nextrans
CONSULTING ENGINEERS

nextrans.ca

Transportation Impact Study Update

PROPOSED MIXED-USE DEVELOPMENT

392-412 Wilson Street East
CITY OF HAMILTON, ONTARIO

March 4, 2026
Project No: NT-20-089

Prepared for: Urban Solution

520 Industrial Parkway South, Suite 201
Aurora ON L4G 6W8

Phone: 905-503-2563
www.nextrans.ca

nexTrans CONSULTING ENGINEERS

NextEng Consulting Group Inc.

March 4, 2026
Wilson St. Ancaster Inc.

c/o Urban Solutions
3 Studebaker Place, Unit 1
Hamilton, ON L8L 0C8

Re: Transportation Impact Study
Proposed Mixed-use Development
392-412 Wilson Street East, City of Hamilton
Our Project No. NT-20-089

Nextrans Consulting Engineers (a Division of NextEng Consulting Group Inc.) is pleased to present the enclosed Transportation Impact Study (TIS) Update for the above-noted site in support of the Urban Hamilton Official Plan and Zoning By-law Amendment Applications for a proposed mixed-use development.

By way of background, a previous TIS was prepared by Nextrans dated December 19, 2024. This Study updates the December 2024 TIS with an updated traffic analysis based on more recent traffic data, including new TMC data, signal timing plans, trip generation using ITE Trip Generation Manual 12th Edition, and travel patterns using 2022 TTS data.

The subject site is located at 392-412 Wilson Street E, located in the southeast corner of Wilson Street E and Academy Street, in the City of Hamilton. The development proposal consists of an 8-storey mixed-use building with a total of 118 residential units and 1,475.2 m^2 of retail gross floor area on the related ground floor. The proposed development is proposing full movement access via Academy Street to accommodate the proposed development. The proposed development will provide a total of 270 vehicle parking spaces and 190 bicycle parking spaces.

The Transportation Impact Study concludes that the proposed development can adequately be accommodated by the existing transportation network, existing Hamilton Transit service, as well as the recommended Transportation Demand Management measures and incentives recommended in this report.

We trust the enclosed sufficiently addresses your needs. Should you have any questions, please do not hesitate to contact the undersigned.

Yours truly,

Nextrans Consulting Engineers
A Division of NextEng Consulting Group Inc.

Reviewed by:

LICENSED PROFESSIONAL ENGINEER
J. NHAN
100531407
2026-03-04
PROVINCE OF ONTARIO

John Nhan, P.Eng
Project Engineer

Prepared by:

Sam Nguyen, Dipl.
Transportation Analy

Reviewed and Approved by:

Richard Pernicky, MITE
Principal

Report Submission Record

Identification	Date	Description of issued and/or revision
TIS	December 19, 2024	For submission
TIS Update	March 4, 2026	For re-submission

EXECUTIVE SUMMARY

Nextrans Consulting Engineers (A Division of NextEng Consulting Group Inc.) was retained by Wilson St. Ancaster Inc. (the 'Client') to undertake a Transportation Impact Study Update in support of the Urban Hamilton Official Plan and Zoning Bylaw Amendment Applications for a proposed mixed-use residential development. The subject site is located at 392-412 Wilson Street E, southeast corner of Wilson Street E and Academy Street, in the City of Hamilton.

Proposed Development

Currently, the subject land is occupied by a two-story building. They propose to demolish the existing building and introduce an 8-storey mixed-use building with 118 residential dwelling units and 1,475 m^2 GFA of retail.

Proposed Development Access

Access is proposed from one full movement driveway via Academy Street

Based on the findings of this Study, the proposed access arrangement is reasonable and acceptable as it is optimized for the developable lands and consistent with the context of the area. The analysis indicates that the proposed access is expected to operate at acceptable levels of service with minimum queues and delays.

Capacity Analysis

The proposed development is expected to generate 107 total two-way trips (44 inbound and 63 outbound) and 145 total two-way trips (79 inbound and 66 outbound) during the morning and afternoon peak hours, respectively.

Auto Mode Assessment

Overall, under the existing, future background and future total traffic conditions, the study area intersections are expected to continue operating at generally acceptable levels of service, and the site-generated traffic from the proposed development is anticipated to have a negligible impact on the surrounding road network.

Active Transportation Mode Assessment

Walking

Sidewalks are currently provided along both sides of Wilson Street East along the frontage of the proposed development. A sidewalk is also available on the north side of Academy Street, providing pedestrian connectivity within the surrounding area.

As part of the proposed development, it is recommended that the existing sidewalk along the south side of Academy Street be maintained and enhanced where appropriate to support safe pedestrian movements. In addition, sidewalks will be provided along the internal private access driveways to facilitate pedestrian circulation within the site.

The main entrances of the proposed building are oriented toward Wilson Street East and Academy Street, where appropriate, to promote convenient pedestrian access to and from the surrounding sidewalk network.

Cycling

Currently, unsigned bicycle routes exist along Wilson Street East between Halson Street and Rousseaux Street, and designated bike lanes are provided along portions of Wilson Street East south of Halson Street and north of Rousseaux Street. Additional unsigned bicycle routes are present along Sulphur Springs Road / Church Street and other collector and local streets within the area. There are also multi-use trails located within the broader area, providing additional cycling and recreational opportunities.

The proposed development will provide approximately 190 bicycle parking spaces, which will support cycling as an alternative mode of transportation and encourage residents and visitors to utilize the existing cycling facilities in the area.

Transit Mode Assessment

The analysis indicates that the transit passenger demands generated by the proposed development per transit vehicle are very low (at most 2 passengers per transit vehicle). As such, the proposed development impact on transit service is negligible, and no improvements are required. In reality, some passengers could be bunched together during the peak 15 minutes, instead of spreading during the entire peak hour. Even if this is the case, our estimates indicate that the demand per vehicle is extremely low and can be accommodated without the need for additional transit vehicles or improvements during both the morning and afternoon peak periods.

Vehicle/Bicycle Parking Review

Based on the City's By-Law No. 05-200, a total of 234 parking spaces (including retail, resident, and visitor parking spaces) are required for the proposed development. It is our understanding that the proposed development will provide a total of 263 parking spaces, which meets the requirement.

Based on the City's By-Law No. 05-200, a total of 61 bicycle long-term spaces and 8 bicycle short-term spaces are required for the proposed development. It is our understanding that the proposed development will provide a total of 190 bicycle parking spaces, which meets the requirement.

Transportation Demand Management Measures and Incentives

The Report identifies and recommends appropriate Transportation Demand Management measures and incentives to support active transportation and transit, to meet the objectives and requirements in the City of Hamilton's TDM for Development Report (June, 2015). AutoTURN software was used to assess the turning movement requirements for garbage pick-up, delivery, and passenger vehicles accessing the site via Academy Street, as well as the proposed loading area and internal circulation to the underground parking garage. The analysis demonstrates that all vehicles can safely complete the required turning maneuvers without conflict with site elements or surrounding infrastructure

Loading Requirement

The proposed development will provide one loading space.

Study Conclusions and Recommendations

Based on the findings and conclusions of this study, the following recommendations are provided:

- The proposed development implements the TDM measures and incentives identified in this report to support active transportation and transit and to reduce the number of single-occupant-vehicle trips to and from the proposed development.
- The installation of speed cushions per the traffic calming assessment along Academy Street
- No additional physical improvements for the area at this time to accommodate the proposed development, under the future background and future total conditions.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

