REDEEMER ANN ARBOR

Historic Preservation & Adaptive Reuse

of the Former Treasure Mart Building

521 – 529 Detroit Street

Traffic Impact Study

City of Ann Arbor, Washtenaw County, Michigan

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APPENDICIES

1. ANALYSIS SUMMARY

Redeemer Ann Arbor is the proposed re-development and adaptive reuse of the former Treasure Mart building into a house of worship. Located on Detroit Street between North Division Street and Kingsley Street, the proposed reuse will not generate significant vehicular trips on weekdays during either the AM and PM peak hour as the church does not schedule worship services these times. Worship services will be limited to mid-morning on Sundays, which will place a very low burden on the surrounding roadway systems.

As part of the study, existing traffic volumes were collected on a typical Sunday in December 2021 to evaluate the existing and background conditions on the roadway network. As observed traffic counts in the area have varied up and down significantly over the past ten years, and in particular over the past two years due to the impact of COVID-19, determining a consistent trend of background growth for the area is challenging. As it is not suitable to assume a flat or negative rate of growth for traffic on the existing roadway network, for the purposes of this study a background growth factor of one percent has been assumed.

A trip generation analysis for the proposed reuse was performed based on the rates/equations included in the ITE Trip Generation report (10th Edition) for Church Land Use 560. The predicted number of trips for Sunday services are as follows:

- Sunday Peak Hour of Generator – 94 trip ends

As the property for the proposed re-use has limited parking, it is assumed for the purposes of the study that the on-site parking will be fully utilized by church staff and other visitors who arrive to the facility significantly prior to the start of Sunday worship services. Additionally, it is assumed that on Sunday mornings the local on-street parking will be fully utilized by local residents on Detroit Street and the immediate surrounding streets. As a result, visitors to the church for Sunday services will be required to utilize nearby public parking lots, including the Farmers Market lots and Community High lot in the vicinity of Kingsley Street and Detroit Street. For the purposes of the study, these lots, and not the church property, have been assumed to be the primary destination for visitors in the hour prior to Sunday services as well as the primary point of departure in the hour after Sunday services, with trips being distributed along the roadway network based on proportional traffic movements at the nearby intersections.

Highway capacity analyses were performed for the following locations:

- Broadway Street and Summit Street
- Division Street and Detroit Street
- Beakes Street and 5th Avenue
- Kingsley Street and 5th Avenue
- Kingsley Street and Detroit Street

Based on the approach geometries, traffic patterns, and traffic volumes for the above intersections, it is observed that each intersection in the existing and background condition performs very well in the hour prior to Sunday worship services as well as the hour after. Given the relatively light traffic volumes in this area of Ann Arbor on Sunday morning, Level of Service values of A and B are predominant, and the introduction of additional traffic related to the future condition of the proposed site reuse does not degrade levels of service at any of the intersections. Level of Service values remain predominantly at A and B for the approaches, and each intersection performs very well even with the additional traffic, indicating the additional volumes do not negatively impact the roadway network.

2. INTRODUCTION

The Redeemer Ann Arbor project involves the adaptive reuse of the former Treasure Mart building at 521-529 Detroit Street for use as a house of worship by the Redeemer Church of Ann Arbor Ministry. The Redeemer Church proposed to move their worship services from their present location in the renovated and restored former DKE Shant Building at 611 ½ Williams Street to the Detroit Street location in middle to late 2022. The proposed adaptive reuse will result in a building with approximately 9,300 gross square feet of floor area. The general location of the proposed project is shown below.

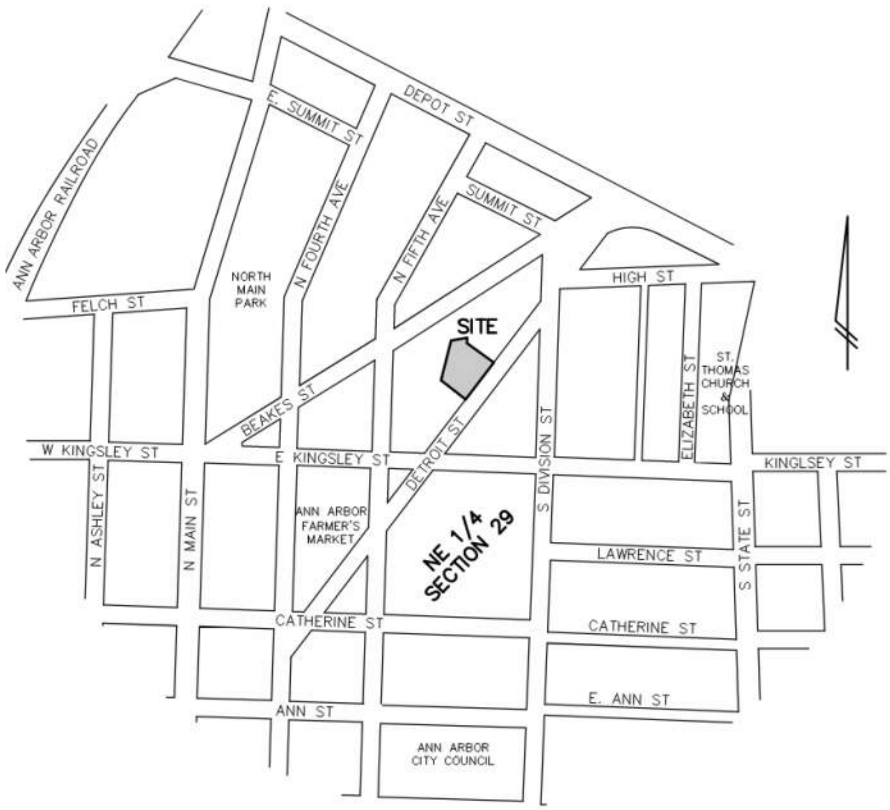

Figure 1. Redeemer Ann Arbor Location Map.

2.1 STUDY PURPOSE & TRAFFIC ANALYSIS AREA

The Washtenaw Engineering Company (WECO) has been retained to evaluate the traffic impacts of the proposed development as well as develop traffic mitigation strategies, as necessary. In preparation of this traffic impact analysis, the manual prepared by McKenna Associates and the WBDC Group, *Evaluating Traffic Impact Studies – A Recommended Practice for Michigan Communities*, as well as other traffic engineering resources have been consulted to ensure a thorough and complete evaluation of the proposed site development. Additionally, the following objectives for the proposed development have been established for this study.

- Perform a field review of the roadway characteristics in the immediate vicinity of the development.
- Gather turning movement counts for the hour prior and hour after proposed Sunday morning worship services at the nearest major intersection(s).
- Make a reasonable assumption for background traffic growth.
- Establish the Sunday peak period future trip generation for the proposed development using the Institute of Transportation Engineers (ITE) Trip Generation report.
- Perform a trip distribution and traffic assignment analysis to forecast future traffic on the existing roadways.
- Analyze the existing traffic and proposed conditions utilizing methodologies from the *Highway Capacity Manual*, as published by the Transportation Research Board of the National Academies, as well as *Synchro10* and *SimTraffic* software.
- Develop recommendations, including any mitigation measures as necessary, based on the results of the above analysis.

3. SITE CHARACTERISTICS

3.1 FIELD OBSERVATIONS

WECO staff performed field observations and traffic movement counts at the following intersections on December 5, 2021, from the period of 9:30 AM until 12:30 PM while locale schools and the University of Michigan were still in session.

- Broadway Street and Summit Street
- Division Street and Detroit Street
- Beakes Street and 5th Avenue
- Kingsley Street and 5th Avenue
- Kingsley Street and Detroit Street

3.2 ADJACENT LAND USES

The proposed redevelopment project is situated among a mixture of single-family and multi-family residential dwellings, including on adjacent streets to the west and east. To the immediate south beyond Kingsley Street, land uses become more commercial and retail, with a mixture of boutique shops, restaurants, small professional offices, and a community high school. To the immediate north is Depot Street, which runs parallel to the Huron River.

3.3 EXISTING TRANSPORATION SYSTEM

Within the vicinity of the proposed redevelopment, the study area includes a mixture of one-way and two-way local roads, the majority of which are two lane and controlled by stop sign, with the one exception being the intersection of Kingsley Street and 5th Avenue, which is signalized. The intersection in this study have been analyzed during the hour prior to Sunday worship services as well as the hour after services end to establish existing levels of services, background traffic conditions assuming the development is not constructed, and future traffic conditions assuming the development is fully constructed.

Figure 2. Road network north of the proposed redevelopment.

Figure 3. Road network south of the proposed redevelopment.

In addition to the road network, there are also several banks of public and private parking that are identified in the immediate vicinity of the proposed redevelopment. On Figure 3, the Community High School and Farmers Market public lots are shown. Characteristics of these lots and their impact on trip distribution are discussed in Section 4.4, Traffic Assignments.

3.4 PROPOSED DEVELOPMENT ENTRANCES

The proposed resevelopment is located on Detroit Street approximately halfway between the intersections of Kingsley Street and Division Street. The existing two-way gravel entrance to the site will be replaced with a one-way circulation driveway that provides access into the site through the existing driveway and exits on the northeast corner of the building as shown below. Traffic will be able to enter the site from either direction on Detroit Street, and traffic will also be able to exit on Detroit Street in either direction as well.

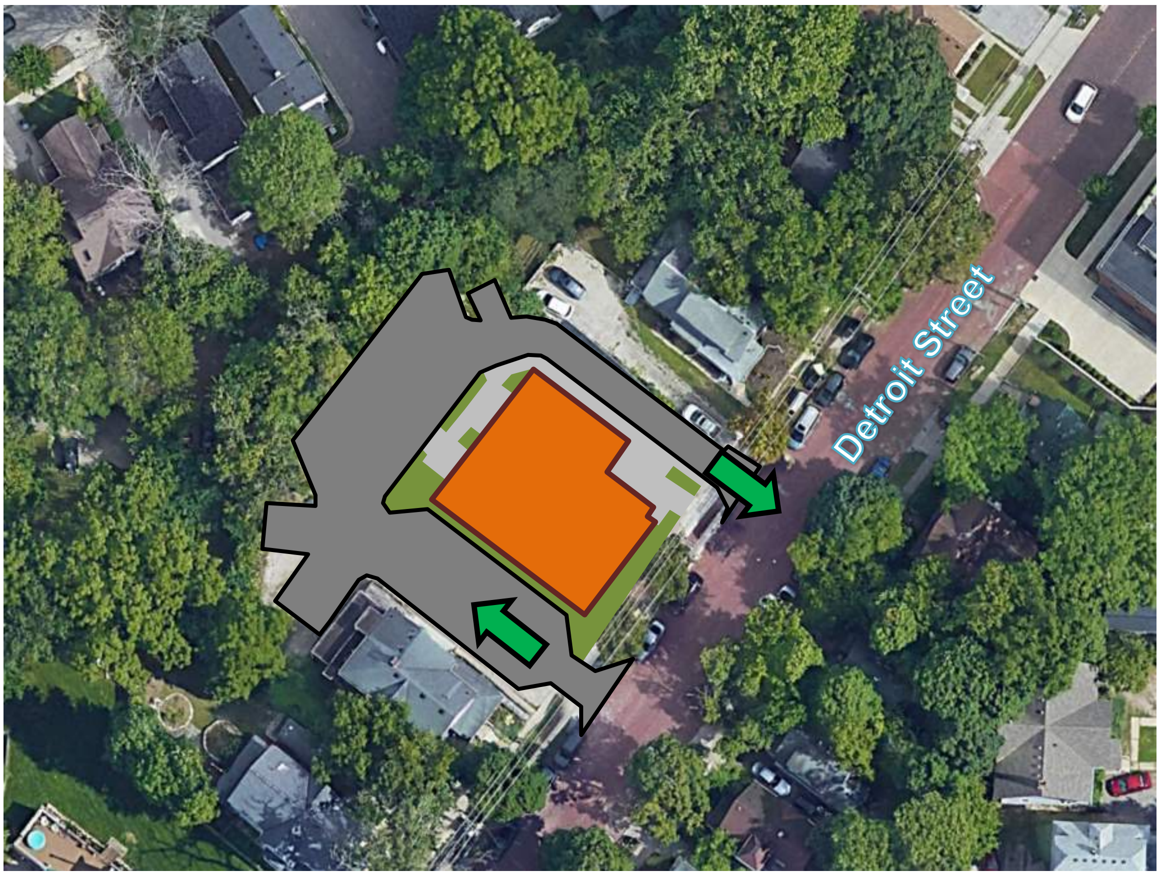

Figure 4. Redeemer Ann Arbor access to/from Detroit Street.

As part of the redevelopment, the site will have seventeen parking spaces, which includes two ADA accessible spaces. For the purposes of the study, these spaces will be assumed to be fully occupied by Redeemer AA staff and other visitors who arrive significantly earlier than regular worshipers for Sunday services.

The site plan for Redeemer AA is provided in *Appendix A* of this study.

4. ANALYSIS METHODOLOGIES

A traffic impact analysis attempts to quantify the volume of additional traffic a proposed development will generate and assess the impacts of that additional traffic on adjacent roadways. WECO utilizes several accepted methodologies to compile existing traffic volumes and patterns, estimate background traffic volumes, and generate future traffic volumes from the proposed development. A brief description of each methodology follows below.

4.1 EXISTING CONDITIONS

The analysis of existing conditions provides a baseline of operations for the transportation network. This analysis provides an understanding of how the network is currently operating and assists in determining if there are any existing conditions that may be adversely affected by additional vehicles or changes in traffic patterns. Existing conditions are determined through field observations and traffic counts in the vicinity of the proposed development area, which WECO has performed. The existing traffic counts are provided in *Appendix B* of this study, while volume diagrams illustrating conditions an hour prior to and an hour after Sunday worship services are provided in *Appendix E* of this study.

4.2 BACKGROUND CONDITIONS

Developing future and proposed traffic volumes requires knowledge of the area growth patterns, regional attractions and proposed projects in the area. The purpose of including background traffic in the future traffic condition is to account for the increase in traffic volumes from the time of the study to the time of actual development. It is assumed that the proposed redevelopment will be constructed within one (1) year from the time the traffic counts were taken, which corresponds to mid to late 2022.

Historic traffic count data for the immediate vicinity of the proposed site development is utilized to determine and assess the growth patterns at the local and county levels. The data is used to illustrate changes in the annual growth rate of traffic volumes prior to construction of the proposed development and estimate a growth rate of background traffic.

At the time of this study, historic traffic data in the immediate vicinity of the proposed site development was not available due to the inaccessibility of SEMCOG online traffic count data. However, from other recent traffic impact studies Ann Arbor and the surrounding area in the past year, a decline in traffic volumes has been observed, particularly due to the impacts of the COVID pandemic. However, it is not reasonable to assume a negative or zero growth in background traffic volume for the purposes of this study.

For the purposes of comparison, the Washtenaw Area Transportation Study 2040 Long Range Plan has projections for Washtenaw County based on its modeling, as shown below.

YEAR	PROJECTED AVG DAILY VEHICLE MILES TRAVELED	ANNUAL RATE OF CHANGE
2020	13,750,000	0.5%
2015	13,400,000	

Table 1. Washtenaw County Annual Average Daily VMT.

(Source: Washtenaw Area Transportation Study, 2040 Long Range Plan, accessed December 19, 2021).

While the WATS model suggests an annual county-wide increase of approximately 0.5%, the model does not account for the impacts to vehicle miles traveled by the recent COVID-19 pandemic. The short-term impact has been a significant decrease in traffic volumes, and currently there is no reliable projection to foresee the impacts to traffic in 2022. ***In spite of this uncertainty, for the purposes of this study, a one percent growth rate has been used to account for the increase in background traffic from the time of the study to the time of the proposed development's operation in late 2022.***

The background hour traffic diagrams with an annual one percent growth rate applied to existing traffic volumes are provided in *Appendix F* of this study.

4.3 PROPOSED DEVELOPMENT TRIP GENERATION

A trip generation analysis to estimate future traffic demand from the proposed development has been performed utilizing the ITE methodology. This methodology utilizes empirical graphs based on models derived from data collected for specific types of land uses across the United States. These graphs provide a means to estimate the peak period traffic generated by developments. For the purposes of this analysis, the Church Land Use (LU 560) has been chosen to represent future traffic demand projects from the proposed development.

The Redeemer Ann Arbor church in its current location has limited, small gatherings on weekdays between the hours of 6:30 AM and 7:30AM as well as between 6:30 PM and 9:00 PM, neither of which have impact on the typical AM and PM peak hour periods. No services are provided on Saturdays, but Sundays reflect the church's main worship services, which occur between 10:30 AM and 11:30 AM. As these meeting times are anticipated to continue at the church's new location on Detroit Street, the Sunday worship services has been selected as the focus of this traffic study.

