movement on Lewis

Street modified to right-in/right-out only. Background and development traffic were redistributed to surrounding intersections. The analysis shows that all six intersections operate at LOS A during the PM peak period. All movements operate at LOS C or better except for the northbound approach at the intersection of Michigan Street and George Street which operates at a LOS D. Delay for this stop-controlled northbound movement on Michigan Street increased by less than 5 seconds with the additional traffic from the redistribution.

The concept of modifying the westbound movement on Lewis Street to right-in/right-out is recommended. The Miovision video at the intersection of S. Broadway and Lewis Street showed that during peak periods, the westbound movement is already operating as a de facto right-out due to the proximity of Lewis Street to the roundabout at Main Avenue. Drivers are choosing or have learned to avoid attempts at a left-out movement. The overall data shows only one vehicle making a left turn from Lewis Street onto S. Broadway on a weekday between the hours of 11:00 AM – 6:00 PM, none during AM or PM peak times. On Saturday, two vehicles made this left turn between 11:00 AM – 3:00 PM. Making this modification will provide for increased overall network safety by eliminating both the southbound queue and the left turn movements. Left turning vehicles are redistributed to the traffic signal at S. Broadway and Merrill Street to the south or become right turns at the intersection of Michigan Street and George Street resulting in safer access to the desired corridors.

There are no other improvements required to provide LOS D or better for all traffic movements.

De Pere Mulva Cultural Center Traffic Impact Analysis

Background

The proposed development will be in the SE quadrant of the roundabout at Main Avenue and S. Broadway and will occupy what is currently two separate parcels – an undeveloped parcel on the west side of Wisconsin Street and Notre Dame Middle School on the east side of Wisconsin Street. This segment of Wisconsin Street between the two parcels will be eliminated and Notre Dame Middle School will be moving to a new location. See Appendix A for a Proposed Development Map.

The existing intersection details for the analyzed locations are as follows:

- 1) The intersection of S. Broadway and Lewis Street is a T intersection with stop-control westbound on Lewis Street. There is currently full access to/from Lewis Street.
- 2) The intersection of S. Broadway and Merrill Street is signalized and currently programmed to run actuated-coordinated during peak times and fully actuated during off-peak times.
- 3) The intersection of Merrill Street and Chicago Street is a two-way stop-controlled intersection with the stop control northbound and southbound on Chicago Street.
- 4) The intersection of Chicago Street and S. Wisconsin Street is a T intersection with stop-control southbound on S. Wisconsin Street.
- 5) The intersection of George Street and Michigan Street is two-way stop-controlled with the stop control northbound and southbound on Michigan Street.
- 6) The intersection of Lewis Street and Erie Street is two-way stop-controlled with the stop control eastbound and westbound on Lewis Street.

A project location map is included in Appendix A.

Purpose of this Study

This Traffic Impact Analysis (TIA) is an effort to evaluate the potential impacts to the above intersections as a result of the proposed Mulva Cultural Center development. The results of the study will be recommendations on traffic control, intersection geometrics, turn bay creation and any other improvements required to provide Level of Service (LOS) 'D' or better for all traffic movements. The intersection of S. Broadway and Lewis Street will be evaluated with right-in/right-out only access westbound from Lewis Street.

Analysis Approach

The project intersections were analyzed using Synchro software. The results generated from this software utilize the Two Way Stop Control (TWSC) and Signalized capacity methodology from the Transportation Research Board Highway Capacity Manual (HCM) within the Synchro software. Synchro output includes overall intersection and approach delays. SimTraffic was used to determine queue lengths and individual vehicle delays.

The existing base traffic volumes were generated from the video counts taken between Saturday, February 8 and Saturday, February 15, 2020 using Miovision cameras. See Appendix C for existing peak hour traffic counts. The videos allowed for an analysis of existing conditions and driver behavior at the intersections. Analysis times included the AM peak (based on the peak 15-minute

period from 7:45 AM – 8:00 AM), Midday peak (11:45 AM – 12:45 PM), PM peak (4:30 PM – 5:30 PM), and Saturday peak (11:45 AM – 12:45 PM) periods for the 2020 Existing scenario. The hours of operation of the Mulva Cultural Center are outside of the AM peak and therefore the Midday peak was analyzed in lieu of the AM peak for the build scenario. The detailed Traffic Analysis output is included in Appendix D.

The 2021 projected traffic scenario was based on a growth rate of approximately 0.5% per year. This was based on the WisDOT Planning Forecast Unit data for the Hwy 32 crossing of the Fox River and Hwy 57 (Broadway). The 2021 build scenario included the traffic expected to be generated by the proposed development, which was determined based on the number of available parking spaces. See Appendix A for the Proposed Development Map which provides details for the on-site parking and driveway locations. See Appendix C for Year 2021 traffic volumes and Appendix B for the data used from the ITE Trip Generation manual.

Proposed Development

The proposed development in the SE quadrant of the roundabout at Main Avenue and S. Broadway is the Mulva Cultural Center. The hours of operation will be from 9:00 AM to 6:00 PM, six or seven days a week with occasional private receptions in the evening. Included within the center will be a 224-seat auditorium; a 2,730 square foot, 71-seat restaurant; two classrooms totaling 1,700 square feet and seating 48; a 10,180 square foot exhibit space; and an 1,840 square foot gift shop.

Trip generation was determined based on discussions with the developer: parking is expecting to be accommodated on-site with 125 available stalls; trips to the restaurant and gift shop will be 100% linked to other on-site uses; and no pass-by trips are expected. Peak hour trip generation arrival and departure percentages were determined using ITE methodology to the extent possible plus knowledge of the development. Trips were distributed based on directional distributions at the roundabout determined from data obtained from WisDOT. See Appendix C for traffic counts and turning movement data.

Intersection Evaluation

Traffic Operations

Intersection operations are defined by Level of Service (LOS), which is a quantitative measure that refers to the overall quality of flow at an intersection ranging from very good (LOS A) to very poor (LOS F). For the purpose of this study, LOS D was used to define acceptable peak hour operating conditions. Descriptions of the various levels of service are as follows:

- LOS A is the highest level of service that can be achieved. Under this condition, intersection approaches appear to be quite open, turning movements are easily made, and nearly all drivers find freedom of operation. At signalized and unsignalized intersections, average delays are less than 10 seconds.
- LOS B represents stable operation. At signalized intersections, average vehicle delays are 10 to 20 seconds. At unsignalized intersections, average delays are 10 to 15 seconds.
- LOS C still represents stable operation, but periodic backups of a few vehicles may develop behind turning vehicles. Most drivers begin to feel restricted, but not objectionably so. At

signalized intersections, average vehicle delays are 20 to 35 seconds. At unsignalized intersections, average delays are 15 to 25 seconds.

- LOS D represents increasing traffic restrictions as the intersection approaches instability. Delays to approaching vehicles may be substantial during short peaks within the peak period, but periodic clearance of long lines occurs, thus preventing excessive backups. At signalized intersections, average vehicle delays are 35 to 55 seconds. At unsignalized intersections, average delays are 25 to 35 seconds.
- LOS E represents the capacity of the intersection. At signalized intersections, average vehicle delays are 55 to 80 seconds. At unsignalized intersections, average delays are 35 to 50 seconds.
- LOS F represents jammed conditions where the intersection is over capacity and acceptable gaps for unsignalized intersections in the mainline traffic flow are minimal. At signalized intersections, average vehicle delays exceed 80 seconds. At unsignalized intersections, average delays exceed 50 seconds.

Overall intersection and approach LOS were reported from Synchro. Queue lengths and delay per vehicle were reported from SimTraffic. The results of the analysis for the six project intersections detailed in Appendix D are as follows:

2020 Existing Conditions

Details on the existing geometrics for the six project intersections are as follows:

- 1) S. Broadway and Lewis St. currently consists of a through lane and a shared through/right lane in the northbound direction, a through lane and a shared left/through lane in the southbound direction, and a shared left/right lane in the westbound direction.
- 2) S. Broadway and Merrill St. consists of a shared left/through lane and a shared through/right lane in the northbound and southbound directions, a shared left/through/right in the eastbound direction, and a shared left/through lane and right turn only lane in the westbound direction.
- 3) Merrill St. and Chicago St. consists of a shared left/through/right lane in all four directions.
- 4) Chicago St. and S. Wisconsin St. consists of a shared through/right in the northbound direction, a shared left/through in the southbound direction, and a shared left/right in the westbound direction.
- 5) George St. and Michigan St. consists of a shared left/through/right lane in all four directions.
- 6) Lewis St. and Erie St. consists of a shared left/through/right lane in all four directions.

The analysis of the Existing Conditions shows that all six intersections operate at LOS A during the AM, midday, PM, and Saturday peak periods. All movements operate at LOS C or better. See Table 1 for details.

Table 1

Existing AM Peak											
Location	Intersection Control	Overall Intersection		Eastbound		Westbound		Northbound		Southbound	
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
S. Broadway & Lewis St.	TWSC	A	2.8			C	21.7	A	0	A	1.4
S. Broadway & Merrill St.	Signal	A	8.1	B	14.1	B	15.1	A	6.2	A	6.4
Merrill St. & Chicago St.	TWSC	A	5.1	A	1.9	A	0.2	A	0	B	12.5
Chicago St. & S. Wisconsin St.	TWSC	A	5			A	0	A	0	A	9.1
George St. & Michigan St.	TWSC	A	5.8	A	0.4	A	0.5	C	21.7	C	19.2
Lewis St. & Erie St.	TWSC	A	4.2	C	15.9	C	19.1	A	2.3	A	0.2
Existing Midday Peak											
Location	Intersection Control	Overall Intersection		Eastbound		Westbound		Northbound		Southbound	
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
S. Broadway & Lewis St.	TWSC	A	0.8			B	11.4	A	0	A	1
S. Broadway & Merrill St.	Signal	A	8	B	13.9	B	14.1	B	10.7	A	4.2
Merrill St. & Chicago St.	TWSC	A	4	A	2.6	A	0	B	10.9	A	9.1
Chicago St. & S. Wisconsin St.	TWSC	A	10.2			A	0	A	0	A	8.7
George St. & Michigan St.	TWSC	A	1.3	A	0.3	A	0.1	C	15.6	B	13.9
Lewis St. & Erie St.	TWSC	A	3.9	A	9.1	A	9.5	A	2.2	A	0.1

Table 1 Continued

Existing PM Peak											
Location	Intersection Control	Overall Intersection		Eastbound		Westbound		Northbound		Southbound	
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
S. Broadway & Lewis St.	TWSC	A	2			B	12.6	A	0	A	2.8
S. Broadway & Merrill St.	Signal	A	9.4	C	23.3	C	23.7	A	8.4	A	7.4
Merrill St. & Chicago St.	TWSC	A	4.8	A	3.7	A	0	C	15	A	9.3
Chicago St. & S. Wisconsin St.	TWSC	A	1.2			A	0	A	0	A	8.9
George St. & Michigan St.	TWSC	A	1.5	A	0.2	A	0.3	C	18.1	C	19.2
Lewis St. & Erie St.	TWSC	A	3.8	B	10.2	B	10.4	A	2.1	A	0.1
Existing Saturday Peak											
Location	Intersection Control	Overall Intersection		Eastbound		Westbound		Northbound		Southbound	
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
S. Broadway & Lewis St.	TWSC	A	0.9			B	11.9	A	0	A	1.1
S. Broadway & Merrill St.	Signal	A	5.8	B	14	B	14.3	A	4.3	A	4.8
Merrill St. & Chicago St.	TWSC	A	4.7	A	3.8	A	0	B	11.9	A	9.1
Chicago St. & S. Wisconsin St.	TWSC										
George St. & Michigan St.	TWSC	A	0.8	A	0.2	A	0.3	B	12.9	B	13.2
Lewis St. & Erie St.	TWSC										

Note: Delay is reported in seconds

During the existing AM peak, review of the Miovision videos showed network operations were largely affected by the roundabout at Main Avenue and S. Broadway. Since this intersection was not part of the study area, these impacts were not seen through the Synchro analysis. The following issues were noted:

- Northbound traffic from the roundabout queued through the intersection of S. Broadway and Lewis Street during the entire observed 15 minute peak but the queued traffic allowed westbound left-turning traffic through by not blocking the intersection and westbound right-turning traffic to enter in a zipper merge fashion.
- Northbound traffic from the roundabout at times queued back to the center of the intersection of S. Broadway and Merrill Street, blocking both left and right turns from Merrill Street.

- The westbound right turn at S. Broadway and Merrill Street queued back to Chicago Street several times during the 15-minute peak.
- Westbound traffic from the roundabout queued back to the intersection of George Street and Michigan Street at times during the 15-minute peak but did not block the intersection.

During the Existing PM peak, review of the Miovision videos showed similar effects from the roundabout at Main Avenue and S. Broadway, including long northbound queues through the intersection of S. Broadway and Lewis Street posing a safety issue for left-turning traffic. The 95th percentile queue length for the southbound through/left movement at the intersection of S. Broadway and Lewis Street, as reported from SimTraffic, extends 170 feet (approximately 7 vehicles) with a delay of less than 10 seconds per vehicle. This is within approximately 12 feet of the crosswalk on the south leg of the roundabout at Main Avenue and S. Broadway.

2021 Build Conditions

Year 2021 build conditions include a 0.5% growth rate in background traffic plus the additional traffic from the development. Parking is expected to be accommodated on-site with the maximum additional trips totaling 125. The ITE Trip Generation Manual site code for Museums provided PM and Saturday peak in and out percentages. The Saturday peak percentages were also applied to the midday peak. The ITE Trip Generation rate for a Museum is much lower than the parking capacity which is why it was not used for the analysis. See Appendix B for details.

The analysis of the Build Conditions shows that all six intersections operate at LOS A during the midday, PM, and Saturday peak periods. All movements operate at LOS C or better during the midday and Saturday peak periods. During the PM peak period, the northbound approach at the intersection of Michigan Street and George Street operates at a LOS D with a total delay of 25.6 seconds based on HCM TWSC delay output. The 95th percentile queue length for the northbound movement, as reported from SimTraffic, shows approximately 2 vehicles with a delay of less than 15 seconds per vehicle. The westbound approach at the intersection of S. Broadway and Lewis Street operates at a LOS F with a total delay of 115.6 seconds based on HCM TWSC delay output. The 95th percentile queue length for the westbound movement, as reported from SimTraffic, shows approximately 6 vehicles with a delay of 71 seconds per vehicle. See Table 2 for details on LOS and delay.

Table 2

Build Midday Peak											
Location	Intersection Control	Overall Intersection		Eastbound		Westbound		Northbound		Southbound	
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
S. Broadway & Lewis St.	TWSC	A	1.5			C	15.1	A	0	A	1.7
S. Broadway & Merrill St.	Signal	A	8.1	B	14.3	B	14.5	B	10.8	A	4.2
Merrill St. & Chicago St.	TWSC	A	4.1	A	2.7	A	0	B	11.1	A	9.2
Chicago St. & S. Wisconsin St.	TWSC	A	1.2			A	0	A	0	A	8.8
George St. & Michigan St.	TWSC	A	1.9	A	0.4	A	0.4	C	15	B	13.5
Lewis St. & Erie St.	TWSC	A	4.2	A	9.3	A	9.6	A	2.3	A	0.1
Build PM Peak											
Location	Intersection Control	Overall Intersection		Eastbound		Westbound		Northbound		Southbound	
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
S. Broadway & Lewis St.	TWSC	A	8.4			F	115.6	A	0	A	3.2
S. Broadway & Merrill St.	Signal	A	9.5	C	24.3	C	24.7	A	8.1	A	7.6
Merrill St. & Chicago St.	TWSC	A	5	A	3.8	A	0	C	15.3	A	9.6
Chicago St. & S. Wisconsin St.	TWSC	A	1.6			A	0	A	0	A	8.9
George St. & Michigan St.	TWSC	A	2.7	A	0.2	A	0.5	D	25.6	C	21.6
Lewis St. & Erie St.	TWSC	A	4	B	10.5	B	10.1	A	2.3	A	0.1

Table 2 Continued

Build Saturday Peak											
Location	Intersection Control	Overall Intersection		Eastbound		Westbound		Northbound		Southbound	
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
S. Broadway & Lewis St.	TWSC	A	1.6			C	16.2	A	0	A	1.8
S. Broadway & Merrill St.	Signal	A	8.4	B	15	B	12.2	B	10.7	A	4.4
Merrill St. & Chicago St.	TWSC	A	4.7	A	3.8	A	0	B	12.1	A	9.2
Chicago St. & S. Wisconsin St.	TWSC										
George St. & Michigan St.	TWSC	A	1.3	A	0.2	A	0.5	B	14.4	B	14.4
Lewis St. & Erie St.	TWSC										

Note: Delay is reported in seconds

During the 2021 PM peak build conditions, the 95th percentile queue length for the southbound through/left movement at the intersection S. Broadway and Lewis Street, as reported from SimTraffic, extends 204 feet (approximately 8 vehicles) with a delay of less than 10 seconds per vehicle. Although this is only one additional vehicle over existing conditions, the queue would now back up through the crosswalk on the south leg of the roundabout at Main Avenue and S. Broadway.

Given the large volume of southbound traffic exiting the roundabout during the PM peak and the potential lane changes to avoid stopped traffic wishing to turn left at Lewis Street, plus the inability for westbound left-turning traffic on Lewis Street to see past the southbound left turn queue to observe vehicles traveling southbound in the right lane, this area was further analyzed.

2021 Build Conditions with Right-In/Right-Out Only Access at S. Broadway & Lewis Street

To address the proximity of the intersection of S. Broadway and Lewis Street with the roundabout at Main Avenue, an analysis was completed for the PM peak with the westbound movement on Lewis Street modified to right-in/right-out only. Background and development traffic were redistributed to surrounding intersections. The analysis shows that all six intersections operate at LOS A during the PM peak period. All movements operate at LOS C or better except for the northbound movement at the intersection of Michigan Street and George Street which operates at a LOS D with a total delay of 28.5 seconds based on HCM TWSC delay output. The 95th percentile queue length for the northbound movement, as reported from SimTraffic, shows between 2 and 3 vehicles with a delay of less than 20 seconds per vehicle. The existing roadway network of local streets and multiple connections to George Street would allow drivers to choose an alternate access location if delays are found unacceptable based on driver perception. See Table 3 for details on LOS and delay.

Table 3

Build PM Peak - RIRO at S. Broadway & Lewis St.											
Location	Intersection Control	Overall Intersection		Eastbound		Westbound		Northbound		Southbound	
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
S. Broadway & Lewis St.	TWSC	A	0.7			B	13.6	A	0	A	0
S. Broadway & Merrill St.	Signal	A	10	C	23.5	C	24.2	A	8.6	A	7.9
Merrill St. & Chicago St.	TWSC	A	5.2	A	3.8	A	0	C	15.8	A	9.7
Chicago St. & S. Wisconsin St.	TWSC	A	2.7			A	0	A	0	A	9
George St. & Michigan St.	TWSC	A	2.7	A	0.2	A	0.5	D	28.5	C	23.5
Lewis St. & Erie St.	TWSC	A	4	B	10.5	B	10.1	A	2.3	A	0.1

Note: Delay is reported in seconds

Summary

The analysis of the Existing Conditions shows that all six intersections operate at LOS A during the midday, PM, and Saturday peak periods. All movements operate at LOS C or better.

The analysis of the Build Conditions shows that all six intersections operate at LOS A during the midday, PM, and Saturday peak periods. All movements operate at LOS C or better during the midday and Saturday peak periods. During the PM peak period, the stop-controlled northbound approach at the intersection of Michigan Street and George Street operates at a LOS D and the stop-controlled westbound approach at the intersection of S. Broadway and Lewis Street operates at a LOS F based on HCM TWSC delay output. This is an increase over existing conditions of 7.5 seconds northbound on Michigan Street and 103 seconds westbound on Lewis Street.

During the Existing AM peak, review of the Miovision videos showed network operations were largely affected by the roundabout at Main Avenue and S. Broadway. Since this intersection was not part of the study area, these impacts were not seen through the Synchro analysis. Northbound traffic from the roundabout was viewed queueing back on S. Broadway through the intersection of S. Broadway and Lewis Street for the entire observed 15-minute peak and at times the queue reached back to the center of the intersection of S. Broadway and Merrill Street. Although queued traffic left gaps at the intersection of S. Broadway and Lewis Street, this poses a safety issue for westbound left-turning traffic due to the inability to see past the northbound queued traffic to observe vehicles coming southbound in the right lane.

During the Existing PM peak, review of the Miovision videos showed similar effects from the roundabout at Main Avenue and S. Broadway, including long northbound queues through the intersection of S. Broadway and Lewis Street posing a safety issue for left-turning traffic. The 95th percentile queue length for the southbound through/left movement at the intersection of S. Broadway and Lewis Street, as reported from SimTraffic, extends 170 feet. This is within 12 feet of

the crosswalk on the south leg of the roundabout at Main Avenue and S. Broadway. During the 2021 PM peak under Build conditions, the 95th percentile queue length at this same location extends 204 feet and the queue would now back up through the crosswalk. The proximity of these two intersections, in conjunction with southbound queuing at Lewis Street, poses a safety issue for westbound left-turning traffic at Lewis Street due to the inability to easily see past the queuing to observe the large volume of southbound traffic coming from the roundabout in the right lane. It also poses a safety issue for southbound traffic exiting the roundabout with the potential lane changes required to avoid the stopped traffic wishing to turn left at Lewis Street. And finally, it poses a safety issue for pedestrians wishing to cross the south leg of the roundabout.

To address the proximity of the intersection of S. Broadway and Lewis Street with the roundabout at Main Avenue, an analysis was completed for the PM peak with the westbound movement on Lewis Street modified to right-in/right-out only. Background and development traffic were redistributed to surrounding intersections. The analysis shows that all six intersections operate at LOS A during the PM peak period. All movements operate at LOS C or better except for the northbound approach at the intersection of Michigan Street and George Street which operates at a LOS D. Delay for this stop-controlled northbound movement on Michigan Street increased by less than 5 seconds with the additional traffic from the redistribution.