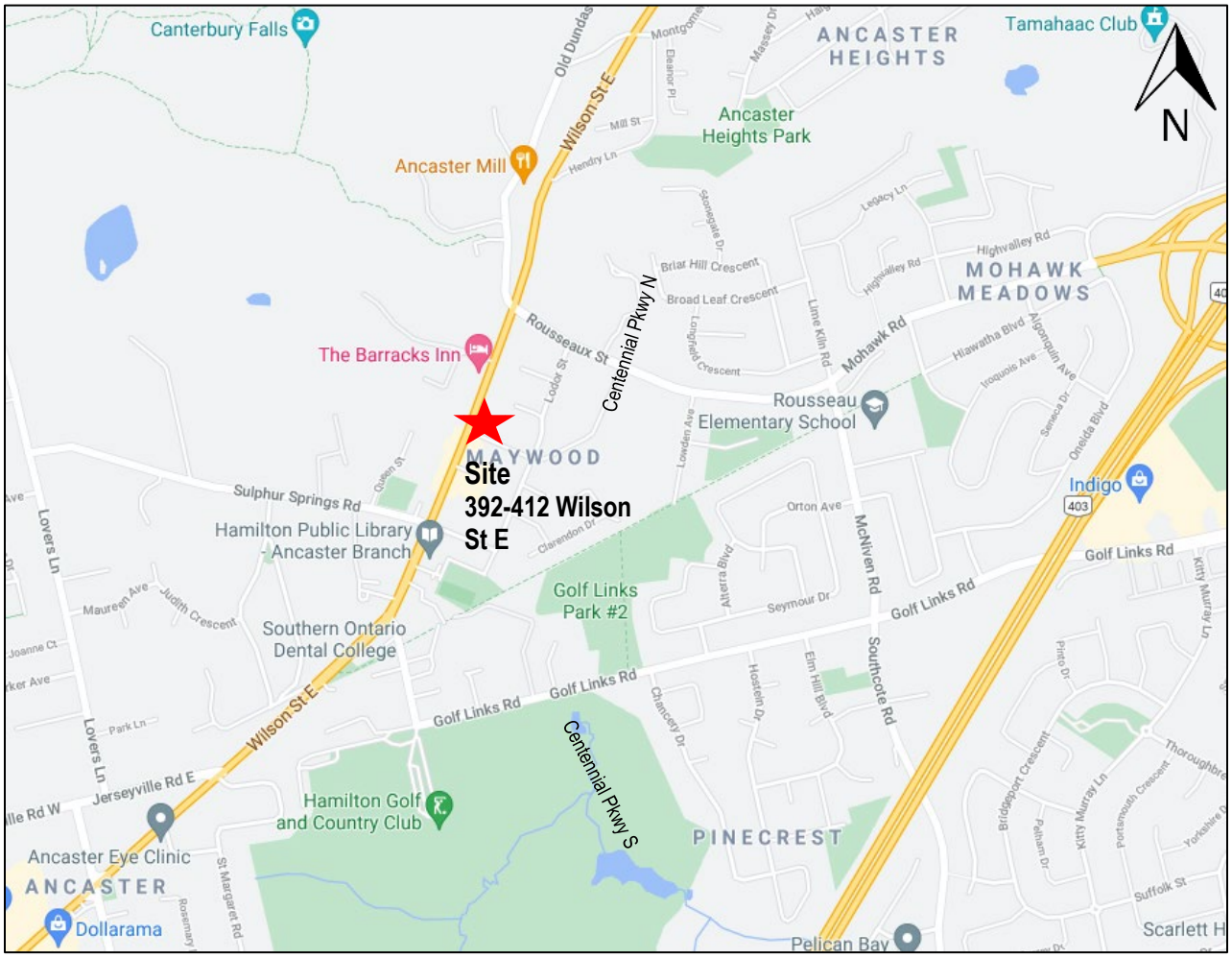
APPENDICES

1.0 INTRODUCTION

Nextrans Consulting Engineers (A Division of NextEng Consulting Group Inc.) was retained by Wilson St. Ancaster Inc. (the 'Client') to undertake a Transportation Impact Study in support of Urban Hamilton Official Plan Amendment and Zoning By-law Amendment Applications for a proposed mixed-use residential development. The subject site is located at 392-412 Wilson Street E, southeast corner of Wilson Street E and Academy Street, in the City of Hamilton.

The location of the proposed development is illustrated in **Figure 1**.

Figure 1 – Proposed Development Location



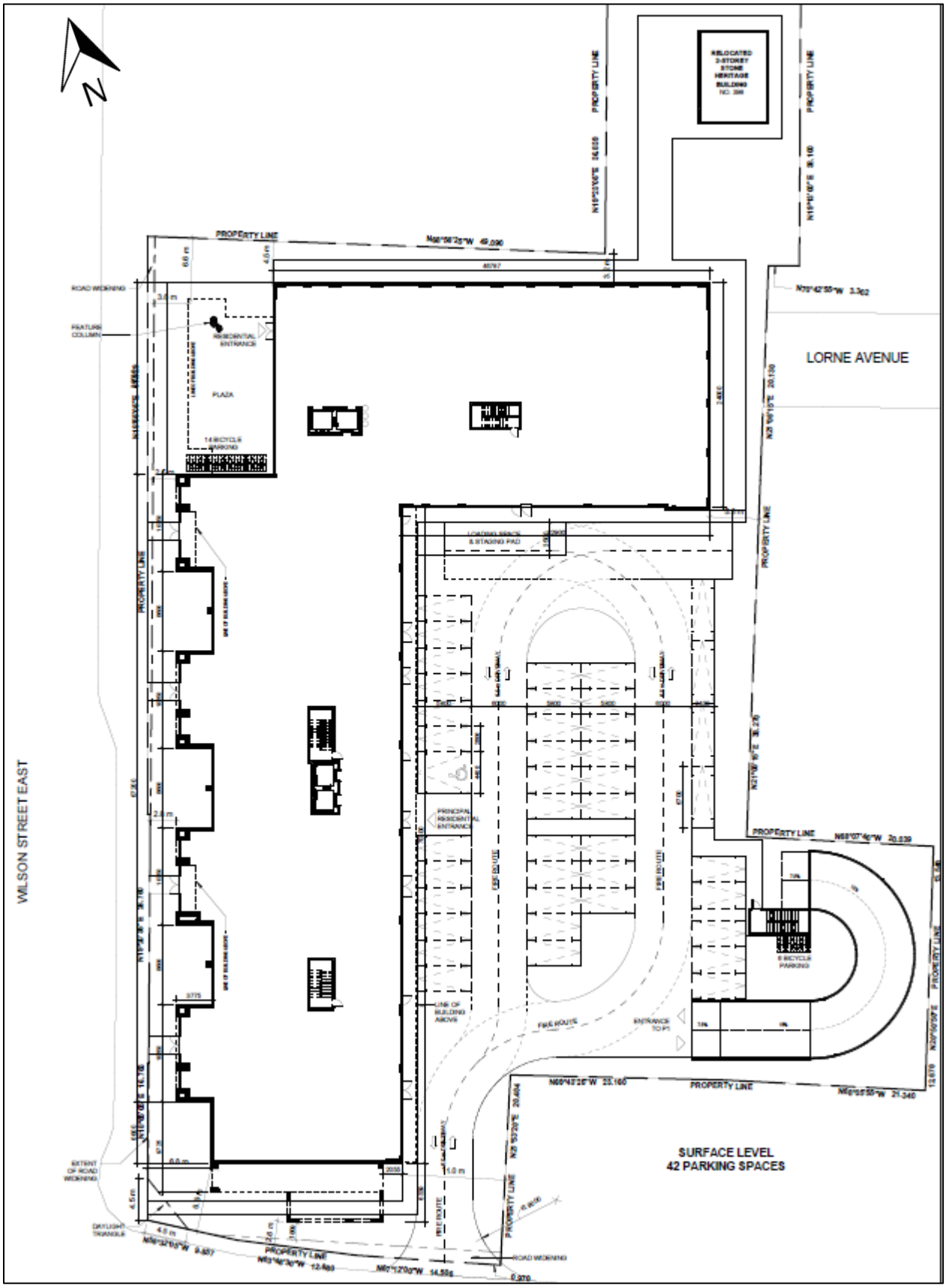
Source: Google Map

Currently, the subject lands are occupied by a two-story building and a parking lot to the south and vacant to the north. The existing building will be demolished. The proposed development consists of an 8-storey building with 118 residential dwelling units and 1,475 m^2 of ground-floor retail GFA.

The proposed development will provide 263 vehicle parking spaces and 190 bicycle parking spaces. The proposed site plan is illustrated in **Figure 2**.

Access to the subject site is proposed through a full movement driveway via Academy Street.