The empirical calculations for Sunday peak hour of generator traffic are shown below.

Sunday Peak Hour of Generator

T = 9.99 * X T = trip ends per hour X = 1,000 SF of floor area

T = 9.99 * (9.3 ksf) ≈ **94 trip ends per hour**

The above trip generation will be utilized to evaluate the intersection in the study for the hour prior to Sunday services as well as the hour after Sunday services.

The ITE diagrams for Land Use 560 is provided in *Appendix C* of this study, while the site generated traffic volume diagrams are provided in *Appendix G*.

4.4 TRAFFIC ASSIGNMENTS

The directional distribution of generated traffic from a small development is a function of several factors, including the population and employment distribution within the area of influence, the operational characteristics of the street system, and the ease with which drivers can travel over various sections of the roadway network without encountering congestion. The future trip distribution and traffic assignment modeling is generally performed based on the existing travel characteristics.

Traffic distribution and traffic assignment analyses use future roadway improvement plans, and the determination of the existing trip distribution is often proportional to the directional traffic movements at nearby major intersections. This occurs as models are based on existing population and employment characteristics as well as the shortest travel time pathway to the proposed destination.

For the purposes of this analysis, all trip distribution models are calibrated using observed directional traffic volumes utilizing the observed December 2021 traffic counts approaching the redevelopment site on Detroit Street. All of the vehicle trips are considered to be newly generated and primary trips. As inbound and outbound trips arrive at the major intersections examined in this study, those trips are further distributed proportional to the turning movements in each lane of the intersections.

As part of the redevelopment, the site will have seventeen parking spaces, which includes two ADA accessible spaces. For the purposes of the study, these spaces will be assumed to be fully occupied by Redeemer AA staff and other visitors who arrive significantly earlier than regular worshipers for Sunday services.

Given the lack of on-site parking at the proposed redevelopment site, and given that the majority of on-street parking on Detroit Street is occupied by local residents on Sunday mornings, it is anticipated that the majority of Sunday morning worship service attendees will utilize the Farmers Market parking lots and the Community High parking lot in the vicinity of the 5th Avenue and Detroit Street intersection. These parking lots will provide the shortest walk to the proposed church. A survey of the lots has been performed to verify sufficient open spaces existing to accommodate churchgoers, which is provided in *Appendix D.*

The following assumptions have been made with regards to the proportional traffic distribution as shown in the figures below with the observed traffic counts in the hour prior to Sunday services.

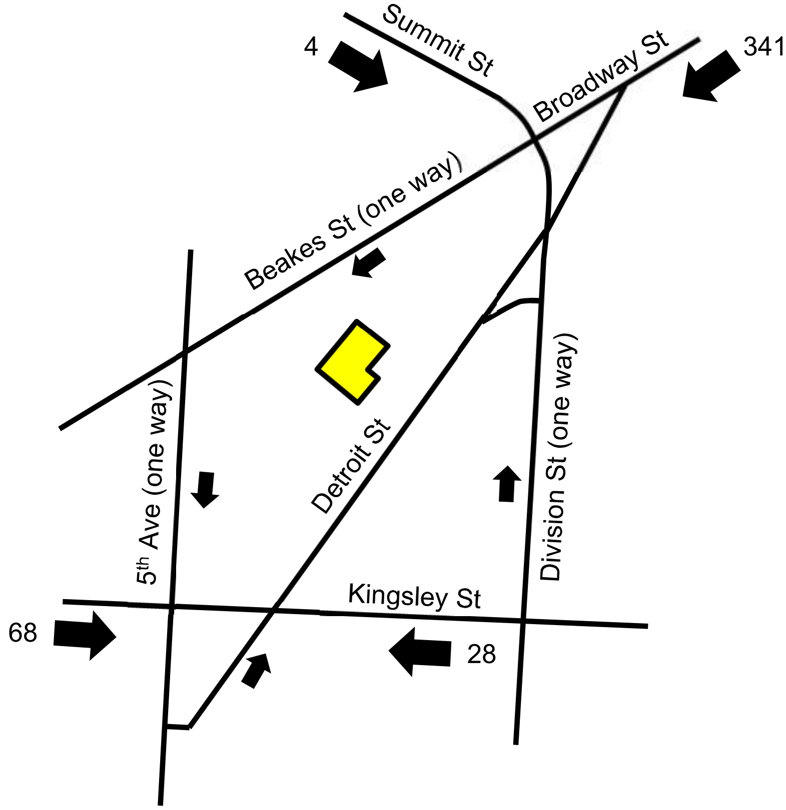

Figure 5. Existing traffic distribution in the vicinity of the proposed Redeemer Church one hour prior to Sunday Services.

December 2021 Sunday Peak Hour of Generator Hour Directional Distribution of Site Generated Trips Prior to Services

From the North – utilizing Summit St & Broadway St

Total Peak Hour Trips = 94

From the North = (345/441) x 94 = 73 trips

From the South – utilizing Kingsley Street

Total Peak Hour Trips = 94

From the South = (96/441) x 94 = 21 trips

After Sunday services have concluded, vehicles will leave the Farmers Market and Community High lots and depart the area based on the proportional traffic distribution as shown in the figures below with the observed traffic counts in the hour after Sunday services.

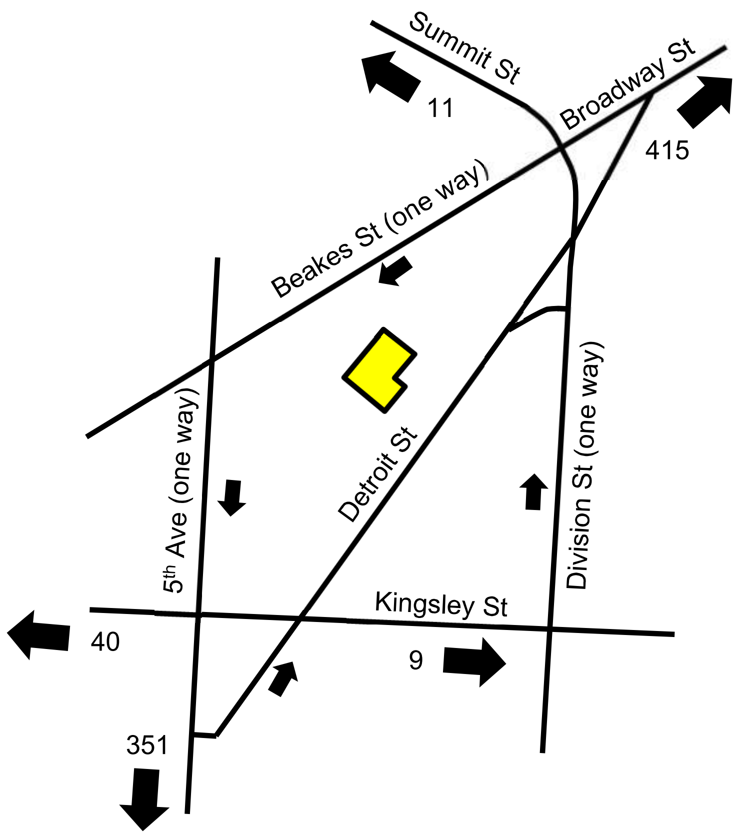

Figure 6. Existing traffic distribution in the vicinity of the proposed Redeemer Church one hour after Sunday Services.

December 2021 Sunday Peak Hour of Generator Hour Directional Distribution of Site Generated Trips After Services

To the North – utilizing Summit St & Division St

Total Peak Hour Trips = 94

To the North = (421/821) x 94 = 48 trips

To the South – utilizing Kingsley Street & 5th Avenue

Total Peak Hour Trips = 94

From the South = (400/821) x 94 = 46 trips

The above vehicle trips are considered to be newly generated and primary trips. As inbound and outbound trips arrive and the major intersections examined in this study, those trips are further distributed proportional to the turning movements in each lane of the intersections.

The future AM and PM peak hour traffic diagrams are provided in *Appendix H* of this study.

4.5 CAPACITY AND LEVEL OF SERVICE DEFINITIONS

A capacity analysis is a quantitative comparison of the supply and demand characteristics of a traffic facility. The available supply refers to the physical characteristics of a roadway (i.e., number of lanes, configuration and lane width), and the demand refers to the traffic volume that is using, or expected to use, the roadway facility. A capacity analysis is typically performed for peak period traffic to evaluate the expected impact on the traffic operation utilizing the future traffic volume data. If a roadway facility has an acceptable level of service during peak traffic conditions, it certainly will operate at a very high level of service during off-peak periods. As a part of this study, a highway capacity analysis has been performed at the following locations.

- Broadway Street and Summit Street (unsignalized)
- Division Street and Detroit Street (unsignalized)
- Beakes Street and 5th Avenue (unsignalized)
- Kingsley Street and 5th Avenue (signalized)
- Kingsley Street and Detroit Street (unsignalized)

The study locations have been evaluated for their capacity based on six levels of service (LOS) ranging from *LOS A* to *LOS F*. *LOS A* describes an intersection that experiences minimal delay and is the best level an intersection or approach can achieve. *LOS F*, on the other hand, is the lowest level of operation. During peak periods, *LOS C* and *LOS D* are typically acceptable in suburban areas.

The capacity analysis of the intersections includes identifying the lane geometry, traffic volumes, heavy vehicle percentages, and peak hour factors. The percentage of heavy vehicles along the roadway has been determined as less than the industry standard assumption of two percent. Therefore, for the purposes of this analysis, a conservative two percent heavy vehicle volume has been applied at the two locations.

Analysis results for existing conditions, background conditions, and future conditions are presented in the terms seconds of delay and levels of service for signalized intersections as shown below.

LOS	Description	Average Control Delay (sec/veh)
A	Very little or no delay experienced.	$\leq$ 10.0
B	Short delay experienced.	> 10.1 and $\leq$ 15.0
C	Average delay experienced.	> 15.0 and $\leq$ 25.0
D	Long delay experienced.	> 25.0 and $\leq$ 35.0
E	Very long delay experienced.	> 35.0 and $\leq$ 50.0
F	Excessive delay experienced. Occurs as a result of limited gaps in major street traffic for minor street traffic to enter main street traffic.	> 50.0

Table 2. Level of service criteria for signalized intersections
(Source: Highway Capacity Manual)

LOS	Description	Average Control Delay (sec/veh)
A	Free Flow.	$\leq$ 10
B	Stable Flow (slight delays)	> 10 and $\leq$ 20
C	Stable Flow (acceptable delays)	> 20 and $\leq$ 35
D	Approaching Unstable Flow (tolerable delay, occasionally waiting through more than one cycle before proceeding)	> 35 and $\leq$ 355
E	Unstable Flow (intolerable delay)	> 55 and $\leq$ 80
F	Forced Flow (congested and queues fail to clear)	> 80.0

Table 3. Level of service criteria for signalized intersections.
(Source: Highway Capacity Manual)

ANALYSIS RESULTS AND FINDINGS

5.1 BROADWAY STREET & SUMMIT STREET INTERSECTION

At this intersection, Broadway Street is one way and free flow, with the intersecting approaches of Summit Street and Detroit Street controlled with stop signs. Based on the capacity analysis of the existing and background traffic volumes, traffic in all directions at this intersection operates with free to stable flow.

PEAK	APPROACH	EXISTING VOLUMES 2021		BACKGROUND VOLUMES 2022		FUTURE VOLUMES 2022	
		DELAY (SEC/VEH)	LOS	DELAY (SEC/VEH)	LOS	DELAY (SEC/VEH)	LOS
1-HR BEFORE SERVICES	WB BROADWAY	0.0	A	0.0	A	0.0	A
	NB DETROIT	10.6	B	10.7	B	11.3	B
	SB SUMMIT	10.6	B	10.6	B	11.2	B
1-HR AFTER SERVICES	WB BROADWAY	0.0	A	0.0	A	0.0	A
	NB DETROIT	12.8	B	12.9	B	13.2	B
	SB SUMMIT	10.1	B	10.2	B	10.2	B

Table 4. *Delay / Level of Service for the peak hour of generator one hour before and after services at the intersection of Broadway Street and Summit Street / Detroit Street*.

With the projected one percent increase in background volumes for 2021, the AM and PM peak traffic continues to operate almost unchanged. As shown above in the future volumes, ***the addition of traffic volume from the proposed development has little to no additional impact*** on the roadway system.

5.2 DIVISION STREET & DETROIT STREET INTERSECTION

At this intersection, Division Street is one way and free flow, with the intersecting approach of Detroit Street controlled with a stop sign. Based on the capacity analysis of the existing and background traffic volumes, traffic in all directions at this intersection operates with free to stable flow.

PEAK	APPROACH	EXISTING VOLUMES 2021		BACKGROUND VOLUMES 2022		FUTURE VOLUMES 2022	
		DELAY (SEC/VEH)	LOS	DELAY (SEC/VEH)	LOS	DELAY (SEC/VEH)	LOS
1-HR BEFORE SERVICES	EB DETROIT	9.3	A	9.3	A	9.3	A
	NB DIVISION	0.0	A	0.0	A	0.0	A
1-HR AFTER SERVICES	EB DETROIT	10.5	A	10.6	A	11.1	B
	NB DIVISION	0.0	A	0.0	A	0.0	A

Table 5. *Delay / Level of Service for the peak hour of generator one hour before and after services at the intersection of North Division Street and Detroit Street*.

With the projected one percent increase in background volumes for 2021, the AM and PM peak traffic continues to operate almost unchanged. As shown above in the future volumes, ***the addition of traffic volume from the proposed development has little to no additional impact*** on the roadway system.

5.3 BEAKES STREET & 5TH AVENUE INTERSECTION

At this intersection, Beakes Street is one way and free flow, with the intersecting approach of 5th Avenue is one way and controlled with a stop sign. Based on the capacity analysis of the existing and background traffic volumes, traffic in all directions at this intersection operates with free flow.

PEAK	APPROACH	EXISTING VOLUMES 2021		BACKGROUND VOLUMES 2022		FUTURE VOLUMES 2022	
		DELAY (SEC/VEH)	LOS	DELAY (SEC/VEH)	LOS	DELAY (SEC/VEH)	LOS
1-HR BEFORE SERVICES	WB BEAKES	0.0	A	0.0	A	0.0	A
	SB 5TH AVE	9.0	A	9.0	A	9.0	A
1-HR AFTER SERVICES	WB BEAKES	0.0	A	0.0	A	0.0	A
	SB 5TH AVE	9.4	A	9.4	A	9.4	A

Table 6. *Delay / Level of Service for the peak hour of generator one hour before and after services at the intersection of Beakes Street and 5th Avenue*.

With the projected one percent increase in background volumes for 2021, the AM and PM peak traffic continues to operate almost unchanged. As shown above in the future volumes, ***the addition of traffic volume from the proposed development has little to no additional impact*** on the roadway system.

5.4 KINGSLEY STREET & 5TH AVENUE INTERSECTION

At this signalized intersection, 5th Avenue is one way, with the intersecting Kingsley Street being two way in the eastbound and westbound approaches. Based on the capacity analysis of the existing and background traffic volumes, traffic in all directions at this intersection operates with very little to average delay.

PEAK	APPROACH	EXISTING VOLUMES 2021		BACKGROUND VOLUMES 2022		FUTURE VOLUMES 2022	
		DELAY (SEC/VEH)	LOS	DELAY (SEC/VEH)	LOS	DELAY (SEC/VEH)	LOS
1-HR BEFORE SERVICES	EB KINGSLEY	2.8	A	2.8	A	3.3	A
	WB KINGSLEY	2.7	A	2.7	A	3.2	A
	SB 5TH AVE	27.4	C	27.4	C	27.4	C
1-HR AFTER SERVICES	EB KINGSLEY	3.8	A	3.8	A	3.8	A
	WB KINGSLEY	3.7	A	3.8	A	4.0	A
	SB 5TH AVE	26.8	C	26.8	C	26.8	C

Table 7. *Delay / Level of Service for the peak hour of generator one hour before and after services at the intersection of Kingsley Street and 5th Avenue.*

With the projected one percent increase in background volumes for 2021, the AM and PM peak traffic continues to operate almost unchanged. As shown above in the future volumes, ***the addition of traffic volume from the proposed development has little to no additional impact*** on the roadway system.

5.5 KINGSLEY STREET & 5TH AVENUE INTERSECTION

This intersection is controlled in all directions with stop signs. The north approach of Detroit Street is two way, while the south approach is one way, and the intersecting Kingsley Street is two way in the eastbound and westbound approaches. Based on the capacity analysis of the existing and background traffic volumes, traffic in all directions at this intersection operates with free flow.