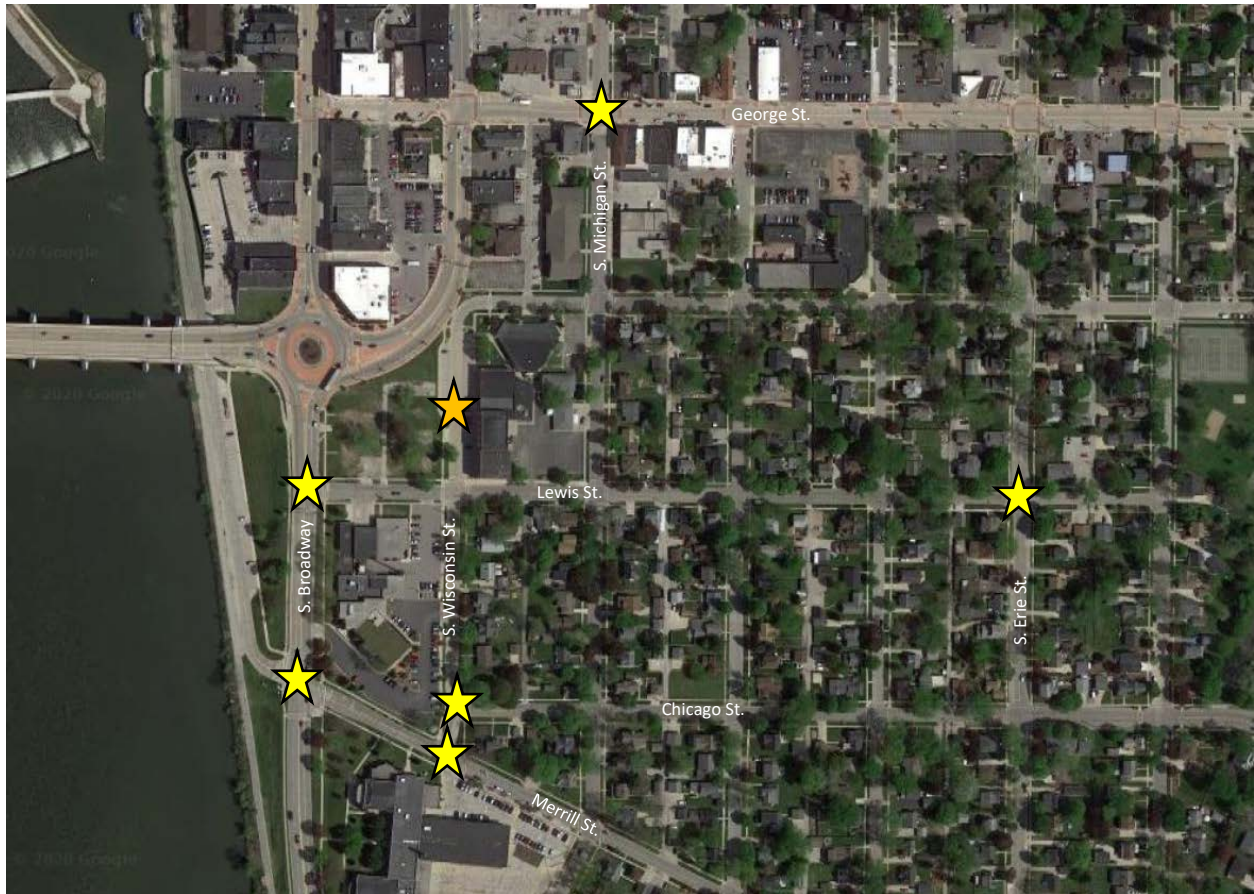
The concept of modifying the westbound movement on Lewis Street to right-in/right-out is recommended. The Miovision video at the intersection of S. Broadway and Lewis Street showed that during peak periods, the westbound movement is already operating as a de facto right-out due to the proximity of Lewis Street to the roundabout at Main Avenue. Drivers are choosing or have learned to avoid attempts at a left-out movement. The overall data shows only one vehicle making a left turn from Lewis Street onto S. Broadway on a weekday between the hours of 11:00 AM – 6:00 PM, none during AM or PM peak times. On Saturday, two vehicles made this left turn between 11:00 AM – 3:00 PM. Making this modification will provide for increased overall network safety by eliminating both the southbound queue and the left turn movements. Left turning vehicles are redistributed to the traffic signal at S. Broadway and Merrill Street to the south or become right turns at the intersection of Michigan Street and George Street resulting in safer access to the desired corridors.

There are no other improvements required to provide LOS D or better for all traffic movements.

Appendix A

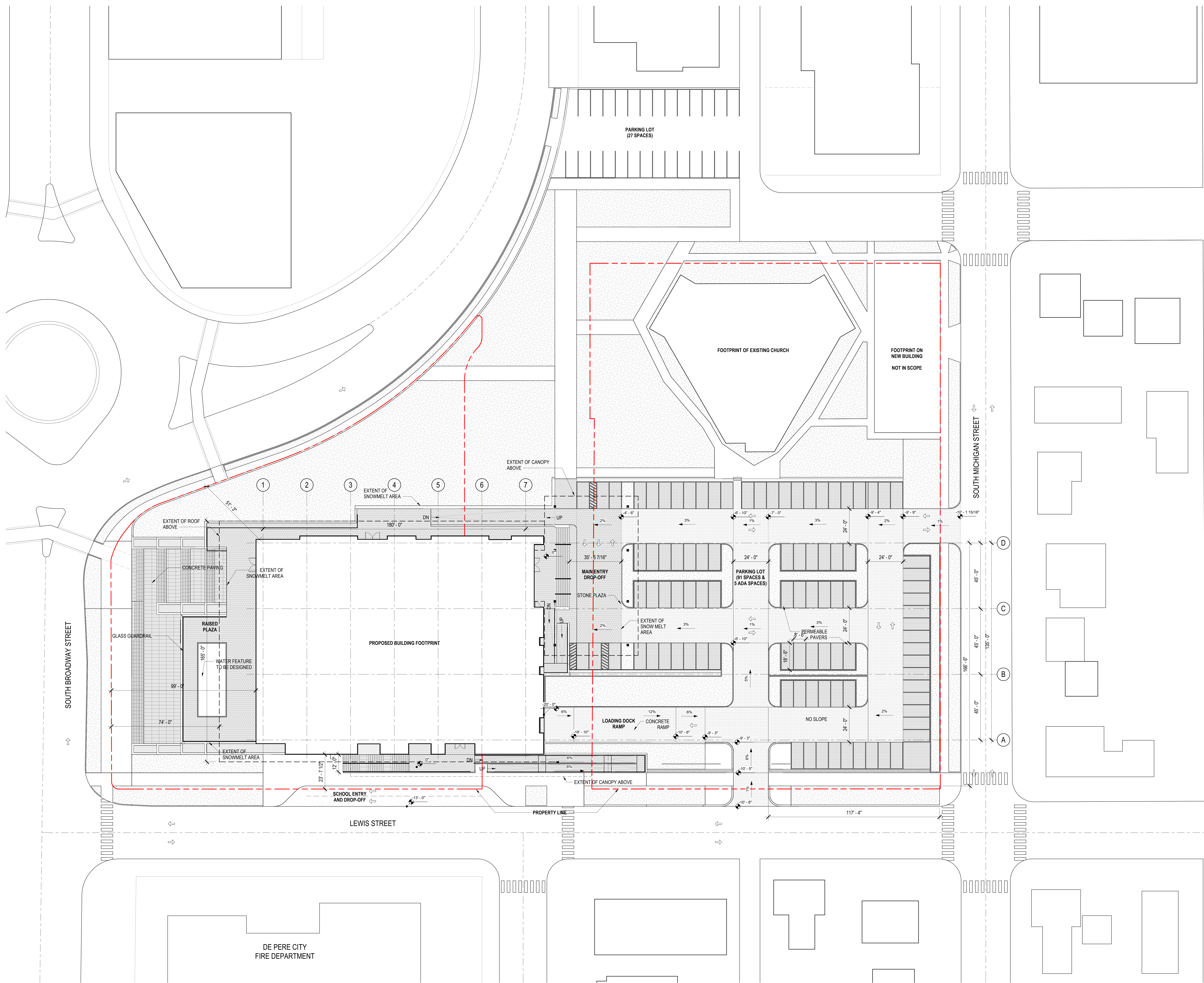
Project Location and Proposed Development Map

Attachment A
Project Location Map



Legend

-  Development Location
-  Analyzed Intersection Location



1 SITE PLAN
1" = 20'-0"

PROJECT NAME
MULVA CULTURAL CENTER
231 S ADAMS ST.
GREEN BAY, WI 54301-4513

CLIENT
DE PERE CULTURAL FOUNDATION, INC.
231 S ADAMS ST.
GREEN BAY, WI 54301-4513

ARCHITECT
SOM
SKIDMORE, OWINGS & MERRILL LLP
224 SOUTH MICHIGAN AVENUE, SUITE 1000
CHICAGO, ILLINOIS 60604

CONSULTANT

NOTES

KEY PLAN

SEAL & SIGNATURE

**IN PROGRESS
SCHEMATIC DESIGN
20TH DECEMBER, 2019**

SITE PLAN

PROJECT NO. 218560
DATE: 12/20/19
SCALE: 1" = 20'-0"

SHEET NO. **A-010**

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Appendix B

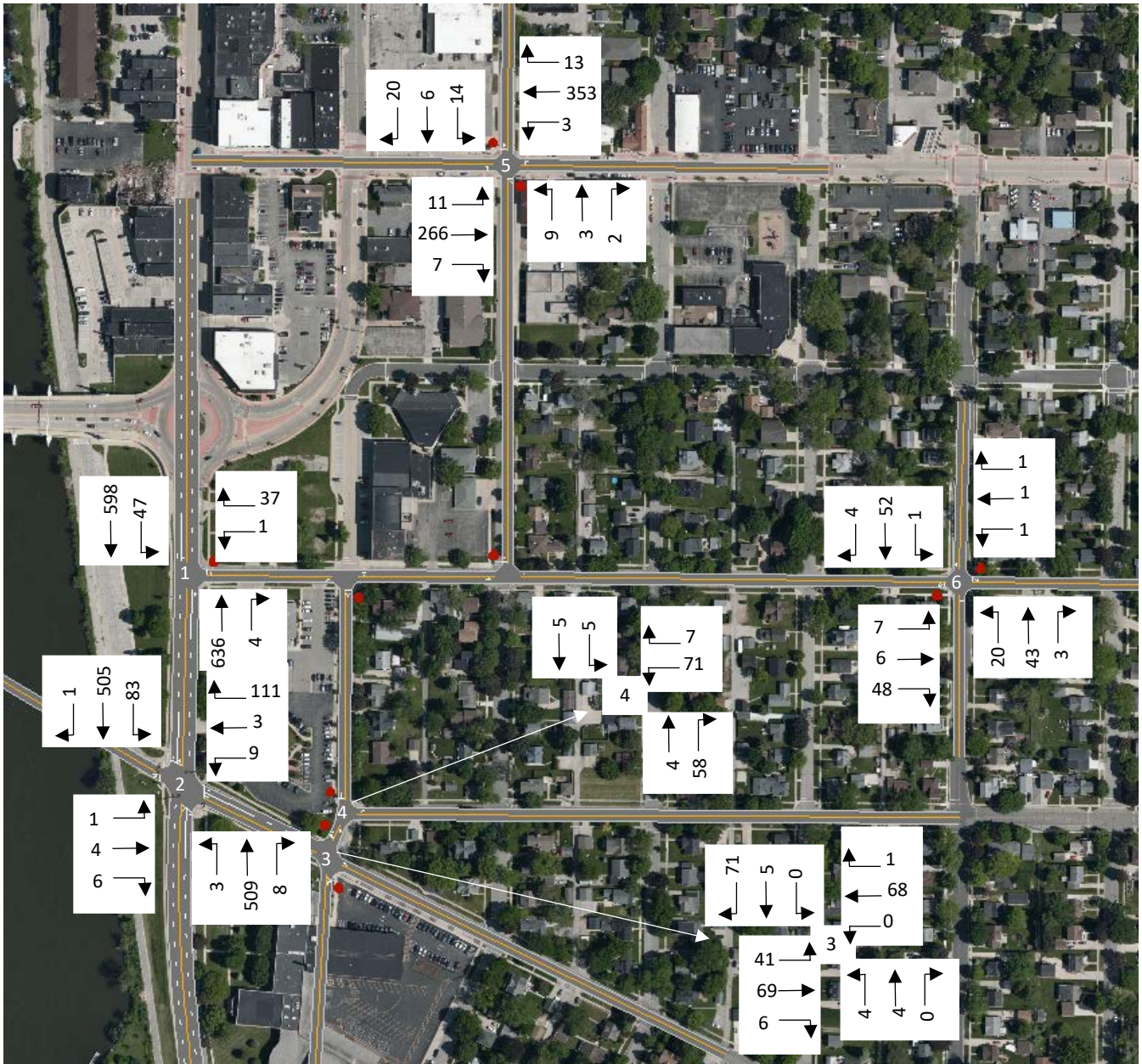
ITE Trip Generation Data

Appendix B
ITE Trip Generation Data

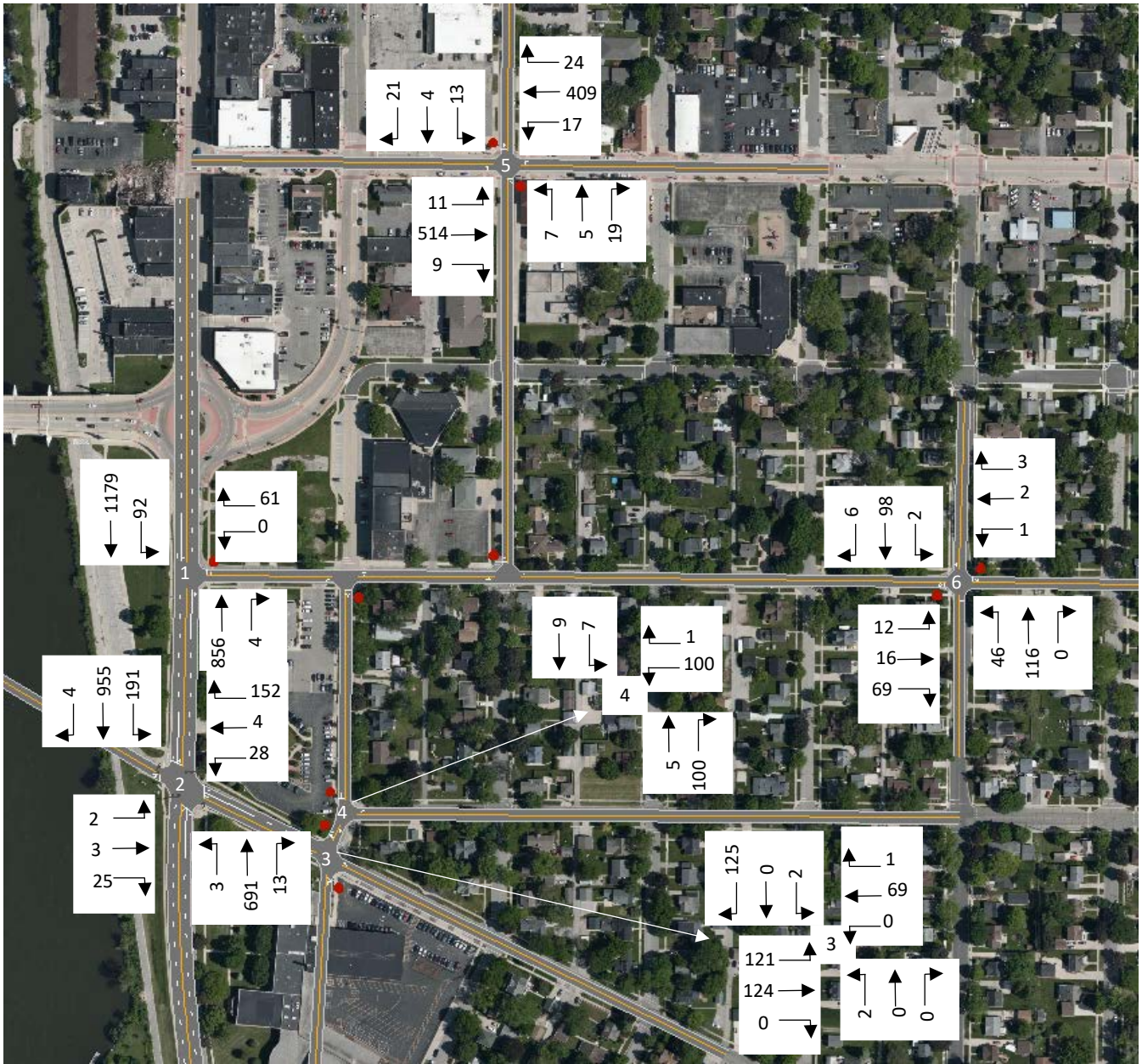
				AM Peak						PM Peak						SAT Peak of Generator					
ITE Code	Land Use	Proposed Size	Unit	In	%	Out	%	Total	Trip Generation Rate	In	%	Out	%	Total	Trip Generation Rate	In	%	Out	%	Total	Trip Generation Rate
580	Museum	10180	sf	5	86%	0	14%	5	0.28	0	16%	0	84%	0	0.18	5	71%	0	29%	5	0.66