Figure 2 – Proposed Site Plan



Source: SRN Architects Inc., dated 2025-06-10

2.0 EXISTING TRAFFIC CONDITIONS

2.1. Existing Road Network

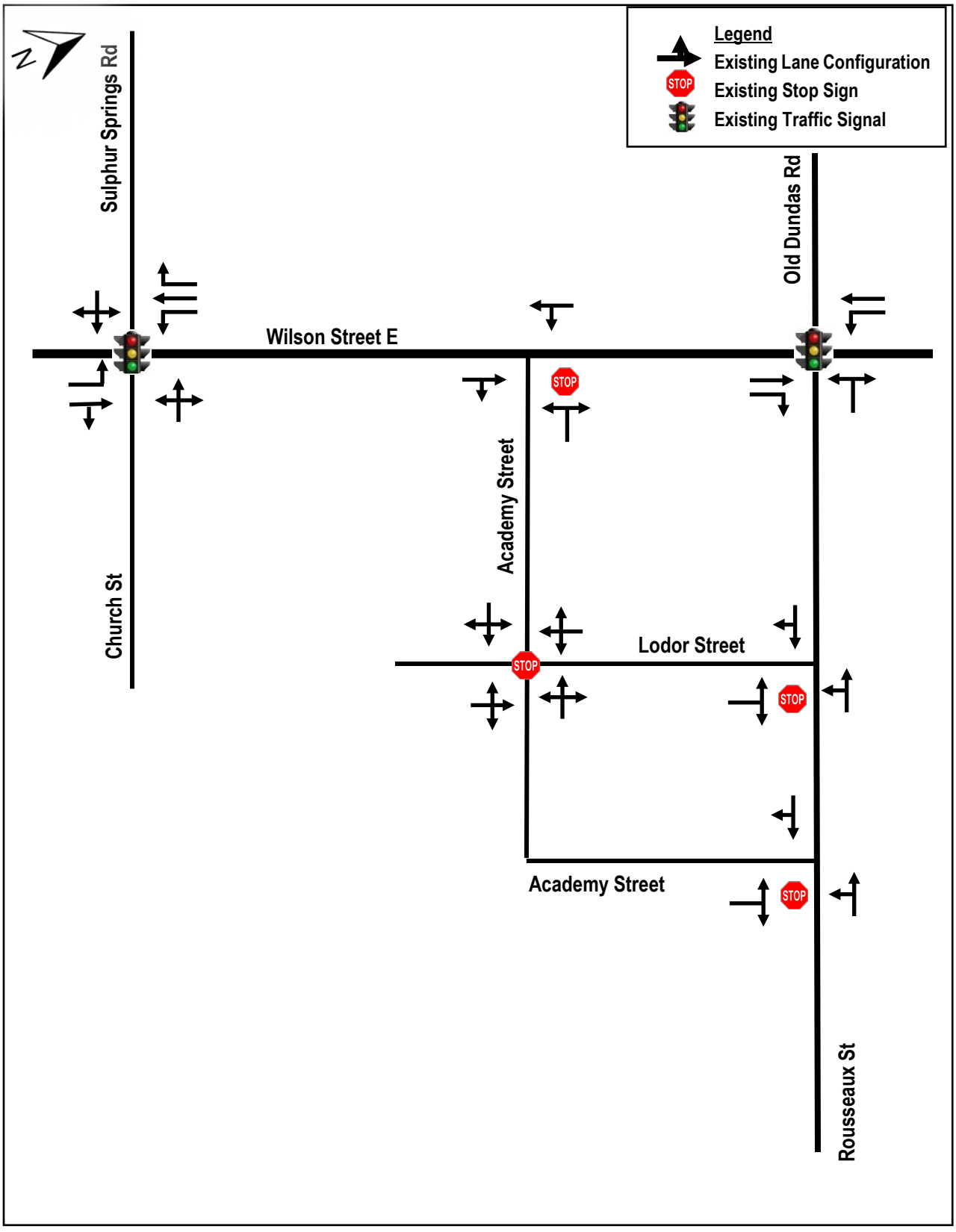
As indicated, the subject site is located at 392-412 Wilson Street E, southeast corner of Wilson Street E and Academy Street, in the City of Hamilton. The description of the existing road network in the study area is summarized in **Table 1** below.

Table 1 – Summary of the Existing Road Network in the Study Area

Road Name	Jurisdiction	Number of Lanes	Speed	Road Type	Sidewalk/Cycling
Wilson Street E	City of Hamilton	2	50 km/h (unposted)	Arterial	Sidewalks on both sides of Wilson Street E
Rousseaux Street/ Old Dundas Road	City of Hamilton	2	50 km/h (unposted)	Rural Roadway	The sidewalk on both sides of Rousseaux Street and the east side of Old Dundas Road
Sulphur Spring Road/ Church Street	City of Hamilton	2	50 km/h (unposted)	Urban Roadway	Sidewalks on both sides of Sulphur Springs Road and the east side of Church Street
Academy Street	City of Hamilton	2	40 km/h (posted)	Local	Sidewalks on the south side of Academy Street
Lodor Street	City of Hamilton	2	40 km/h (posted)	Local	Sidewalks on the north side of Lodor Street

Figure 3 illustrates the existing lane configurations and traffic control devices for the intersections considered in the analysis.

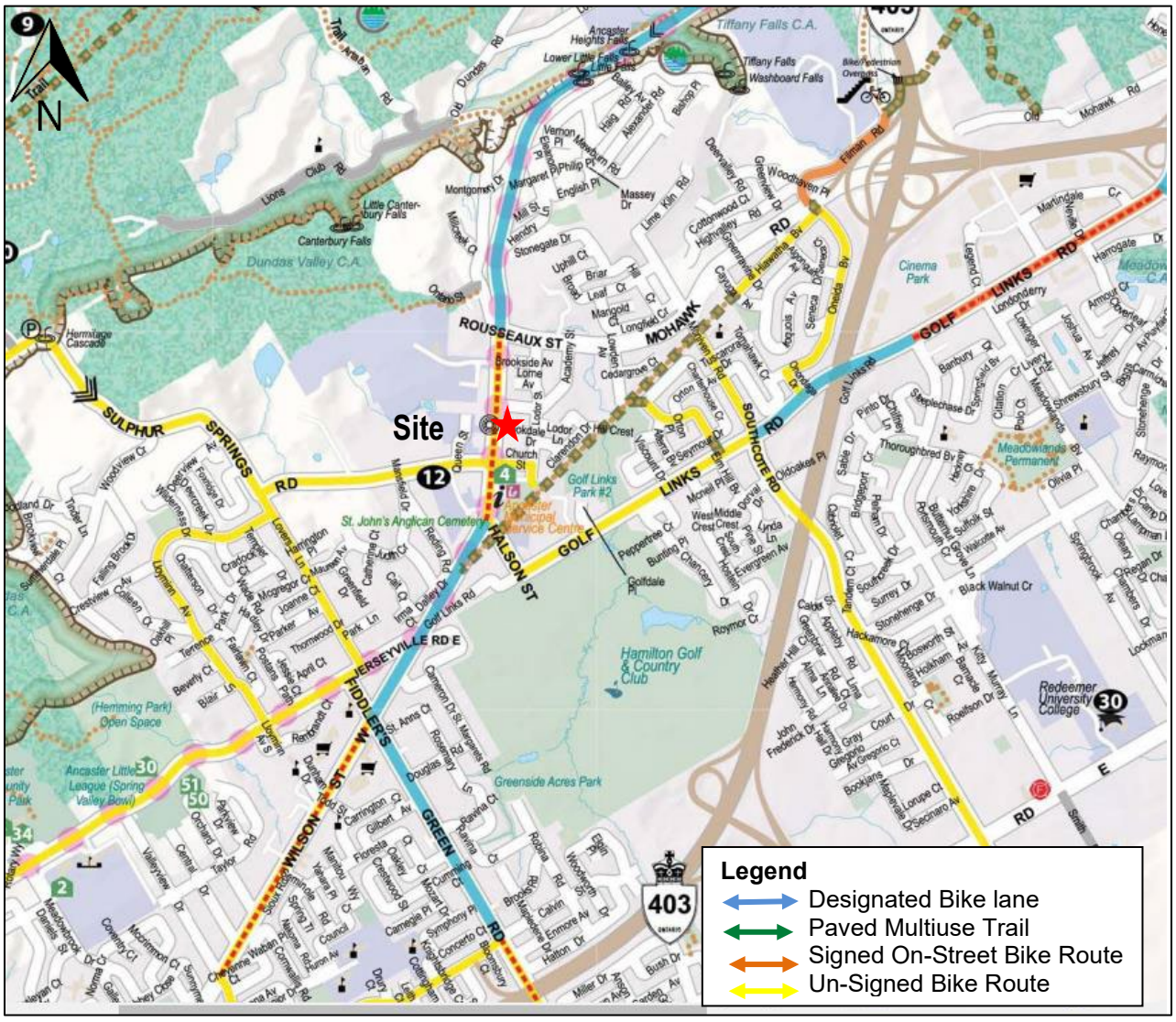
Figure 3 – Existing Lane Configuration and Traffic Control



2.2. Existing Active Transportation Network

Figure 4 illustrates the existing active transportation network in the study area.

Figure 4 – Existing Active Transportation Network in the Study Area



Source: City of Hamilton Cycling Map

2.3. Existing Active Transportation Assessment

Walking

Sidewalks are currently provided along both sides of Wilson Street E along the frontage of the proposed development. Sidewalks are also available on the east side of Academy Street, the west side of Lodor Street, both sides of Sulphur Springs Road, both sides of Rousseaux Street, and the east side of Old Dundas Road. In addition, sidewalks are generally in good condition; therefore, it is Nextrans' opinion that no improvements to the sidewalk network are required at this time.