PEAK	APPROACH	EXISTING VOLUMES 2021		BACKGROUND VOLUMES 2022		FUTURE VOLUMES 2022	
		DELAY (SEC/VEH)	LOS	DELAY (SEC/VEH)	LOS	DELAY (SEC/VEH)	LOS
1-HR BEFORE SERVICES	EB KINGSLEY	7.5	A	7.5	A	7.6	A
	WB KINGSLEY	7.2	A	7.2	A	7.3	A
	NB DETROIT	7.5	A	7.5	A	7.5	A
	SB DETROIT	7.3	A	7.4	A	7.4	A
1-HR AFTER SERVICES	EB KINGSLEY	8.0	A	8.0	A	8.5	A
	WB KINGSLEY	7.7	A	7.7	A	8.1	A
	NB DETROIT	7.8	A	7.9	A	9.0	A
	SB DETROIT	7.5	A	7.5	A	7.7	A

Table 8. *Delay / Level of Service for the peak hour of generator one hour before and after services at the intersection of Kingsley Street and Detroit Street*.

With the projected one percent increase in background volumes for 2021, the AM and PM peak traffic continues to operate almost unchanged. As shown above in the future volumes, ***the addition of traffic volume from the proposed development has little to no additional impact*** on the roadway system.

6. REFERENCES

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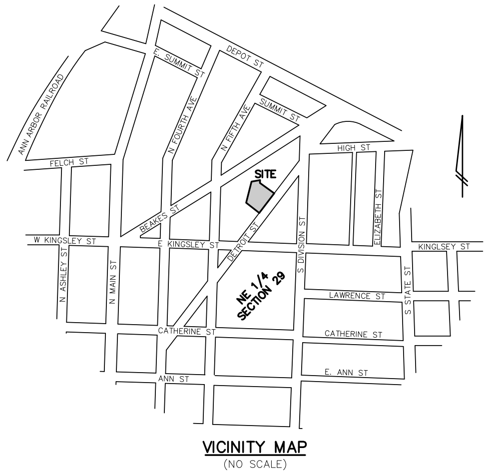
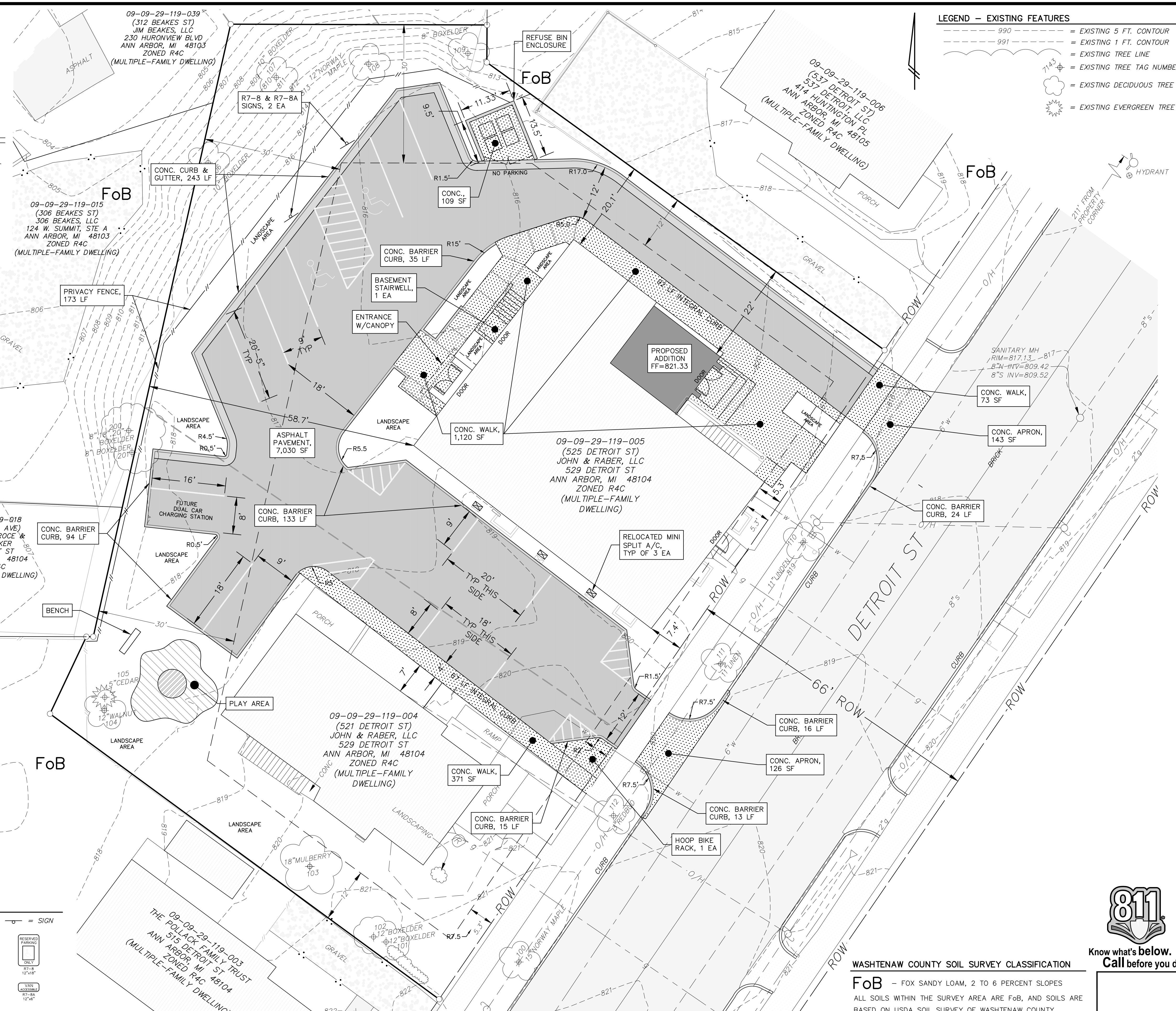
Appendix A

Site Plan





THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING RECORDS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN-SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.

THE OWNER SHALL NOT USE OR AUTHORIZE ANY OTHER PERSON TO USE THE DRAWINGS, SPECIFICATIONS, ELECTRONIC DATA AND OTHER INSTRUMENTS OF SERVICE ON OTHER PROJECTS, FOR ADDITIONS TO THIS PROJECT OR FOR COMPLETION OF THIS PROJECT BY OTHERS SO LONG AS WASHTENAW ENGINEERING COMPANY (WECO) IS NOT ADJUDGED TO BE IN DEFAULT UNDER THIS AGREEMENT. REUSE WITHOUT WECO'S PROFESSIONAL INVOLVEMENT WILL BE AT THE OWNER'S SOLE RISK AND WITHOUT LIABILITY TO WECO. THE OWNER SHALL INDEMNIFY AND HOLD HARMLESS WECO, WECO'S CONSULTANTS AND AGENTS AND EMPLOYEES OF ANY OF THEM FROM AND AGAINST CLAIMS, DAMAGES, LOSSES AND EXPENSES, INCLUDING BUT NOT LIMITED TO ATTORNEYS' FEES, ARISING OUT OF UNAUTHORIZED REUSE OF DRAWINGS, SPECIFICATIONS, ELECTRONIC DATA OR OTHER INSTRUMENTS OF SERVICE.

VEHICULAR PARKING

TOTAL PARKING 17 SPACES
(INCLUDING 5 SMALL CAR SPACES)

BIKE PARKING

2 SPACES (CLASS C)

SIDEWALK NOTES

PER CHAPTER 49, SECTION 4:58, ALL SIDEWALKS ARE TO BE KEPT AND MAINTAINED IN GOOD REPAIR BY THE OWNER OF THE LAND ADJACENT TO AND ABUTTING THE SAME. PRIOR TO THE ISSUANCE OF THE FINAL CERTIFICATE OF OCCUPANCY FOR THIS SITE, ALL EXISTING SIDEWALKS IN NEED OF REPAIR MUST BE REPAIRED IN ACCORDANCE WITH CITY STANDARDS.

RIGHT-OF-WAY SIDEWALKS TO BE CONTINUOUS THROUGH PROPOSED DRIVEWAYS WITH NO RAMPS OR MARKINGS.

ENGINEERING NOTES

TITLE IV, CHAPTER 47, SECTION 4:13 OF THE CITY CODE, PROHIBITS EXCAVATIONS "IN OR UNDER A PAVED STREET WITHIN THREE YEARS AFTER THE COMPLETION OF ANY PAVING OR RESURFACING THEREOF." IN ADDITION, PER DIVISION I, SECTION 1H, "WORK IN THE RIGHT-OF-WAY OF THE PUBLIC SERVICES DEPARTMENT STANDARD SPECIFICATIONS FOR CONSTRUCTION," EXTENDS THE MORATORIUM FOR ARTERIAL STREETS TO 10 YEARS. THIS PORTION OF DETROIT STREET IS A LOCAL ROAD AND HAS NOT BEEN RESURFACED IN THE PAST THREE YEARS. SPECIAL CARE SHALL BE TAKEN TO RESTORE THE EXISTING BRICK SURFACE AS REQUIRED TO COMPLETE THE CONSTRUCTION. EXISTING ROADWAY BRICK THAT MUST BE REMOVED AS PART OF CONSTRUCTION ACTIVITIES SHALL BE CAREFULLY REMOVED, CLEANED, AND STORED FOR REUSE. DAMAGED BRICKS SHALL BE REPLACED AT THE DIRECTION OF THE CITY OF ANN ARBOR.

LEGEND – PROPOSED FEATURES

= CURB & GUTTER
= BARRIER CURB
= ASPHALT SURFACE
= CONCRETE SURFACE
= SIGN
RESERVED PARKING ONLY R7-8 12"x18"
VAN ACCESSIBLE R7-8A 12"x6"

LEGEND

= LIGHT POLE
= UTILITY POLE
= GUY ANCHOR
= HYDRANT
= SPOT ELEV.
= POST
= GATE VALVE
= SIGN
TC = TOP OF CURB
TW = TOP OF WALL
= MANHOLE
= CATCHBASIN
= END SECTION
= GRAVEL
= FENCE
= CONCRETE
= ASPHALT
= EXISTING STORM
= EXISTING SANITARY
= EXISTING WATER
= EXISTING GAS
= EXISTING ELECTRIC
= EXISTING TELEPHONE

WASHTENAW COUNTY SOIL SURVEY CLASSIFICATION

FoB – FOX SANDY LOAM, 2 TO 6 PERCENT SLOPES

ALL SOILS WITHIN THE SURVEY AREA ARE FoB, AND SOILS ARE BASED ON USDA SOIL SURVEY OF WASHTENAW COUNTY.

Know what's **below.** **Call** before you dig.

BENCHMARK BM1=NAIL IN S'LY FACE OF 12" MAPLE, NEAR NW'LY CORNER OF SITE, ELEV=816.93.
BM2=NAIL IN W'LY FACE OF UTILITY POLE, NEAR NE'LY CORNER OF SITE, ELEV=820.28.
DATUM=NAVD 88

REVISIONS

SCALE 0 5 10 20
SCALE: 1"=10'

PREPARED BY
JOSEPH K. MAYNARD P.E., MICH No. 52559

CIVIL ENGINEERS
PLANNERS • SURVEYORS
LANDSCAPE ARCHITECTS
3526 W. LIBERTY RD
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ANN ARBOR, MI 48103
TEL 734-761-8800
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WASHTENAWENGINEERING.COM
WASHTENAW ENGINEERING

CLIENT
REDEEMER OF ANN ARBOR
611 ½ EAST WILLIAMS STREET
ANN ARBOR, MI 48104
TEL 734-502-3809
WWW.REDEEMERA2.ORG

SHEET
DIMENSIONAL LAYOUT PLAN

PROJECT
REDEEMER OF ANN ARBOR
HISTORIC PRESERVATION & ADAPTIVE REUSE

SECTION 29 TOWN 2 SOUTH RANGE 6 EAST
CITY OF ANN ARBOR
WASHTENAW COUNTY • MICHIGAN
DATE 09/13/2021
JOB NO. 32825
DWG NO. 825-04-PSP-SITE
FIELD BOOK 648
FILE NO. 10692
C4
SHEET 6

Appendix B

Traffic Counts

Pre-Services Peak Traffic Count

Time	EB Beakes St					WB Broadway St					NB Detroit St					SB Summit St					Total Intersection
	All Vehicles			Total Approac	Peds	All Vehicles			Total Approach	Peds	All Vehicles			Total Approach	Peds	All Vehicles			Total Approach	Peds	
	Left	Thru	Right			Left	Thru	Right			Left	Thru	Right			Left	Thru	Right			
9:30-9:45				0	0	5	71	0	76	0	2	1		3	0		0	0	0	0	79
9:45-10:00				0	0	1	95	0	96	0	2	1		3	0		1	0	1	0	100
10:00-10:15				0	0	3	82	0	85	0	2	1		3	0		0	0	0	0	88
10:15-10:30				0	0	5	77	0	82	0	2	0		2	0		0	1	1	0	85
Max Hourly	0	0	0	0	0	14	325	0	339	0	8	3	0	11	0	0	1	1	2	0	352
PHF =	#DIV/0!					0.883					0.917					0.500					0.880

Post-Services Peak Traffic Count

Time	EB Beakes St					WB Broadway St					NB Detroit St					SB Summit St					Total Intersection
	All Vehicles			Total Approac	Peds	All Vehicles			Total Approach	Peds	All Vehicles			Total Approach	Peds	All Vehicles			Total Approach	Peds	
	Left	Thru	Right			Left	Thru	Right			Left	Thru	Right			Left	Thru	Right			
11:30-11:45				0	0	4	101	0	105	0	6	1		7	0		0	0	0	0	112
11:45-12:00				0	0	9	138	0	147	0	2	4		6	0		0	3	3	0	156
12:00-12:15				0	0	2	106	0	108	0	4	5		9	0		0	1	1	0	118
12:15-12:30				0	0	3	120	0	123	0	4	1		5	0		0	2	2	0	130
Max Hourly	0	0	0	0	0	18	465	0	483	0	16	11	0	27	0	0	0	6	6	0	516
PHF =	#DIV/0!					0.821					0.750					0.500					0.827

Pre-Services Peak Traffic Count

Time	NB Division St										EB Detroit St					SB Detroit St					Total Intersection
	All Vehicles			Total Approac	Peds	All Vehicles			Total Approach	Peds	All Vehicles			Total Approach	Peds	All Vehicles			Total Approach	Peds	
	Left	Thru	Right			Left	Thru	Right			Left	Thru	Right			Left	Thru	Right			
9:30-9:45	2	28		30	0				0	0	8			8	0		3		3	0	41
9:45-10:00	0	41		41	0				0	0	14			14	0		1		1	0	56
10:00-10:15	1	35		36	0				0	0	4			4	0		2		2	0	42
10:15-10:30	0	42		42	0				0	0	12			12	0		5		5	0	59
Max Hourly	3	146	0	149	0	0	0	0	0	0	38	0	0	38	0	0	11	0	11	0	198
PHF =	0.887					#DIV/0!					0.679					0.550					0.839

Post-Services Peak Traffic Count

Time	NB Division St					0					EB Detroit St					SB Detroit St					Total Intersection
	All Vehicles			Total Approac	Peds	All Vehicles			Total Approach	Peds	All Vehicles			Total Approach	Peds	All Vehicles			Total Approach	Peds	
	Left	Thru	Right			Left	Thru	Right			Left	Thru	Right			Left	Thru	Right			
11:30-11:45	3	96		99	0				0	0	18			18	0		2		2	0	119
11:45-12:00	1	110		111	0				0	0	10			10	0		6		6	0	127
12:00-12:15	3	90		93	0				0	0	15			15	0		2		2	0	110
12:15-12:30	3	86		89	0				0	0	17			17	0		3		3	0	109
Max Hourly	10	382	0	392	0	0	0	0	0	0	60	0	0	60	0	0	13	0	13	0	465
PHF =	0.883					#DIV/0!					0.833					0.542					0.915

Pre-Services Peak Traffic Count

Time	EB Beakes St					WB Beakes St					NB 5th Ave					SB 5th Ave					Total Intersection
	All Vehicles			Total Approac	Peds	All Vehicles			Total Approach	Peds	All Vehicles			Total Approach	Peds	All Vehicles			Total Approach	Peds	
	Left	Thru	Right			Left	Thru	Right			Left	Thru	Right			Left	Thru	Right			
9:30-9:45				0	0	43	26	0	69	0				0	0		6	0	6	0	75
9:45-10:00				0	0	50	44	0	94	0				0	0		6	0	6	0	100
10:00-10:15				0	0	45	38	0	83	0				0	0		11	0	11	0	94
10:15-10:30				0	0	33	45	0	78	0				0	0		8	2	10	0	88
Max Hourly	0	0	0	0	0	171	153	0	324	0	0	0	0	0	0	0	31	2	33	0	357
PHF =	#DIV/0!					0.862					#DIV/0!					0.750					0.893