Appendix C

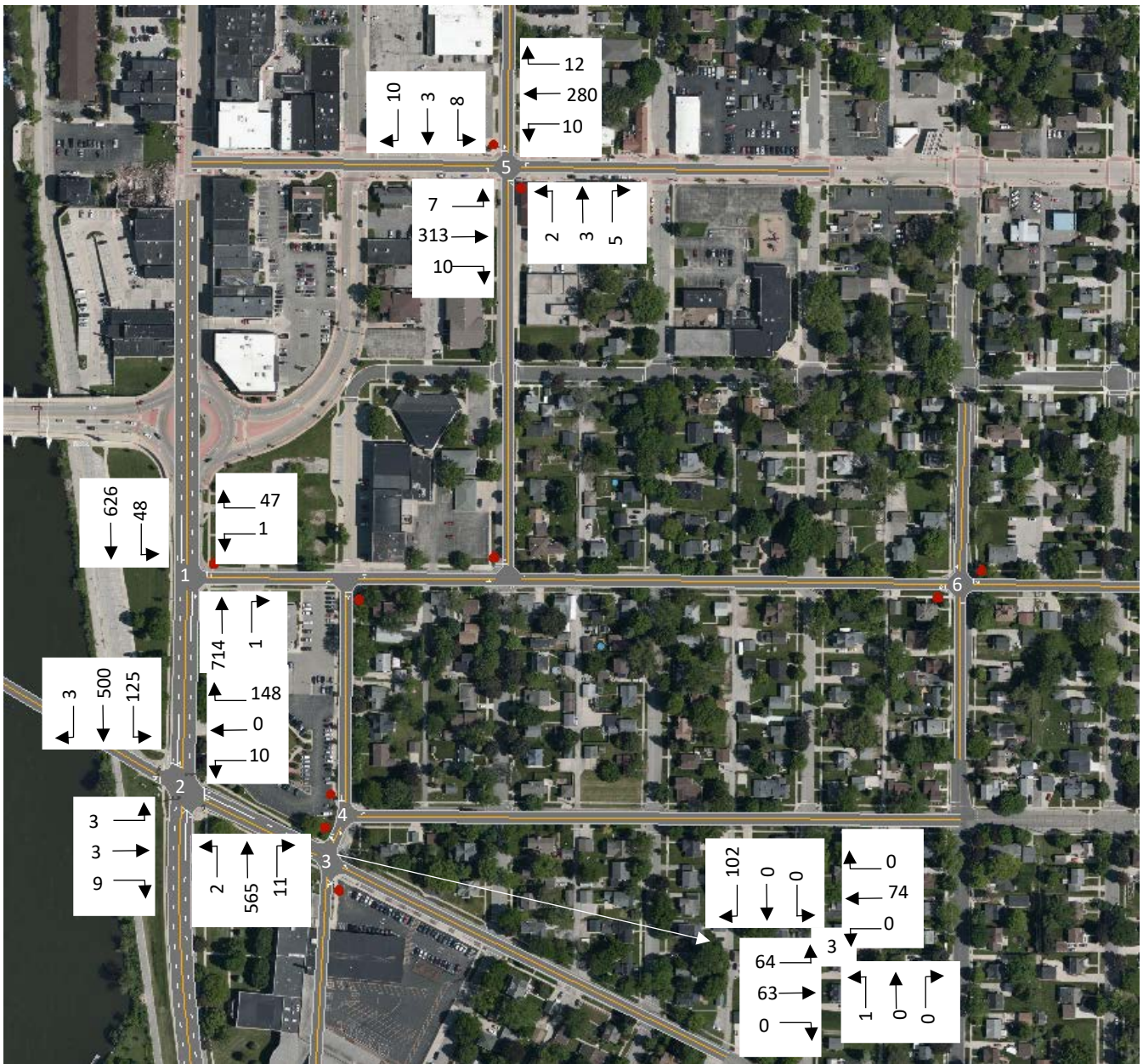
Traffic Data



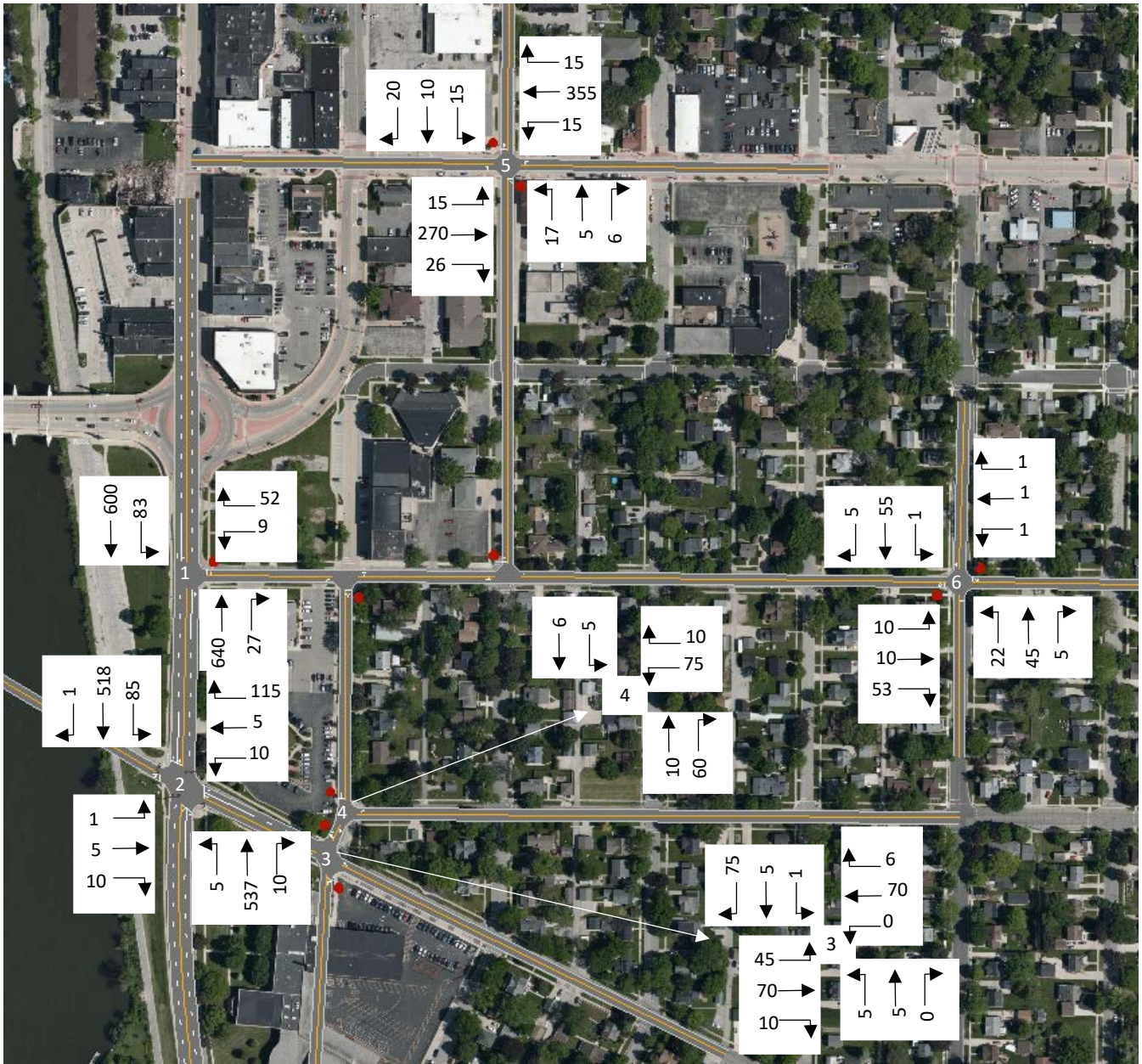
2020 Existing Midday Peak



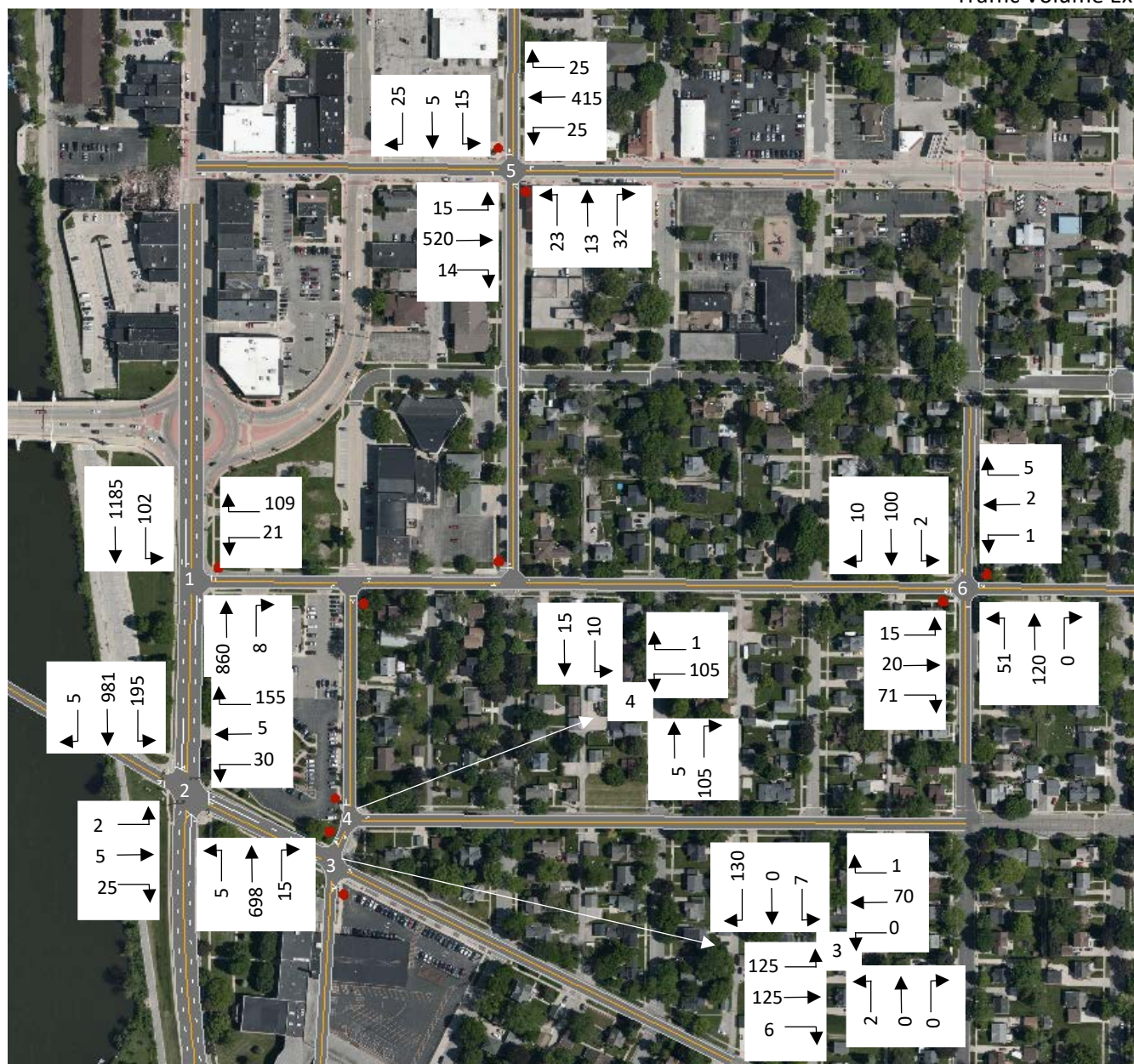
2020 Existing PM Peak



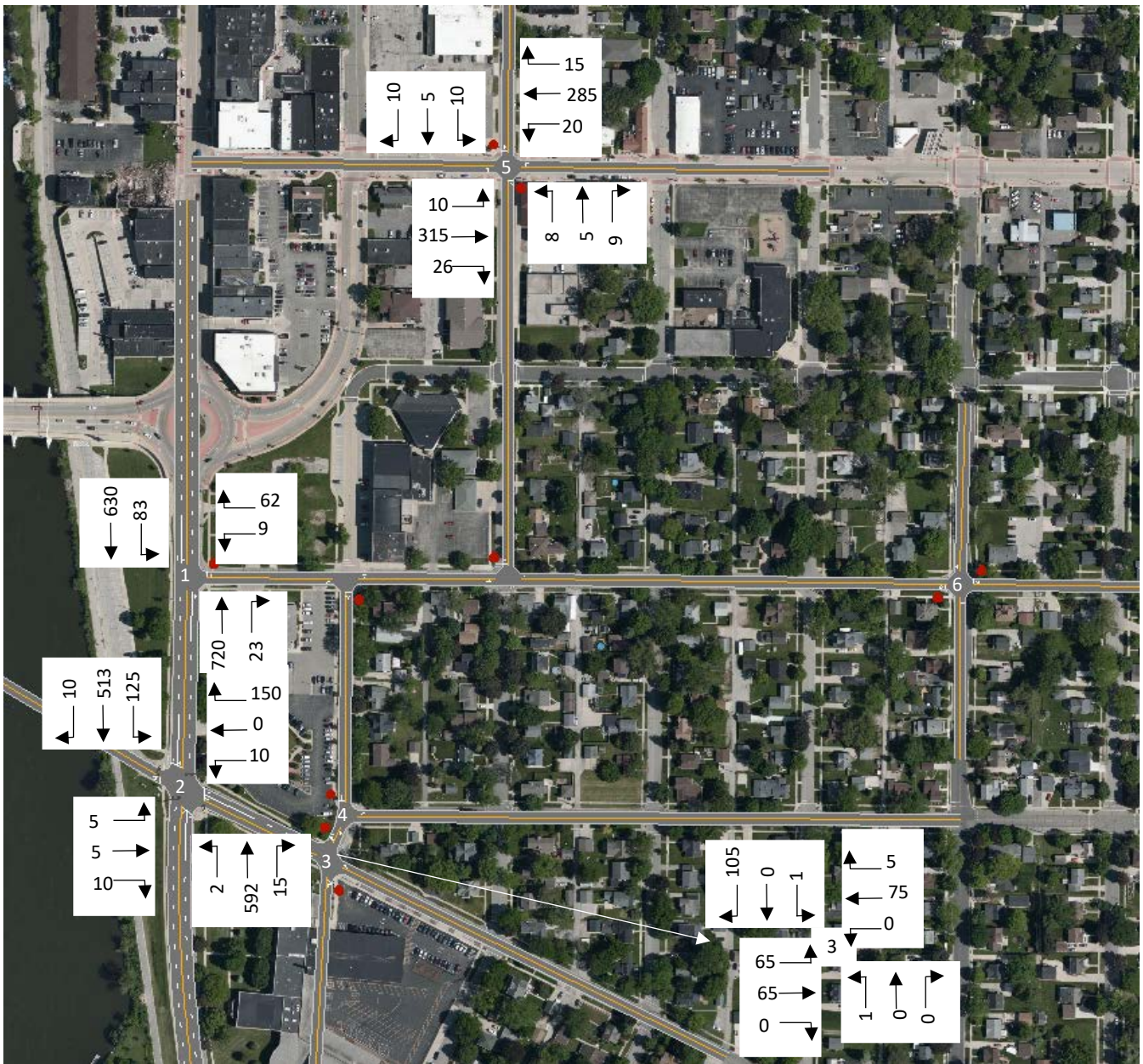
2020 Existing Saturday Peak

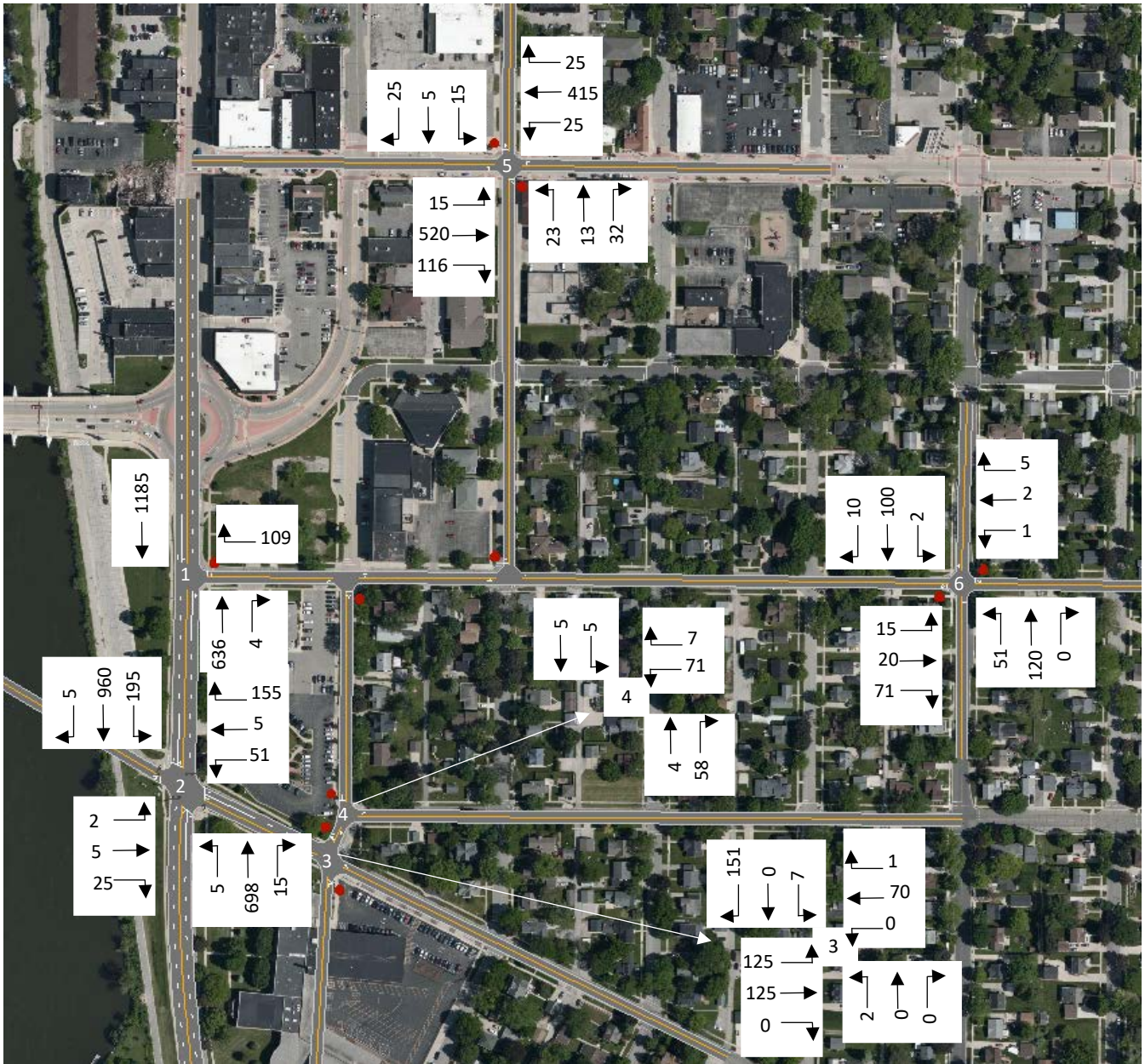


2021 Build Midday Peak



2021 Build PM Peak





2021 Build PM Peak – Right-in/Right-out only access WB at S. Broadway & Lewis St.

AM Peak Data

Used the WisDOT RAB Count and review of other area counts to settle on 745-800 as the peak 15 minute period

1

Broadway & Lewis

NB				SB				EB				WB				TOTAL
L	T	R		L	T	R		L	T	R		L	T	R		
0	300	1		12	183	0		0	0	0		0	0	58		554

2

Broadway & Merrill

NB				SB				EB				WB				TOTAL
L	T	R		L	T	R		L	T	R		L	T	R		
4	218	5		28	157	1		0	0	7		18	2	82		522

3

Merrill & Chicago

NB				SB				EB				WB				TOTAL
L	T	R		L	T	R		L	T	R		L	T	R		
0	0	0		10	0	49		7	22	0		2	65	3		158

Pkg Lot Ent

4

Chicago & Wisconsin

NB				SB				EB				WB				TOTAL
L	T	R		L	T	R		L	T	R		L	T	R		
0	7	10		3	18	0		0	0	0		0	49	3		90

5

George & Michigan

NB				SB				EB				WB				TOTAL
L	T	R		L	T	R		L	T	R		L	T	R		
18	5	40		2	2	2		3	56	6		8	127	3		272

6

Lewis & Erie

NB				SB				EB				WB				TOTAL
L	T	R		L	T	R		L	T	R		L	T	R		
32	78	0		1	33	13		10	1	11		1	9	0		189

Leg	Lewis St (Westbound)						S Broadway (Northbound)						S Broadway (Southbound)							
Direction	Westbound						Northbound						Southbound							
Start Time	Left	Right	U-Turn	App Total	Peds CW	Peds CCW	Thru	Right	U-Turn	App Total	Peds CW	Peds CCW	Left	Thru	U-Turn	App Total	Peds CW	Peds CCW	Int Total	
2020-02-10 11:00:00	0	8	0	8	0	0	142	0	0	142	0	0	4	132	0	136	0	0	286	
2020-02-10 11:15:00	0	7	0	7	0	0	144	0	0	144	0	0	11	138	0	149	0	0	300	
2020-02-10 11:30:00	0	8	0	8	0	0	147	0	0	147	0	0	9	146	0	155	0	0	310	
2020-02-10 11:45:00	1	11	0	12	0	0	168	1	0	169	0	0	14	146	0	160	0	0	341	
2020-02-10 12:00:00	0	13	0	13	0	0	161	1	0	162	0	0	17	134	0	151	0	0	326	
2020-02-10 12:15:00	0	6	0	6	0	0	143	1	0	144	0	0	9	164	0	173	0	0	323	
2020-02-10 12:30:00	0	7	0	7	0	0	164	1	0	165	0	0	7	154	0	161	0	0	333	
2020-02-10 12:45:00	0	10	0	10	0	0	157	0	0	157	0	0	13	160	0	173	0	0	340	
2020-02-10 15:00:00	0	35	0	35	0	0	240	0	0	240	0	0	18	202	0	220	0	0	495	
2020-02-10 15:15:00	0	18	0	18	0	0	244	1	0	245	0	0	15	205	0	220	0	0	483	
2020-02-10 15:30:00	0	26	0	26	0	0	205	0	0	205	0	0	12	246	0	258	0	0	489	
2020-02-10 15:45:00	0	15	0	15	0	0	225	0	0	225	0	0	26	225	0	251	0	0	491	
2020-02-10 16:00:00	0	9	0	9	0	0	200	0	0	200	0	0	17	250	0	267	0	0	476	
2020-02-10 16:15:00	0	11	0	11	0	0	210	0	0	210	0	0	21	274	0	295	0	0	516	
2020-02-10 16:30:00	0	19	0	19	0	0	201	1	0	202	0	0	18	280	0	298	0	0	519	
2020-02-10 16:45:00	0	18	0	18	0	0	219	0	0	219	0	0	24	327	0	351	0	0	588	
2020-02-10 17:00:00	0	11	0	11	0	0	224	0	0	224	0	0	27	271	0	298	0	0	533	
2020-02-10 17:15:00	0	13	0	13	0	0	212	3	0	215	0	0	23	301	0	324	0	0	552	
2020-02-10 17:30:00	0	23	0	23	0	0	206	4	0	210	0	0	25	256	0	281	0	0	514	
2020-02-10 17:45:00	0	12	0	12	0	0	178	0	0	178	0	0	17	252	0	269	0	0	459	
Grand Total	1	280	0	281	0	0	3790	13	0	3803	0	0	327	4263	0	4590	0	0	8674	

Leg	Lewis St. (Westbound)						S Broadway (Northbound)						S Broadway (Southbound)						
Direction	Westbound						Northbound						Southbound						
Start Time	Left	Right	U-Turn	App Total	Peds CW	Peds CCW	Thru	Right	U-Turn	App Total	Peds CW	Peds CCW	Left	Thru	U-Turn	App Total	Peds CW	Peds CCW	Int Total
2020-02-08 11:00:00	0	14	0	14	0	0	160	0	0	160	0	0	13	129	0	142	0	0	316
2020-02-08 11:15:00	0	10	0	10	0	0	186	0	0	186	0	0	10	145	0	155	0	0	351
2020-02-08 11:30:00	0	8	0	8	0	0	169	0	0	169	0	0	16	156	0	172	0	0	349
2020-02-08 11:45:00	0	16	0	16	0	0	185	1	0	186	0	0	12	156	0	168	0	0	370
2020-02-08 12:00:00	1	9	0	10	1	0	173	0	0	173	0	0	14	151	0	165	0	0	348
2020-02-08 12:15:00	0	8	0	8	0	0	161	0	0	161	0	0	15	159	0	174	0	0	343
2020-02-08 12:30:00	0	14	0	14	0	0	195	0	0	195	0	0	7	160	0	167	0	0	376
2020-02-08 12:45:00	0	8	0	8	0	0	177	0	0	177	0	0	10	173	0	183	0	0	368
2020-02-08 13:00:00	0	21	0	21	0	0	163	1	0	164	0	0	17	161	0	178	0	0	363
2020-02-08 13:15:00	0	17	0	17	0	0	146	0	0	146	0	0	20	146	0	166	0	0	329
2020-02-08 13:30:00	0	13	0	13	0	0	136	3	0	139	0	0	15	155	0	170	0	0	322
2020-02-08 13:45:00	0	7	0	7	0	0	130	0	0	130	0	0	16	161	0	177	0	0	314
2020-02-08 14:00:00	0	9	0	9	0	0	151	0	0	151	0	0	13	146	0	159	0	0	319
2020-02-08 14:15:00	0	10	0	10	0	0	146	0	0	146	0	0	11	151	0	162	0	0	318
2020-02-08 14:30:00	0	12	0	12	1	1	143	1	0	144	0	0	8	146	0	154	0	0	310
2020-02-08 14:45:00	1	9	0	10	0	0	116	3	0	119	0	0	14	157	0	171	0	0	300
Grand Total	2	185	0	187	2	1	2537	9	0	2546	0	0	211	2452	0	2663	0	0	5396

Leg Direction Start Time	S Front (Eastbound)						Merrill (Westbound)						S Broadway (Northbound)						S Broadway (Southbound)					
	Eastbound			App Total	Peds CW	Peds CCW	Westbound			App Total	Peds CW	Peds CCW	Northbound			Southbound			App Total	Peds CW	Peds CCW	Int Total		
Left	Thru	Right	Left				Thru	Right	Left				Thru	Right	Left	Thru	Right	Left					Thru	Right
2020-02-10 11:00:00	0	0	1	1	0	0	7	1	29	37	0	0	0	119	2	121	20	114	0	134	0	0	293	
2020-02-10 11:15:00	0	0	1	1	0	0	3	0	19	22	0	0	1	119	1	121	20	112	1	133	0	0	277	
2020-02-10 11:30:00	1	0	2	3	0	0	3	0	22	25	0	0	2	121	2	125	25	118	0	143	0	0	296	
2020-02-10 11:45:00	1	1	2	4	0	0	2	0	32	34	0	0	1	138	1	140	12	130	0	142	0	0	320	
2020-02-10 12:00:00	0	1	2	3	0	0	5	0	25	30	0	0	0	128	1	129	19	117	0	136	0	0	298	
2020-02-10 12:15:00	0	2	2	4	0	0	0	1	23	24	0	0	1	126	4	131	25	130	0	155	0	0	314	
2020-02-10 12:30:00	0	0	0	0	0	0	2	2	31	35	0	0	1	117	2	120	27	128	1	156	0	0	311	
2020-02-10 12:45:00	0	0	2	2	0	0	7	1	33	41	0	0	1	126	4	131	13	137	1	151	0	0	325	
2020-02-10 15:00:00	0	1	1	2	0	0	11	1	35	47	0	0	0	234	18	252	34	145	4	183	0	0	484	
2020-02-10 15:15:00	1	2	1	4	0	0	8	3	57	68	0	0	3	166	3	172	36	166	1	203	0	0	447	
2020-02-10 15:30:00	0	0	2	2	0	0	12	0	49	61	0	0	0	160	8	168	33	208	1	242	0	1	473	
2020-02-10 15:45:00	1	1	4	6	0	0	2	2	31	35	0	0	1	189	8	198	55	173	1	229	0	1	468	
2020-02-10 16:00:00	0	2	4	6	0	0	10	0	37	47	0	0	0	160	9	169	44	202	0	246	0	0	468	
2020-02-10 16:15:00	1	1	1	3	0	0	3	0	36	39	0	0	1	155	3	159	37	243	0	280	0	0	481	
2020-02-10 16:30:00	1	0	3	4	0	0	7	1	40	48	0	0	1	185	1	187	49	218	0	267	0	0	506	
2020-02-10 16:45:00	0	1	6	7	0	0	5	1	27	33	0	0	2	162	5	169	50	270	1	321	0	0	530	
2020-02-10 17:00:00	0	2	14	16	0	0	8	1	44	53	0	0	0	175	2	177	46	228	1	275	0	0	521	
2020-02-10 17:15:00	1	0	2	3	0	0	8	1	41	50	0	0	0	169	5	174	46	239	2	287	0	0	514	
2020-02-10 17:30:00	0	0	3	4	0	0	3	0	44	47	2	0	1	168	5	174	58	210	0	268	1	0	493	
2020-02-10 17:45:00	1	4	0	6	0	0	2	0	42	44	0	0	0	133	4	137	40	210	0	250	0	0	437	
Grand Total	8	18	53	81	0	0	108	15	697	820	2	0	16	3050	88	3154	689	3498	14	4201	1	2	8256	