Cycling

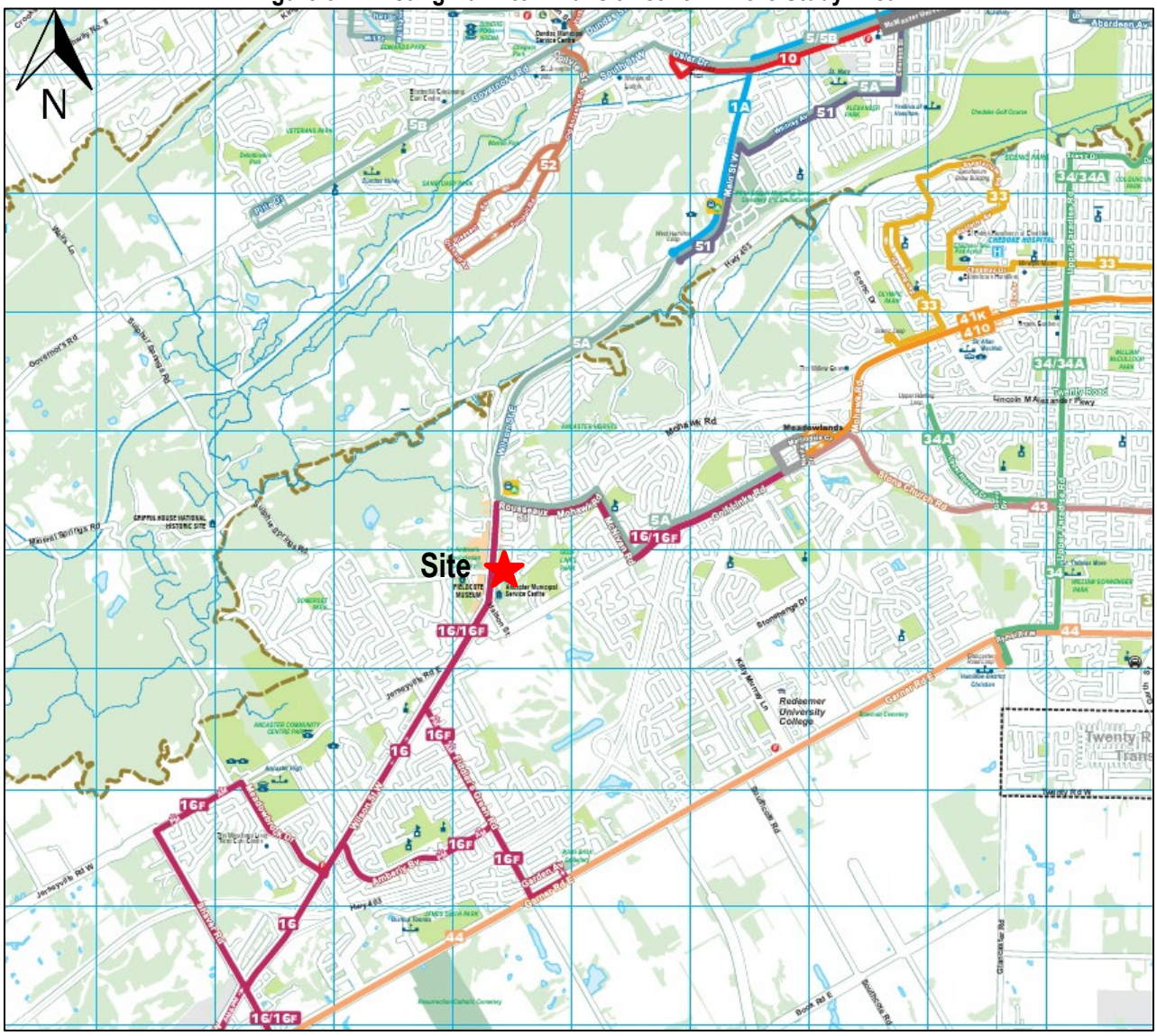
Currently, there is an unsigned bike route along Wilson Street E from Halson Street and Rousseaux Street, and designated bike lanes along Wilson Street E from Halson Street to the south and Rousseaux Street to the north. There are unsigned bicycle routes along Sulphur Springs Road/ Church Street and other collector and local streets in the area. There are also multi-use trails in the area.

It is Nextrans' opinion that the cycling network in the area could be improved in the future, especially along Wilson Street East, and Academy Street, to encourage more cycling trips to and from this area. These cycling facilities can be implemented as part of the future capital projects by the City of Hamilton. These facilities are beyond the scope of this Study.

2.4. Existing Hamilton Transit (HSR) System

The area is currently serviced by four existing HSR Transit Bus Routes 16 Ancaster and 5 Delaware. **Figure 5** illustrates the existing HSR Transit Bus Routes in the study area.

Figure 5 – Existing Hamilton Transit Network in the Study Area



Source: Hamilton Transit website (as of January 2025)

The proposed development is located adjacent to the existing transit stops located at the Wilson Street East/Academy intersection for the HSR Transit Bus Route 16 Ancaster, and about 350 m to the existing transit stops located at Wilson

Street East/Rousseaux Street intersection for the HSR Transit Bus Route 5 Delaware. It is Nextrans' opinion that the proposed development will contribute to a healthy transit ridership for the existing Hamilton transit system in the area. Below are the bus route descriptions based on the information provided on the Hamilton Transit Website (https://www.hamilton.ca/hsr-bus-schedules-fares):

- **Route 16 – Ancaster** provides local transit service within the Ancaster area, generally operating in an east–west direction between Meadowlands Transit Terminal and the commercial area near Wilson Street and Garner Road. The route connects residential neighbourhoods with nearby retail and transit hubs, providing access to other HSR services at Meadowlands Terminal. Service typically operates six days per week from early morning until late evening, with approximately 30-minute headways during weekday peak periods and weekend peak periods.
- **Route 5 – Delaware** is an east–west corridor route that connects west Hamilton and Dundas through the downtown core to east Hamilton and Stoney Creek. The route serves several key destinations, including McMaster University, downtown Hamilton, and major residential and commercial areas along the corridor. Service typically operates seven days per week from early morning until late evening, with approximately 15-minute headways during weekday peak periods and weekend peak periods.

2.3. Existing Traffic Volumes

Existing traffic volumes at the study area intersections were surveyed by Spectrum on Thursday, June 26, 2025, from 7:00 am to 10:00 am and 4:00 pm to 7:00 pm, for the following intersections:

- Wilson Street East and Academy Street (unsignalized)
- Wilson Street East and Sulphur Springs Road/Church Street (signalized)
- Wilson Street East and Rousseaux Street/Old Dundas Road (signalized)
- Rousseaux Street and Academy Street (unsignalized)
- Academy Street and Lodor Street (unsignalized)
- Rousseaux Street and Lodor Street (unsignalized**)** are estimated based on existing traffic counts.

Existing turning movement counts are summarized in **Appendix A**. The existing volumes are illustrated in **Figure 6.**

2.4. Existing Traffic Assessment

The existing volumes in **Figure 6** were analyzed using Synchro Version 11 software based on HCM 2000 methodology. It should be noted that the printouts for signalized intersections are based on Synchro so that queues and more detailed information are provided.

The signal timing plans for the signalized intersections were obtained from the City of Hamilton and incorporated into the analysis. The results are provided in **Appendix B** and summarized in **Table 2**.

Overall, the study area operates at acceptable levels of service under existing conditions, with most intersections performing at LOS A–C during both peak hours.

The signalized intersections along Wilson Street East generally operate well overall. Wilson Street East & Rousseaux Street / Old Dundas Road operates at LOS B in the AM peak hour and LOS D in the PM peak hour; however, the southbound left-turn movement experiences LOS F during the PM peak hour, indicating higher delay and queue for that movement. Wilson Street East & Sulphur Springs Road / Church Street operates at LOS B in both peak hours, with most movements performing efficiently.

The unsignalized intersections within the study area generally operate at LOS A–C with minimal delays. An exception occurs at Rousseaux Street & Lodor Street, where the northbound left/right movement operates at LOS F during the AM peak hour, reflecting higher delay for minor-street traffic.

Overall, aside from these localized movement constraints, the intersections are operating at acceptable levels of service under existing traffic conditions.