Post-Services Peak Traffic Count

Time	EB Beakes St					WB Beakes St					NB 5th Ave					SB 5th Ave					Total Intersection
	All Vehicles			Total Approac	Peds	All Vehicles			Total Approach	Peds	All Vehicles			Total Approach	Peds	All Vehicles			Total Approach	Peds	
	Left	Thru	Right			Left	Thru	Right			Left	Thru	Right			Left	Thru	Right			
11:30-11:45				0	0	62	51	1	114	0				0	0		17	0	17	0	131
11:45-12:00				0	0	68	58	0	126	0				0	0		15	2	17	0	143
12:00-12:15				0	0	46	64	0	110	0				0	0		20	1	21	0	131
12:15-12:30				0	0	64	55	0	119	0				0	0		19	2	21	0	140
Max Hourly	0	0	0	0	0	240	228	1	469	0	0	0	0	0	0	0	71	5	76	0	545
PHF =	#DIV/0!					0.931					#DIV/0!					0.905					0.953

Pre-Services Peak Traffic Count

Time	EB Kingsley St					WB Kingsley St					NB 5th Ave					SB 5th Ave					Total Intersection
	All Vehicles			Total Approac	Peds	All Vehicles			Total Approach	Peds	All Vehicles			Total Approach	Peds	All Vehicles			Total Approach	Peds	
	Left	Thru	Right			Left	Thru	Right			Left	Thru	Right			Left	Thru	Right			
9:30-9:45		15	4	19	0	8	2		10	0				0	0	2	45	1	48	0	77
9:45-10:00		13	9	22	0	6	2		8	0				0	0	3	51	0	54	0	84
10:00-10:15		12	3	15	0	3	4		7	0				0	0	0	49	0	49	0	71
10:15-10:30		11	1	12	0	4	7		11	0				0	0	4	40	1	45	0	68
Max Hourly	0	51	17	68	0	21	15	0	36	0	0	0	0	0	0	9	185	2	196	0	300
PHF =	0.773					0.818					#DIV/0!					0.907					0.893

Post-Services Peak Traffic Count

Time	EB Kingsley St					WB Kingsley St					NB 5th Ave					SB 5th Ave					Total Intersection
	All Vehicles			Total Approac	Peds	All Vehicles			Total Approach	Peds	All Vehicles			Total Approach	Peds	All Vehicles			Total Approach	Peds	
	Left	Thru	Right			Left	Thru	Right			Left	Thru	Right			Left	Thru	Right			
11:30-11:45		25	13	38	0	13	7		20	0				0	0	2	70	1	73	0	131
11:45-12:00		17	11	28	0	18	9		27	0				0	0	3	76	1	80	0	135
12:00-12:15		19	14	33	0	17	11		28	0				0	0	0	62	1	63	0	124
12:15-12:30		20	23	43	0	14	13		27	0				0	0	1	82	2	85	0	155
Max Hourly	0	81	61	142	0	62	40	0	102	0	0	0	0	0	0	6	290	5	301	0	545
PHF =	0.826					0.911					#DIV/0!					0.885					0.879

Pre-Services Peak Traffic Count

Time	EB Kingsley St					WB Kingsley St					NB Detroit St					SB Detroit St					Total Intersection
	All Vehicles			Total Approac	Peds	All Vehicles			Total Approach	Peds	All Vehicles			Total Approach	Peds	All Vehicles			Total Approach	Peds	
	Left	Thru	Right			Left	Thru	Right			Left	Thru	Right			Left	Thru	Right			
9:30-9:45	7	9		16	0		6	1	7	0	2	5	0	7	0	2		2	4	0	34
9:45-10:00	8	7		15	0		7	1	8	0	0	3	1	4	0	0		1	1	0	28
10:00-10:15	5	6		11	0		4	1	5	0	4	1	0	5	0	0		0	0	0	21
10:15-10:30	11	4		15	0		8	0	8	0	1	2	0	3	0	2		2	4	0	30
Max Hourly	31	26	0	57	0	0	25	3	28	0	7	11	1	19	0	4	0	5	9	0	113
PHF =	0.891					0.875					0.679					0.563					0.831

Post-Services Peak Traffic Count

Time	EB Kingsley St					WB Kingsley St					NB Detroit St					SB Detroit St					Total Intersection
	All Vehicles			Total Approac	Peds	All Vehicles			Total Approach	Peds	All Vehicles			Total Approach	Peds	All Vehicles			Total Approach	Peds	
	Left	Thru	Right			Left	Thru	Right			Left	Thru	Right			Left	Thru	Right			
11:30-11:45	15	12		27	0		11	1	12	0	5	7	3	15	0	1		4	5	0	59
11:45-12:00	6	11		17	0		12	1	13	0	6	2	1	9	0	1		6	7	0	46
12:00-12:15	11	12		23	0		20	1	21	0	3	5	0	8	0	2		2	4	0	56
12:15-12:30	8	12		20	0		15	1	16	0	4	7	5	16	0	3		5	8	0	60
Max Hourly	40	47	0	87	0	0	58	4	62	0	18	21	9	48	0	7	0	17	24	0	221
PHF =	0.806					0.738					0.750					0.750					0.921

Appendix C

ITE LAND USE DIAGRAM

Church
(560)

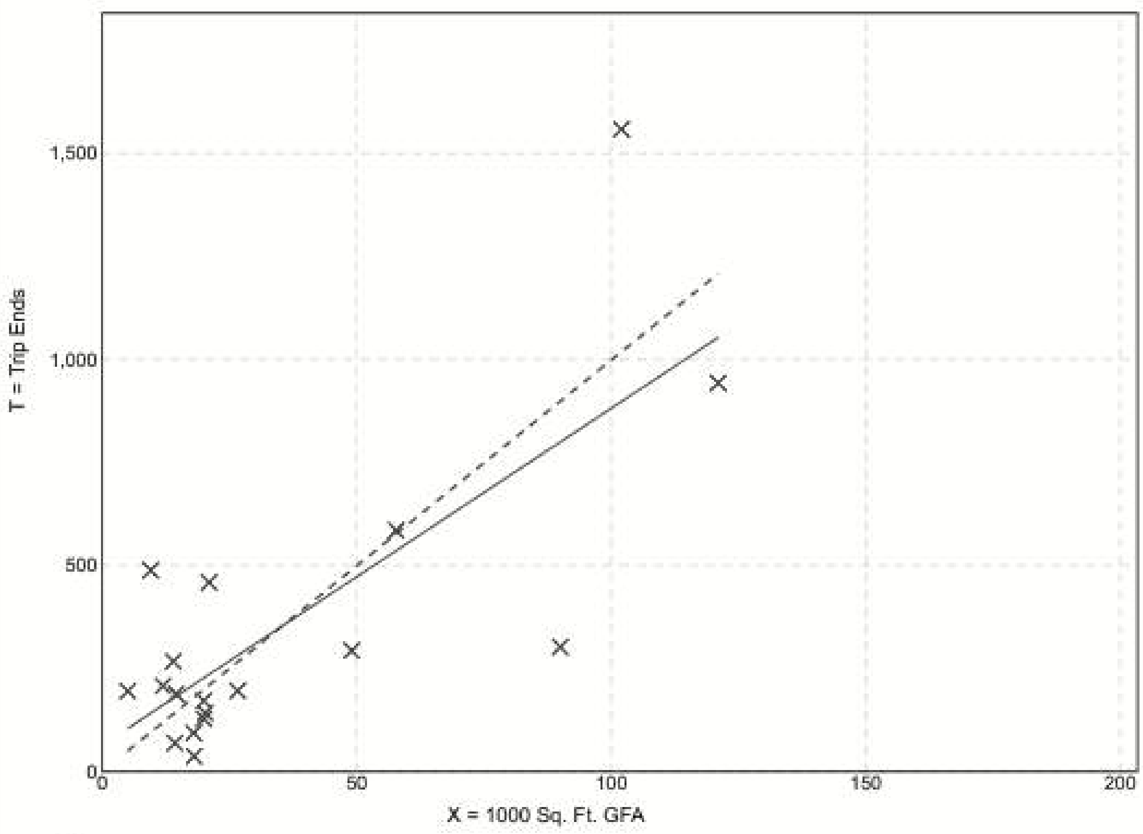
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Sunday, Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 18
1000 Sq. Ft. GFA: 35
Directional Distribution: 48% entering, 52% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
9.99	2.05 - 51.31	7.77

Data Plot and Equation



Fitted Curve Equation: $T = 8.18(X) + 63.81$ **$R^2 = 0.58$**

Appendix D

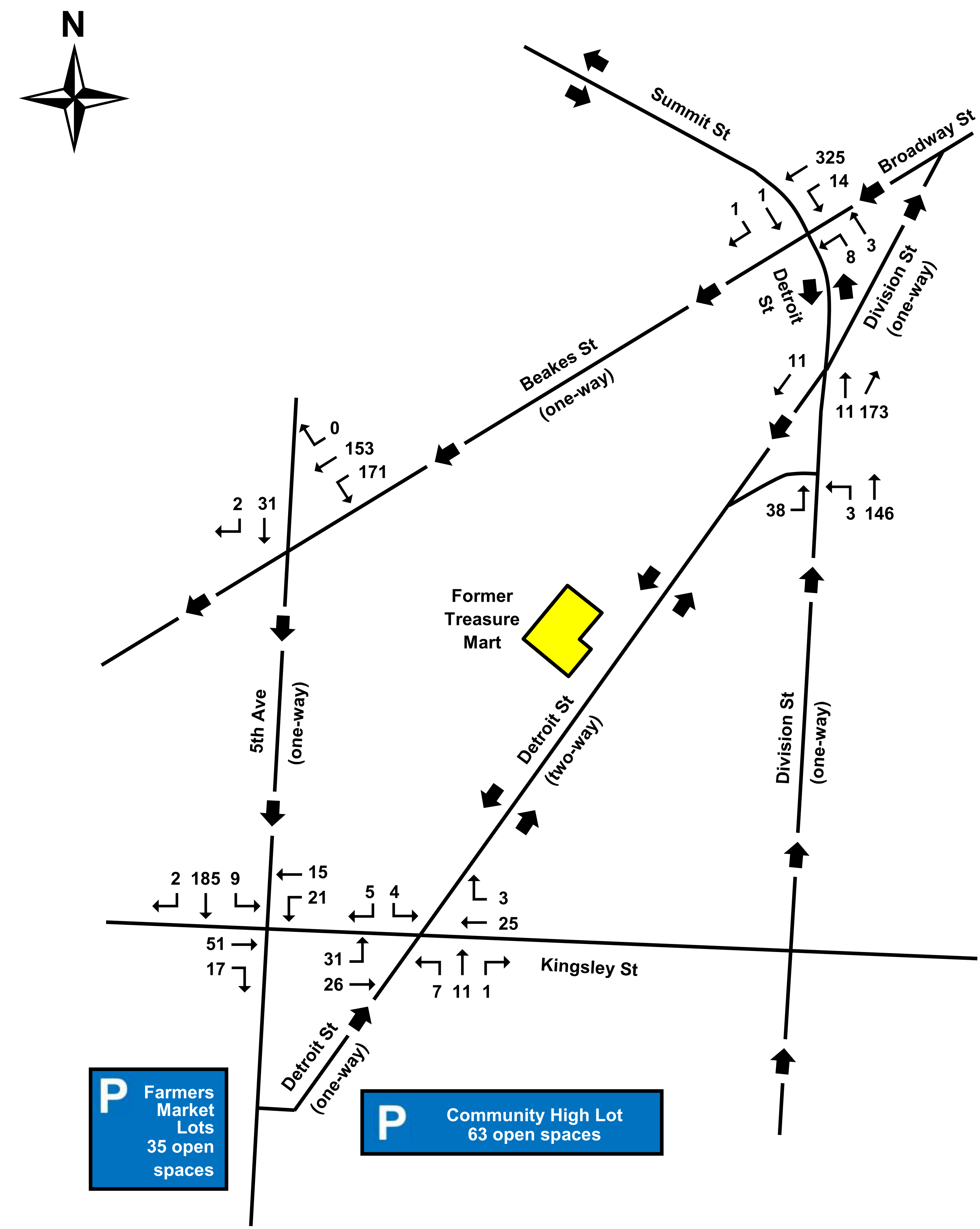
Local Parking Survey

		Open / Available Spots between 9:50 AM - 10:00 AM		
Parking Lot Location	Total Available Spots	Oct 10th	Oct 17th	Oct 24th
Human Element (two lots)	22	22	22	22
Community High School	78	64	55	57
Farmers Market Lot #10	22	16	15	11
Farmers Market Office Lot	28	16	16	18
4th & Caterine	43	36	37	42
Total Open Parking Spots	193	154	145	150
		79.8%	75.1%	77.7%

Note 1: Neither Handicapped or EV charging spots are included in the "Total Available Spots" above
Note 2: Street parking was not surveyed for these dates, however, it appeared approximately 50% to 60% of street spots were open and available on N4th Ave, N5th Ave and E. Kingsley near the Treasure Mart each Sunday morning

Appendix E

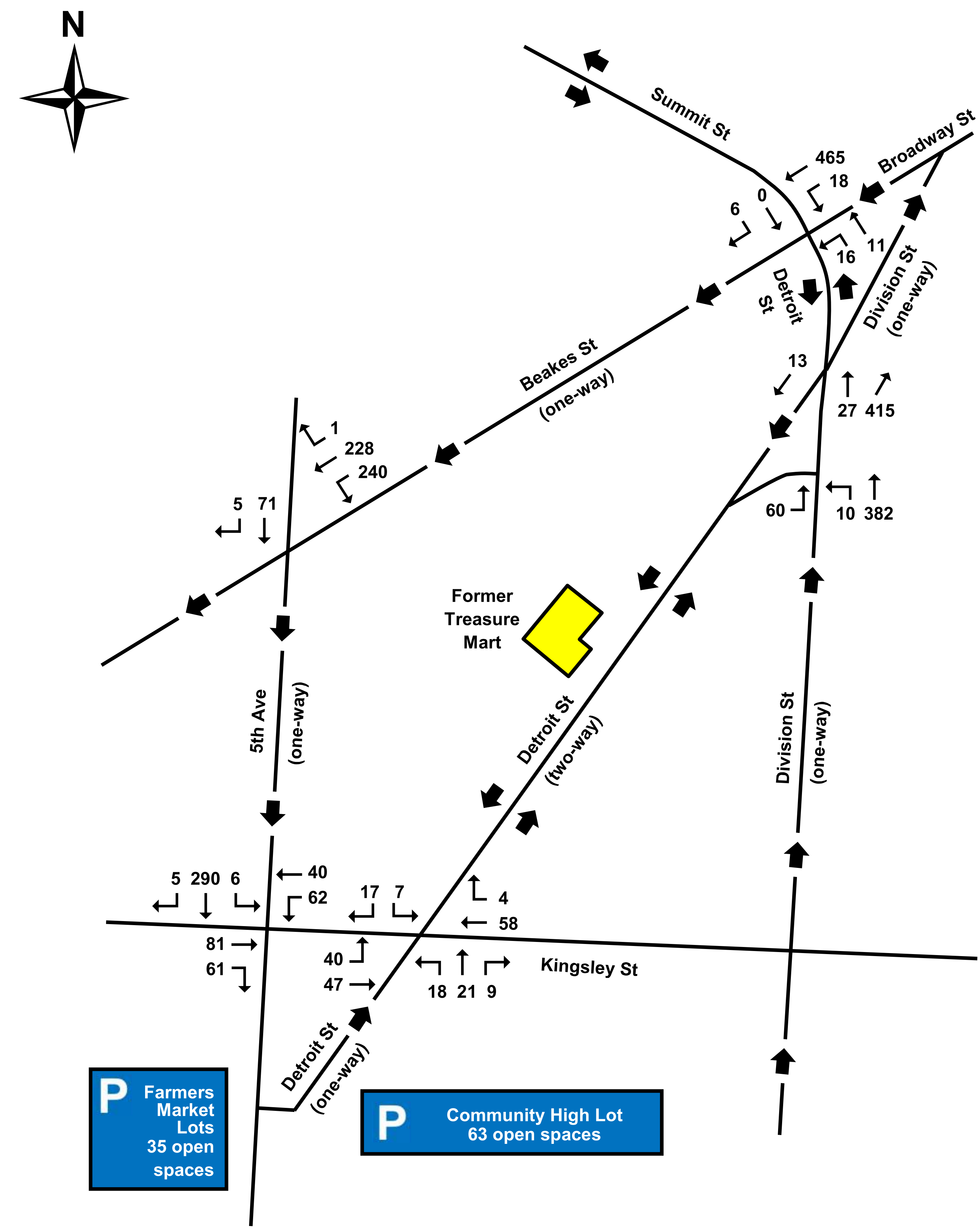
2021 Existing Sunday 1-Hour Prior to Service Volume Diagram
2021 Existing Sunday 1-Hour After Services Volume Diagram