Leg Direction Start Time	S Front (Eastbound)							Merrill (Westbound)							S. Broadway (Northbound)							S. Broadway (Southbound)							Int Total
	Eastbound							Westbound							Northbound							Southbound							
	Left	Thru	Right	U-Turn	App Total	Peds CW	Peds CCW	Left	Thru	Right	U-Turn	App Total	Peds CW	Peds CCW	Left	Thru	Right	U-Turn	App Total	Peds CW	Peds CCW	Left	Thru	Right	U-Turn	App Total	Peds CW	Peds CCW	
2020-02-08 11:00:00	0	2	0	0	2	0	0	4	1	36	0	41	0	0	0	125	2	0	127	30	99	0	0	129	0	0	0	299	
2020-02-08 11:15:00	0	1	0	0	1	0	0	5	0	43	0	48	0	0	1	141	2	0	144	34	102	0	0	136	0	0	0	329	
2020-02-08 11:30:00	0	0	0	0	0	0	0	1	0	29	0	30	0	0	0	139	2	0	141	36	117	1	0	154	0	0	0	325	
2020-02-08 11:45:00	0	1	2	0	3	0	0	4	0	40	0	44	0	0	0	142	3	0	145	35	121	4	0	160	0	0	0	352	
2020-02-08 12:00:00	2	0	4	0	6	0	0	2	0	34	0	36	0	0	0	145	1	0	146	36	110	2	0	148	0	0	0	336	
2020-02-08 12:15:00	0	1	2	0	3	0	0	1	0	35	0	36	0	0	0	127	2	0	129	24	132	2	0	158	0	0	0	326	
2020-02-08 12:30:00	1	1	1	0	3	0	0	3	0	39	0	42	0	0	2	151	5	0	158	30	137	0	0	167	0	0	0	370	
2020-02-08 12:45:00	2	1	3	0	6	0	0	4	2	46	0	52	0	1	1	125	2	0	128	38	126	1	0	165	0	0	0	351	
2020-02-08 13:00:00	2	0	1	0	3	0	0	5	0	43	0	48	0	0	0	122	2	0	124	23	142	1	0	166	0	0	0	341	
2020-02-08 13:15:00	0	0	0	0	0	0	0	3	1	26	0	30	0	0	1	118	4	0	123	25	112	0	0	137	0	0	0	290	
2020-02-08 13:30:00	0	0	2	0	2	0	0	0	0	24	0	24	0	0	0	117	1	0	118	17	145	3	0	165	0	0	0	309	
2020-02-08 13:45:00	0	1	1	0	2	0	0	7	1	26	0	34	0	0	2	102	2	0	106	39	118	2	0	159	0	0	0	301	
2020-02-08 14:00:00	1	4	1	0	6	0	0	2	0	30	0	32	0	0	0	122	1	0	123	28	117	1	0	146	0	0	0	307	
2020-02-08 14:15:00	0	0	1	0	1	0	0	3	2	38	0	43	0	0	0	107	0	0	107	26	124	3	0	153	0	0	0	304	
2020-02-08 14:30:00	1	0	2	0	3	0	1	1	0	36	0	37	0	0	0	105	1	0	106	36	117	2	0	155	0	0	0	301	
2020-02-08 14:45:00	1	1	3	0	5	0	0	1	0	31	0	32	0	0	0	87	1	0	88	28	118	0	0	146	0	0	0	271	
Grand Total	10	13	23	0	46	0	1	46	7	556	0	609	0	1	7	1975	31	0	2013	485	1937	22	0	2444	0	0	0	5112	

Leg	Merrill St (Eastbound)				Merrill St (Westbound)				Chicago St (Northbound)				Chicago St (Southbound)						
Direction	Eastbound				Westbound				Northbound				Southbound						
Start Time	Left	Thru	Right	App Total	Left	Thru	Right	App Total	Left	Thru	Right	App Total	Left	Thru	Right	App Total	Peds CW	Peds CCW	Int Total
2020-02-12 11:00:00	15	11	1	27	0	6	1	7	1	1	0	2	1	0	16	17	0	0	53
2020-02-12 11:15:00	10	12	0	22	0	10	0	10	1	1	1	3	0	0	16	16	0	0	51
2020-02-12 11:30:00	10	23	1	34	0	17	0	17	1	0	0	1	0	1	19	20	0	0	72
2020-02-12 11:45:00	8	15	2	25	0	19	0	19	1	0	0	1	0	2	23	25	0	0	70
2020-02-12 12:00:00	11	15	1	27	0	19	0	19	2	3	0	5	0	0	10	10	0	0	61
2020-02-12 12:15:00	12	16	2	30	0	13	1	14	0	1	0	1	0	2	19	21	0	0	66
2020-02-12 12:30:00	9	14	0	23	0	11	0	11	0	0	0	0	0	3	26	29	0	0	63
2020-02-12 12:45:00	10	8	0	18	0	13	0	13	0	1	1	2	1	0	23	24	0	0	57
2020-02-12 15:00:00	24	26	0	50	0	15	1	16	3	1	1	5	5	1	24	30	3	1	101
2020-02-12 15:15:00	13	27	0	40	1	31	4	36	3	2	1	6	2	0	29	31	0	0	113
2020-02-12 15:30:00	22	20	0	42	0	14	1	15	9	9	3	21	0	1	23	24	0	1	102
2020-02-12 15:45:00	15	35	0	50	0	17	1	18	8	5	1	14	0	0	21	21	0	0	103
2020-02-12 16:00:00	12	31	0	43	0	22	0	22	1	2	0	3	1	0	28	29	0	0	97
2020-02-12 16:15:00	33	34	0	67	0	18	0	18	1	0	1	2	0	0	33	33	0	0	120
2020-02-12 16:30:00	34	32	0	66	0	14	1	15	1	0	0	1	0	0	34	34	2	2	116
2020-02-12 16:45:00	31	37	0	68	0	19	0	19	0	0	0	0	2	0	29	31	0	0	118
2020-02-12 17:00:00	23	26	0	49	0	16	0	16	0	0	0	0	0	0	29	29	0	0	94
2020-02-12 17:15:00	33	29	0	62	0	20	0	20	1	0	0	1	0	0	33	33	0	0	116
2020-02-12 17:30:00	15	31	0	46	0	21	0	21	0	0	0	0	1	0	30	31	0	0	98
2020-02-12 17:45:00	21	23	0	44	0	19	1	20	0	0	0	0	1	0	15	16	0	0	80
Grand Total	361	465	7	833	1	334	11	346	33	26	9	68	14	10	480	504	5	4	1751

Leg	Merrill St (Eastbound)								Merrill St (Westbound)								Private Entrance (Northbound)								Chicago St (Southbound)							
Direction	Eastbound								Westbound								Northbound								Southbound							
Start Time	Left	Thru	Right	U-Turn	App Total	Peds CW	Peds CCW	Left	Thru	Right	U-Turn	App Total	Left	Thru	Right	U-Turn	App Total	Peds CW	Peds CCW	Left	Thru	Right	U-Turn	App Total	Int Total							
2020-02-15 11:00:00	20	20	0	0	40	0	0	0	0	13	0	0	13	0	0	0	0	0	0	0	0	24	0	24	77							
2020-02-15 11:15:00	11	12	0	0	23	0	0	0	0	18	1	0	19	0	0	0	0	0	0	0	0	21	0	21	63							
2020-02-15 11:30:00	16	11	0	0	27	0	0	0	0	16	0	0	16	0	0	0	0	0	0	1	0	0	22	0	22	65						
2020-02-15 11:45:00	17	14	0	0	31	0	0	0	0	16	0	0	16	0	0	0	0	0	0	0	0	24	0	24	71							
2020-02-15 12:00:00	13	15	0	0	28	0	0	0	0	23	0	0	23	0	0	0	0	0	0	0	0	27	0	27	78							
2020-02-15 12:15:00	17	15	0	0	32	0	0	0	0	21	0	0	21	1	0	0	0	1	0	0	0	25	0	25	79							
2020-02-15 12:30:00	17	19	0	0	36	0	0	0	0	14	0	0	14	0	0	0	0	0	0	0	0	26	0	26	76							
2020-02-15 12:45:00	17	16	0	0	33	0	0	0	0	16	0	0	16	0	0	0	0	0	0	0	0	21	0	21	70							
2020-02-15 13:00:00	11	11	0	0	22	0	0	0	0	14	0	0	14	0	0	0	0	0	0	0	0	15	0	15	51							
2020-02-15 13:15:00	16	17	0	0	33	0	0	0	0	16	0	0	16	0	0	0	0	0	0	0	0	17	0	17	66							
2020-02-15 13:30:00	21	9	0	0	30	0	0	0	0	11	0	0	11	0	0	0	0	0	0	0	1	0	12	0	13	54						
2020-02-15 13:45:00	7	12	0	0	19	0	0	0	0	12	0	0	12	0	0	0	0	0	0	0	0	14	0	14	45							
2020-02-15 14:00:00	13	13	0	0	26	0	0	0	0	13	0	0	13	0	0	0	0	0	0	0	0	16	0	16	55							
2020-02-15 14:15:00	11	22	1	0	34	0	0	0	0	13	0	0	13	0	0	0	0	0	0	0	0	22	0	22	69							
2020-02-15 14:30:00	9	11	0	0	20	0	0	0	0	24	0	0	24	0	0	0	0	0	0	0	0	24	0	24	68							
2020-02-15 14:45:00	10	16	0	0	26	1	0	0	0	17	0	0	17	0	0	0	0	0	1	0	0	32	0	32	75							
2020-02-15 15:00:00	12	14	0	0	26	0	0	0	0	19	0	0	19	0	0	0	0	0	0	0	0	15	0	15	60							
2020-02-15 15:15:00	12	20	0	0	32	0	0	0	0	12	0	0	12	0	0	0	0	0	0	0	0	14	0	14	58							
2020-02-15 15:30:00	12	20	0	0	32	0	0	0	0	11	0	0	11	0	0	0	0	0	0	0	0	18	0	18	61							
2020-02-15 15:45:00	15	22	0	0	37	0	0	0	0	19	1	0	20	0	0	0	0	0	0	0	0	18	0	18	75							
2020-02-15 16:00:00	6	20	0	0	26	0	0	0	0	9	0	0	9	0	0	0	0	0	0	0	0	15	0	15	50							
2020-02-15 16:15:00	6	19	0	0	25	0	0	0	0	17	0	0	17	0	0	0	0	0	0	0	0	10	0	10	52							
2020-02-15 16:30:00	13	20	0	0	33	0	0	0	0	19	1	0	20	0	0	0	0	0	0	0	0	12	0	12	65							
2020-02-15 16:45:00	13	18	0	0	31	0	0	0	0	20	2	0	22	0	0	0	0	0	0	0	4	0	27	0	31	84						
Grand Total	315	386	1	0	702	1	0	0	0	383	5	0	388	1	0	0	0	1	1	1	5	0	471	0	476	1567						

Leg	Chicago St (Westbound)						Chicago St (Northbound)						S Wisconsin St (Southbound)					
Direction	Westbound						Northbound						Southbound					
Start Time	Left	Right	App Total	Peds CW	Peds CCW	Thru	Left	Right	App Total	Peds CW	Peds CCW	Left	Thru	App Total	Peds CW	Peds CCW	Int Total	
2020-02-11 11:00:00		11	0	11	0	0		2	8	10	0	0	2	2	4	0	0	25
2020-02-11 11:15:00		18	5	23	0	0		0	16	16	0	0	2	0	2	0	0	41
2020-02-11 11:30:00		25	1	26	0	0		0	13	13	0	0	1	2	3	0	0	42
2020-02-11 11:45:00		19	3	22	0	0		2	21	23	0	0	0	0	0	0	0	45
2020-02-11 12:00:00		23	0	23	0	0		0	15	15	0	0	2	2	4	0	0	42
2020-02-11 12:15:00		16	3	19	0	0		0	11	11	0	0	2	2	4	0	0	34
2020-02-11 12:30:00		13	1	14	0	1		2	11	13	0	0	1	1	2	1	0	29
2020-02-11 12:45:00		26	1	27	0	0		1	14	15	0	0	2	0	2	0	0	44
2020-02-11 15:00:00		28	1	29	0	1		2	19	21	0	0	4	7	11	0	0	61
2020-02-11 15:15:00		28	2	30	0	0		3	31	34	0	0	3	5	8	0	0	72
2020-02-11 15:30:00		23	0	23	0	0		6	30	36	0	0	1	6	7	0	0	66
2020-02-11 15:45:00		23	3	26	0	0		4	24	28	0	0	0	2	2	0	0	56
2020-02-11 16:00:00		26	3	29	0	0		1	23	24	0	0	0	2	2	0	0	55
2020-02-11 16:15:00		29	1	30	0	0		1	28	29	0	0	0	4	4	0	0	63
2020-02-11 16:30:00		24	0	24	0	0		0	22	22	0	0	1	4	5	2	2	51
2020-02-11 16:45:00		30	0	30	0	0		3	32	35	0	0	4	2	6	0	0	71
2020-02-11 17:00:00		29	0	29	0	0		2	23	25	0	0	2	1	3	0	0	57
2020-02-11 17:15:00		17	1	18	0	0		0	23	23	0	0	0	2	2	0	0	43
2020-02-11 17:30:00		12	0	12	0	0		3	15	18	0	1	0	0	0	0	0	30
2020-02-11 17:45:00		18	0	18	0	0		0	19	19	0	0	1	1	2	0	0	39
Grand Total		438	25	463	0	2		32	398	430	0	1	28	45	73	3	2	966

Leg	George St (Eastbound)					George St (Westbound)					Michigan St (Northbound)					Michigan St (Southbound)											
Direction	Eastbound					Westbound					Northbound					Southbound											
Start Time	Left	Thru	Right	U-Turn	App Total	Left	Thru	Right	U-Turn	App Total	Peds CW	Peds CCW	Left	Thru	Right	U-Turn	App Total	Peds CW	Peds CCW	Left	Thru	Right	U-Turn	App Total	Peds CW	Peds CCW	Int Total
2020-02-13 11:00:00	5	59	1	0	65	3	65	5	0	73	0	0	4	1	3	0	8	0	0	1	2	6	0	9	0	0	155
2020-02-13 11:15:00	2	72	1	0	75	3	59	4	0	66	0	0	2	1	3	0	6	0	0	2	0	4	0	6	0	1	153
2020-02-13 11:30:00	1	56	2	0	59	2	61	4	0	67	0	0	3	0	1	0	4	1	0	3	1	3	0	7	0	0	137
2020-02-13 11:45:00	2	73	1	0	76	2	71	2	0	75	0	0	2	0	1	0	3	0	0	4	1	2	0	7	0	0	161
2020-02-13 12:00:00	1	68	1	0	70	0	57	6	1	64	0	0	3	1	0	0	4	0	0	3	2	4	0	9	1	0	147
2020-02-13 12:15:00	4	59	5	0	68	0	64	4	0	68	1	0	0	0	0	0	0	0	1	5	2	7	0	14	0	0	150
2020-02-13 12:30:00	4	66	0	0	70	1	61	1	0	63	0	0	4	2	1	0	7	0	1	2	1	7	0	10	0	0	150
2020-02-13 12:45:00	2	69	1	0	72	1	63	2	0	66	0	0	1	0	0	0	1	0	0	0	0	3	0	3	0	1	142
2020-02-13 15:00:00	2	72	5	0	79	6	80	2	1	89	0	0	11	6	19	0	36	0	0	5	0	5	0	10	0	0	214
2020-02-13 15:15:00	4	96	3	0	103	1	100	3	0	104	0	0	3	2	2	0	7	0	0	2	1	6	0	9	0	0	223
2020-02-13 15:30:00	3	89	2	0	94	3	102	2	0	107	0	0	4	1	1	0	6	0	0	1	1	1	0	3	0	1	210
2020-02-13 15:45:00	6	103	3	0	112	3	92	3	0	98	0	0	2	1	3	0	6	0	0	2	0	2	0	4	0	0	220
2020-02-13 16:00:00	4	114	4	0	122	2	78	2	0	82	0	0	5	1	2	0	8	0	0	3	1	9	0	13	0	0	225
2020-02-13 16:15:00	4	128	2	0	134	4	99	6	0	109	0	0	3	1	5	0	9	0	0	2	1	5	0	8	0	0	260
2020-02-13 16:30:00	2	126	2	0	130	8	89	4	0	101	0	0	2	0	6	0	8	0	0	5	1	2	0	8	0	0	247
2020-02-13 16:45:00	6	137	3	0	146	4	94	6	0	104	0	0	4	0	4	0	8	0	0	1	1	8	0	10	0	0	268
2020-02-13 17:00:00	1	129	2	0	132	2	112	5	0	119	0	1	1	4	4	0	9	0	0	1	2	4	0	7	0	0	267
2020-02-13 17:15:00	2	122	2	0	126	3	114	9	0	126	0	0	0	1	5	0	6	0	0	6	0	7	0	13	1	0	271
2020-02-13 17:30:00	1	101	4	0	106	5	93	2	0	100	0	0	3	3	3	0	9	0	2	7	1	5	0	13	1	0	228
2020-02-13 17:45:00	3	84	4	0	91	6	86	5	0	97	0	0	1	1	5	0	7	0	0	2	1	1	0	4	0	0	199
Grand Total	59	1823	48	0	1930	59	1640	77	2	1778	1	1	58	26	68	0	152	1	4	57	19	91	0	167	3	3	4027

Leg Direction Start Time	George St (Eastbound)				George St (Westbound)				Michigan St (Northbound)				Michigan St (Southbound)						Int Total		
	Eastbound				Westbound				Northbound				Southbound								
	Left	Thru	Right	App Total	Left	Thru	Right	App Total	Left	Thru	Right	App Total	Peds CW	Peds CCW	Left	Thru	Right	App Total	Peds CW	Peds CCW	
2020-02-15 11:00:00	4	73	2	79	1	75	3	79	0	1	0	1	0	0	3	1	4	8	0	0	167
2020-02-15 11:15:00	2	80	4	86	2	69	7	78	0	2	1	3	0	0	5	1	4	10	0	0	177
2020-02-15 11:30:00	3	67	2	72	0	72	5	77	1	1	1	3	1	1	4	0	6	10	1	0	162
2020-02-15 11:45:00	0	69	1	70	2	67	4	73	1	1	0	2	0	0	0	1	1	2	0	0	147
2020-02-15 12:00:00	2	74	5	81	3	79	3	85	0	0	0	0	4	0	3	0	2	5	2	1	171
2020-02-15 12:15:00	2	79	1	82	4	67	3	74	1	2	4	7	0	0	3	1	2	6	0	0	169
2020-02-15 12:30:00	3	91	3	97	1	67	2	70	0	0	1	1	0	1	2	1	5	8	0	0	176
2020-02-15 12:45:00	3	98	4	106	1	75	1	77	2	1	1	4	0	0	0	0	2	2	2	0	189
2020-02-15 13:00:00	0	75	2	77	1	83	3	87	0	0	1	1	1	1	1	0	0	1	0	0	166
2020-02-15 13:15:00	2	85	0	87	5	68	0	74	2	0	0	2	0	0	0	0	2	2	0	1	165
2020-02-15 13:30:00	2	68	1	71	1	64	1	66	0	0	1	1	1	0	2	2	0	4	0	0	142
2020-02-15 13:45:00	1	66	2	69	3	72	0	75	3	0	1	4	1	0	4	0	1	5	0	0	153
2020-02-15 14:00:00	1	64	2	67	1	71	0	72	0	0	2	2	3	1	1	0	2	3	0	2	144
2020-02-15 14:15:00	2	73	1	76	1	54	0	55	0	0	2	2	1	0	1	0	1	2	0	0	135
2020-02-15 14:30:00	2	64	1	67	2	68	1	71	2	0	2	4	0	0	2	0	1	3	1	0	145
2020-02-15 14:45:00	3	70	3	76	3	58	2	63	0	1	0	1	1	0	1	0	2	3	0	2	143
2020-02-15 15:00:00	1	64	3	68	1	47	1	49	2	1	0	3	2	0	1	2	2	5	0	0	125
2020-02-15 15:15:00	1	80	4	85	5	58	2	65	0	1	1	2	0	0	1	1	1	3	0	0	155
2020-02-15 15:30:00	2	68	7	77	7	62	2	71	0	1	0	1	1	3	1	0	5	6	0	1	155
2020-02-15 15:45:00	3	73	1	77	15	66	1	82	4	1	0	5	0	0	0	1	0	1	0	0	165
2020-02-15 16:00:00	5	50	2	57	0	54	1	55	4	0	1	5	0	2	4	3	1	8	0	0	125
2020-02-15 16:15:00	2	72	1	75	0	51	2	53	2	2	2	6	0	3	0	1	1	2	2	0	136
2020-02-15 16:30:00	1	67	2	70	0	60	0	60	3	0	1	4	0	0	0	0	3	3	0	0	137
2020-02-15 16:45:00	2	89	5	96	3	62	1	66	6	2	9	17	0	0	2	1	2	5	1	0	184
Grand Total	49	1759	59	1868	62	1569	45	1677	33	17	31	81	16	12	41	16	50	107	9	7	3733

Leg	Lewis St (Eastbound)							Lewis St (Westbound)							Erie St (Northbound)							Erie St (Southbound)							
Direction	Eastbound							Westbound							Northbound							Southbound							
Start Time	Left	Thru	Right	U-Turn	App Total	Peds CW	Peds CCW	Left	Thru	Right	U-Turn	App Total	Peds CW	Peds CCW	Left	Thru	Right	U-Turn	App Total	Peds CW	Peds CCW	Left	Thru	Right	U-Turn	App Total	Peds CW	Peds CCW	Int Total
2020-02-12 11:00:00	1	0	6	0	7	0	0	0	0	1	1	0	2	0	0	1	5	8	0	0	13	0	0	0	11	0	0	0	33
2020-02-12 11:15:00	1	1	6	0	8	0	0	0	0	0	2	0	2	0	0	0	1	10	0	0	11	0	4	0	0	4	0	0	25
2020-02-12 11:30:00	2	4	10	0	16	2	0	1	0	0	0	1	0	0	0	5	14	0	0	19	0	12	0	0	12	0	0	48	
2020-02-12 11:45:00	2	0	12	0	14	0	0	0	0	0	1	0	1	0	1	9	5	1	0	15	1	17	1	0	19	0	0	49	
2020-02-12 12:00:00	1	0	13	0	14	0	0	0	0	0	0	0	0	1	0	4	16	0	0	20	0	15	0	0	15	0	0	49	
2020-02-12 12:15:00	0	3	12	0	15	0	0	1	1	0	0	2	0	0	0	3	11	1	0	15	0	7	1	0	8	0	0	40	
2020-02-12 12:30:00	4	3	11	0	18	0	0	0	0	0	0	0	0	0	0	4	11	1	0	16	0	13	2	0	15	0	0	49	
2020-02-12 12:45:00	1	0	4	0	5	0	0	0	0	1	0	1	0	0	0	3	15	0	0	18	0	13	0	0	13	0	0	37	
2020-02-12 15:00:00	10	6	13	0	29	0	0	0	3	0	0	3	0	0	0	12	48	0	0	60	0	30	4	0	34	1	0	126	
2020-02-12 15:15:00	3	1	10	0	14	0	0	0	1	1	0	2	0	0	0	7	40	0	0	47	0	22	2	0	24	0	0	87	
2020-02-12 15:30:00	3	4	10	0	17	0	1	0	1	0	0	1	0	0	1	4	28	0	0	32	0	18	1	0	19	0	1	69	
2020-02-12 15:45:00	0	0	9	0	9	0	0	0	0	2	0	2	0	0	0	6	22	1	0	29	0	17	3	0	20	0	0	60	
2020-02-12 16:00:00	3	4	12	0	19	0	1	0	1	0	0	1	1	0	0	9	21	0	0	30	0	22	4	0	26	0	0	76	
2020-02-12 16:15:00	4	3	22	0	29	0	0	0	0	0	0	0	0	0	0	10	17	0	0	27	0	20	1	0	21	0	0	77	
2020-02-12 16:30:00	5	4	12	0	21	0	0	0	0	0	0	0	0	0	0	13	25	0	0	38	0	27	2	0	29	0	0	88	
2020-02-12 16:45:00	5	6	23	0	34	0	0	0	1	0	0	1	0	0	0	9	32	0	0	41	1	23	2	0	26	0	0	102	
2020-02-12 17:00:00	1	4	15	0	20	0	1	0	0	2	0	2	0	0	0	15	34	0	0	49	0	22	2	0	24	2	0	95	
2020-02-12 17:15:00	1	2	19	0	22	0	0	1	1	1	0	3	1	0	0	9	25	0	0	34	1	26	0	0	27	0	0	86	
2020-02-12 17:30:00	3	3	18	0	24	0	0	0	1	0	0	1	0	0	0	10	15	1	0	26	0	20	0	0	20	0	0	71	
2020-02-12 17:45:00	0	3	9	0	12	0	0	0	0	0	0	0	0	0	0	8	15	0	0	23	0	18	5	0	23	0	0	58	
Grand Total	50	51	246	0	347	2	3	3	12	10	0	25	3	3	146	412	5	0	563	3	357	30	0	390	3	1	1325		