Table 2 – Existing Levels of Service

Intersection	Movement	Weekday AM Peak Hour				Weekday PM Peak Hour			
		LOS (v/c)		Delay (s)	95th Queue (m)	LOS (v/c)		Delay (s)	95th Queue (m)
Wilson Street E & Rousseaux St/Old Dundas Rd (Signalized)	**OVERALL**	B	0.68	12.8		D	1.00	36.6	
	WB – L	C	0.69	33.1	60.3	C	0.75	30.6	77.3
	WB – R	B	0.52	10.4	15.3	B	0.35	11.4	16.6
	NB – T	A	0.34	8.0	51.2	B	0.34	11.0	54.4
	NB – R	A	0.23	7.2	11.1	B	0.23	10.0	13.8
	SB – L	B	0.68	16.5	98.3	F	1.15	107.0	188.6
	SB – T	A	0.19	6.9	27.9	B	0.35	11.3	56.4
Wilson Street E & Sulphur Springs Road/ Church St (Signalized)	**OVERALL**	B	0.59	15.4		B	0.61	15.4	
	EB – LTR	D	0.79	43.5	61.1	D	0.79	42.9	62.8
	WB – LTR	C	0.15	26.2	15.3	C	0.29	27.4	23.9
	NB – L	A	0.07	5.9	7.1	A	0.10	6.3	7.3
	NB – TR	A	0.51	9.7	87.2	B	0.54	10.2	95.1
	SB – L	A	0.02	5.6	2.2	A	0.03	5.6	2.8
	SB – T	A	0.34	7.7	50.9	A	0.53	10.0	91.9
	SB - R	A	0.05	5.7	5.5	A	0.11	6.1	10.8
Wilson Street E/ Academy St (unsignalized)	WB – LR	B	0.04	14.1	1.0	B	0.04	14.6	1.0
	NB – TR	A	0.45	0.0	0.0	A	0.46	0.0	0.0
	SB - LT	A	0.00	9.5	0.1	A	0.01	9.6	0.3
Rousseaux St/ Lodor St (unsignalized)	WB -LT	A	0.00	0.00	0.00	A	0.09	2.6	2.2
	NB -LR	F	1.08	152.1	70.0	C	0.01	16.4	0.3
Rousseaux St/ Academy St (unsignalized)	WB – LT	A	0.05	1.5	1.3	A	0.13	3.9	3.5
	NB - LR	C	0.13	16.1	3.6	C	0.19	22.2	5.5
Academy Street/ Lodor St (unsignalized)	EB – LTR	A	0.02	7.0	-	A	0.07	7.4	-
	WB- LTR	A	0.05	7.4	-	A	0.07	7.7	-
	NB – LTR	A	0.04	6.7	-	A	0.07	7.1	-
	SB - LTR	A	0.02	7.1	-	A	0.03	7.3	-

3.0 TRANSPORTATION PLANNING CONTEXT IN THE AREA

3.1. Existing Land Use Context and Amenities

Based on Nextran's comprehensive review of the existing land uses in the area indicates that:

- Existing residential neighbourhoods are located immediately east of the subject site. The majority is low-rise housing.
- The existing retail stores are located immediately to the south of the subject site,
- Hamilton Public Library, Ancaster Community Services – Ancaster Branch is located at the Wilson St/ Sulphur Springs Road intersection
- Ancaster Town Plaza (shopping mall) is located about 1.48 km to the south of the subject site, at Wilson Street West and Fiddlers Green Road intersection.

It is NexTrans's opinion that the community is complete with various amenities to support the future residents in the proposed development.

3.2. Transportation Planning Context

The existing area today is developed based on the traditional urban sprawl planning with low-rise residential and big box shopping centers, where residents will have to drive to school, work, or shopping. It is anticipated that the majority of the modes of transportation in this area would be driving private cars.

It is Nextrans' opinion that the proposed development, a compact development that is different from traditional urban sprawl, will contribute to a healthy transit ridership for the existing Hamilton transit system in the area and provide more housing options for the residents. This type of development should be encouraged and embraced in the City of Hamilton.

As part of this study, Nextrans will provide appropriate recommendations that the proposed development can implement to continue to contribute positively to the area and community.

4.0 FUTURE BACKGROUND CONDITIONS

4.1. Analysis Horizon

For the purposes of this assessment, it is assumed that the proposed development will be completed by 2031 and therefore a five-year horizon (2036) has been carried out for the study analysis. This provision is consistent with the City of Hamilton's Traffic Impact Study Guidelines.

4.2. Background Development Applications

Based on information provided by the city, the following development has been identified within the study area and has been included in the background traffic scenario:

- **442–462 Wilson Street East**: Proposed development consisting of 158 residential units and approximately 650 m² of commercial space within a mid-rise building. The site is proposed to be served by two access points, including one right-in/right-out/left-in access on Rousseaux Street and one full-movement access on Wilson Street East.

Other developments within the broader area are anticipated to generate nominal additional traffic, which will be accounted for through the application of a general background traffic growth rate. The background traffic volumes, including the above development, are illustrated in **Figure 7**.

Email correspondence with the city confirming the background developments to be included in the analysis is provided in **Appendix C**.

4.3. Background Corridor Growth

Based on information provided by the City, an annual background traffic growth rate of 2%, compounded, has been applied to existing traffic volumes to estimate future background traffic conditions for the study horizon years.

The projected background traffic volumes are illustrated in:

- **Figure 8** – 2031 Growth Traffic Volumes
- **Figure 9** – 2036 Growth Traffic Volumes

Email correspondence confirming the applicable background traffic growth rate is included in **Appendix C**.

4.4. Future 2031 Background Traffic Assessment

The estimated 2031 future background traffic volumes are illustrated in **Figure 10** and were analyzed using Synchro Version 11 software. The detailed calculations are provided in **Appendix D** and summarized in **Table 3**.

Under the 2031 future background traffic conditions, the study area intersections generally continue to operate at acceptable levels of service, with most movements performing at LOS A–C during both peak hours.

The signalized intersections along Wilson Street East remain stable overall. Wilson Street East & Rousseaux Street / Old Dundas Road operates at LOS B in the AM peak hour and LOS D in the PM peak hour. However, the southbound left-turn movement continues to experience capacity constraints during the PM peak hour (LOS F), with higher delay and queue lengths. Wilson Street East & Sulphur Springs Road / Church Street continues to operate at LOS B overall in both peak periods.

The unsignalized intersections generally operate efficiently with LOS A–C and minimal delay. Higher delays remain for minor-street movements at Rousseaux Street & Lodor Street during the AM peak hour, while other intersections continue to function satisfactorily.

Overall, aside from these localized movement constraints, the study intersections are expected to continue operating satisfactorily under 2031 background traffic conditions.

Table 3 – 2031 Future Background Levels of Service

Intersection	Movement	Weekday AM Peak Hour				Weekday PM Peak Hour			
		LOS (v/c)		Delay (s)	95th Queue (m)	LOS (v/c)		Delay (s)	95th Queue (m)
Wilson Street E & Rousseaux St/Old Dundas Rd (Signalized)	**OVERALL**	B	0.71	14.4		D	1.07	46.7	
	WB – L	D	0.68	35.0	69.8	C	0.78	30.9	83.0
	WB – R	B	0.53	11.7	15.8	B	0.36	12.2	17.4
	NB – T	A	0.36	9.1	58.6	B	0.36	12.0	58.9
	NB – R	A	0.24	8.1	11.7	B	0.23	10.8	14.6
	SB – L	B	0.73	20.0	113.6	F	1.26	150.2	199.8
	SB – T	A	0.20	7.8	31.4	B	0.37	12.2	60.0
Wilson Street E & Sulphur Springs Road/ Church St (Signalized)	**OVERALL**	B	0.60	15.6		B	0.63	15.9	
	EB – LTR	D	0.80	44.1	62.9	D	0.80	43.7	64.7
	WB – LTR	C	0.16	26.1	15.5	C	0.29	27.1	24.4
	NB – L	A	0.07	6.0	7.3	A	0.10	6.5	7.6
	NB – TR	B	0.53	10.1	91.6	B	0.57	10.9	102.3
	SB – L	A	0.02	5.6	2.2	A	0.03	5.8	2.8
	SB – T	A	0.36	8.0	54.8	B	0.56	10.5	98.4
	SB - R	A	0.06	5.8	5.6	A	0.12	6.2	11.4
Wilson Street E/ Academy St (unsignalized)	WB – LR	B	0.04	14.4	1.0	C	0.04	15.0	1.1
	NB – TR	A	0.46	0.0	0.0	A	0.48	0.0	0.0
	SB - LT	A	0.01	9.7	0.1	A	0.01	9.8	0.3
Rousseaux St/ Lodor St (unsignalized)	WB -LT	A	0.00	0.00	0.0	A	0.09	3.0	2.4
	NB -LR	F	1.23	211.6	82.5	C	0.01	17.2	0.3
Rousseaux St/ Academy St (unsignalized)	WB – LT	A	0.05	1.7	1.4	A	0.14	4.5	3.8
	NB - LR	C	0.14	17.0	4.0	C	0.21	24.1	6.2
Academy Street/ Lodor St (unsignalized)	EB – LTR	A	0.02	7.0	-	A	0.07	7.4	-
	WB- LTR	A	0.06	7.4	-	A	0.07	7.7	-
	NB – LTR	A	0.04	6.8	-	A	0.07	7.1	-
	SB - LTR	A	0.02	7.1	-	A	0.03	7.3	-

4.5. Future 2036 Background Traffic Assessment

The estimated 2036 future background traffic volumes are illustrated in **Figure 11** and were analyzed using Synchro Version 11 software. The detailed calculations are provided in **Appendix D** and summarized in **Table 4**.