Existing Conditions 2021

Pre-Services Corridor Volumes (9:30 AM - 10:30 AM)

WASHTENAW ENGINEERING



Existing Conditions 2021

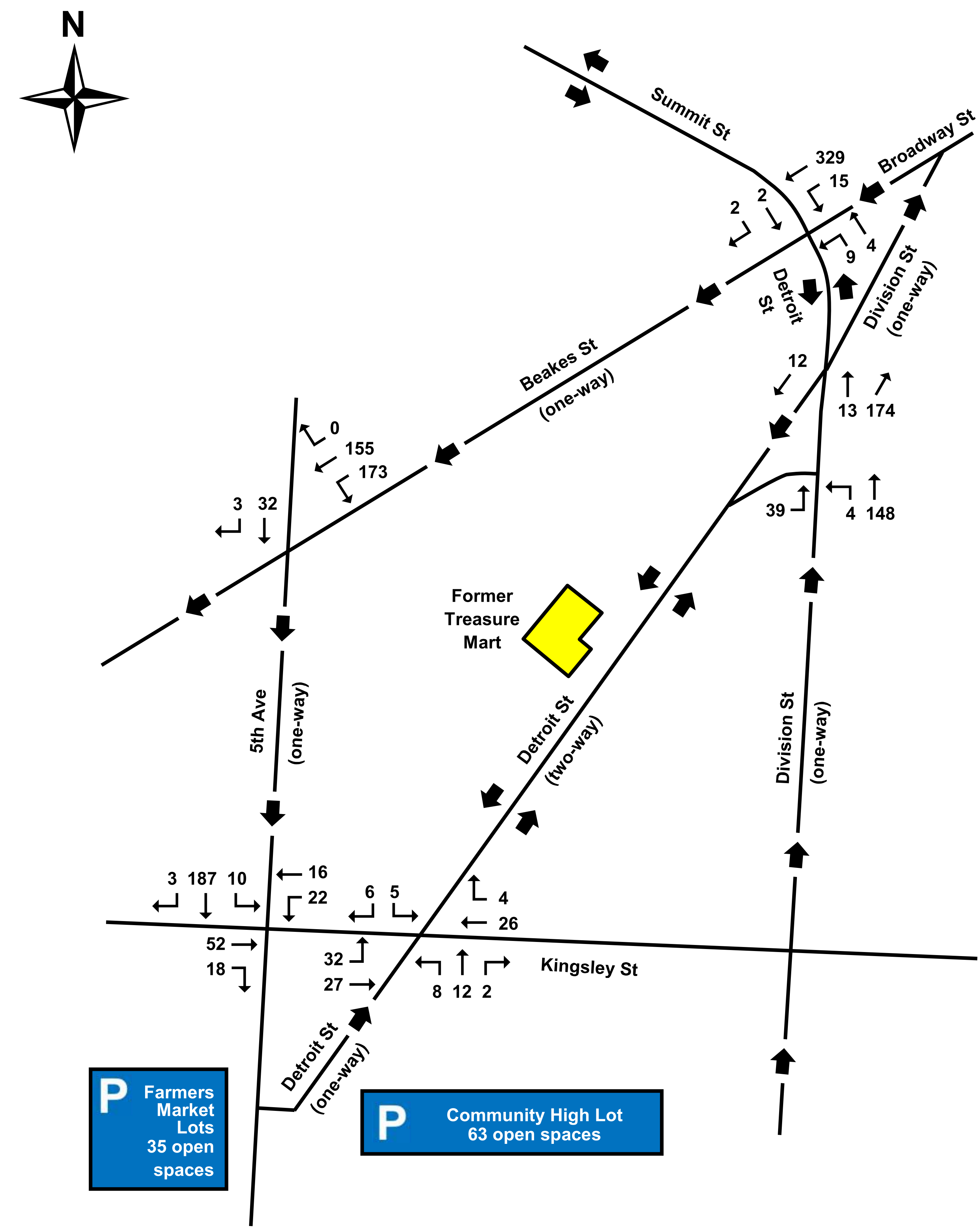
Post-Services Corridor Volumes (11:30 AM - 12:30 PM)

WASHTENAW ENGINEERING

Appendix F

2022 Bakground Sunday 1-Hour Prior to Service Volume Diagram

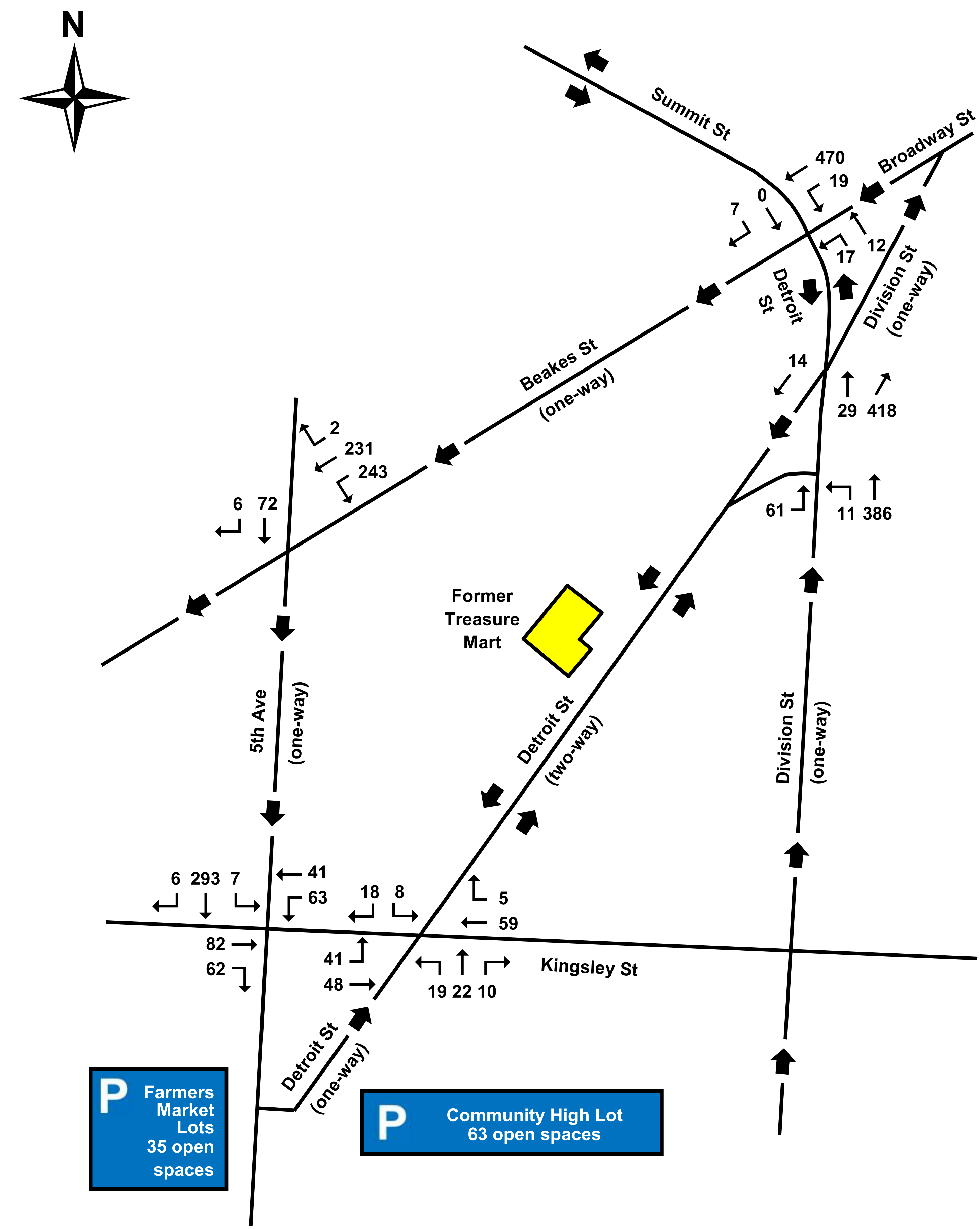
2022 Backgroun Sunday 1-Hour After Services Volume Diagram



Background Conditions 2022

Pre-Services Corridor Volumes (9:30 AM - 10:30 AM)

WASHTENAW ENGINEERING



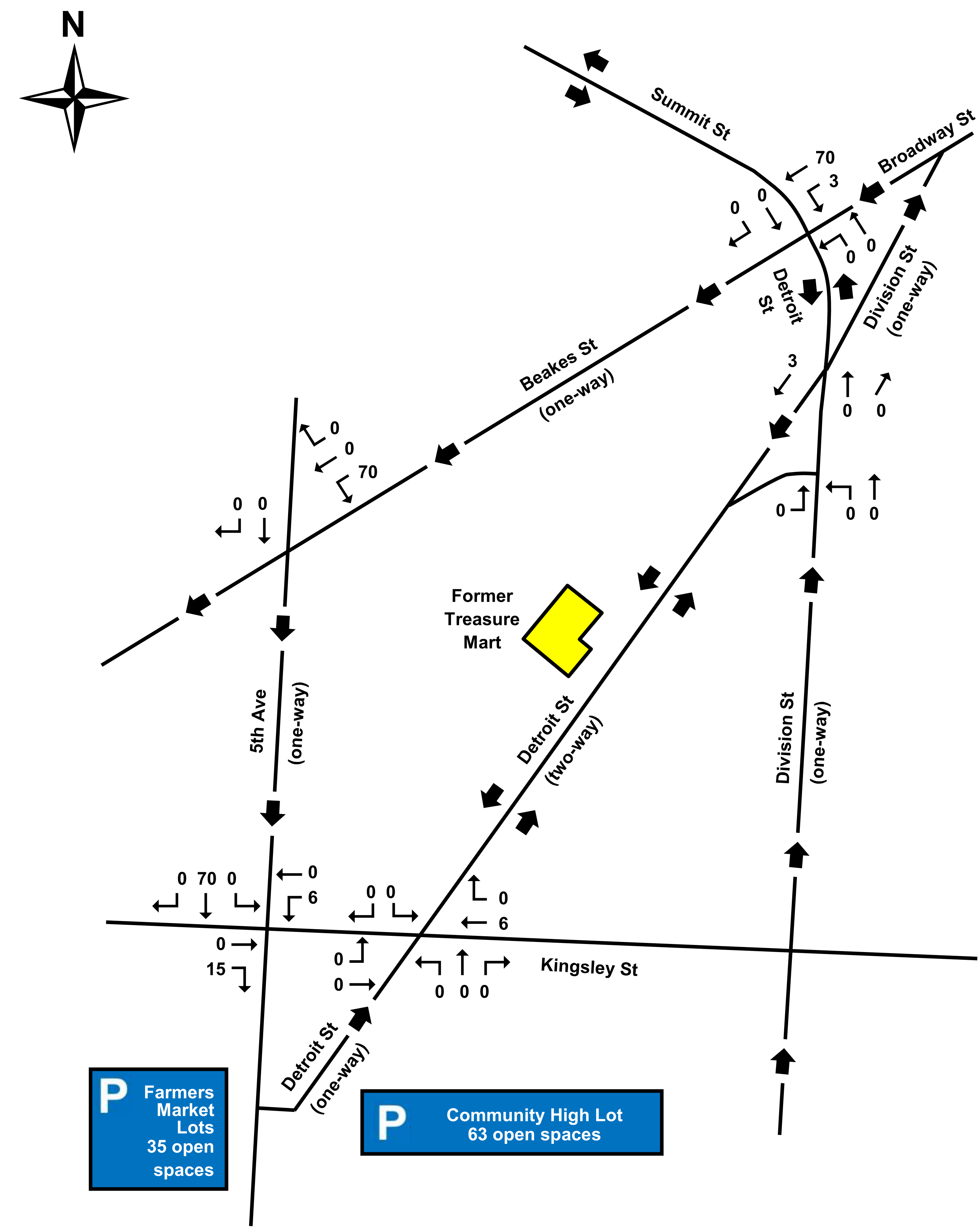
Background Conditions 2022

Post-Services Corridor Volumes (11:30 AM - 12:30 PM)

WASHTENAW ENGINEERING

Appendix G

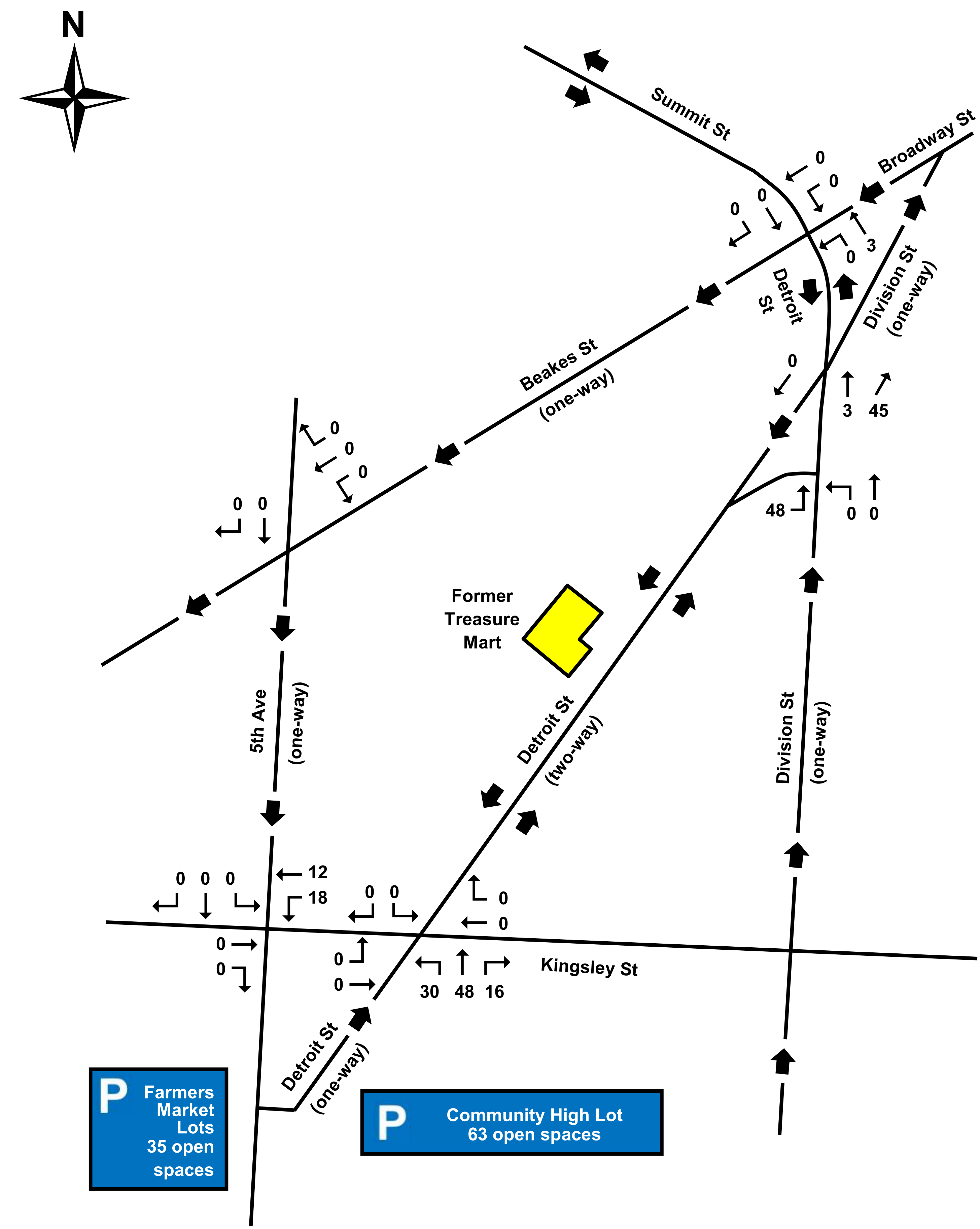
Site Generated 1-Hour Prior to Service Volume Diagram
Site Generated 1-Hour After Services Volume Diagram



Site Generated Trip Distribution

Pre-Services Corridor Volumes (9:30 AM - 10:30 AM)