Appendix D

Synchro and SimTraffic Output

HCM 6th TWSC
1: S Broadway & Lewis St

Existing
AM Peak

Intersection

Int Delay, s/veh 2.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	232	1200	4	48	732
Future Vol, veh/h	0	232	1200	4	48	732
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	232	1200	4	48	732

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1664	602	0
Stage 1	1202	-	-
Stage 2	462	-	-
Critical Hdwy	6.84	6.94	-
Critical Hdwy Stg 1	5.84	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	3.32	-
Pot Cap-1 Maneuver	88	443	-
Stage 1	247	-	-
Stage 2	601	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	76	443	-
Mov Cap-2 Maneuver	76	-	-
Stage 1	247	-	-
Stage 2	516	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21.7	0	1.4
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	443	575
HCM Lane V/C Ratio	-	-	0.524	0.083
HCM Control Delay (s)	-	-	21.7	11.8
HCM Lane LOS	-	-	C	B
HCM 95th %tile Q(veh)	-	-	3	0.3

HCM Signalized Intersection Capacity Analysis

2: S Broadway & Merrill St

Existing
AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	28	72	8	328	16	872	20	112	628	4
Future Volume (vph)	0	0	28	72	8	328	16	872	20	112	628	4
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	1.00		0.95			0.95	
Frt		0.86			1.00	0.85		1.00			1.00	
Flt Protected		1.00			0.96	1.00		1.00			0.99	
Satd. Flow (prot)		1611			1783	1583		3524			3510	
Flt Permitted		1.00			0.73	1.00		0.94			0.73	
Satd. Flow (perm)		1611			1354	1583		3313			2565	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	28	72	8	328	16	872	20	112	628	4
RTOR Reduction (vph)	0	22	0	0	0	257	0	1	0	0	0	0
Lane Group Flow (vph)	0	6	0	0	80	71	0	907	0	0	744	0
Turn Type		NA		Perm	NA	Perm	Perm	NA		custom	NA	
Protected Phases		4			8			6		5	2	
Permitted Phases	4			8		8	6			5		
Actuated Green, G (s)		9.9			9.9	9.9		25.8			25.8	
Effective Green, g (s)		9.9			9.9	9.9		25.8			25.8	
Actuated g/C Ratio		0.22			0.22	0.22		0.56			0.56	
Clearance Time (s)		5.0			5.0	5.0		5.0			5.0	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		348			293	342		1870			1448	
v/s Ratio Prot		0.00										
v/s Ratio Perm					c0.06	0.04		0.27			c0.29	
v/c Ratio		0.02			0.27	0.21		0.48			0.51	
Uniform Delay, d1		14.1			14.9	14.7		6.0			6.1	
Progression Factor		1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2		0.0			0.5	0.3		0.2			0.3	
Delay (s)		14.1			15.4	15.0		6.2			6.4	
Level of Service		B			B	B		A			A	
Approach Delay (s)		14.1			15.1			6.2			6.4	
Approach LOS		B			B			A			A	
Intersection Summary												
HCM 2000 Control Delay		8.1										
HCM 2000 Volume to Capacity ratio		0.50										
Actuated Cycle Length (s)		45.7										
Intersection Capacity Utilization		69.5%										
Analysis Period (min)		15										
c Critical Lane Group												

HCM 6th TWSC
3: Merrill St & Chicago St

Existing
AM Peak

Intersection												
Int Delay, s/veh	5.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	28	88	0	8	260	12	0	0	0	40	0	196
Future Vol, veh/h	28	88	0	8	260	12	0	0	0	40	0	196
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	28	88	0	8	260	12	0	0	0	40	0	196
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	272	0	0	88	0	0	524	432	88	426	426	266
Stage 1	-	-	-	-	-	-	144	144	-	282	282	-
Stage 2	-	-	-	-	-	-	380	288	-	144	144	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1291	-	-	1508	-	-	464	516	970	539	520	773
Stage 1	-	-	-	-	-	-	859	778	-	725	678	-
Stage 2	-	-	-	-	-	-	642	674	-	859	778	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1291	-	-	1508	-	-	339	501	970	527	505	773
Mov Cap-2 Maneuver	-	-	-	-	-	-	339	501	-	527	505	-
Stage 1	-	-	-	-	-	-	839	760	-	708	674	-
Stage 2	-	-	-	-	-	-	476	670	-	839	760	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.9			0.2			0			12.5		
HCM LOS							A			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	-	1291	-	-	1508	-	-	716				
HCM Lane V/C Ratio	-	0.022	-	-	0.005	-	-	0.33				
HCM Control Delay (s)	0	7.8	0	-	7.4	0	-	12.5				
HCM Lane LOS	A	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	-	0.1	-	-	0	-	-	1.4				

HCM 6th TWSC
4: Chicago St & S Wisconsin St

Existing
AM Peak

Intersection						
Int Delay, s/veh	5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	196	12	28	40	12	72
Future Vol, veh/h	196	12	28	40	12	72
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	196	12	28	40	12	72
Major/Minor		Major1		Minor2		
Conflicting Flow All		0	0	48	68	
Stage 1		-	-	0	0	
Stage 2		-	-	48	68	
Critical Hdwy		-	-	6.42	6.52	
Critical Hdwy Stg 1		-	-	-	-	
Critical Hdwy Stg 2		-	-	5.42	5.52	
Follow-up Hdwy		-	-	3.518	4.018	
Pot Cap-1 Maneuver		-	-	962	823	
Stage 1		-	-	-	-	
Stage 2		-	-	974	838	
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver		-	-	962	0	
Mov Cap-2 Maneuver		-	-	962	0	
Stage 1		-	-	-	0	
Stage 2		-	-	974	0	
Approach		NB		SB		
HCM Control Delay, s		0		9.1		
HCM LOS				A		
Minor Lane/Major Mvmt	NBT	NBR	SBLn1			
Capacity (veh/h)	-	-	962			
HCM Lane V/C Ratio	-	-	0.087			
HCM Control Delay (s)	-	-	9.1			
HCM Lane LOS	-	-	A			
HCM 95th %tile Q(veh)	-	-	0.3			

HCM 6th TWSC
5: S Michigan St/N Michigan St & George St

Existing
AM Peak

Intersection												
Int Delay, s/veh	5.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	12	224	24	32	508	12	72	20	160	8	8	8
Future Vol, veh/h	12	224	24	32	508	12	72	20	160	8	8	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	224	24	32	508	12	72	20	160	8	8	8
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	520	0	0	248	0	0	846	844	236	928	850	514
Stage 1	-	-	-	-	-	-	260	260	-	578	578	-
Stage 2	-	-	-	-	-	-	586	584	-	350	272	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1046	-	-	1318	-	-	282	300	803	248	298	560
Stage 1	-	-	-	-	-	-	745	693	-	501	501	-
Stage 2	-	-	-	-	-	-	496	498	-	666	685	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1046	-	-	1318	-	-	262	286	803	181	284	560
Mov Cap-2 Maneuver	-	-	-	-	-	-	262	286	-	181	284	-
Stage 1	-	-	-	-	-	-	735	684	-	494	484	-
Stage 2	-	-	-	-	-	-	464	481	-	511	676	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			0.5			21.7			19.2		
HCM LOS							C			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	463	1046	-	-	1318	-	-	277				
HCM Lane V/C Ratio	0.544	0.011	-	-	0.024	-	-	0.087				
HCM Control Delay (s)	21.7	8.5	0	-	7.8	0	-	19.2				
HCM Lane LOS	C	A	A	-	A	A	-	C				
HCM 95th %tile Q(veh)	3.2	0	-	-	0.1	-	-	0.3				

HCM 6th TWSC
6: S Erie St & Lewis St

Existing
AM Peak

Intersection												
Int Delay, s/veh	4.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	40	4	44	4	36	0	128	312	0	4	132	52
Future Vol, veh/h	40	4	44	4	36	0	128	312	0	4	132	52
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	40	4	44	4	36	0	128	312	0	4	132	52
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	752	734	158	758	760	312	184	0	0	312	0	0
Stage 1	166	166	-	568	568	-	-	-	-	-	-	-
Stage 2	586	568	-	190	192	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	327	347	887	324	336	728	1391	-	-	1248	-	-
Stage 1	836	761	-	508	506	-	-	-	-	-	-	-
Stage 2	496	506	-	812	742	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	271	307	887	278	297	728	1391	-	-	1248	-	-
Mov Cap-2 Maneuver	271	307	-	278	297	-	-	-	-	-	-	-
Stage 1	743	758	-	452	450	-	-	-	-	-	-	-
Stage 2	406	450	-	765	739	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	15.9		19.1		2.3		0.2					
HCM LOS	C		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1391	-	-	419	295	1248	-	-				
HCM Lane V/C Ratio	0.092	-	-	0.21	0.136	0.003	-	-				
HCM Control Delay (s)	7.8	0	-	15.9	19.1	7.9	0	-				
HCM Lane LOS	A	A	-	C	C	A	A	-				
HCM 95th %tile O(veh)	0.3	-	-	0.8	0.5	0	-	-				

1: S Broadway & Lewis St Performance by movement

Movement	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.5	0.0	0.0	0.3	0.2	0.1
Total Del/Veh (s)	14.3	1.5	1.1	10.7	2.1	3.3

2: S Broadway & Merrill St Performance by movement

Movement	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.0	0.0	0.0	0.3	0.2	0.2	0.0	0.0	0.0	0.1
Total Del/Veh (s)	3.7	19.4	3.2	6.6	16.0	7.9	3.8	36.7	11.9	2.9	10.6

3: Merrill St & Chicago St Performance by movement

Movement	EBL	EBT	WBL	WBT	WBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.2	0.2	0.3	0.0	0.0	0.0	0.1
Total Del/Veh (s)	3.3	1.1	2.1	0.7	0.4	5.5	0.7	3.2	1.9

4: Chicago St & S Wisconsin St Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.2	0.3	0.0	0.1	0.1	0.2	0.2
Total Del/Veh (s)	4.5	1.6	0.6	0.2	18.4	27.1	8.5

5: S Michigan St/N Michigan St & George St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.2	0.3	0.2	0.4	0.4	0.4	0.3	0.2	0.3	0.1	0.1	0.1
Total Del/Veh (s)	3.9	0.9	0.3	3.3	1.0	0.5	14.5	13.3	8.0	9.5	11.1	4.9

5: S Michigan St/N Michigan St & George St Performance by movement

Movement	All
Denied Del/Veh (s)	0.3
Total Del/Veh (s)	3.4

6: S Erie St & Lewis St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.2	0.1	0.1	0.1	0.1	0.4	0.4	0.1	0.2	0.2	0.3
Total Del/Veh (s)	10.9	10.5	4.6	7.6	10.0	3.2	1.6	3.0	0.6	0.3	2.8

16: S Wisconsin St & Lewis St Performance by movement

Movement	EBT	NBT	All
Denied Del/Veh (s)	0.0	0.0	0.0
Total Del/Veh (s)	0.6	0.6	0.6

Intersection: 1: S Broadway & Lewis St

Movement	WB	SB	SB
Directions Served	LR	LT	T
Maximum Queue (ft)	154	179	172
Average Queue (ft)	79	56	7
95th Queue (ft)	138	138	61
Link Distance (ft)		741	741
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: S Broadway & Merrill St

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	LT	TR	LT	TR
Maximum Queue (ft)	35	80	102	189	163	248	208
Average Queue (ft)	7	32	52	108	68	135	101
95th Queue (ft)	24	68	94	174	138	220	184
Link Distance (ft)	451	241	241	709	709	352	352
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 3: Merrill St & Chicago St

Movement	EB	WB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	51	17	60
Average Queue (ft)	8	1	31
95th Queue (ft)	34	9	46
Link Distance (ft)	241	867	27
Upstream Blk Time (%)			22
Queuing Penalty (veh)			58
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 4: Chicago St & S Wisconsin St

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	103	37	104
Average Queue (ft)	34	3	44
95th Queue (ft)	78	16	84
Link Distance (ft)	1228	27	
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 5: S Michigan St/N Michigan St & George St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	56	77	168	43
Average Queue (ft)	6	12	70	19
95th Queue (ft)	33	50	123	45
Link Distance (ft)	617	630		339
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: S Erie St & Lewis St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	83	57	112	23
Average Queue (ft)	38	26	28	1
95th Queue (ft)	68	55	81	11
Link Distance (ft)		345	328	342
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

HCM 6th TWSC
1: S Broadway & Lewis St

Existing
Midday Peak

Intersection						
Int Delay, s/veh	0.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	37	636	4	47	598
Future Vol, veh/h	1	37	636	4	47	598
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	40	691	4	51	650
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1120	348	0	0	695	0
Stage 1	693	-	-	-	-	-
Stage 2	427	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	200	648	-	-	897	-
Stage 1	457	-	-	-	-	-
Stage 2	626	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	182	648	-	-	897	-
Mov Cap-2 Maneuver	182	-	-	-	-	-
Stage 1	457	-	-	-	-	-
Stage 2	570	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	11.4	0		1		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	-		607	897	-
HCM Lane V/C Ratio	-	-		0.068	0.057	-
HCM Control Delay (s)	-	-		11.4	9.3	0.4
HCM Lane LOS	-	-		B	A	A
HCM 95th %tile Q(veh)	-	-		0.2	0.2	-

HCM Signalized Intersection Capacity Analysis

2: S Broadway & Merrill St

Existing
Midday Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	4	6	9	3	111	3	509	8	83	505	1
Future Volume (vph)	1	4	6	9	3	111	3	509	8	83	505	1
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	1.00		0.95			0.95	
Frt		0.92			1.00	0.85		1.00			1.00	
Flt Protected		1.00			0.96	1.00		1.00			0.99	
Satd. Flow (prot)		1709			1794	1583		3530			3514	
Flt Permitted		0.97			0.77	1.00		0.95			0.84	
Satd. Flow (perm)		1667			1430	1583		3357			2971	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	4	7	10	3	121	3	553	9	90	549	1
RTOR Reduction (vph)	0	6	0	0	0	103	0	1	0	0	0	0
Lane Group Flow (vph)	0	6	0	0	13	18	0	564	0	0	640	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		custom	NA	
Protected Phases		4			8			6		5	2	
Permitted Phases	4			8		8	6			5		
Actuated Green, G (s)		5.9			5.9	5.9		12.8			22.7	
Effective Green, g (s)		5.9			5.9	5.9		12.8			22.7	
Actuated g/C Ratio		0.15			0.15	0.15		0.33			0.59	
Clearance Time (s)		5.0			5.0	5.0		5.0			5.0	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		254			218	241		1113			1837	
v/s Ratio Prot											c0.06	
v/s Ratio Perm		0.00			0.01	c0.01		c0.17			0.15	
v/c Ratio		0.02			0.06	0.08		0.51			0.35	
Uniform Delay, d1		13.9			14.0	14.0		10.4			4.1	
Progression Factor		1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2		0.0			0.1	0.1		0.4			0.1	
Delay (s)		13.9			14.1	14.2		10.7			4.2	
Level of Service		B			B	B		B			A	
Approach Delay (s)		13.9			14.1			10.7			4.2	
Approach LOS		B			B			B			A	
Intersection Summary												
HCM 2000 Control Delay		8.0			HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio		0.38										
Actuated Cycle Length (s)		38.6			Sum of lost time (s)			13.5				
Intersection Capacity Utilization		50.0%			ICU Level of Service			A				
Analysis Period (min)		15										
c Critical Lane Group												

HCM 6th TWSC
3: Merrill St & Chicago St

Existing
Midday Peak

Intersection												
Int Delay, s/veh	4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	41	69	6	0	68	1	4	4	0	0	5	71
Future Vol, veh/h	41	69	6	0	68	1	4	4	0	0	5	71
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	45	75	7	0	74	1	4	4	0	0	5	77
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	75	0	0	82	0	0	285	244	79	246	247	75
Stage 1	-	-	-	-	-	-	169	169	-	75	75	-
Stage 2	-	-	-	-	-	-	116	75	-	171	172	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1524	-	-	1515	-	-	667	658	981	708	655	986
Stage 1	-	-	-	-	-	-	833	759	-	934	833	-
Stage 2	-	-	-	-	-	-	889	833	-	831	756	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1524	-	-	1515	-	-	596	638	981	687	635	986
Mov Cap-2 Maneuver	-	-	-	-	-	-	596	638	-	687	635	-
Stage 1	-	-	-	-	-	-	807	735	-	905	833	-
Stage 2	-	-	-	-	-	-	814	833	-	800	733	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	2.6			0			10.9			9.1		
HCM LOS							B			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	616	1524	-	-	1515	-	-	951				
HCM Lane V/C Ratio	0.014	0.029	-	-	-	-	-	0.087				
HCM Control Delay (s)	10.9	7.4	0	-	0	-	-	9.1				
HCM Lane LOS	B	A	A	-	A	-	-	A				
HCM 95th %tile Q(veh)	0	0.1	-	-	0	-	-	0.3				

HCM 6th TWSC
4: Chicago St & S Wisconsin St

Existing
Midday Peak

Intersection

Int Delay, s/veh 1.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	71	7	4	58	5	5
Future Vol, veh/h	71	7	4	58	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	77	8	4	63	5	5

Major/Minor	Major1	Minor2
Conflicting Flow All	0	0 36 67
Stage 1	-	- 0 0
Stage 2	-	- 36 67
Critical Hdwy	-	- 6.42 6.52
Critical Hdwy Stg 1	-	- - -
Critical Hdwy Stg 2	-	- 5.42 5.52
Follow-up Hdwy	-	- 3.518 4.018
Pot Cap-1 Maneuver	-	- 977 824
Stage 1	-	- - -
Stage 2	-	- 986 839
Platoon blocked, %	-	- -
Mov Cap-1 Maneuver	-	- 977 0
Mov Cap-2 Maneuver	-	- 977 0
Stage 1	-	- - 0
Stage 2	-	- 986 0

Approach	NB	SB
HCM Control Delay, s	0	8.7
HCM LOS		A

Minor Lane/Major Mvmt	NBT	NBR	SBLn1
Capacity (veh/h)	-	-	977
HCM Lane V/C Ratio	-	-	0.011
HCM Control Delay (s)	-	-	8.7
HCM Lane LOS	-	-	A
HCM 95th %tile Q(veh)	-	-	0

HCM 6th TWSC
5: S Michigan St/N Michigan St & George St

Existing
Midday Peak

Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	11	266	7	3	353	13	9	3	2	14	6	20
Future Vol, veh/h	11	266	7	3	353	13	9	3	2	14	6	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	289	8	3	384	14	10	3	2	15	7	22
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	398	0	0	297	0	0	729	721	293	717	718	391
Stage 1	-	-	-	-	-	-	317	317	-	397	397	-
Stage 2	-	-	-	-	-	-	412	404	-	320	321	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1161	-	-	1264	-	-	338	353	746	345	355	658
Stage 1	-	-	-	-	-	-	694	654	-	629	603	-
Stage 2	-	-	-	-	-	-	617	599	-	692	652	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1161	-	-	1264	-	-	318	348	746	338	350	658
Mov Cap-2 Maneuver	-	-	-	-	-	-	318	348	-	338	350	-
Stage 1	-	-	-	-	-	-	686	646	-	621	601	-
Stage 2	-	-	-	-	-	-	588	597	-	678	644	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.3			0.1			15.6			13.9		
HCM LOS							C			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	354	1161	-	-	1264	-	-	450				
HCM Lane V/C Ratio	0.043	0.01	-	-	0.003	-	-	0.097				
HCM Control Delay (s)	15.6	8.1	0	-	7.9	0	-	13.9				
HCM Lane LOS	C	A	A	-	A	A	-	B				
HCM 95th %tile O(veh)	0.1	0	-	-	0	-	-	0.3				

HCM 6th TWSC
6: S Erie St & Lewis St

Existing
Midday Peak

Intersection												
Int Delay, s/veh	3.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	7	6	48	1	1	1	20	43	3	1	52	4
Future Vol, veh/h	7	6	48	1	1	1	20	43	3	1	52	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	7	52	1	1	1	22	47	3	1	57	4
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	155	155	59	184	156	49	61	0	0	50	0	0
Stage 1	61	61	-	93	93	-	-	-	-	-	-	-
Stage 2	94	94	-	91	63	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	812	737	1007	777	736	1020	1542	-	-	1557	-	-
Stage 1	950	844	-	914	818	-	-	-	-	-	-	-
Stage 2	913	817	-	916	842	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	801	725	1007	723	724	1020	1542	-	-	1557	-	-
Mov Cap-2 Maneuver	801	725	-	723	724	-	-	-	-	-	-	-
Stage 1	936	843	-	900	806	-	-	-	-	-	-	-
Stage 2	897	805	-	861	841	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	9.1		9.5			2.2			0.1			
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1542	-	-	943	801	1557	-	-				
HCM Lane V/C Ratio	0.014	-	-	0.07	0.004	0.001	-	-				
HCM Control Delay (s)	7.4	0	-	9.1	9.5	7.3	0	-				
HCM Lane LOS	A	A	-	A	A	A	A	-				
HCM 95th %tile O(veh)	0	-	-	0.2	0	0	-	-				

1: S Broadway & Lewis St Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)		0.1	0.0	0.0	0.3	0.2	0.1
Total Del/Veh (s)		3.6	0.9	0.9	5.0	0.9	1.1