Under the 2036 future background traffic conditions, the study area intersections generally continue to operate at acceptable levels of service, with most movements performing at LOS A–C during both peak hours.

The signalized intersections along Wilson Street East remain operational overall. Wilson Street East & Rousseaux Street / Old Dundas Road operates at LOS B in the AM peak hour and LOS D in the PM peak hour. However, the southbound left-turn movement continues to experience capacity constraints during the PM peak hour (LOS F), with increased delay and queue lengths. Wilson Street East & Sulphur Springs Road / Church Street operates at LOS D in the AM peak hour and LOS B in the PM peak hour, with most individual movements performing at acceptable levels.

The unsignalized intersections generally operate efficiently with LOS A–C and low delays. Higher delays remain for the minor-street movement at Rousseaux Street & Lodor Street during the AM peak hour, while the remaining intersections continue to function satisfactorily.

Overall, aside from these localized movement constraints, the intersections are expected to continue operating satisfactorily under 2036 background traffic conditions.

Table 4 – 2036 Future Background Levels of Service

Intersection	Movement	Weekday AM Peak Hour				Weekday PM Peak Hour			
		LOS (v/c)		Delay (s)	95th Queue (m)	LOS (v/c)		Delay (s)	95th Queue (m)
Wilson Street E & Rousseaux St/Old Dundas Rd (Signalized)	**OVERALL**	B	0.74	15.0		D	1.11	53.5	
	WB – L	D	0.69	35.2	71.2	C	0.78	31.1	84.7
	WB – R	B	0.54	12.1	16.1	B	0.37	12.5	17.7
	NB – T	A	0.37	9.4	61.4	B	0.37	12.4	61.0
	NB – R	A	0.24	8.3	12.0	B	0.24	11.0	14.8
	SB – L	C	0.76	22.2	119.8	F	1.32	178.6	207.2
	SB – T	A	0.21	7.9	32.7	B	0.38	12.6	62.4
Wilson Street E & Sulphur Springs Road/ Church St (Signalized)	**OVERALL**	B	0.62	16.1		B	0.65	16.4	
	EB – LTR	D	0.81	44.6	66.3	D	0.81	44.0	68.5
	WB – LTR	C	0.16	25.7	15.8	C	0.29	26.8	24.9
	NB – L	A	0.08	6.3	7.4	A	0.11	6.8	7.8
	NB – TR	B	0.55	10.6	95.1	B	0.59	11.4	106.3
	SB – L	A	0.02	5.8	2.2	A	0.03	6.0	2.8
	SB – T	A	0.37	8.4	56.3	B	0.58	11.1	102.1
	SB - R	A	0.06	6.0	5.7	A	0.12	6.5	11.7
Wilson Street E/ Academy St (unsignalized)	WB – LR	A	0.04	14.7	1.1	C	0.04	15.3	1.1
	NB – TR	A	0.47	0.0	0.0	A	0.49	0.0	0.0
	SB - LT	A	0.01	9.8	0.1	A	0.01	10.0	0.3
Rousseaux St/ Lodor St (unsignalized)	WB -LT	A	0.00	0.00	0.0	A	0.09	3.2	2.5
	NB -LR	F	1.33	254.4	90.8	C	0.01	17.6	0.3
Rousseaux St/ Academy St (unsignalized)	WB – LT	A	0.06	1.8	1.4	A	0.14	4.9	4.0
	NB - LR	C	0.15	17.4	4.2	D	0.22	25.2	6.6
Academy Street/ Lodor St (unsignalized)	EB – LTR	A	0.02	7.0	-	A	0.07	7.4	-
	WB- LTR	A	0.06	7.4	-	A	0.07	7.7	-
	NB – LTR	A	0.04	6.8	-	A	0.08	7.2	-
	SB - LTR	A	0.02	7.1	-	A	0.03	7.3	-

5.0 SITE TRAFFIC

5.1. Proposed Development

As indicated, currently, the subject land is occupied by a two-story building and a parking lot to the south and vacant to the north. The proposed development consists of a mixed-use 8-storey building with 118 dwelling units and 1,475 m^2 of ground-related retail gross floor area.

The 2022 Transportation Tomorrow Survey (TTS) and the *Trip Generation Manual, 12th Edition* published by the Institute of Transportation Engineers (ITE) and information was reviewed to estimate trip distribution and trip generation for the proposed development.

5.2. Site Trip Generation

The trip generation forecasts were undertaken using the information contained in the *Trip Generation Manual, 12th Edition* published by the Institute of Transportation Engineers (ITE).

For this assessment, the ITE Land Use Codes (LUC) 221 "Multifamily Housing (Mid-Rise) General Urban/Suburban" and LUC 822 "Strip Retail Plaza (<40k) General Urban/Suburban" average rates have been utilized for the proposed development.

The site trip generation is summarized in **Table 4**.

Table 5 – Site Traffic Trip Generation

ITE Land Use	Magnitude (units/ft²)	Parameters	Morning Peak Hour			Afternoon Peak Hour		
			In	Out	Total	In	Out	Total
Multifamily Housing (Mid-Rise) LUC 221 General Urban/Suburban	118	Trip Rates (Average)	0.087	0.29	0.38	0.243	0.137	0.38
		Total Trips	**10**	**35**	**45**	**29**	**16**	**45**
Strip Retail Plaza(<40k) LUC 822 General Urban/Suburban	15,877	Trip Rates (Average)	2.162	1.769	3.93	3.145	3.145	6.29
		Total Trips	**34**	**28**	**62**	**50**	**50**	**100**
Total Trips			***44***	***63***	***107***	***79***	***66***	***145***

The proposed development is expected to generate 107 total two-way trips (44 inbound and 63 outbound) and 145 total two-way trips (79 inbound and 66 outbound) during the morning and afternoon peak hours, respectively.

5.3. Site Trip Distribution Based on 2022 TTS Data

The 2022 Transportation Tomorrow Survey (TTS) data was reviewed for Traffic Zone 6052 in order to estimate the general trip distribution for the proposed development.

Table 5 summarizes the general distribution based on the 2022 TTS data for the proposed development, with **Table 6** summarizing the site traffic assignment. It should be noted that the auto-site trip distribution and assignment have taken into consideration the TTS information, existing intersection operations, and capacity constraints. The detailed 2022 TTS data extraction is included in **Appendix E**.

Table 6 – Trip Distribution for Residential Component

Time	Toronto	Peel Region	Halton Region	City of Hamilton	Waterloo Region	Niagara Region
AM	1%	7%	0%	80%	10%	2%
PM	0%	6%	11%	80%	1%	2%

Table 7 – Site Trip Distribution for Residential Component

General Direction (To/From)	AM	PM
North (Wilson Street E, Academy St)	10%	10%
South (Wilson Street E, Academy St)	20%	20%
East (Wilson Street E, Rousseaux, Academy St)	33%	42%
West (Wilson Street E)	37%	28%
Total	***100%***	

Figure 12 illustrates the proposed development generated traffic volumes for the proposed development.

6.0 FUTURE TOTAL TRAFFIC CONDITIONS

6.1. Future 2031 Total Traffic Assessment for Auto Mode

The estimated future 2031 total traffic volumes (future 2031 background traffic volumes plus site-generated traffic volumes) are illustrated in **Figure 13** and were analyzed using Synchro Version 11 software. The detailed calculations are provided in **Appendix F** and summarized in **Table 7**.