WASHTENAW ENGINEERING



Site Generated Trip Distribution

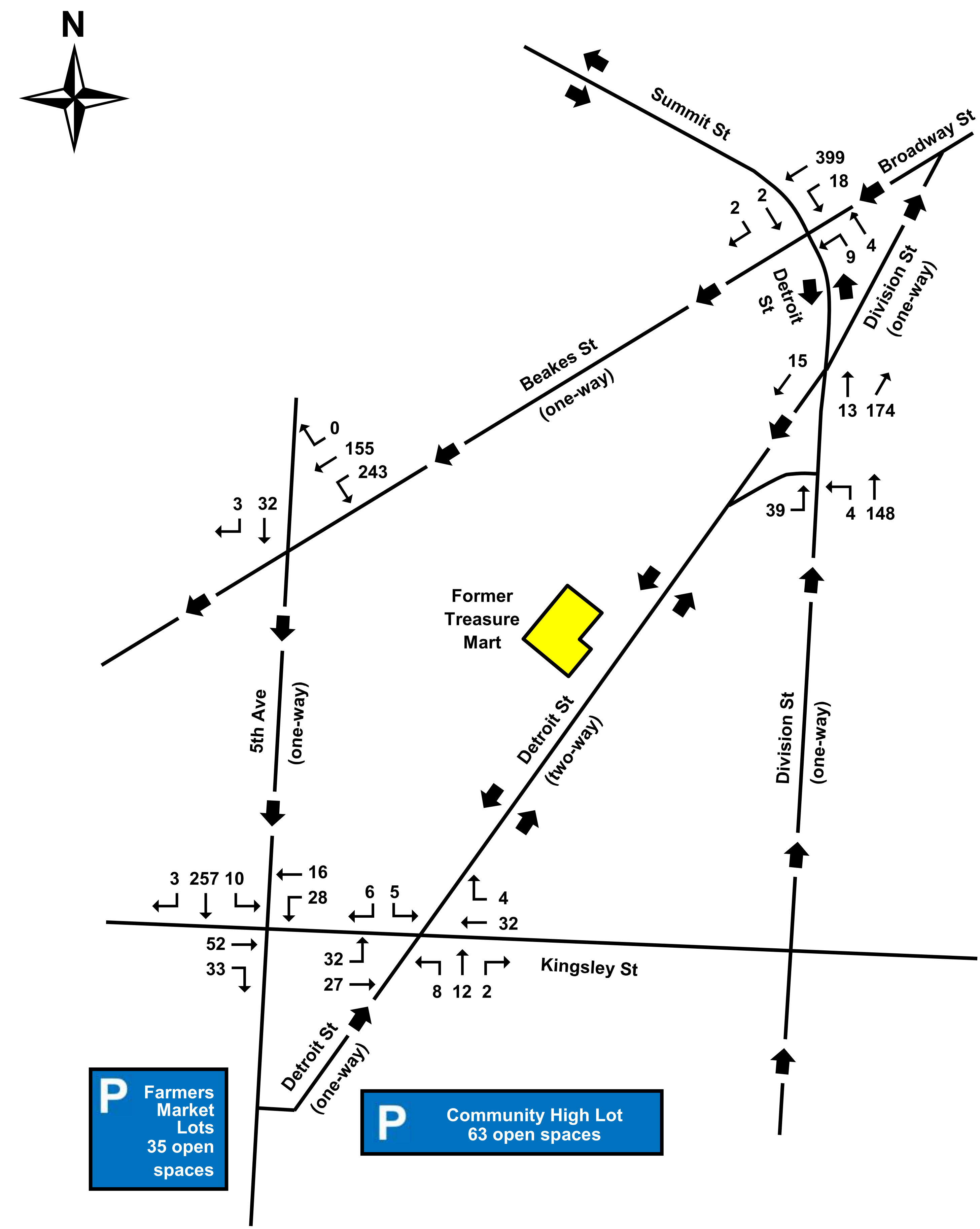
Post-Services Corridor Volumes (11:30 AM - 12:30 PM)

WASHTENAW ENGINEERING

Appendix H

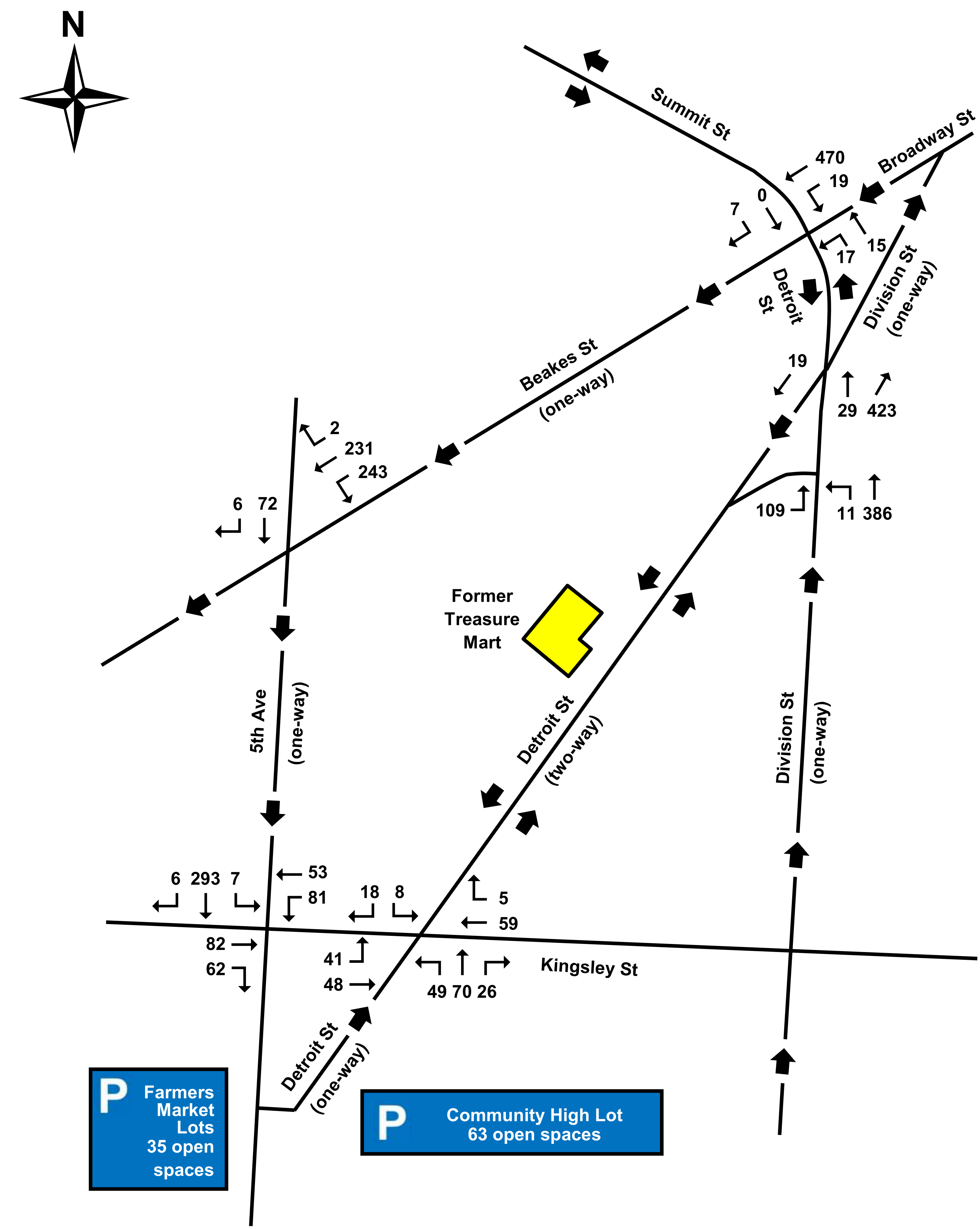
2022 Future Sunday 1-Hour Prior to Service Volume Diagram

2022 Future Sunday 1-Hour After Services Volume Diagram



Future Conditions 2022

Pre-Services Corridor Volumes (9:30 AM - 10:30 AM)



Future Conditions 2022

Post-Services Corridor Volumes (11:30 AM - 12:30 PM)

WASHTENAW ENGINEERING

Appendix I

Capacity Analysis Output

BROADWAY STREET & SUMMIT STREET

Capacity Analysis Output

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	14	325	0	8	3	0	0	1	1
Future Vol, veh/h	0	0	0	14	325	0	8	3	0	0	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	88	88	88	92	92	92	50	50	50
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	16	369	0	9	3	0	0	2	2

Major/Minor	Major2			Minor1			Minor2		
Conflicting Flow All	0	0	0	218	401	-	-	401	185
Stage 1	-	-	-	0	0	-	-	401	-
Stage 2	-	-	-	218	401	-	-	0	-
Critical Hdwy	4.14	-	-	7.54	6.54	-	-	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	5.54	-
Critical Hdwy Stg 2	-	-	-	6.54	5.54	-	-	-	-
Follow-up Hdwy	2.22	-	-	3.52	4.02	-	-	4.02	3.32
Pot Cap-1 Maneuver	-	-	0	719	536	0	0	536	826
Stage 1	-	-	0	-	-	0	0	599	-
Stage 2	-	-	0	764	599	0	0	-	-
Platoon blocked, %		-							
Mov Cap-1 Maneuver	-	-	-	715	536	-	-	536	826
Mov Cap-2 Maneuver	-	-	-	715	536	-	-	536	-
Stage 1	-	-	-	-	-	-	-	599	-
Stage 2	-	-	-	760	599	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s		10.6	10.6
HCM LOS		B	B

Minor Lane/Major Mvmt	NBLn1	WBL	WBT	SBLn1
Capacity (veh/h)	655	-	-	650
HCM Lane V/C Ratio	0.018	-	-	0.006
HCM Control Delay (s)	10.6	-	-	10.6
HCM Lane LOS	B	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	0

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	18	465	0	16	11	0	0	0	6
Future Vol, veh/h	0	0	0	18	465	0	16	11	0	0	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	82	82	82	75	75	75	50	50	50
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	22	567	0	21	15	0	0	0	12

Major/Minor				Major2			Minor1			Minor2		
Conflicting Flow All				0	0	0	328	611	-	-	611	284
Stage 1				-	-	-	0	0	-	-	611	-
Stage 2				-	-	-	328	611	-	-	0	-
Critical Hdwy				4.14	-	-	7.54	6.54	-	-	6.54	6.94
Critical Hdwy Stg 1				-	-	-	-	-	-	-	5.54	-
Critical Hdwy Stg 2				-	-	-	6.54	5.54	-	-	-	-
Follow-up Hdwy				2.22	-	-	3.52	4.02	-	-	4.02	3.32
Pot Cap-1 Maneuver				-	-	0	601	407	0	0	407	713
Stage 1				-	-	0	-	-	0	0	482	-
Stage 2				-	-	0	659	482	0	0	-	-
Platoon blocked, %					-							
Mov Cap-1 Maneuver				-	-	-	591	407	-	-	407	713
Mov Cap-2 Maneuver				-	-	-	591	407	-	-	407	-
Stage 1				-	-	-	-	-	-	-	482	-
Stage 2				-	-	-	648	482	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s		12.8	10.1
HCM LOS		B	B

Minor Lane/Major Mvmt	NBLn1	WBL	WBT	SBLn1
Capacity (veh/h)	499	-	-	713
HCM Lane V/C Ratio	0.072	-	-	0.017
HCM Control Delay (s)	12.8	-	-	10.1
HCM Lane LOS	B	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	0.1

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	15	329	0	9	4	0	0	2	2
Future Vol, veh/h	0	0	0	15	329	0	9	4	0	0	2	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	88	88	88	92	92	92	50	50	50
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	17	374	0	10	4	0	0	4	4

Major/Minor				Major2			Minor1			Minor2		
Conflicting Flow All				0	0	0	223	408	-	-	408	187
Stage 1				-	-	-	0	0	-	-	408	-
Stage 2				-	-	-	223	408	-	-	0	-
Critical Hdwy				4.14	-	-	7.54	6.54	-	-	6.54	6.94
Critical Hdwy Stg 1				-	-	-	-	-	-	-	5.54	-
Critical Hdwy Stg 2				-	-	-	6.54	5.54	-	-	-	-
Follow-up Hdwy				2.22	-	-	3.52	4.02	-	-	4.02	3.32
Pot Cap-1 Maneuver				-	-	0	714	531	0	0	531	823
Stage 1				-	-	0	-	-	0	0	595	-
Stage 2				-	-	0	759	595	0	0	-	-
Platoon blocked, %					-							
Mov Cap-1 Maneuver				-	-	-	706	531	-	-	531	823
Mov Cap-2 Maneuver				-	-	-	706	531	-	-	531	-
Stage 1				-	-	-	-	-	-	-	595	-
Stage 2				-	-	-	750	595	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s		10.7	10.6
HCM LOS		B	B

Minor Lane/Major Mvmt	NBLn1	WBL	WBT	SBLn1
Capacity (veh/h)	641	-	-	646
HCM Lane V/C Ratio	0.022	-	-	0.012
HCM Control Delay (s)	10.7	-	-	10.6
HCM Lane LOS	B	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	0

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	19	465	0	17	12	0	0	0	7
Future Vol, veh/h	0	0	0	19	465	0	17	12	0	0	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	82	82	82	75	75	75	50	50	50
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	23	567	0	23	16	0	0	0	14

Major/Minor	Major2			Minor1			Minor2		
Conflicting Flow All	0	0	0	330	613	-	-	613	284
Stage 1	-	-	-	0	0	-	-	613	-
Stage 2	-	-	-	330	613	-	-	0	-
Critical Hdwy	4.14	-	-	7.54	6.54	-	-	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	5.54	-
Critical Hdwy Stg 2	-	-	-	6.54	5.54	-	-	-	-
Follow-up Hdwy	2.22	-	-	3.52	4.02	-	-	4.02	3.32
Pot Cap-1 Maneuver	-	-	0	599	406	0	0	406	713
Stage 1	-	-	0	-	-	0	0	481	-
Stage 2	-	-	0	657	481	0	0	-	-
Platoon blocked, %		-							
Mov Cap-1 Maneuver	-	-	-	587	406	-	-	406	713
Mov Cap-2 Maneuver	-	-	-	587	406	-	-	406	-
Stage 1	-	-	-	-	-	-	-	481	-
Stage 2	-	-	-	644	481	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s		12.9	10.2
HCM LOS		B	B

Minor Lane/Major Mvmt	NBLn1	WBL	WBT	SBLn1
Capacity (veh/h)	496	-	-	713
HCM Lane V/C Ratio	0.078	-	-	0.02
HCM Control Delay (s)	12.9	-	-	10.2
HCM Lane LOS	B	-	-	B
HCM 95th %tile Q(veh)	0.3	-	-	0.1

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	18	399	0	9	4	0	0	2	2
Future Vol, veh/h	0	0	0	18	399	0	9	4	0	0	2	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	88	88	88	92	92	92	50	50	50
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	20	453	0	10	4	0	0	4	4

Major/Minor				Major2			Minor1			Minor2		
Conflicting Flow All				0	0	0	269	493	-	-	493	227
Stage 1				-	-	-	0	0	-	-	493	-
Stage 2				-	-	-	269	493	-	-	0	-
Critical Hdwy				4.14	-	-	7.54	6.54	-	-	6.54	6.94
Critical Hdwy Stg 1				-	-	-	-	-	-	-	5.54	-
Critical Hdwy Stg 2				-	-	-	6.54	5.54	-	-	-	-
Follow-up Hdwy				2.22	-	-	3.52	4.02	-	-	4.02	3.32
Pot Cap-1 Maneuver				-	-	0	662	476	0	0	476	776
Stage 1				-	-	0	-	-	0	0	545	-
Stage 2				-	-	0	713	545	0	0	-	-
Platoon blocked, %					-							
Mov Cap-1 Maneuver				-	-	-	654	476	-	-	476	776
Mov Cap-2 Maneuver				-	-	-	654	476	-	-	476	-
Stage 1				-	-	-	-	-	-	-	545	-
Stage 2				-	-	-	704	545	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s		11.3	11.2
HCM LOS		B	B

Minor Lane/Major Mvmt	NBLn1	WBL	WBT	SBLn1
Capacity (veh/h)	587	-	-	590
HCM Lane V/C Ratio	0.024	-	-	0.014
HCM Control Delay (s)	11.3	-	-	11.2
HCM Lane LOS	B	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	0

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	19	470	0	17	15	0	0	0	7
Future Vol, veh/h	0	0	0	19	470	0	17	15	0	0	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	82	82	82	75	75	75	50	50	50
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	23	573	0	23	20	0	0	0	14