2: S Broadway & Merrill St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)		0.1	0.1	0.0	0.0	0.0	0.4	0.1	0.1	0.0	0.0	0.0
Total Del/Veh (s)		16.6	2.7	11.2	1.9	3.3	12.0	3.8	2.1	13.1	5.4	1.7

2: S Broadway & Merrill St Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	5.0

3: Merrill St & Chicago St Performance by movement

Movement	EBL	EBT	EBR	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0
Total Del/Veh (s)	2.3	1.0	0.9	0.2	0.0	4.9	5.6	3.4	2.3	1.5

4: Chicago St & S Wisconsin St Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.1	0.1	0.1	0.1
Total Del/Veh (s)	1.0	0.2	0.7	0.2	4.8	9.8	1.2

5: S Michigan St/N Michigan St & George St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.2	0.2	0.1	0.1	0.3	0.3	0.1	0.1	0.1	0.1	0.1	0.1
Total Del/Veh (s)	3.0	0.4	0.1	3.3	0.5	0.3	8.4	6.2	2.8	7.5	8.1	4.0

5: S Michigan St/N Michigan St & George St Performance by movement

Movement	All
Denied Del/Veh (s)	0.3
Total Del/Veh (s)	0.9

6: S Erie St & Lewis St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR	All
Denied Del/Veh (s)	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1
Total Del/Veh (s)	4.5	6.1	3.1	2.4	6.0	2.3	2.0	0.2	0.1	0.1	0.1	1.5

Intersection: 1: S Broadway & Lewis St

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	55	102
Average Queue (ft)	22	28
95th Queue (ft)	47	77
Link Distance (ft)	741	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: S Broadway & Merrill St

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	LT	TR	LT	TR
Maximum Queue (ft)	19	25	47	95	58	152	115
Average Queue (ft)	4	7	18	47	18	72	43
95th Queue (ft)	15	23	35	85	48	128	97
Link Distance (ft)	451	241	241	709	709	352	352
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 3: Merrill St & Chicago St

Movement	EB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	46	27	51
Average Queue (ft)	4	7	27
95th Queue (ft)	23	26	44
Link Distance (ft)	241	421	27
Upstream Blk Time (%)	6		
Queuing Penalty (veh)	5		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 4: Chicago St & S Wisconsin St

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	42	16	40
Average Queue (ft)	7	1	10
95th Queue (ft)	29	7	35
Link Distance (ft)	1228	27	
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 5: S Michigan St/N Michigan St & George St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	48	23	31	54
Average Queue (ft)	5	1	9	22
95th Queue (ft)	24	12	31	48
Link Distance (ft)	617	630		339
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: S Erie St & Lewis St

Movement	EB	WB	NB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	53	31	18
Average Queue (ft)	28	3	1
95th Queue (ft)	48	16	10
Link Distance (ft)		345	328
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

HCM 6th TWSC
1: S Broadway & Lewis St

Existing
PM Peak

Intersection						
Int Delay, s/veh	2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	61	856	4	92	1179
Future Vol, veh/h	0	61	856	4	92	1179
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	66	930	4	100	1282
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1773	467	0	0	934	0
Stage 1	932	-	-	-	-	-
Stage 2	841	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	74	542	-	-	729	-
Stage 1	344	-	-	-	-	-
Stage 2	383	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	39	542	-	-	729	-
Mov Cap-2 Maneuver	39	-	-	-	-	-
Stage 1	344	-	-	-	-	-
Stage 2	201	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	12.6	0		2.8		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	542	729	-	
HCM Lane V/C Ratio	-	-	0.122	0.137	-	
HCM Control Delay (s)	-	-	12.6	10.7	2.2	
HCM Lane LOS	-	-	B	B	A	
HCM 95th %tile O(veh)	-	-	0.4	0.5	-	

HCM Signalized Intersection Capacity Analysis

2: S Broadway & Merrill St

Existing
PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	3	25	28	4	152	3	691	13	191	955	4
Future Volume (vph)	2	3	25	28	4	152	3	691	13	191	955	4
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	1.00		0.95			0.95	
Frt		0.89			1.00	0.85		1.00			1.00	
Flt Protected		1.00			0.96	1.00		1.00			0.99	
Satd. Flow (prot)		1645			1784	1583		3529			3508	
Flt Permitted		0.98			0.73	1.00		0.95			0.64	
Satd. Flow (perm)		1621			1356	1583		3357			2248	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	3	27	30	4	165	3	751	14	208	1038	4
RTOR Reduction (vph)	0	23	0	0	0	142	0	1	0	0	0	0
Lane Group Flow (vph)	0	9	0	0	34	23	0	767	0	0	1250	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		custom	NA	
Protected Phases		4			8			6		5	2	
Permitted Phases	4			8		8	6			5		
Actuated Green, G (s)		8.6			8.6	8.6		34.0			43.6	
Effective Green, g (s)		8.6			8.6	8.6		34.0			43.6	
Actuated g/C Ratio		0.14			0.14	0.14		0.55			0.70	
Clearance Time (s)		5.0			5.0	5.0		5.0			5.0	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		224			187	218		1835			1699	
v/s Ratio Prot											c0.07	
v/s Ratio Perm		0.01			c0.03	0.01		0.23			c0.44	
v/c Ratio		0.04			0.18	0.10		0.42			0.74	
Uniform Delay, d1		23.2			23.7	23.4		8.3			5.7	
Progression Factor		1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2		0.1			0.5	0.2		0.2			1.7	
Delay (s)		23.3			24.2	23.6		8.4			7.4	
Level of Service		C			C	C		A			A	
Approach Delay (s)		23.3			23.7			8.4			7.4	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay		9.4										
HCM 2000 Volume to Capacity ratio		0.68										
Actuated Cycle Length (s)		62.2										
Intersection Capacity Utilization		72.6%										
Analysis Period (min)		15										
c Critical Lane Group												

HCM 6th TWSC
3: Merrill St & Chicago St

Existing
PM Peak

Intersection												
Int Delay, s/veh	4.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	121	124	0	0	69	1	2	0	0	2	0	125
Future Vol, veh/h	121	124	0	0	69	1	2	0	0	2	0	125
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	132	135	0	0	75	1	2	0	0	2	0	136
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	76	0	0	135	0	0	543	475	135	475	475	76
Stage 1	-	-	-	-	-	-	399	399	-	76	76	-
Stage 2	-	-	-	-	-	-	144	76	-	399	399	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1523	-	-	1449	-	-	451	488	914	500	488	985
Stage 1	-	-	-	-	-	-	627	602	-	933	832	-
Stage 2	-	-	-	-	-	-	859	832	-	627	602	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1523	-	-	1449	-	-	361	442	914	464	442	985
Mov Cap-2 Maneuver	-	-	-	-	-	-	361	442	-	464	442	-
Stage 1	-	-	-	-	-	-	568	545	-	845	832	-
Stage 2	-	-	-	-	-	-	741	832	-	568	545	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	3.7			0			15			9.3		
HCM LOS							C			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	361	1523	-	-	1449	-	-	968				
HCM Lane V/C Ratio	0.006	0.086	-	-	-	-	-	0.143				
HCM Control Delay (s)	15	7.6	0	-	0	-	-	9.3				
HCM Lane LOS	C	A	A	-	A	-	-	A				
HCM 95th %tile O(veh)	0	0.3	-	-	0	-	-	0.5				

HCM 6th TWSC
4: Chicago St & S Wisconsin St

Existing
PM Peak

Intersection						
Int Delay, s/veh	1.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	100	1	5	100	7	9
Future Vol, veh/h	100	1	5	100	7	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	109	1	5	109	8	10
Major/Minor		Major1		Minor2		
Conflicting Flow All		0	0	60	114	
Stage 1		-	-	0	0	
Stage 2		-	-	60	114	
Critical Hdwy		-	-	6.42	6.52	
Critical Hdwy Stg 1		-	-	-	-	
Critical Hdwy Stg 2		-	-	5.42	5.52	
Follow-up Hdwy		-	-	3.518	4.018	
Pot Cap-1 Maneuver		-	-	947	776	
Stage 1		-	-	-	-	
Stage 2		-	-	963	801	
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver		-	-	947	0	
Mov Cap-2 Maneuver		-	-	947	0	
Stage 1		-	-	-	0	
Stage 2		-	-	963	0	
Approach		NB		SB		
HCM Control Delay, s		0		8.9		
HCM LOS				A		
Minor Lane/Major Mvmt	NBT	NBR	SBLn1			
Capacity (veh/h)	-	-	947			
HCM Lane V/C Ratio	-	-	0.018			
HCM Control Delay (s)	-	-	8.9			
HCM Lane LOS	-	-	A			
HCM 95th %tile Q(veh)	-	-	0.1			

HCM 6th TWSC
5: S Michigan St/N Michigan St & George St

Existing
PM Peak

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	11	514	9	17	409	24	7	5	19	13	4	21
Future Vol, veh/h	11	514	9	17	409	24	7	5	19	13	4	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	559	10	18	445	26	8	5	21	14	4	23
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	471	0	0	569	0	0	1096	1095	564	1095	1087	458
Stage 1	-	-	-	-	-	-	588	588	-	494	494	-
Stage 2	-	-	-	-	-	-	508	507	-	601	593	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1091	-	-	1003	-	-	191	214	525	191	216	603
Stage 1	-	-	-	-	-	-	495	496	-	557	546	-
Stage 2	-	-	-	-	-	-	547	539	-	487	493	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1091	-	-	1003	-	-	175	205	525	174	207	603
Mov Cap-2 Maneuver	-	-	-	-	-	-	175	205	-	174	207	-
Stage 1	-	-	-	-	-	-	487	488	-	548	533	-
Stage 2	-	-	-	-	-	-	509	526	-	455	485	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.3			18.1			19.2		
HCM LOS							C			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	308	1091	-	-	1003	-	-	295				
HCM Lane V/C Ratio	0.109	0.011	-	-	0.018	-	-	0.14				
HCM Control Delay (s)	18.1	8.3	0	-	8.7	0	-	19.2				
HCM Lane LOS	C	A	A	-	A	A	-	C				
HCM 95th %tile Q(veh)	0.4	0	-	-	0.1	-	-	0.5				

HCM 6th TWSC
6: S Erie St & Lewis St

Existing
PM Peak

Intersection												
Int Delay, s/veh	3.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	12	16	69	1	2	3	46	116	0	2	98	6
Future Vol, veh/h	12	16	69	1	2	3	46	116	0	2	98	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	17	75	1	2	3	50	126	0	2	107	7
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	344	341	111	387	344	126	114	0	0	126	0	0
Stage 1	115	115	-	226	226	-	-	-	-	-	-	-
Stage 2	229	226	-	161	118	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	610	581	942	572	579	924	1475	-	-	1460	-	-
Stage 1	890	800	-	777	717	-	-	-	-	-	-	-
Stage 2	774	717	-	841	798	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	589	560	942	499	558	924	1475	-	-	1460	-	-
Mov Cap-2 Maneuver	589	560	-	499	558	-	-	-	-	-	-	-
Stage 1	858	799	-	749	691	-	-	-	-	-	-	-
Stage 2	741	691	-	756	797	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	10.2		10.4			2.1			0.1			
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1475	-	-	794	679	1460	-	-				
HCM Lane V/C Ratio	0.034	-	-	0.133	0.01	0.001	-	-				
HCM Control Delay (s)	7.5	0	-	10.2	10.4	7.5	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile O(veh)	0.1	-	-	0.5	0	0	-	-				

1: S Broadway & Lewis St Performance by movement

Movement	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.1	0.0	0.0	0.5	0.3	0.2
Total Del/Veh (s)	5.0	1.4	0.6	8.3	2.6	2.5

2: S Broadway & Merrill St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.1	0.1	0.0	0.0	0.0	0.4	0.1	0.1	0.0	0.0	0.0
Total Del/Veh (s)	33.5	20.9	6.3	19.2	4.9	4.8	11.1	8.2	2.8	16.4	6.8	3.2

2: S Broadway & Merrill St Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	8.1

3: Merrill St & Chicago St Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	SBL	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1
Total Del/Veh (s)	2.3	1.3	0.3	0.0	4.8	2.0	2.3	1.7

4: Chicago St & S Wisconsin St Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.1	0.2	0.0	0.0	0.1	0.1	0.1
Total Del/Veh (s)	1.6	0.1	0.1	0.1	5.0	10.8	1.4

5: S Michigan St/N Michigan St & George St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.4	0.4	0.5	0.3	0.4	0.3	0.2	0.1	0.1	0.1	0.1	0.1
Total Del/Veh (s)	3.5	0.8	0.5	4.0	0.9	0.6	12.4	13.9	5.4	11.4	11.3	5.1

5: S Michigan St/N Michigan St & George St Performance by movement

Movement	All
Denied Del/Veh (s)	0.4
Total Del/Veh (s)	1.4

6: S Erie St & Lewis St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.2	0.2	0.1	0.1	0.1	0.2	0.2		0.1	0.1	0.2
Total Del/Veh (s)	6.4	6.9	3.3	2.7	5.4	2.5	2.2	0.3		0.2	0.0	1.7

Intersection: 1: S Broadway & Lewis St

Movement	WB	NB	SB	SB
Directions Served	LR	TR	LT	T
Maximum Queue (ft)	64	4	197	131
Average Queue (ft)	30	0	75	10
95th Queue (ft)	54	3	170	71
Link Distance (ft)		352	741	741
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 2: S Broadway & Merrill St

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	LT	TR	LT	TR
Maximum Queue (ft)	43	62	59	176	140	214	193
Average Queue (ft)	9	15	26	95	49	123	94
95th Queue (ft)	27	42	51	150	102	198	174
Link Distance (ft)	451	241	241	709	709	352	352
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 3: Merrill St & Chicago St

Movement	EB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	66	22	61
Average Queue (ft)	8	2	30
95th Queue (ft)	36	14	45
Link Distance (ft)	241	421	27
Upstream Blk Time (%)			9
Queuing Penalty (veh)			10
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 4: Chicago St & S Wisconsin St

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	52	40
Average Queue (ft)	13	15
95th Queue (ft)	41	40
Link Distance (ft)	1228	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: S Michigan St/N Michigan St & George St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	47	82	49	58
Average Queue (ft)	4	12	22	25
95th Queue (ft)	24	47	48	50
Link Distance (ft)	617	630		339
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: S Erie St & Lewis St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	60	31	31	10
Average Queue (ft)	34	5	5	0
95th Queue (ft)	54	24	23	7
Link Distance (ft)		345	328	342
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

HCM 6th TWSC
1: S Broadway & Lewis St

Existing
Saturday Peak

Intersection

Int Delay, s/veh 0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	47	714	1	48	626
Future Vol, veh/h	1	47	714	1	48	626
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	51	776	1	52	680

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1221	389	0
Stage 1	777	-	-
Stage 2	444	-	-
Critical Hdwy	6.84	6.94	-
Critical Hdwy Stg 1	5.84	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	3.32	-
Pot Cap-1 Maneuver	172	610	-
Stage 1	414	-	-
Stage 2	614	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	155	610	-
Mov Cap-2 Maneuver	155	-	-
Stage 1	414	-	-
Stage 2	553	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.9	0	1.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	575	835
HCM Lane V/C Ratio	-	-	0.091	0.062
HCM Control Delay (s)	-	-	11.9	9.6
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.3	0.2

HCM Signalized Intersection Capacity Analysis

2: S Broadway & Merrill St

Existing
Saturday Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	3	9	10	0	148	2	565	11	125	500	8
Future Volume (vph)	3	3	9	10	0	148	2	565	11	125	500	8
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	1.00		0.95			0.95	
Frt		0.92			1.00	0.85		1.00			1.00	
Flt Protected		0.99			0.95	1.00		1.00			0.99	
Satd. Flow (prot)		1690			1770	1583		3529			3498	
Flt Permitted		0.94			0.75	1.00		0.95			0.74	
Satd. Flow (perm)		1603			1392	1583		3365			2623	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	3	10	11	0	161	2	614	12	136	543	9
RTOR Reduction (vph)	0	8	0	0	0	135	0	1	0	0	1	0
Lane Group Flow (vph)	0	8	0	0	11	26	0	627	0	0	687	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		custom	NA	
Protected Phases		4			8			6		5	2	
Permitted Phases	4			8		8	6			5		
Actuated Green, G (s)		6.4			6.4	6.4		23.1			23.1	
Effective Green, g (s)		6.4			6.4	6.4		23.1			23.1	
Actuated g/C Ratio		0.16			0.16	0.16		0.58			0.58	
Clearance Time (s)		5.0			5.0	5.0		5.0			5.0	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		259			225	256		1967			1533	
v/s Ratio Prot												
v/s Ratio Perm		0.00			0.01	c0.02		0.19			c0.26	
v/c Ratio		0.03			0.05	0.10		0.32			0.45	
Uniform Delay, d1		13.9			14.0	14.1		4.2			4.6	
Progression Factor		1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2		0.0			0.1	0.2		0.1			0.2	
Delay (s)		14.0			14.1	14.3		4.3			4.8	
Level of Service		B			B	B		A			A	
Approach Delay (s)		14.0			14.3			4.3			4.8	
Approach LOS		B			B			A			A	
Intersection Summary												
HCM 2000 Control Delay		5.8										
HCM 2000 Volume to Capacity ratio		0.42										
Actuated Cycle Length (s)		39.5										
Intersection Capacity Utilization		52.9%										
Analysis Period (min)		15										
c Critical Lane Group												

HCM 6th TWSC
3: Merrill St & Chicago St

Existing
Saturday Peak

Intersection												
Int Delay, s/veh	4.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	64	63	0	0	74	0	1	0	0	0	0	102
Future Vol, veh/h	64	63	0	0	74	0	1	0	0	0	0	102
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	70	68	0	0	80	0	1	0	0	0	0	111
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	80	0	0	68	0	0	344	288	68	288	288	80
Stage 1	-	-	-	-	-	-	208	208	-	80	80	-
Stage 2	-	-	-	-	-	-	136	80	-	208	208	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1518	-	-	1533	-	-	610	622	995	664	622	980
Stage 1	-	-	-	-	-	-	794	730	-	929	828	-
Stage 2	-	-	-	-	-	-	867	828	-	794	730	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1518	-	-	1533	-	-	521	592	995	639	592	980
Mov Cap-2 Maneuver	-	-	-	-	-	-	521	592	-	639	592	-
Stage 1	-	-	-	-	-	-	756	695	-	884	828	-
Stage 2	-	-	-	-	-	-	769	828	-	756	695	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	3.8			0			11.9			9.1		
HCM LOS							B			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	521	1518	-	-	1533	-	-	980				
HCM Lane V/C Ratio	0.002	0.046	-	-	-	-	-	0.113				
HCM Control Delay (s)	11.9	7.5	0	-	0	-	-	9.1				
HCM Lane LOS	B	A	A	-	A	-	-	A				
HCM 95th %tile O(veh)	0	0.1	-	-	0	-	-	0.4				

HCM 6th TWSC
5: S Michigan St/N Michigan St & George St

Existing
Saturday Peak

Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	7	313	10	10	280	12	2	3	5	8	3	10
Future Vol, veh/h	7	313	10	10	280	12	2	3	5	8	3	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	340	11	11	304	13	2	3	5	9	3	11
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	317	0	0	351	0	0	702	701	346	699	700	311
Stage 1	-	-	-	-	-	-	362	362	-	333	333	-
Stage 2	-	-	-	-	-	-	340	339	-	366	367	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1243	-	-	1208	-	-	353	363	697	354	363	729
Stage 1	-	-	-	-	-	-	657	625	-	681	644	-
Stage 2	-	-	-	-	-	-	675	640	-	653	622	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1243	-	-	1208	-	-	340	356	697	344	356	729
Mov Cap-2 Maneuver	-	-	-	-	-	-	340	356	-	344	356	-
Stage 1	-	-	-	-	-	-	652	620	-	676	637	-
Stage 2	-	-	-	-	-	-	654	633	-	639	617	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.3			12.9			13.2		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	465	1243	-	-	1208	-	-	463				
HCM Lane V/C Ratio	0.023	0.006	-	-	0.009	-	-	0.049				
HCM Control Delay (s)	12.9	7.9	0	-	8	0	-	13.2				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile O(veh)	0.1	0	-	-	0	-	-	0.2				

1: S Broadway & Lewis St Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)		0.1	0.0	0.0	0.3	0.2	0.1
Total Del/Veh (s)		3.9	1.0	1.2	5.4	1.1	1.3

2: S Broadway & Merrill St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.1	0.1	0.0	0.0	0.0		0.1	0.2	0.0	0.0	0.0
Total Del/Veh (s)	18.9	18.5	3.1	13.2	0.3	3.7		4.3	2.2	17.7	7.1	1.6

2: S Broadway & Merrill St Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	6.4

3: Merrill St & Chicago St Performance by movement

Movement	EBL	EBT	WBT	NBL	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.1		0.2	0.1
Total Del/Veh (s)	2.3	1.1	0.2		1.6	1.2

4: Chicago St & S Wisconsin St Performance by movement

Movement	NBT	All
Denied Del/Veh (s)	0.0	0.0
Total Del/Veh (s)	0.1	0.1

5: S Michigan St/N Michigan St & George St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.4	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
Total Del/Veh (s)	2.7	0.5	0.2	3.5	0.5	0.3	6.4	7.7	4.1	8.5	6.9	3.0

5: S Michigan St/N Michigan St & George St Performance by movement

Movement	All
Denied Del/Veh (s)	0.3
Total Del/Veh (s)	0.8

16: S Wisconsin St & Lewis St Performance by movement

Movement	EBT	All
Denied Del/Veh (s)	0.0	0.0
Total Del/Veh (s)	0.5	0.5

Intersection: 1: S Broadway & Lewis St

Movement	WB	SB	SB
Directions Served	LR	LT	T
Maximum Queue (ft)	56	114	29
Average Queue (ft)	27	31	1
95th Queue (ft)	51	87	21
Link Distance (ft)		741	741
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: S Broadway & Merrill St

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	LT	TR	LT	TR
Maximum Queue (ft)	19	29	59	126	100	194	149
Average Queue (ft)	5	5	25	60	28	93	53
95th Queue (ft)	16	20	48	107	72	162	123
Link Distance (ft)	451	241	241	709	709	352	352
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 3: Merrill St & Chicago St

Movement	EB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	42	6	54
Average Queue (ft)	5	0	28
95th Queue (ft)	23	4	42
Link Distance (ft)	241	421	
Upstream Blk Time (%)			7
Queuing Penalty (veh)			0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 4: Chicago St & S Wisconsin St

Movement

Directions Served

Maximum Queue (ft)

Average Queue (ft)

95th Queue (ft)

Link Distance (ft)

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Intersection: 5: S Michigan St/N Michigan St & George St

Movement

EB

WB

NB

SB

Directions Served LTR LTR LTR LTR

Maximum Queue (ft) 27 49 35 36

Average Queue (ft) 2 5 10 17

95th Queue (ft) 14 26 33 42

Link Distance (ft) 617 630 339

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Intersection: 6: S Erie St & Lewis St

Movement

Directions Served

Maximum Queue (ft)

Average Queue (ft)

95th Queue (ft)

Link Distance (ft)