Table 8 – 2031 Future Total Levels of Service

Intersection	Movement	Weekday AM Peak Hour				Weekday PM Peak Hour			
		LOS (v/c)		Delay (s)	95th Queue (m)	LOS (v/c)		Delay (s)	95th Queue (m)
Wilson Street E & Rousseaux St/Old Dundas Rd (Signalized)	**OVERALL**	B	0.73	14.8		D	1.11	52.1	
	WB – L	D	0.69	35.0	70.4	C	0.78	31.1	84.2
	WB – R	B	0.53	11.8	16.0	B	0.36	12.3	17.6
	NB – T	A	0.38	9.4	63.1	B	0.39	12.5	63.5
	NB – R	A	0.24	8.2	11.8	B	0.23	10.9	14.7
	SB – L	C	0.75	21.9	117.4	F	1.32	176.0	203.2
	SB – T	A	0.21	8.0	33.8	B	0.40	12.7	65.9
Wilson Street E & Sulphur Springs Road/ Church St (Signalized)	**OVERALL**	B	0.61	15.6		B	0.65	16.0	
	EB – LTR	D	0.80	44.1	62.9	D	0.80	43.7	64.7
	WB – LTR	C	0.16	26.1	15.5	C	0.29	27.1	24.4
	NB – L	A	0.08	6.1	7.4	A	0.11	6.6	7.6
	NB – TR	B	0.55	10.4	96.1	B	0.59	11.2	108.6
	SB – L	A	0.02	5.7	2.2	A	0.03	5.8	2.8
	SB – T	A	0.38	8.3	58.6	B	0.57	10.8	103.3
	SB - R	A	0.06	5.8	5.9	A	0.12	6.2	11.6
Wilson Street E/ Academy St (unsignalized)	WB – LR	C	0.16	16.1	4.5	C	0.16	17.1	4.4
	NB – TR	A	0.47	0.0	0.0	A	0.49	0.0	0.0
	SB - LT	A	0.03	9.9	0.7	B	0.06	10.3	1.6
Rousseaux St/ Lodor St (unsignalized)	WB -LT	A	0.00	0.00	0.00	A	0.09	3.0	2.4
	NB -LR	F	1.23	211.6	82.5	C	0.01	17.2	0.3
Rousseaux St/ Academy St (unsignalized)	WB – LT	A	0.07	2.2	1.8	A	0.17	5.8	5.0
	NB - LR	C	0.21	18.0	6.2	D	0.32	25.7	10.5
Academy Street/ Lodor St (unsignalized)	EB – LTR	A	0.02	7.0	-	A	0.10	7.6	-
	WB- LTR	A	0.07	7.4	-	A	0.10	7.8	-
	NB – LTR	A	0.04	6.8	-	A	0.08	7.3	-
	SB - LTR	A	0.02	7.1	-	A	0.03	7.4	-
Academy Street/ Proposed Site Access (unsignalized)	EB – LT	A	0.02	5.3	0.6	A	0.04	3.9	1.0
	SB - LR	A	0.07	8.9	1.8	A	0.08	9.4	2.1

Under the 2031 future total traffic conditions (background traffic plus site traffic), the study area intersections are expected to continue operating at acceptable levels of service, with most movements performing at LOS A–C during both peak hours.

The signalized intersections along Wilson Street East continue to operate adequately overall. Wilson Street East & Rousseaux Street / Old Dundas Road operates at LOS B in the AM peak hour and LOS D in the PM peak hour, with the southbound left-turn movement continuing to experience LOS F during the PM peak hour, consistent with the background conditions. Wilson Street East & Sulphur Springs Road / Church Street operates at LOS B overall in both peak periods, with most movements functioning efficiently.

The unsignalized intersections within the study area continue to operate with LOS A–C and minimal delays, including the proposed site access at Academy Street, which operates at LOS A in both peak hours.

Overall, the addition of traffic from the proposed development does not result in any significant deterioration in intersection operations compared to the background conditions. The results indicate that the proposed development is not expected to have an impact on the operation of the surrounding road network.

6.2. Future 2036 Total Traffic Assessment for Auto Mode

The estimated future 2036 total traffic volumes (future 2036 background traffic volumes plus site-generated traffic volumes) are illustrated in **Figure 14** and were analyzed using Synchro Version 11 software. The detailed calculations are provided in **Appendix F** and summarized in **Table 8**.

Table 9 – 2036 Future Total Levels of Service

Intersection	Movement	Weekday AM Peak Hour				Weekday PM Peak Hour			
		LOS (v/c)		Delay (s)	95th Queue (m)	LOS (v/c)		Delay (s)	95th Queue (m)
Wilson Street E & Rousseaux St/Old Dundas Rd (Signalized)	**OVERALL**	B	0.76	15.2		E	1.15	59.6	
	WB – L	D	0.70	35.3	71.9	C	0.79	31.1	86.1
	WB – R	B	0.55	12.1	16.3	B	0.37	12.7	17.9
	NB – T	A	0.39	9.6	65.6	B	0.40	12.9	66.2
	NB – R	A	0.31	8.9	13.3	B	0.24	11.2	15.0
	SB – L	C	0.79	24.3	123.4	F	1.39	208.3	210.5
	SB – T	A	0.22	8.1	35.0	B	0.41	13.1	68.6
Wilson Street E & Sulphur Springs Road/ Church St (Signalized)	**OVERALL**	B	0.63	16.1		B	0.67	16.5	
	EB – LTR	D	0.81	44.6	66.3	D	0.81	44.0	68.5
	WB – LTR	C	0.16	25.7	15.8	C	0.29	26.8	24.9
	NB – L	A	0.08	6.3	7.5	A	0.12	6.9	7.9
	NB – TR	B	0.57	10.9	99.4	B	0.61	11.9	112.6
	SB – L	A	0.02	5.9	2.2	A	0.03	6.0	2.8
	SB – T	A	0.39	8.6	60.3	B	0.59	11.4	107.3
	SB - R	A	0.06	6.0	6.0	A	0.12	6.5	11.9
Wilson Street E/ Academy St (unsignalized)	WB – LR	C	0.17	16.5	4.8	C	0.16	17.5	4.6
	NB – TR	A	0.49	0.0	0.0	A	0.50	0.0	0.0
	SB - LT	B	0.03	10.0	0.8	B	0.06	10.4	1.7
Rousseaux St/ Lodor St (unsignalized)	WB -LT	A	0.00	0.00	0.00	A	0.09	3.1	2.4
	NB -LR	F	1.33	254.4	90.8	C	0.01	17.2	0.3
Rousseaux St/ Academy St (unsignalized)	WB – LT	A	0.07	2.3	1.9	A	0.18	6.2	5.3
	NB - LR	C	0.22	18.5	6.5	D	0.33	27.1	11.2
Academy Street/ Lodor St (unsignalized)	EB – LTR	A	0.04	7.2	-	A	0.11	7.7	-
	WB- LTR	A	0.07	7.5	-	A	0.11	7.9	-
	NB – LTR	A	0.04	6.8	-	A	0.08	7.3	-
	SB - LTR	A	0.02	7.2	-	A	0.03	7.5	-
Academy Street/ Proposed Site Access (unsignalized)	EB – LT	A	0.02	5.3	0.6	A	0.04	3.9	1.0
	SB - LR	A	0.07	8.9	1.8	A	0.08	9.4	2.1

Under the 2036 future total traffic conditions (background traffic plus site-generated traffic), the intersections within the study area are expected to continue operating at generally acceptable levels of service, with most movements performing at LOS A–C during both peak periods.

The signalized intersections along Wilson Street East continue to function adequately overall. Wilson Street East & Rousseaux Street / Old Dundas Road operates at LOS B in the AM peak hour and LOS E in the PM peak hour. The southbound left-turn movement continues to experience LOS F during the PM peak hour, reflecting higher delay and queue lengths that are consistent with previously identified background conditions. Wilson Street East & Sulphur Springs

Road / Church Street operates at LOS B overall in both peak periods, with the majority of movements continuing to perform efficiently.

The unsignalized intersections within the study area continue to operate with LOS A–C and relatively low delays for most movements. Minor-street approaches at Rousseaux Street & Lodor Street continue to experience higher delays during the AM peak hour, which is typical for unsignalized intersections with lower priority movements.

Overall, the addition of traffic associated with the proposed development results in minimal change to intersection operations compared to the background conditions. The analysis indicates that the proposed development has a negligible impact on the performance of the surrounding road network.