Major/Minor	Major2			Minor1			Minor2		
Conflicting Flow All	0	0	0	333	619	-	-	619	287
Stage 1	-	-	-	0	0	-	-	619	-
Stage 2	-	-	-	333	619	-	-	0	-
Critical Hdwy	4.14	-	-	7.54	6.54	-	-	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	5.54	-
Critical Hdwy Stg 2	-	-	-	6.54	5.54	-	-	-	-
Follow-up Hdwy	2.22	-	-	3.52	4.02	-	-	4.02	3.32
Pot Cap-1 Maneuver	-	-	0	597	403	0	0	403	710
Stage 1	-	-	0	-	-	0	0	478	-
Stage 2	-	-	0	654	478	0	0	-	-
Platoon blocked, %		-							
Mov Cap-1 Maneuver	-	-	-	585	403	-	-	403	710
Mov Cap-2 Maneuver	-	-	-	585	403	-	-	403	-
Stage 1	-	-	-	-	-	-	-	478	-
Stage 2	-	-	-	641	478	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s		13.2	10.2
HCM LOS		B	B

Minor Lane/Major Mvmt	NBLn1	WBL	WBT	SBLn1
Capacity (veh/h)	483	-	-	710
HCM Lane V/C Ratio	0.088	-	-	0.02
HCM Control Delay (s)	13.2	-	-	10.2
HCM Lane LOS	B	-	-	B
HCM 95th %tile Q(veh)	0.3	-	-	0.1

DIVISION STREET & DETROIT STREET

Capacity Analysis Output

Intersection						
Int Delay, s/veh	2.3					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	38	0	3	146	0	0
Future Vol, veh/h	38	0	3	146	0	0
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	-	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	68	68	89	89	55	55
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	56	0	3	164	0	0

Major/Minor	Minor2		Major1	
Conflicting Flow All	88	-	0	0
Stage 1	0	-	-	-
Stage 2	88	-	-	-
Critical Hdwy	6.84	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-
Follow-up Hdwy	3.52	-	2.22	-
Pot Cap-1 Maneuver	903	0	-	-
Stage 1	-	0	-	-
Stage 2	925	0	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	903	-	-	-
Mov Cap-2 Maneuver	903	-	-	-
Stage 1	-	-	-	-
Stage 2	925	-	-	-

Approach	EB	NB
HCM Control Delay, s	9.3	
HCM LOS	A	

Minor Lane/Major Mvmt	NBL	NBT	EBLn1
Capacity (veh/h)	-	-	903
HCM Lane V/C Ratio	-	-	0.062
HCM Control Delay (s)	-	-	9.3
HCM Lane LOS	-	-	A
HCM 95th %tile Q(veh)	-	-	0.2

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	60	0	10	382	0	0
Future Vol, veh/h	60	0	10	382	0	0
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	-	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	88	88	54	54
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	72	0	11	434	0	0

Major/Minor	Minor2		Major1	
Conflicting Flow All	239	-	0	0
Stage 1	0	-	-	-
Stage 2	239	-	-	-
Critical Hdwy	6.84	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-
Follow-up Hdwy	3.52	-	2.22	-
Pot Cap-1 Maneuver	728	0	-	-
Stage 1	-	0	-	-
Stage 2	778	0	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	728	-	-	-
Mov Cap-2 Maneuver	728	-	-	-
Stage 1	-	-	-	-
Stage 2	778	-	-	-

Approach	EB	NB
HCM Control Delay, s	10.5	
HCM LOS	B	

Minor Lane/Major Mvmt	NBL	NBT	EBLn1
Capacity (veh/h)	-	-	728
HCM Lane V/C Ratio	-	-	0.099
HCM Control Delay (s)	-	-	10.5
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.3

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	39	0	4	148	0	0
Future Vol, veh/h	39	0	4	148	0	0
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	-	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	68	68	89	89	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	57	0	4	166	0	0

Major/Minor	Minor2		Major1	
Conflicting Flow All	91	-	0	0
Stage 1	0	-	-	-
Stage 2	91	-	-	-
Critical Hdwy	6.84	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-
Follow-up Hdwy	3.52	-	2.22	-
Pot Cap-1 Maneuver	899	0	-	-
Stage 1	-	0	-	-
Stage 2	922	0	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	899	-	-	-
Mov Cap-2 Maneuver	899	-	-	-
Stage 1	-	-	-	-
Stage 2	922	-	-	-

Approach	EB	NB
HCM Control Delay, s	9.3	
HCM LOS	A	

Minor Lane/Major Mvmt	NBL	NBT	EBLn1
Capacity (veh/h)	-	-	899
HCM Lane V/C Ratio	-	-	0.064
HCM Control Delay (s)	-	-	9.3
HCM Lane LOS	-	-	A
HCM 95th %tile Q(veh)	-	-	0.2

Intersection						
Int Delay, s/veh	1.5					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	61	0	11	386	0	0
Future Vol, veh/h	61	0	11	386	0	0
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	-	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	88	88	54	54
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	73	0	13	439	0	0

Major/Minor	Minor2		Major1	
Conflicting Flow All	246	-	0	0
Stage 1	0	-	-	-
Stage 2	246	-	-	-
Critical Hdwy	6.84	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-
Follow-up Hdwy	3.52	-	2.22	-
Pot Cap-1 Maneuver	721	0	-	-
Stage 1	-	0	-	-
Stage 2	772	0	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	721	-	-	-
Mov Cap-2 Maneuver	721	-	-	-
Stage 1	-	-	-	-
Stage 2	772	-	-	-

Approach	EB	NB
HCM Control Delay, s	10.6	
HCM LOS	B	

Minor Lane/Major Mvmt	NBL	NBT	EBLn1
Capacity (veh/h)	-	-	721
HCM Lane V/C Ratio	-	-	0.102
HCM Control Delay (s)	-	-	10.6
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.3

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	39	0	4	148	0	0
Future Vol, veh/h	39	0	4	148	0	0
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	-	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	68	68	89	89	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	57	0	4	166	0	0

Major/Minor	Minor2		Major1	
Conflicting Flow All	91	-	0	0
Stage 1	0	-	-	-
Stage 2	91	-	-	-
Critical Hdwy	6.84	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-
Follow-up Hdwy	3.52	-	2.22	-
Pot Cap-1 Maneuver	899	0	-	-
Stage 1	-	0	-	-
Stage 2	922	0	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	899	-	-	-
Mov Cap-2 Maneuver	899	-	-	-
Stage 1	-	-	-	-
Stage 2	922	-	-	-

Approach	EB	NB
HCM Control Delay, s	9.3	
HCM LOS	A	

Minor Lane/Major Mvmt	NBL	NBT	EBLn1
Capacity (veh/h)	-	-	899
HCM Lane V/C Ratio	-	-	0.064
HCM Control Delay (s)	-	-	9.3
HCM Lane LOS	-	-	A
HCM 95th %tile Q(veh)	-	-	0.2

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	109	0	11	386	0	0
Future Vol, veh/h	109	0	11	386	0	0
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	-	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	88	88	54	54
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	131	0	13	439	0	0

Major/Minor	Minor2		Major1	
Conflicting Flow All	246	-	0	0
Stage 1	0	-	-	-
Stage 2	246	-	-	-
Critical Hdwy	6.84	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-
Follow-up Hdwy	3.52	-	2.22	-
Pot Cap-1 Maneuver	721	0	-	-
Stage 1	-	0	-	-
Stage 2	772	0	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	721	-	-	-
Mov Cap-2 Maneuver	721	-	-	-
Stage 1	-	-	-	-
Stage 2	772	-	-	-

Approach	EB	NB
HCM Control Delay, s	11.1	
HCM LOS	B	

Minor Lane/Major Mvmt	NBL	NBT	EBLn1
Capacity (veh/h)	-	-	721
HCM Lane V/C Ratio	-	-	0.182
HCM Control Delay (s)	-	-	11.1
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.7

BEAKES STREET & 5TH AVENUE

Capacity Analysis Output

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	171	153	0	0	0	0	0	31	2
Future Vol, veh/h	0	0	0	171	153	0	0	0	0	0	31	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	86	86	86	92	92	92	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	199	178	0	0	0	0	0	41	3

Major/Minor	Major2			Minor2		
Conflicting Flow All	0	0	0	-	576	89
Stage 1	-	-	-	-	576	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	4.14	-	-	-	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.22	-	-	-	4.02	3.32
Pot Cap-1 Maneuver	-	-	-	0	426	951
Stage 1	-	-	-	0	500	-
Stage 2	-	-	-	0	-	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	0	951
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-

Approach	WB	SB
HCM Control Delay, s		9
HCM LOS		A

Minor Lane/Major Mvmt	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	951
HCM Lane V/C Ratio	-	-	-	0.046
HCM Control Delay (s)	-	-	-	9
HCM Lane LOS	-	-	-	A
HCM 95th %tile Q(veh)	-	-	-	0.1

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	0	0	0	240	228	1	0	0	0	0	71	5
Future Vol, veh/h	0	0	0	240	228	1	0	0	0	0	71	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	93	93	93	92	92	92	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	258	245	1	0	0	0	0	78	5

Major/Minor	Major2			Minor2		
Conflicting Flow All	0	0	0	-	762	123
Stage 1	-	-	-	-	762	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	4.14	-	-	-	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.22	-	-	-	4.02	3.32
Pot Cap-1 Maneuver	-	-	-	0	333	905
Stage 1	-	-	-	0	412	-
Stage 2	-	-	-	0	-	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	0	905
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-

Approach	WB	SB
HCM Control Delay, s		9.4
HCM LOS		A

Minor Lane/Major Mvmt	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	905
HCM Lane V/C Ratio	-	-	-	0.092
HCM Control Delay (s)	-	-	-	9.4
HCM Lane LOS	-	-	-	A
HCM 95th %tile Q(veh)	-	-	-	0.3

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	173	155	0	0	0	0	0	32	3
Future Vol, veh/h	0	0	0	173	155	0	0	0	0	0	32	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	86	86	86	92	92	92	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	201	180	0	0	0	0	0	43	4

Major/Minor	Major2			Minor2		
Conflicting Flow All	0	0	0	-	582	90
Stage 1	-	-	-	-	582	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	4.14	-	-	-	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.22	-	-	-	4.02	3.32
Pot Cap-1 Maneuver	-	-	-	0	423	950
Stage 1	-	-	-	0	497	-
Stage 2	-	-	-	0	-	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	0	950
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-

Approach	WB	SB
HCM Control Delay, s		9
HCM LOS		A

Minor Lane/Major Mvmt	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	950
HCM Lane V/C Ratio	-	-	-	0.049
HCM Control Delay (s)	-	-	-	9
HCM Lane LOS	-	-	-	A
HCM 95th %tile Q(veh)	-	-	-	0.2

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	0	0	0	243	231	2	0	0	0	0	72	6
Future Vol, veh/h	0	0	0	243	231	2	0	0	0	0	72	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	93	93	93	92	92	92	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	261	248	2	0	0	0	0	79	7

Major/Minor	Major2			Minor2		
Conflicting Flow All	0	0	0	-	771	125
Stage 1	-	-	-	-	771	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	4.14	-	-	-	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.22	-	-	-	4.02	3.32
Pot Cap-1 Maneuver	-	-	-	0	329	902
Stage 1	-	-	-	0	408	-
Stage 2	-	-	-	0	-	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	0	902
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-

Approach	WB	SB
HCM Control Delay, s		9.4
HCM LOS		A

Minor Lane/Major Mvmt	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	902
HCM Lane V/C Ratio	-	-	-	0.095
HCM Control Delay (s)	-	-	-	9.4
HCM Lane LOS	-	-	-	A
HCM 95th %tile Q(veh)	-	-	-	0.3

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	0	0	0	243	155	0	0	0	0	0	32	3
Future Vol, veh/h	0	0	0	243	155	0	0	0	0	0	32	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	86	86	86	92	92	92	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	283	180	0	0	0	0	0	43	4

Major/Minor	Major2			Minor2		
Conflicting Flow All	0	0	0	-	746	90
Stage 1	-	-	-	-	746	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	4.14	-	-	-	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.22	-	-	-	4.02	3.32
Pot Cap-1 Maneuver	-	-	-	0	340	950
Stage 1	-	-	-	0	419	-
Stage 2	-	-	-	0	-	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	0	950
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-

Approach	WB	SB
HCM Control Delay, s		9
HCM LOS		A

Minor Lane/Major Mvmt	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	950
HCM Lane V/C Ratio	-	-	-	0.049
HCM Control Delay (s)	-	-	-	9
HCM Lane LOS	-	-	-	A
HCM 95th %tile Q(veh)	-	-	-	0.2

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	0	0	0	243	231	2	0	0	0	0	72	6
Future Vol, veh/h	0	0	0	243	231	2	0	0	0	0	72	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	-	-	-	0	-	-	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	93	93	93	92	92	92	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	261	248	2	0	0	0	0	79	7

Major/Minor	Major2			Minor2		
Conflicting Flow All	0	0	0	-	771	125
Stage 1	-	-	-	-	771	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	4.14	-	-	-	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.22	-	-	-	4.02	3.32
Pot Cap-1 Maneuver	-	-	-	0	329	902
Stage 1	-	-	-	0	408	-
Stage 2	-	-	-	0	-	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	0	902
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-

Approach	WB	SB
HCM Control Delay, s		9.4
HCM LOS		A

Minor Lane/Major Mvmt	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	902
HCM Lane V/C Ratio	-	-	-	0.095
HCM Control Delay (s)	-	-	-	9.4
HCM Lane LOS	-	-	-	A
HCM 95th %tile Q(veh)	-	-	-	0.3