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

HCM 6th TWSC
1: S Broadway & Lewis St

Build
Midday Peak

Intersection						
Int Delay, s/veh	1.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	52	640	27	83	600
Future Vol, veh/h	9	52	640	27	83	600
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	57	696	29	90	652
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1217	363	0	0	725	0
Stage 1	711	-	-	-	-	-
Stage 2	506	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	173	634	-	-	874	-
Stage 1	448	-	-	-	-	-
Stage 2	571	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	145	634	-	-	874	-
Mov Cap-2 Maneuver	145	-	-	-	-	-
Stage 1	448	-	-	-	-	-
Stage 2	479	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	15.1	0		1.7		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	423	874	-	
HCM Lane V/C Ratio	-	-	0.157	0.103	-	
HCM Control Delay (s)	-	-	15.1	9.6	0.6	
HCM Lane LOS	-	-	C	A	A	
HCM 95th %tile O(veh)	-	-	0.6	0.3	-	

HCM Signalized Intersection Capacity Analysis

2: S Broadway & Merrill St

Build
Midday Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	5	10	10	5	115	5	537	10	85	518	1
Future Volume (vph)	1	5	10	10	5	115	5	537	10	85	518	1
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	1.00		0.95			0.95	
Frt		0.91			1.00	0.85		1.00			1.00	
Flt Protected		1.00			0.97	1.00		1.00			0.99	
Satd. Flow (prot)		1695			1801	1583		3528			3514	
Flt Permitted		0.98			0.78	1.00		0.95			0.83	
Satd. Flow (perm)		1665			1461	1583		3347			2946	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	5	11	11	5	125	5	584	11	92	563	1
RTOR Reduction (vph)	0	9	0	0	0	106	0	1	0	0	0	0
Lane Group Flow (vph)	0	8	0	0	16	19	0	599	0	0	656	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		custom	NA	
Protected Phases		4			8			6		5	2	
Permitted Phases	4			8		8	6			5		
Actuated Green, G (s)		5.9			5.9	5.9		13.4			23.3	
Effective Green, g (s)		5.9			5.9	5.9		13.4			23.3	
Actuated g/C Ratio		0.15			0.15	0.15		0.34			0.59	
Clearance Time (s)		5.0			5.0	5.0		5.0			5.0	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		250			219	238		1144			1843	
v/s Ratio Prot											c0.06	
v/s Ratio Perm		0.00			0.01	c0.01		c0.18			0.15	
v/c Ratio		0.03			0.07	0.08		0.52			0.36	
Uniform Delay, d1		14.2			14.3	14.3		10.3			4.1	
Progression Factor		1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2		0.1			0.1	0.1		0.4			0.1	
Delay (s)		14.3			14.4	14.5		10.8			4.2	
Level of Service		B			B	B		B			A	
Approach Delay (s)		14.3			14.5			10.8			4.2	
Approach LOS		B			B			B			A	
Intersection Summary												
HCM 2000 Control Delay		8.1										
HCM 2000 Volume to Capacity ratio		0.39										
Actuated Cycle Length (s)		39.2										
Intersection Capacity Utilization		51.3%										
Analysis Period (min)		15										
c Critical Lane Group												

HCM 6th TWSC
3: Merrill St & Chicago St

Build
Midday Peak

Intersection												
Int Delay, s/veh	4.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	45	70	10	0	70	6	5	5	0	1	5	75
Future Vol, veh/h	45	70	10	0	70	6	5	5	0	1	5	75
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	49	76	11	0	76	7	5	5	0	1	5	82
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	83	0	0	87	0	0	303	263	82	262	265	80
Stage 1	-	-	-	-	-	-	180	180	-	80	80	-
Stage 2	-	-	-	-	-	-	123	83	-	182	185	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1514	-	-	1509	-	-	649	642	978	691	640	980
Stage 1	-	-	-	-	-	-	822	750	-	929	828	-
Stage 2	-	-	-	-	-	-	881	826	-	820	747	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1514	-	-	1509	-	-	576	620	978	669	618	980
Mov Cap-2 Maneuver	-	-	-	-	-	-	576	620	-	669	618	-
Stage 1	-	-	-	-	-	-	794	725	-	897	828	-
Stage 2	-	-	-	-	-	-	802	826	-	786	722	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	2.7			0			11.1			9.2		
HCM LOS							B			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	597	1514	-	-	1509	-	-	941				
HCM Lane V/C Ratio	0.018	0.032	-	-	-	-	-	0.094				
HCM Control Delay (s)	11.1	7.5	0	-	0	-	-	9.2				
HCM Lane LOS	B	A	A	-	A	-	-	A				
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.3				

Intersection						
Int Delay, s/veh	1.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	75	10	10	60	5	6
Future Vol, veh/h	75	10	10	60	5	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	82	11	11	65	5	7
Major/Minor	Major1		Minor2			
Conflicting Flow All			0	0	44	76
Stage 1			-	-	0	0
Stage 2			-	-	44	76
Critical Hdwy			-	-	6.42	6.52
Critical Hdwy Stg 1			-	-	-	-
Critical Hdwy Stg 2			-	-	5.42	5.52
Follow-up Hdwy			-	-	3.518	4.018
Pot Cap-1 Maneuver			-	-	967	814
Stage 1			-	-	-	-
Stage 2			-	-	978	832
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver			-	-	967	0
Mov Cap-2 Maneuver			-	-	967	0
Stage 1			-	-	-	0
Stage 2			-	-	978	0
Approach	NB		SB			
HCM Control Delay, s			0		8.8	
HCM LOS					A	
Minor Lane/Major Mvmt	NBT	NBR	SBLn1			
Capacity (veh/h)	-	-	967			
HCM Lane V/C Ratio	-	-	0.012			
HCM Control Delay (s)	-	-	8.8			
HCM Lane LOS	-	-	A			
HCM 95th %tile O(veh)	-	-	0			

HCM 6th TWSC
5: S Michigan St/N Michigan St & George St

Build
Midday Peak

Intersection												
Int Delay, s/veh	1.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	15	270	26	15	255	15	17	5	6	15	10	20
Future Vol, veh/h	15	270	26	15	255	15	17	5	6	15	10	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	293	28	16	277	16	18	5	7	16	11	22
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	293	0	0	321	0	0	673	664	307	662	670	285
Stage 1	-	-	-	-	-	-	339	339	-	317	317	-
Stage 2	-	-	-	-	-	-	334	325	-	345	353	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1269	-	-	1239	-	-	369	381	733	375	378	754
Stage 1	-	-	-	-	-	-	676	640	-	694	654	-
Stage 2	-	-	-	-	-	-	680	649	-	671	631	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1269	-	-	1239	-	-	342	370	733	359	367	754
Mov Cap-2 Maneuver	-	-	-	-	-	-	342	370	-	359	367	-
Stage 1	-	-	-	-	-	-	666	630	-	684	644	-
Stage 2	-	-	-	-	-	-	640	639	-	649	622	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			0.4			15			13.5		
HCM LOS							C			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	392	1269	-	-	1239	-	-	471				
HCM Lane V/C Ratio	0.078	0.013	-	-	0.013	-	-	0.104				
HCM Control Delay (s)	15	7.9	0	-	7.9	0	-	13.5				
HCM Lane LOS	C	A	A	-	A	A	-	B				
HCM 95th %tile O(veh)	0.3	0	-	-	0	-	-	0.3				

HCM 6th TWSC
6: S Erie St & Lewis St

Build
Midday Peak

Intersection												
Int Delay, s/veh	4.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	10	53	1	1	1	22	45	5	1	55	5
Future Vol, veh/h	10	10	53	1	1	1	22	45	5	1	55	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	11	58	1	1	1	24	49	5	1	60	5
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	166	167	63	199	167	52	65	0	0	54	0	0
Stage 1	65	65	-	100	100	-	-	-	-	-	-	-
Stage 2	101	102	-	99	67	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	798	726	1002	760	726	1016	1537	-	-	1551	-	-
Stage 1	946	841	-	906	812	-	-	-	-	-	-	-
Stage 2	905	811	-	907	839	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	786	714	1002	699	714	1016	1537	-	-	1551	-	-
Mov Cap-2 Maneuver	786	714	-	699	714	-	-	-	-	-	-	-
Stage 1	931	840	-	892	799	-	-	-	-	-	-	-
Stage 2	888	798	-	843	838	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	9.3		9.6			2.3			0.1			
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1537	-	-	917	786	1551	-	-				
HCM Lane V/C Ratio	0.016	-	-	0.087	0.004	0.001	-	-				
HCM Control Delay (s)	7.4	0	-	9.3	9.6	7.3	0	-				
HCM Lane LOS	A	A	-	A	A	A	A	-				
HCM 95th %tile O(veh)	0	-	-	0.3	0	0	-	-				

1: S Broadway & Lewis St Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.4	0.2	0.1
Total Del/Veh (s)	14.1	4.3	1.5	1.3	5.6	1.4	1.9

2: S Broadway & Merrill St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.1	0.1	0.0	0.0	0.0	0.2	0.1	0.2	0.0	0.0	0.0
Total Del/Veh (s)	18.1	22.0	4.7	18.7	2.7	4.5	8.6	7.7	4.4	8.4	3.7	3.0

2: S Broadway & Merrill St Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	5.9

3: Merrill St & Chicago St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.1		0.0	0.0	0.1
Total Del/Veh (s)	2.2	0.9	0.6	0.3	0.1	4.2	6.1			3.0	2.3	1.4

4: Chicago St & S Wisconsin St Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.1	0.2	0.1	0.0	0.1	0.1	0.1
Total Del/Veh (s)	1.0	0.2	0.4	0.1	5.1	7.0	0.9

5: S Michigan St/N Michigan St & George St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.2	0.3	0.2	0.3	0.3	0.1	0.1	0.1	0.1	0.1	0.2	0.1
Total Del/Veh (s)	2.8	0.7	0.4	3.1	0.6	0.3	6.7	9.3	3.3	7.9	9.3	3.6

5: S Michigan St/N Michigan St & George St Performance by movement

Movement	All
Denied Del/Veh (s)	0.2
Total Del/Veh (s)	1.4

6: S Erie St & Lewis St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.1	0.1		0.1	0.1	0.1	0.1	0.1		0.1	0.1
Total Del/Veh (s)	4.7	6.7	2.9		6.4	4.4	2.0	0.2	0.0		0.1	0.0

6: S Erie St & Lewis St Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	1.8

16: S Wisconsin St & Lewis St Performance by movement

Movement	EBT	NBT	All
Denied Del/Veh (s)	0.0	0.0	0.0
Total Del/Veh (s)	0.3	0.3	0.3

21: Lewis St Performance by movement

Movement	WBT	SBT	All
Denied Del/Veh (s)	0.0	0.0	0.0
Total Del/Veh (s)	0.2	0.6	0.5

Total Network Performance

Movement	All
Denied Del/Veh (s)	0.2
Total Del/Veh (s)	5.7

Intersection: 1: S Broadway & Lewis St

Movement	WB	SB	SB
Directions Served	LR	LT	T
Maximum Queue (ft)	57	128	40
Average Queue (ft)	30	42	1
95th Queue (ft)	55	101	23
Link Distance (ft)		741	741
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: S Broadway & Merrill St

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	LT	TR	LT	TR
Maximum Queue (ft)	32	34	53	141	121	131	105
Average Queue (ft)	5	7	22	70	40	62	33
95th Queue (ft)	21	25	46	114	85	115	88
Link Distance (ft)	451	241	241	709	709	352	352
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 3: Merrill St & Chicago St

Movement	EB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	34	27	47
Average Queue (ft)	4	6	27
95th Queue (ft)	20	24	40
Link Distance (ft)	241	421	27
Upstream Blk Time (%)			6
Queuing Penalty (veh)			5
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 4: Chicago St & S Wisconsin St

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	53	11	31
Average Queue (ft)	5	0	8
95th Queue (ft)	26	6	30
Link Distance (ft)	1228	27	
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 5: S Michigan St/N Michigan St & George St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	44	58	44	66
Average Queue (ft)	5	6	22	27
95th Queue (ft)	25	33	46	53
Link Distance (ft)	617	630		339
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: S Erie St & Lewis St

Movement	EB	WB	NB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	55	31	25
Average Queue (ft)	29	2	2
95th Queue (ft)	48	14	12
Link Distance (ft)		345	328
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

HCM 6th TWSC
1: S Broadway & Lewis St

Build
PM Peak

Intersection

Int Delay, s/veh 8.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	21	109	860	8	102	1185
Future Vol, veh/h	21	109	860	8	102	1185
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	23	118	935	9	111	1288

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1806	472	0
Stage 1	940	-	-
Stage 2	866	-	-
Critical Hdwy	6.84	6.94	-
Critical Hdwy Stg 1	5.84	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	3.32	-
Pot Cap-1 Maneuver	70	538	-
Stage 1	340	-	-
Stage 2	372	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	32	538	-
Mov Cap-2 Maneuver	32	-	-
Stage 1	340	-	-
Stage 2	171	-	-

Approach	WB	NB	SB
HCM Control Delay, s	115.6	0	3.2
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	151	722
HCM Lane V/C Ratio	-	-	0.936	0.154
HCM Control Delay (s)	-	-	115.6	10.9
HCM Lane LOS	-	-	F	B
HCM 95th %tile Q(veh)	-	-	6.7	0.5

HCM Signalized Intersection Capacity Analysis

2: S Broadway & Merrill St

Build
PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	5	25	30	5	155	5	698	15	195	981	5
Future Volume (vph)	2	5	25	30	5	155	5	698	15	195	981	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		5.0			5.0	
Lane Util. Factor		1.00			1.00	1.00		0.95			0.95	
Frt		0.89			1.00	0.85		1.00			1.00	
Flt Protected		1.00			0.96	1.00		1.00			0.99	
Satd. Flow (prot)		1658			1785	1583		3527			3508	
Flt Permitted		0.98			0.73	1.00		0.95			0.63	
Satd. Flow (perm)		1635			1360	1583		3343			2244	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	5	27	33	5	168	5	759	16	212	1066	5
RTOR Reduction (vph)	0	23	0	0	0	146	0	1	0	0	0	0
Lane Group Flow (vph)	0	11	0	0	38	22	0	779	0	0	1283	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		custom	NA	
Protected Phases		4			8			6		5	2	
Permitted Phases	4			8		8	6			5		
Actuated Green, G (s)		8.5			8.5	8.5		35.9			45.4	
Effective Green, g (s)		8.5			8.5	8.5		35.9			45.4	
Actuated g/C Ratio		0.13			0.13	0.13		0.56			0.71	
Clearance Time (s)		5.0			5.0	5.0		5.0			5.0	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		217			180	210		1878			1713	
v/s Ratio Prot											c0.07	
v/s Ratio Perm		0.01			c0.03	0.01		0.23			c0.46	
v/c Ratio		0.05			0.21	0.11		0.41			0.75	
Uniform Delay, d1		24.2			24.7	24.4		8.0			5.7	
Progression Factor		1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2		0.1			0.6	0.2		0.1			1.8	
Delay (s)		24.3			25.3	24.6		8.1			7.6	
Level of Service		C			C	C		A			A	
Approach Delay (s)		24.3			24.7			8.1			7.6	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay		9.5										
HCM 2000 Volume to Capacity ratio		0.70										
Actuated Cycle Length (s)		63.9										
Intersection Capacity Utilization		73.9%										
Analysis Period (min)		15										
c Critical Lane Group												

HCM 6th TWSC
3: Merrill St & Chicago St

Build
PM Peak

Intersection												
Int Delay, s/veh	5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	125	125	0	0	70	1	2	0	0	7	0	130
Future Vol, veh/h	125	125	0	0	70	1	2	0	0	7	0	130
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	136	136	0	0	76	1	2	0	0	8	0	141
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	77	0	0	136	0	0	555	485	136	485	485	77
Stage 1	-	-	-	-	-	-	408	408	-	77	77	-
Stage 2	-	-	-	-	-	-	147	77	-	408	408	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1522	-	-	1448	-	-	442	482	913	492	482	984
Stage 1	-	-	-	-	-	-	620	597	-	932	831	-
Stage 2	-	-	-	-	-	-	856	831	-	620	597	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1522	-	-	1448	-	-	351	435	913	456	435	984
Mov Cap-2 Maneuver	-	-	-	-	-	-	351	435	-	456	435	-
Stage 1	-	-	-	-	-	-	560	539	-	842	831	-
Stage 2	-	-	-	-	-	-	733	831	-	560	539	-
Approach	EB		WB				NB		SB			
HCM Control Delay, s	3.8		0				15.3		9.6			
HCM LOS							C		A			
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	351	1522	-	-	1448	-	-	929				
HCM Lane V/C Ratio	0.006	0.089	-	-	-	-	-	0.16				
HCM Control Delay (s)	15.3	7.6	0	-	0	-	-	9.6				
HCM Lane LOS	C	A	A	-	A	-	-	A				
HCM 95th %tile Q(veh)	0	0.3	-	-	0	-	-	0.6				

Intersection						
Int Delay, s/veh	1.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	105	1	5	105	10	15
Future Vol, veh/h	105	1	5	105	10	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	114	1	5	114	11	16
Major/Minor		Major1		Minor2		
Conflicting Flow All		0	0	62	119	
Stage 1		-	-	0	0	
Stage 2		-	-	62	119	
Critical Hdwy		-	-	6.42	6.52	
Critical Hdwy Stg 1		-	-	-	-	
Critical Hdwy Stg 2		-	-	5.42	5.52	
Follow-up Hdwy		-	-	3.518	4.018	
Pot Cap-1 Maneuver		-	-	944	771	
Stage 1		-	-	-	-	
Stage 2		-	-	961	797	
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver		-	-	944	0	
Mov Cap-2 Maneuver		-	-	944	0	
Stage 1		-	-	-	0	
Stage 2		-	-	961	0	
Approach		NB		SB		
HCM Control Delay, s		0		8.9		
HCM LOS				A		
Minor Lane/Major Mvmt	NBT	NBR	SBLn1			
Capacity (veh/h)	-	-	944			
HCM Lane V/C Ratio	-	-	0.029			
HCM Control Delay (s)	-	-	8.9			
HCM Lane LOS	-	-	A			
HCM 95th %tile Q(veh)	-	-	0.1			

HCM 6th TWSC
5: S Michigan St/N Michigan St & George St

Build
PM Peak

Intersection												
Int Delay, s/veh	2.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	15	520	14	25	415	25	23	13	32	15	5	25
Future Vol, veh/h	15	520	14	25	415	25	23	13	32	15	5	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	565	15	27	451	27	25	14	35	16	5	27
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	478	0	0	580	0	0	1140	1137	573	1148	1131	465
Stage 1	-	-	-	-	-	-	605	605	-	519	519	-
Stage 2	-	-	-	-	-	-	535	532	-	629	612	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1084	-	-	994	-	-	178	202	519	176	203	597
Stage 1	-	-	-	-	-	-	485	487	-	540	533	-
Stage 2	-	-	-	-	-	-	529	526	-	470	484	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1084	-	-	994	-	-	159	190	519	148	191	597
Mov Cap-2 Maneuver	-	-	-	-	-	-	159	190	-	148	191	-
Stage 1	-	-	-	-	-	-	474	476	-	528	513	-
Stage 2	-	-	-	-	-	-	481	507	-	416	473	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.5			25.6			21.6		
HCM LOS							D			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	248	1084	-	-	994	-	-	266				
HCM Lane V/C Ratio	0.298	0.015	-	-	0.027	-	-	0.184				
HCM Control Delay (s)	25.6	8.4	0	-	8.7	0	-	21.6				
HCM Lane LOS	D	A	A	-	A	A	-	C				
HCM 95th %tile O(veh)	1.2	0	-	-	0.1	-	-	0.7				

HCM 6th TWSC
6: S Erie St & Lewis St

Build
PM Peak

Intersection												
Int Delay, s/veh	4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	15	20	71	1	2	5	51	120	0	2	100	10
Future Vol, veh/h	15	20	71	1	2	5	51	120	0	2	100	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	22	77	1	2	5	55	130	0	2	109	11
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	363	359	115	408	364	130	120	0	0	130	0	0
Stage 1	119	119	-	240	240	-	-	-	-	-	-	-
Stage 2	244	240	-	168	124	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	593	568	937	554	564	920	1468	-	-	1455	-	-
Stage 1	885	797	-	763	707	-	-	-	-	-	-	-
Stage 2	760	707	-	834	793	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	569	545	937	478	541	920	1468	-	-	1455	-	-
Mov Cap-2 Maneuver	569	545	-	478	541	-	-	-	-	-	-	-
Stage 1	850	796	-	732	679	-	-	-	-	-	-	-
Stage 2	723	679	-	744	792	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	10.5		10.1		2.3		0.1					
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1468	-	-	764	713	1455	-	-				
HCM Lane V/C Ratio	0.038	-	-	0.151	0.012	0.001	-	-				
HCM Control Delay (s)	7.5	0	-	10.5	10.1	7.5	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile O(veh)	0.1	-	-	0.5	0	0	-	-				

1: S Broadway & Lewis St Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	1.8	4.0	0.0	0.0	0.5	0.3	0.4
Total Del/Veh (s)	70.9	25.7	1.6	1.0	9.5	3.1	4.5

2: S Broadway & Merrill St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.2	0.1	0.1	0.0	0.0	0.0	0.3	0.1	0.3	0.0	0.0	0.0
Total Del/Veh (s)	15.9	22.0	6.1	22.4	6.4	5.5	19.9	8.7	5.1	20.1	8.1	1.7

2: S Broadway & Merrill St Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	9.4

3: Merrill St & Chicago St Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	SBL	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0
Total Del/Veh (s)	2.3	1.3	0.2	0.2	4.2	5.9	2.3	1.8

4: Chicago St & S Wisconsin St Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.1	0.3	0.0	0.0	0.1	0.1	0.1
Total Del/Veh (s)	1.9	1.4	0.2	0.1	4.8	8.9	1.6

5: S Michigan St/N Michigan St & George St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.4	0.4	0.4	0.3	0.4	0.3	0.2	0.2	0.1	0.1	0.1	0.1
Total Del/Veh (s)	4.8	0.9	0.6	4.3	1.1	0.5	12.4	13.6	5.9	13.7	15.0	5.3

5: S Michigan St/N Michigan St & George St Performance by movement

Movement	All
Denied Del/Veh (s)	0.4
Total Del/Veh (s)	2.0

6: S Erie St & Lewis St Performance by movement

Movement	EBL	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.2	0.2
Total Del/Veh (s)	6.1	7.1	3.7	5.0	2.8	2.2	0.4	2.9	0.3	0.1	1.8

Intersection: 1: S Broadway & Lewis St

Movement	WB	SB	SB
Directions Served	LR	LT	T
Maximum Queue (ft)	151	272	178
Average Queue (ft)	72	88	19
95th Queue (ft)	141	204	104
Link Distance (ft)		741	741
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: S Broadway & Merrill St

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	LT	TR	LT	TR
Maximum Queue (ft)	44	55	82	192	173	269	234
Average Queue (ft)	10	18	27	97	60	141	107
95th Queue (ft)	30	45	57	161	131	233	203
Link Distance (ft)	451	241	241	709	709	352	352
Upstream Blk Time (%)						0	0
Queuing Penalty (veh)						0	0
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 3: Merrill St & Chicago St

Movement	EB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	46	27	59
Average Queue (ft)	7	2	30
95th Queue (ft)	30	15	46
Link Distance (ft)	241	421	27
Upstream Blk Time (%)			10
Queuing Penalty (veh)			12
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 4: Chicago St & S Wisconsin St

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	57	32
Average Queue (ft)	14	17
95th Queue (ft)	45	42
Link Distance (ft)	1228	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: S Michigan St/N Michigan St & George St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	78	98	58	62
Average Queue (ft)	10	12	34	26
95th Queue (ft)	45	47	58	53
Link Distance (ft)	617	630		339
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: S Erie St & Lewis St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	64	31	48	6
Average Queue (ft)	36	5	5	0
95th Queue (ft)	57	23	25	4
Link Distance (ft)		345	328	342
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

HCM 6th TWSC
1: S Broadway & Lewis St

Build
Saturday Peak

Intersection

Int Delay, s/veh 1.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	62	720	23	83	630
Future Vol, veh/h	9	62	720	23	83	630
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	67	783	25	90	685

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1319	404	0
Stage 1	796	-	-
Stage 2	523	-	-
Critical Hdwy	6.84	6.94	-
Critical Hdwy Stg 1	5.84	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	3.32	-
Pot Cap-1 Maneuver	149	596	-
Stage 1	405	-	-
Stage 2	559	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	122	596	-
Mov Cap-2 Maneuver	122	-	-
Stage 1	405	-	-
Stage 2	459	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.2	0	1.8
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	399	813
HCM Lane V/C Ratio	-	-	0.193	0.111
HCM Control Delay (s)	-	-	16.2	10
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	0.7	0.4

HCM Signalized Intersection Capacity Analysis

2: S Broadway & Merrill St

Build
Saturday Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	5	10	10	0	150	2	592	15	125	513	10
Future Volume (vph)	5	5	10	10	0	150	2	592	15	125	513	10
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	1.00		0.95			0.95	
Frt		0.93			1.00	0.85		1.00			1.00	
Flt Protected		0.99			0.95	1.00		1.00			0.99	
Satd. Flow (prot)		1711			1770	1583		3526			3497	
Flt Permitted		0.92			0.74	1.00		0.95			0.72	
Satd. Flow (perm)		1591			1385	1583		3360			2533	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	5	11	11	0	163	2	643	16	136	558	11
RTOR Reduction (vph)	0	9	0	0	0	139	0	2	0	0	1	0
Lane Group Flow (vph)	0	12	0	0	11	24	0	659	0	0	704	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		custom	NA	
Protected Phases		4			8			6		5	2	
Permitted Phases	4			8		8	6			5		
Actuated Green, G (s)		6.1			6.1	6.1		14.9			24.8	
Effective Green, g (s)		6.1			6.1	6.1		14.9			24.8	
Actuated g/C Ratio		0.15			0.15	0.15		0.36			0.61	
Clearance Time (s)		5.0			5.0	5.0		5.0			5.0	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		237			206	236		1224			1686	
v/s Ratio Prot											c0.07	
v/s Ratio Perm		0.01			0.01	c0.02		c0.20			0.19	
v/c Ratio		0.05			0.05	0.10		0.54			0.42	
Uniform Delay, d1		14.9			14.9	15.0		10.3			4.2	
Progression Factor		1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2		0.1			0.1	0.2		0.5			0.2	
Delay (s)		15.0			15.0	15.2		10.7			4.4	
Level of Service		B			B	B		B			A	
Approach Delay (s)		15.0			15.2			10.7			4.4	
Approach LOS		B			B			B			A	
Intersection Summary												
HCM 2000 Control Delay		8.4										
HCM 2000 Volume to Capacity ratio		0.42										
Actuated Cycle Length (s)		40.9										
Intersection Capacity Utilization		54.2%										
Analysis Period (min)		15										
c Critical Lane Group												

Intersection												
Int Delay, s/veh	4.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	65	65	0	0	75	5	1	0	0	1	0	105
Future Vol, veh/h	65	65	0	0	75	5	1	0	0	1	0	105
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	71	71	0	0	82	5	1	0	0	1	0	114
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	87	0	0	71	0	0	355	300	71	298	298	85
Stage 1	-	-	-	-	-	-	213	213	-	85	85	-
Stage 2	-	-	-	-	-	-	142	87	-	213	213	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1509	-	-	1529	-	-	600	612	991	654	614	974
Stage 1	-	-	-	-	-	-	789	726	-	923	824	-
Stage 2	-	-	-	-	-	-	861	823	-	789	726	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1509	-	-	1529	-	-	510	582	991	630	584	974
Mov Cap-2 Maneuver	-	-	-	-	-	-	510	582	-	630	584	-
Stage 1	-	-	-	-	-	-	750	690	-	878	824	-
Stage 2	-	-	-	-	-	-	760	823	-	750	690	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	3.8			0			12.1			9.2		
HCM LOS							B			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	510	1509	-	-	1529	-	-	969				
HCM Lane V/C Ratio	0.002	0.047	-	-	-	-	-	0.119				
HCM Control Delay (s)	12.1	7.5	0	-	0	-	-	9.2				
HCM Lane LOS	B	A	A	-	A	-	-	A				
HCM 95th %tile O(veh)	0	0.1	-	-	0	-	-	0.4				

Intersection

Int Delay, s/veh

-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0

Major/Minor	Major1	Minor2
Conflicting Flow All	0	0
Stage 1	-	0
Stage 2	-	0
Critical Hdwy	-	6.42
Critical Hdwy Stg 1	-	-
Critical Hdwy Stg 2	-	5.42
Follow-up Hdwy	-	3.518
Pot Cap-1 Maneuver	-	-
Stage 1	-	-
Stage 2	-	-
Platoon blocked, %	-	-
Mov Cap-1 Maneuver	-	0
Mov Cap-2 Maneuver	-	0
Stage 1	-	0
Stage 2	-	0

Approach	NB	SB
HCM Control Delay, s	0	0
HCM LOS		A

Minor Lane/Major Mvmt	NBT	NBR	SBLn1
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	-	0
HCM Lane LOS	-	-	A
HCM 95th %tile Q(veh)	-	-	-

HCM 6th TWSC
5: S Michigan St/N Michigan St & George St

Build
Saturday Peak

Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	315	26	20	285	15	8	5	9	10	5	10
Future Vol, veh/h	10	315	26	20	285	15	8	5	9	10	5	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	342	28	22	310	16	9	5	10	11	5	11
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	326	0	0	370	0	0	748	748	356	748	754	318
Stage 1	-	-	-	-	-	-	378	378	-	362	362	-
Stage 2	-	-	-	-	-	-	370	370	-	386	392	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1234	-	-	1189	-	-	329	341	688	329	338	723
Stage 1	-	-	-	-	-	-	644	615	-	657	625	-
Stage 2	-	-	-	-	-	-	650	620	-	637	606	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1234	-	-	1189	-	-	312	329	688	312	327	723
Mov Cap-2 Maneuver	-	-	-	-	-	-	312	329	-	312	327	-
Stage 1	-	-	-	-	-	-	637	608	-	650	611	-
Stage 2	-	-	-	-	-	-	620	606	-	615	599	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.5			14.4			14.4		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	408	1234	-	-	1189	-	-	409				
HCM Lane V/C Ratio	0.059	0.009	-	-	0.018	-	-	0.066				
HCM Control Delay (s)	14.4	7.9	0	-	8.1	0	-	14.4				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile O(veh)	0.2	0	-	-	0.1	-	-	0.2				

HCM 6th TWSC
6: S Erie St & Lewis St

Build
Saturday Peak

Intersection												
Int Delay, s/veh	0											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	0	0	0	0	0
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	1	1	1	1	1	0	1	0	0	0	0	0
Stage 1	1	1	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	1	1	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	1022	895	1084	1022	895	-	1622	-	-	-	-	-
Stage 1	1022	895	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	1022	895	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	895	1084	1022	895	-	1622	-	-	-	-	-
Mov Cap-2 Maneuver	-	895	-	1022	895	-	-	-	-	-	-	-
Stage 1	1022	895	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	1022	895	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	0		0			0			0			
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1622	-	-	-	-	-	-					
HCM Lane V/C Ratio	-	-	-	-	-	-	-					
HCM Control Delay (s)	0	-	-	0	0	0	-	-				
HCM Lane LOS	A	-	-	A	A	A	-	-				
HCM 95th %tile O(veh)	0	-	-	-	-	-	-	-				

1: S Broadway & Lewis St Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.3	0.2	0.1
Total Del/Veh (s)	17.3	5.2	1.6	1.4	6.0	1.5	2.0

2: S Broadway & Merrill St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.2	0.0	0.0	0.0
Total Del/Veh (s)	15.9	23.2	4.0	19.5	0.3	5.2	13.5	8.4	4.0	9.5	4.1	0.7

2: S Broadway & Merrill St Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	6.6

3: Merrill St & Chicago St Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	SBL	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.1	0.1	0.1	0.3	0.1
Total Del/Veh (s)	2.4	1.0	0.2	0.0	3.0	1.4	1.6	1.3

4: Chicago St & S Wisconsin St Performance by movement

Movement	NBT	All
Denied Del/Veh (s)	0.0	0.0
Total Del/Veh (s)	0.1	0.1

5: S Michigan St/N Michigan St & George St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.2	0.3	0.3	0.3	0.3	0.3	0.1	0.1	0.1	0.1	0.1	0.1
Total Del/Veh (s)	3.5	0.7	0.3	3.4	0.7	0.4	10.2	8.0	4.7	6.5	10.1	3.8

5: S Michigan St/N Michigan St & George St Performance by movement

Movement	All
Denied Del/Veh (s)	0.3
Total Del/Veh (s)	1.1

16: S Wisconsin St & Lewis St Performance by movement

Movement	EBT	All
Denied Del/Veh (s)	0.0	0.0
Total Del/Veh (s)	0.4	0.4

Intersection: 1: S Broadway & Lewis St

Movement	WB	NB	SB	SB
Directions Served	LR	TR	LT	T
Maximum Queue (ft)	72	11	140	28
Average Queue (ft)	33	1	44	1
95th Queue (ft)	57	9	109	20
Link Distance (ft)		352	741	741
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 2: S Broadway & Merrill St

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	LT	TR	LT	TR
Maximum Queue (ft)	27	33	68	154	125	144	121
Average Queue (ft)	8	5	30	80	48	66	32
95th Queue (ft)	22	22	56	132	97	121	86
Link Distance (ft)	451	241	241	709	709	352	352
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 3: Merrill St & Chicago St

Movement	EB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	34	21	42
Average Queue (ft)	6	1	27
95th Queue (ft)	24	8	37
Link Distance (ft)	241	421	
Upstream Blk Time (%)			8
Queuing Penalty (veh)			0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 4: Chicago St & S Wisconsin St

Movement

Directions Served

Maximum Queue (ft)

Average Queue (ft)

95th Queue (ft)

Link Distance (ft)

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Intersection: 5: S Michigan St/N Michigan St & George St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	44	55	53	43
Average Queue (ft)	5	7	19	16
95th Queue (ft)	26	33	46	42
Link Distance (ft)	617	630		339
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: S Erie St & Lewis St

Movement

Directions Served

Maximum Queue (ft)

Average Queue (ft)

95th Queue (ft)

Link Distance (ft)

Upstream Blk Time (%)

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

HCM 6th TWSC
1: S Broadway & Lewis St

Build-RIRO @ Lewis
PM Peak

Intersection

Int Delay, s/veh 0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	109	860	8	0	1185
Future Vol, veh/h	0	109	860	8	0	1185
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	118	935	9	0	1288

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1584	472	0
Stage 1	940	-	-
Stage 2	644	-	-
Critical Hdwy	6.84	6.94	-
Critical Hdwy Stg 1	5.84	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	3.32	-
Pot Cap-1 Maneuver	99	538	-
Stage 1	340	-	-
Stage 2	485	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	99	538	-
Mov Cap-2 Maneuver	99	-	-
Stage 1	340	-	-
Stage 2	485	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.6	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	538	722
HCM Lane V/C Ratio	-	-	0.22	-
HCM Control Delay (s)	-	-	13.6	0
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.8	0

HCM Signalized Intersection Capacity Analysis

2: S Broadway & Merrill St

Build-RIRO @ Lewis
PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	5	25	51	5	155	5	698	15	195	960	5
Future Volume (vph)	2	5	25	51	5	155	5	698	15	195	960	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		5.0			5.0	
Lane Util. Factor		1.00			1.00	1.00		0.95			0.95	
Frt		0.89			1.00	0.85		1.00			1.00	
Flt Protected		1.00			0.96	1.00		1.00			0.99	
Satd. Flow (prot)		1658			1781	1583		3527			3508	
Flt Permitted		0.98			0.72	1.00		0.95			0.63	
Satd. Flow (perm)		1634			1339	1583		3343			2230	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	5	27	55	5	168	5	759	16	212	1043	5
RTOR Reduction (vph)	0	23	0	0	0	144	0	1	0	0	0	0
Lane Group Flow (vph)	0	11	0	0	60	24	0	779	0	0	1260	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		custom	NA	
Protected Phases		4			8			6		5	2	
Permitted Phases	4			8		8	6			5		
Actuated Green, G (s)		9.0			9.0	9.0		34.7			44.3	
Effective Green, g (s)		9.0			9.0	9.0		34.7			44.3	
Actuated g/C Ratio		0.14			0.14	0.14		0.55			0.70	
Clearance Time (s)		5.0			5.0	5.0		5.0			5.0	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		232			190	225		1832			1683	
v/s Ratio Prot											c0.07	
v/s Ratio Perm		0.01			c0.04	0.02		0.23			c0.45	
v/c Ratio		0.05			0.32	0.11		0.43			0.75	
Uniform Delay, d1		23.4			24.4	23.6		8.4			6.0	
Progression Factor		1.00			1.00	1.00		1.00			1.00	
Incremental Delay, d2		0.1			1.0	0.2		0.2			1.9	
Delay (s)		23.5			25.3	23.9		8.6			7.9	
Level of Service		C			C	C		A			A	
Approach Delay (s)		23.5			24.2			8.6			7.9	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay		10.0										
HCM 2000 Volume to Capacity ratio		0.72										
Actuated Cycle Length (s)		63.3										
Intersection Capacity Utilization		74.5%										
Analysis Period (min)		15										
c Critical Lane Group												

Intersection												
Int Delay, s/veh	5.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	125	125	0	0	70	1	2	0	0	7	0	151
Future Vol, veh/h	125	125	0	0	70	1	2	0	0	7	0	151
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	136	136	0	0	76	1	2	0	0	8	0	164
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	77	0	0	136	0	0	567	485	136	485	485	77
Stage 1	-	-	-	-	-	-	408	408	-	77	77	-
Stage 2	-	-	-	-	-	-	159	77	-	408	408	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1522	-	-	1448	-	-	434	482	913	492	482	984
Stage 1	-	-	-	-	-	-	620	597	-	932	831	-
Stage 2	-	-	-	-	-	-	843	831	-	620	597	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1522	-	-	1448	-	-	335	435	913	456	435	984
Mov Cap-2 Maneuver	-	-	-	-	-	-	335	435	-	456	435	-
Stage 1	-	-	-	-	-	-	560	539	-	842	831	-
Stage 2	-	-	-	-	-	-	702	831	-	560	539	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	3.8			0			15.8			9.7		
HCM LOS							C			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	335	1522	-	-	1448	-	-	936				
HCM Lane V/C Ratio	0.006	0.089	-	-	-	-	-	0.183				
HCM Control Delay (s)	15.8	7.6	0	-	0	-	-	9.7				
HCM Lane LOS	C	A	A	-	A	-	-	A				
HCM 95th %tile O(veh)	0	0.3	-	-	0	-	-	0.7				

Intersection						
Int Delay, s/veh	2.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	105	1	5	105	10	36
Future Vol, veh/h	105	1	5	105	10	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	114	1	5	114	11	39
Major/Minor		Major1		Minor2		
Conflicting Flow All		0	0	62	119	
Stage 1		-	-	0	0	
Stage 2		-	-	62	119	
Critical Hdwy		-	-	6.42	6.52	
Critical Hdwy Stg 1		-	-	-	-	
Critical Hdwy Stg 2		-	-	5.42	5.52	
Follow-up Hdwy		-	-	3.518	4.018	
Pot Cap-1 Maneuver		-	-	944	771	
Stage 1		-	-	-	-	
Stage 2		-	-	961	797	
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver		-	-	944	0	
Mov Cap-2 Maneuver		-	-	944	0	
Stage 1		-	-	-	0	
Stage 2		-	-	961	0	
Approach		NB		SB		
HCM Control Delay, s		0		9		
HCM LOS				A		
Minor Lane/Major Mvmt	NBT	NBR	SBLn1			
Capacity (veh/h)	-	-	944			
HCM Lane V/C Ratio	-	-	0.053			
HCM Control Delay (s)	-	-	9			
HCM Lane LOS	-	-	A			
HCM 95th %tile Q(veh)	-	-	0.2			

HCM 6th TWSC
5: S Michigan St/N Michigan St & George St

Build-RIRO @ Lewis
PM Peak

Intersection												
Int Delay, s/veh	2.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	15	520	116	25	415	25	23	13	32	15	5	25
Future Vol, veh/h	15	520	116	25	415	25	23	13	32	15	5	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	565	126	27	451	27	25	14	35	16	5	27
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	478	0	0	691	0	0	1195	1192	628	1204	1242	465
Stage 1	-	-	-	-	-	-	660	660	-	519	519	-
Stage 2	-	-	-	-	-	-	535	532	-	685	723	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1084	-	-	904	-	-	163	187	483	161	175	597
Stage 1	-	-	-	-	-	-	452	460	-	540	533	-
Stage 2	-	-	-	-	-	-	529	526	-	438	431	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1084	-	-	904	-	-	144	175	483	133	164	597
Mov Cap-2 Maneuver	-	-	-	-	-	-	144	175	-	133	164	-
Stage 1	-	-	-	-	-	-	441	449	-	527	511	-
Stage 2	-	-	-	-	-	-	479	504	-	384	420	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.5			28.5			23.5		
HCM LOS							D			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	226	1084	-	-	904	-	-	243				
HCM Lane V/C Ratio	0.327	0.015	-	-	0.03	-	-	0.201				
HCM Control Delay (s)	28.5	8.4	0	-	9.1	0	-	23.5				
HCM Lane LOS	D	A	A	-	A	A	-	C				
HCM 95th %tile O(veh)	1.4	0	-	-	0.1	-	-	0.7				

Intersection												
Int Delay, s/veh	4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	15	20	71	1	2	5	51	120	0	2	100	10
Future Vol, veh/h	15	20	71	1	2	5	51	120	0	2	100	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	22	77	1	2	5	55	130	0	2	109	11
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	363	359	115	408	364	130	120	0	0	130	0	0
Stage 1	119	119	-	240	240	-	-	-	-	-	-	-
Stage 2	244	240	-	168	124	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	593	568	937	554	564	920	1468	-	-	1455	-	-
Stage 1	885	797	-	763	707	-	-	-	-	-	-	-
Stage 2	760	707	-	834	793	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	569	545	937	478	541	920	1468	-	-	1455	-	-
Mov Cap-2 Maneuver	569	545	-	478	541	-	-	-	-	-	-	-
Stage 1	850	796	-	732	679	-	-	-	-	-	-	-
Stage 2	723	679	-	744	792	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	10.5		10.1		2.3		0.1					
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1468	-	-	764	713	1455	-	-				
HCM Lane V/C Ratio	0.038	-	-	0.151	0.012	0.001	-	-				
HCM Control Delay (s)	7.5	0	-	10.5	10.1	7.5	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile O(veh)	0.1	-	-	0.5	0	0	-	-				

1: S Broadway & Lewis St Performance by movement

Movement	WBR	NBT	NBR	SBT	All
Denied Del/Veh (s)	0.2	0.0	0.0	0.3	0.1
Total Del/Veh (s)	5.9	1.6	1.2	0.9	1.4

2: S Broadway & Merrill St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.2	0.1	0.1	0.0	0.0	0.0	0.3	0.1	0.2	0.0	0.0	0.0
Total Del/Veh (s)	7.5	26.3	9.2	22.0	4.0	5.2	23.1	10.0	4.3	21.7	8.9	3.3

2: S Broadway & Merrill St Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	10.4

3: Merrill St & Chicago St Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	SBL	SBR	All
Denied Del/Veh (s)	0.1	0.0	0.1	0.2	0.1	0.1	0.1	0.1
Total Del/Veh (s)	2.3	1.2	0.3	0.0	6.2	4.8	2.5	1.8

4: Chicago St & S Wisconsin St Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.1	0.1	0.1
Total Del/Veh (s)	2.1	0.2	0.2	0.1	8.4	12.6	2.8

5: S Michigan St/N Michigan St & George St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.6	0.5	0.6	0.4	0.4	0.3	0.1	0.2	0.1	0.1	0.1	0.1
Total Del/Veh (s)	4.5	2.0	1.2	6.6	1.2	0.8	16.1	18.1	7.7	14.4	13.6	5.5

5: S Michigan St/N Michigan St & George St Performance by movement

Movement	All
Denied Del/Veh (s)	0.4
Total Del/Veh (s)	2.6

6: S Erie St & Lewis St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.2	0.2	0.2		0.1	0.1	0.2	0.2	0.1	0.2	0.1	0.2
Total Del/Veh (s)	6.5	7.2	3.6		7.8	2.6	2.3	0.4	2.5	0.3	0.0	1.9

Intersection: 1: S Broadway & Lewis St

Movement	WB	NB	SB
Directions Served	LR	T	LT
Maximum Queue (ft)	87	6	11
Average Queue (ft)	43	0	0
95th Queue (ft)	71	5	8
Link Distance (ft)		352	741
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: S Broadway & Merrill St

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	LT	TR	LT	TR
Maximum Queue (ft)	52	72	68	195	164	301	265
Average Queue (ft)	10	25	27	108	64	151	122
95th Queue (ft)	30	58	53	173	129	260	226
Link Distance (ft)	451	241	241	709	709	352	352
Upstream Blk Time (%)						0	0
Queuing Penalty (veh)						0	0
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 3: Merrill St & Chicago St

Movement	EB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	46	22	54
Average Queue (ft)	7	2	31
95th Queue (ft)	29	15	47
Link Distance (ft)	241	421	27
Upstream Blk Time (%)			12
Queuing Penalty (veh)			16
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 4: Chicago St & S Wisconsin St

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	73	86
Average Queue (ft)	11	29
95th Queue (ft)	44	61
Link Distance (ft)	1228	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: S Michigan St/N Michigan St & George St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	92	88	77	53
Average Queue (ft)	10	19	35	25
95th Queue (ft)	49	70	61	51
Link Distance (ft)	617	630		339
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: S Erie St & Lewis St

Movement	EB	WB	NB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	68	31	36
Average Queue (ft)	36	7	6
95th Queue (ft)	57	28	26
Link Distance (ft)		345	328
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			