KINGSLEY STREET & 5TH AVENUE

Capacity Analysis Output

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	51	17	21	15	0	0	0	0	9	185	2
Future Volume (vph)	0	51	17	21	15	0	0	0	0	9	185	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1			5.1						4.1	
Lane Util. Factor		1.00			1.00						0.95	
Frt		0.97			1.00						1.00	
Flt Protected		1.00			0.97						1.00	
Satd. Flow (prot)		1800			1809						3526	
Flt Permitted		1.00			0.88						1.00	
Satd. Flow (perm)		1800			1636						3526	
Peak-hour factor, PHF	0.77	0.77	0.77	0.82	0.82	0.82	0.92	0.92	0.92	0.91	0.91	0.91
Adj. Flow (vph)	0	66	22	26	18	0	0	0	0	10	203	2
RTOR Reduction (vph)	0	6	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	82	0	0	44	0	0	0	0	0	214	0
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		2			2						1	
Permitted Phases				2						1		
Actuated Green, G (s)		49.2			49.2						9.5	
Effective Green, g (s)		49.2			49.2						9.5	
Actuated g/C Ratio		0.72			0.72						0.14	
Clearance Time (s)		5.1			5.1						4.1	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		1304			1185						493	
v/s Ratio Prot		c0.05										
v/s Ratio Perm					0.03						0.06	
v/c Ratio		0.06			0.04						0.43	
Uniform Delay, d1		2.7			2.6						26.7	
Progression Factor		1.00			1.00						1.00	
Incremental Delay, d2		0.1			0.1						0.6	
Delay (s)		2.8			2.7						27.4	
Level of Service		A			A						C	
Approach Delay (s)		2.8			2.7			0.0			27.4	
Approach LOS		A			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	18.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.12		
Actuated Cycle Length (s)	67.9	Sum of lost time (s)	9.2
Intersection Capacity Utilization	23.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	81	61	62	40	0	0	0	0	6	290	5
Future Volume (vph)	0	81	61	62	40	0	0	0	0	6	290	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1			5.1						4.1	
Lane Util. Factor		1.00			1.00						0.95	
Frt		0.94			1.00						1.00	
Flt Protected		1.00			0.97						1.00	
Satd. Flow (prot)		1755			1808						3526	
Flt Permitted		1.00			0.79						1.00	
Satd. Flow (perm)		1755			1472						3526	
Peak-hour factor, PHF	0.83	0.83	0.83	0.91	0.91	0.91	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	0	98	73	68	44	0	0	0	0	7	326	6
RTOR Reduction (vph)	0	19	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	152	0	0	112	0	0	0	0	0	337	0
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		2			2						1	
Permitted Phases				2						1		
Actuated Green, G (s)		47.0			47.0						11.8	
Effective Green, g (s)		47.0			47.0						11.8	
Actuated g/C Ratio		0.69			0.69						0.17	
Clearance Time (s)		5.1			5.1						4.1	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		1213			1017						611	
v/s Ratio Prot		c0.09										
v/s Ratio Perm					0.08						0.10	
v/c Ratio		0.13			0.11						0.55	
Uniform Delay, d1		3.5			3.5						25.7	
Progression Factor		1.00			1.00						1.00	
Incremental Delay, d2		0.2			0.2						1.1	
Delay (s)		3.8			3.7						26.8	
Level of Service		A			A						C	
Approach Delay (s)		3.8			3.7			0.0			26.8	
Approach LOS		A			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	16.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.21		
Actuated Cycle Length (s)	68.0	Sum of lost time (s)	9.2
Intersection Capacity Utilization	34.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	52	18	22	16	0	0	0	0	10	187	3
Future Volume (vph)	0	52	18	22	16	0	0	0	0	10	187	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1			5.1						4.1	
Lane Util. Factor		1.00			1.00						0.95	
Frt		0.97			1.00						1.00	
Flt Protected		1.00			0.97						1.00	
Satd. Flow (prot)		1799			1811						3523	
Flt Permitted		1.00			0.88						1.00	
Satd. Flow (perm)		1799			1636						3523	
Peak-hour factor, PHF	0.77	0.77	0.77	0.82	0.82	0.82	0.92	0.92	0.92	0.91	0.91	0.91
Adj. Flow (vph)	0	68	23	27	20	0	0	0	0	11	205	3
RTOR Reduction (vph)	0	6	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	85	0	0	47	0	0	0	0	0	217	0
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		2			2						1	
Permitted Phases				2						1		
Actuated Green, G (s)		49.0			49.0						9.6	
Effective Green, g (s)		49.0			49.0						9.6	
Actuated g/C Ratio		0.72			0.72						0.14	
Clearance Time (s)		5.1			5.1						4.1	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		1300			1182						498	
v/s Ratio Prot		c0.05										
v/s Ratio Perm					0.03						0.06	
v/c Ratio		0.07			0.04						0.44	
Uniform Delay, d1		2.7			2.7						26.6	
Progression Factor		1.00			1.00						1.00	
Incremental Delay, d2		0.1			0.1						0.6	
Delay (s)		2.8			2.7						27.2	
Level of Service		A			A						C	
Approach Delay (s)		2.8			2.7			0.0			27.2	
Approach LOS		A			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	17.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.13		
Actuated Cycle Length (s)	67.8	Sum of lost time (s)	9.2
Intersection Capacity Utilization	23.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	82	62	63	41	0	0	0	0	7	293	6
Future Volume (vph)	0	82	62	63	41	0	0	0	0	7	293	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1			5.1						4.1	
Lane Util. Factor		1.00			1.00						0.95	
Frt		0.94			1.00						1.00	
Flt Protected		1.00			0.97						1.00	
Satd. Flow (prot)		1754			1808						3524	
Flt Permitted		1.00			0.79						1.00	
Satd. Flow (perm)		1754			1469						3524	
Peak-hour factor, PHF	0.83	0.83	0.83	0.91	0.91	0.91	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	0	99	75	69	45	0	0	0	0	8	329	7
RTOR Reduction (vph)	0	20	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	154	0	0	114	0	0	0	0	0	342	0
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		2			2						1	
Permitted Phases				2						1		
Actuated Green, G (s)		47.0			47.0						11.9	
Effective Green, g (s)		47.0			47.0						11.9	
Actuated g/C Ratio		0.69			0.69						0.17	
Clearance Time (s)		5.1			5.1						4.1	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		1210			1013						615	
v/s Ratio Prot		c0.09										
v/s Ratio Perm					0.08						0.10	
v/c Ratio		0.13			0.11						0.56	
Uniform Delay, d1		3.6			3.5						25.7	
Progression Factor		1.00			1.00						1.00	
Incremental Delay, d2		0.2			0.2						1.1	
Delay (s)		3.8			3.8						26.8	
Level of Service		A			A						C	
Approach Delay (s)		3.8			3.8			0.0			26.8	
Approach LOS		A			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	16.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.21		
Actuated Cycle Length (s)	68.1	Sum of lost time (s)	9.2
Intersection Capacity Utilization	35.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	52	33	28	16	0	0	0	0	10	257	3
Future Volume (vph)	0	52	33	28	16	0	0	0	0	10	257	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1			5.1						4.1	
Lane Util. Factor		1.00			1.00						0.95	
Frt		0.95			1.00						1.00	
Flt Protected		1.00			0.97						1.00	
Satd. Flow (prot)		1765			1806						3527	
Flt Permitted		1.00			0.85						1.00	
Satd. Flow (perm)		1765			1584						3527	
Peak-hour factor, PHF	0.77	0.77	0.77	0.82	0.82	0.82	0.92	0.92	0.92	0.91	0.91	0.91
Adj. Flow (vph)	0	68	43	34	20	0	0	0	0	11	282	3
RTOR Reduction (vph)	0	13	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	98	0	0	54	0	0	0	0	0	295	0
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		2			2						1	
Permitted Phases				2						1		
Actuated Green, G (s)		47.2			47.2						10.8	
Effective Green, g (s)		47.2			47.2						10.8	
Actuated g/C Ratio		0.70			0.70						0.16	
Clearance Time (s)		5.1			5.1						4.1	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		1239			1112						566	
v/s Ratio Prot		c0.06										
v/s Ratio Perm					0.03						0.08	
v/c Ratio		0.08			0.05						0.52	
Uniform Delay, d1		3.2			3.1						25.8	
Progression Factor		1.00			1.00						1.00	
Incremental Delay, d2		0.1			0.1						0.9	
Delay (s)		3.3			3.2						26.7	
Level of Service		A			A						C	
Approach Delay (s)		3.3			3.2			0.0			26.7	
Approach LOS		A			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	18.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.16		
Actuated Cycle Length (s)	67.2	Sum of lost time (s)	9.2
Intersection Capacity Utilization	24.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	82	62	81	53	0	0	0	0	7	293	6
Future Volume (vph)	0	82	62	81	53	0	0	0	0	7	293	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1			5.1						4.1	
Lane Util. Factor		1.00			1.00						0.95	
Frt		0.94			1.00						1.00	
Flt Protected		1.00			0.97						1.00	
Satd. Flow (prot)		1754			1808						3524	
Flt Permitted		1.00			0.77						1.00	
Satd. Flow (perm)		1754			1438						3524	
Peak-hour factor, PHF	0.83	0.83	0.83	0.91	0.91	0.91	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	0	99	75	89	58	0	0	0	0	8	329	7
RTOR Reduction (vph)	0	20	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	154	0	0	147	0	0	0	0	0	342	0
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		2			2						1	
Permitted Phases				2						1		
Actuated Green, G (s)		47.0			47.0						11.9	
Effective Green, g (s)		47.0			47.0						11.9	
Actuated g/C Ratio		0.69			0.69						0.17	
Clearance Time (s)		5.1			5.1						4.1	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		1210			992						615	
v/s Ratio Prot		0.09										
v/s Ratio Perm					c0.10						0.10	
v/c Ratio		0.13			0.15						0.56	
Uniform Delay, d1		3.6			3.6						25.7	
Progression Factor		1.00			1.00						1.00	
Incremental Delay, d2		0.2			0.3						1.1	
Delay (s)		3.8			4.0						26.8	
Level of Service		A			A						C	
Approach Delay (s)		3.8			4.0			0.0			26.8	
Approach LOS		A			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	15.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.23		
Actuated Cycle Length (s)	68.1	Sum of lost time (s)	9.2
Intersection Capacity Utilization	35.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

KINGSLEY STREET & DETROIT STREET

Capacity Analysis Output

Intersection	
Intersection Delay, s/veh	7.4
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Vol, veh/h	31	26	0	0	25	3	7	11	1	4	0	5
Future Vol, veh/h	31	26	0	0	25	3	7	11	1	4	0	5
Peak Hour Factor	0.89	0.89	0.89	0.86	0.86	0.86	0.68	0.68	0.68	0.56	0.56	0.56
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	35	29	0	0	29	3	10	16	1	7	0	9
Number of Lanes	0	1	0	0	1	0	0	1	0	1	0	1

Approach	EB	WB	NE	SW
Opposing Approach	WB	EB	SW	NE
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SW	NE	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NE	SW	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay	7.5	7.2	7.5	7.3
HCM LOS	A	A	A	A

Lane	NELn1	EBLn1	WBLn1	SWLn1	SWLn2
Vol Left, %	37%	54%	0%	100%	0%
Vol Thru, %	58%	46%	89%	0%	0%
Vol Right, %	5%	0%	11%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	19	57	28	4	5
LT Vol	7	31	0	4	0
Through Vol	11	26	25	0	0
RT Vol	1	0	3	0	5
Lane Flow Rate	28	64	33	7	9
Geometry Grp	5	2	2	7	7
Degree of Util (X)	0.033	0.074	0.036	0.01	0.01
Departure Headway (Hd)	4.257	4.143	3.993	5.218	4.016
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	836	863	893	683	885
Service Time	2.309	2.176	2.035	2.97	1.768
HCM Lane V/C Ratio	0.033	0.074	0.037	0.01	0.01
HCM Control Delay	7.5	7.5	7.2	8	6.8
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.1	0.2	0.1	0	0

Intersection	
Intersection Delay, s/veh	7.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Vol, veh/h	40	47	0	0	58	4	18	21	9	7	0	17
Future Vol, veh/h	40	47	0	0	58	4	18	21	9	7	0	17
Peak Hour Factor	0.81	0.81	0.81	0.74	0.74	0.74	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	49	58	0	0	78	5	24	28	12	9	0	23
Number of Lanes	0	1	0	0	1	0	0	1	0	1	0	1

Approach	EB	WB	NE	SW
Opposing Approach	WB	EB	SW	NE
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SW	NE	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NE	SW	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay	8	7.7	7.8	7.5
HCM LOS	A	A	A	A

Lane	NELn1	EBLn1	WBLn1	SWLn1	SWLn2
Vol Left, %	38%	46%	0%	100%	0%
Vol Thru, %	44%	54%	94%	0%	0%
Vol Right, %	19%	0%	6%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	48	87	62	7	17
LT Vol	18	40	0	7	0
Through Vol	21	47	58	0	0
RT Vol	9	0	4	0	17
Lane Flow Rate	64	107	84	9	23
Geometry Grp	5	2	2	7	7
Degree of Util (X)	0.079	0.127	0.096	0.014	0.027
Departure Headway (Hd)	4.465	4.254	4.141	5.522	4.316
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	807	831	850	652	834
Service Time	2.466	2.341	2.238	3.223	2.017
HCM Lane V/C Ratio	0.079	0.129	0.099	0.014	0.028
HCM Control Delay	7.8	8	7.7	8.3	7.1
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.3	0.4	0.3	0	0.1

Intersection	
Intersection Delay, s/veh	7.4
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Vol, veh/h	32	27	0	0	26	4	8	12	2	5	0	6
Future Vol, veh/h	32	27	0	0	26	4	8	12	2	5	0	6
Peak Hour Factor	0.89	0.89	0.89	0.88	0.88	0.88	0.68	0.68	0.68	0.56	0.56	0.56
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	36	30	0	0	30	5	12	18	3	9	0	11
Number of Lanes	0	1	0	0	1	0	0	1	0	1	0	1

Approach	EB	WB	NE	SW
Opposing Approach	WB	EB	SW	NE
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SW	NE	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NE	SW	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay	7.5	7.2	7.5	7.4
HCM LOS	A	A	A	A

Lane	NELn1	EBLn1	WBLn1	SWLn1	SWLn2
Vol Left, %	36%	54%	0%	100%	0%
Vol Thru, %	55%	46%	87%	0%	0%
Vol Right, %	9%	0%	13%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	22	59	30	5	6
LT Vol	8	32	0	5	0
Through Vol	12	27	26	0	0
RT Vol	2	0	4	0	6
Lane Flow Rate	32	66	34	9	11
Geometry Grp	5	2	2	7	7
Degree of Util (X)	0.038	0.077	0.038	0.013	0.012
Departure Headway (Hd)	4.242	4.159	3.995	5.227	4.024
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	838	859	891	682	882
Service Time	2.299	2.196	2.041	2.983	1.781
HCM Lane V/C Ratio	0.038	0.077	0.038	0.013	0.012
HCM Control Delay	7.5	7.5	7.2	8.1	6.8
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.1	0.2	0.1	0	0

Intersection	
Intersection Delay, s/veh	7.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Vol, veh/h	41	48	0	0	59	5	19	22	10	8	0	18
Future Vol, veh/h	41	48	0	0	59	5	19	22	10	8	0	18
Peak Hour Factor	0.81	0.81	0.81	0.74	0.74	0.74	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	51	59	0	0	80	7	25	29	13	11	0	24
Number of Lanes	0	1	0	0	1	0	0	1	0	1	0	1

Approach	EB	WB	NE	SW
Opposing Approach	WB	EB	SW	NE
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SW	NE	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NE	SW	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay	8	7.7	7.9	7.5
HCM LOS	A	A	A	A

Lane	NELn1	EBLn1	WBLn1	SWLn1	SWLn2
Vol Left, %	37%	46%	0%	100%	0%
Vol Thru, %	43%	54%	92%	0%	0%
Vol Right, %	20%	0%	8%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	51	89	64	8	18
LT Vol	19	41	0	8	0
Through Vol	22	48	59	0	0
RT Vol	10	0	5	0	18
Lane Flow Rate	68	110	86	11	24
Geometry Grp	5	2	2	7	7
Degree of Util (X)	0.085	0.13	0.102	0.016	0.029
Departure Headway (Hd)	4.477	4.266	4.252	5.539	4.333
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	804	826	848	649	830
Service Time	2.482	2.366	2.252	3.245	2.039
HCM Lane V/C Ratio	0.085	0.133	0.101	0.017	0.029
HCM Control Delay	7.9	8	7.7	8.3	7.2
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.3	0.4	0.3	0	0.1

Intersection	
Intersection Delay, s/veh	7.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Vol, veh/h	32	27	0	0	32	4	8	12	2	5	0	6
Future Vol, veh/h	32	27	0	0	32	4	8	12	2	5	0	6
Peak Hour Factor	0.89	0.89	0.89	0.88	0.88	0.88	0.68	0.68	0.68	0.56	0.56	0.56
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	36	30	0	0	36	5	12	18	3	9	0	11
Number of Lanes	0	1	0	0	1	0	0	1	0	1	0	1

Approach	EB	WB	NE	SW
Opposing Approach	WB	EB	SW	NE
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SW	NE	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NE	SW	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay	7.6	7.3	7.5	7.4
HCM LOS	A	A	A	A

Lane	NELn1	EBLn1	WBLn1	SWLn1	SWLn2
Vol Left, %	36%	54%	0%	100%	0%
Vol Thru, %	55%	46%	89%	0%	0%
Vol Right, %	9%	0%	11%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	22	59	36	5	6
LT Vol	8	32	0	5	0
Through Vol	12	27	32	0	0
RT Vol	2	0	4	0	6
Lane Flow Rate	32	66	41	9	11
Geometry Grp	5	2	2	7	7
Degree of Util (X)	0.038	0.077	0.046	0.013	0.012
Departure Headway (Hd)	4.254	4.164	4.008	5.238	4.036
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	835	858	889	679	879
Service Time	2.315	2.203	2.055	2.999	1.796
HCM Lane V/C Ratio	0.038	0.077	0.046	0.013	0.013
HCM Control Delay	7.5	7.6	7.3	8.1	6.8
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.1	0.2	0.1	0	0

Intersection	
Intersection Delay, s/veh	8.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Vol, veh/h	41	48	0	0	59	5	49	70	26	8	0	18
Future Vol, veh/h	41	48	0	0	59	5	49	70	26	8	0	18
Peak Hour Factor	0.81	0.81	0.81	0.74	0.74	0.74	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	51	59	0	0	80	7	65	93	35	11	0	24
Number of Lanes	0	1	0	0	1	0	0	1	0	1	0	1

Approach	EB	WB	NE	SW
Opposing Approach	WB	EB	SW	NE
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SW	NE	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NE	SW	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay	8.5	8.1	9	7.7
HCM LOS	A	A	A	A

Lane	NELn1	EBLn1	WBLn1	SWLn1	SWLn2
Vol Left, %	34%	46%	0%	100%	0%
Vol Thru, %	48%	54%	92%	0%	0%
Vol Right, %	18%	0%	8%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	145	89	64	8	18
LT Vol	49	41	0	8	0
Through Vol	70	48	59	0	0
RT Vol	26	0	5	0	18
Lane Flow Rate	193	110	86	11	24
Geometry Grp	5	2	2	7	7
Degree of Util (X)	0.242	0.142	0.109	0.017	0.03
Departure Headway (Hd)	4.504	4.661	4.552	5.673	4.465
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	798	770	788	632	802
Service Time	2.523	2.684	2.577	3.397	2.189
HCM Lane V/C Ratio	0.242	0.143	0.109	0.017	0.03
HCM Control Delay	9	8.5	8.1	8.5	7.3
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.9	0.5	0.4	0.1	0.1