6.3. Sensitive Analysis

Based on the analysis, the northbound movement from the minor road to the major road experiences higher delays during the AM peak hour. It should be noted that the traffic volumes at this intersection were estimated based on the observed traffic counts at the Wilson Street East / Rousseaux Street and Rousseaux Street / Academy Street intersections. As a result, these volumes may not fully represent the actual traffic conditions, particularly given the presence of residential properties along Rousseaux Street between Wilson Street East and Lodor Street, which may generate additional local traffic movements. In particular, the left-turn movement from Lodor Street may be lower in reality than the volumes assumed in the analysis, and therefore the delays experienced by this movement may be somewhat overestimated.

However, NexTrans conducted a sensitivity analysis for this intersection under a worst-case scenario, assuming separate left-turn and right-turn movements on Lodor Street, to assess potential operational conditions and ensure a conservative evaluation of intersection performance.

Table 10 summarises the level of service for the intersection of Lodor Street and Rousseaux Street with improvements.

Table 10 – Future Total Level of Service with Improvements

Intersection	Movement	Weekday AM Peak Hour			
		LOS (v/c)		Delay (s)	95th Queue (m)
Rousseaux St/ Lodor St (unsignalized)	NB -L	F	1.10	222.2	50.9
	NB -R	C	0.23	17.2	6.9

With the proposed improvements, the volume-to-capacity (v/c) ratio improves from 1.23 to 1.10. Although the v/c ratio remains slightly above 1.00, this condition is considered typical for minor-street movements entering a major roadway, where vehicles must wait for acceptable gaps in the major-road traffic stream. Such delays are common at unsignalized intersections and are generally expected under these conditions. NexTrans also conducted a traffic signal warrant analysis for this intersection under the 2036 future total traffic conditions, and the results indicate that the installation of traffic signals is not warranted at this time.

Based on the results of the analysis, the intersection is expected to continue operating within acceptable parameters, and no further improvements are recommended at this time.

6.4. Active Transportation Mode Assessment

Walking

Sidewalks are currently provided along both sides of Wilson Street East along the frontage of the proposed development. A sidewalk is also available on the north side of Academy Street, providing pedestrian connectivity within the surrounding area.

As part of the proposed development, it is recommended that the existing sidewalk along the south side of Academy Street be maintained and enhanced where appropriate to support safe pedestrian movements. In addition, sidewalks will be provided along the internal private access driveways to facilitate pedestrian circulation within the site.

The main entrances of the proposed building are oriented toward Wilson Street East and Academy Street, where appropriate, to promote convenient pedestrian access to and from the surrounding sidewalk network.

Cycling

Currently, unsigned bicycle routes exist along Wilson Street East between Halson Street and Rousseaux Street, and designated bike lanes are provided along portions of Wilson Street East south of Halson Street and north of Rousseaux Street. Additional unsigned bicycle routes are present along Sulphur Springs Road / Church Street and other collector and local streets within the area. There are also multi-use trails located within the broader area, providing additional cycling and recreational opportunities.

The proposed development will provide approximately 190 bicycle parking spaces, which will support cycling as an alternative mode of transportation and encourage residents and visitors to utilize the existing cycling facilities in the area.

6.5. Transit Mode Assessment

6.5.1. Modes of Travel Assessment in the Area

Table 11 summarizes the travel mode split information, based on the review of the 2022 Transportation Tomorrow Survey data, for the traffic zone 6052.

Table 11 – Modes of Travel based on 2022 TTS Data for Traffic Zone 6052

Type	Trips Made by Traffic Zone 6052					
	Auto Driver	Auto Passenger	Taxi Passenger/ Paid Rides	Transit/GO rail	Cycle/E-scooter	Walk
AM Peak Hours	74%	10%	0%	2%	0%	14%
PM Peak Hours	67%	22%	0%	1%	0%	10%

Based on the 2022 Transportation Tomorrow Survey (TTS) data for Traffic Zone 6052, travel within the study area is predominantly automobile-oriented. During the AM peak hour, approximately 74% of trips are made by auto drivers, with an additional 10% as auto passengers, indicating that approximately 84% of trips are automobile-based. Walking accounts for 14% of trips, representing the second most common travel mode during the morning peak period, while transit usage accounts for approximately 2% of trips. No trips were recorded by taxi/paid rides or cycling/e-scooter during the AM peak period.

During the PM peak hour, automobile travel continues to dominate, with 67% of trips made by auto drivers and 22% by auto passengers, resulting in approximately 89% of trips occurring by private vehicle. Walking accounts for 10% of trips, while transit usage represents approximately 1% of trips. Similar to the AM peak period, no trips were recorded by taxi/paid rides or cycling/e-scooter.

6.5.2. Transit Assessment

If a 2% transit modal split is applied to the site trip generation based on 2022 TTS data, the proposed development is expected to generate 2 two-way transit trips (1 inbound and 1 outbound) and 3 two-way transit trips (2 inbound and 1 outbound) during the morning and afternoon peak hours, respectively.

The proposed development is located adjacent to the existing transit stops located at the Wilson Street E and Academy Street intersection for the HSR Transit Bus Routes 16 Ancaster, and about 350m to the HSR Transit Bus Route 5 Delaware.

For this assessment, it is assumed that the majority of the transit customers from the proposed development will take Route 16 to Meadowlands Bus Terminal. **Table 12** summarizes the anticipated ridership forecasts for Route 44.

Table 12 – Future Transit Passenger Demand from the Proposed Development

Transit Route	Weekday AM Peak Hour		Weekday PM Peak Hour	
	Inbound (pass/veh)	Outbound (pass/veh)	Inbound (pass/veh)	Outbound (pass/veh)
Route 16 Northbound	0	1	0	1
Route 16 Southbound	1	0	2	0

As indicated in the table above, the transit passenger demands generated by the proposed development per transit vehicle are very low (at most 2 passengers per transit vehicle per hour). As such, the proposed development impact on transit service is negligible, and no improvements are required.

In reality, some passengers could be bunched together during the peak 15 minutes, instead of spreading during the entire peak hour. Even if this is the case, our estimates indicate that the demand per vehicle is extremely low and can be accommodated without the need for additional transit vehicles or improvements during both the morning and afternoon peak periods.

7.0 SITE PLAN REVIEW

7.1. Loading Requirement

As indicated, the development proposal consists of a total of 118 residential units and 1,475 m^2 of retail gross floor area. The proposed development will provide one loading space. AutoTURN software was used to assess the turning movement requirements for garbage pick-up, delivery, and passenger vehicles accessing the site via Academy Street, as well as the proposed loading area and internal circulation to the underground parking garage. The analysis demonstrates that all vehicles can safely complete the required turning maneuvers without conflict with site elements or surrounding infrastructure. **Figure 15** illustrates the MSU-TAC 2017 vehicle turning template.

7.2. Driveway Location and Configuration

The proposed development is proposing one full movement access via Academy Street.

Based on the findings of this Study and Nextrans' assessment, the proposed access arrangement is reasonable and acceptable as it is optimized for the developable lands and consistent with the context of the area.

8.0 PARKING ASSESSMENT

8.1. Vehicle Parking Assessment

For this assessment, Zoning By-law No. 05-200, section 5 has been reviewed and applied in the analysis. **Table 13** summarizes the vehicle parking requirement, based on the City's Zoning By-law No. 05-200.

Table 13 – Zoning By-law No. 05-200 Vehicle Parking Requirement for Areas Outside Downtown Zones

Type	No. Unit	Ratio	Required
Multiple Dwelling; Dwelling Units where the total number of such units is 5 or greater	118 units	1 space per unit for residents, plus 0.3 visitor parking spaces per unit	118 parking spaces for residents and 35 spaces for visitors
Retail/Commercial	1,475 m^2	5.5 for each 100 sqm	81 spaces
Total			**234 spaces**

Based on the City's By-Law No. 05-200, a total of 234 parking spaces (including retail, resident, and visitor parking spaces) are required for the proposed development. It is our understanding that the proposed development will provide a total of 263 parking spaces, which meets the requirement.

8.2. Bicycle Parking Assessment

For this assessment, Zoning By-law No. 05-200, section 5 has been reviewed and applied in the analysis. **Table 14** summarizes the vehicle parking requirement, based on the City's Zoning By-law No. 05-200.

Table 14 – Zoning By-law No. 05-200 Vehicle Parking Requirement for Areas Outside Downtown Zones

Type	No. Unit	Ratio	Required
Multiple Dwelling: Dwelling Units where the total number of such units exceeds 4.	118 units	0.5 per unit for long-term 0.05 per unit for short-term	59 long-term spaces 6 short-term spaces
Retail/Commercial	1,475 m^2	0.1 per 100sqm for long-term 0.15 per 100sqm for short-term	2 long-term spaces 2 short-term spaces
Total			**61 long-term spaces** **8 short-term spaces**

Based on the City's By-Law No. 05-200, a total of 61 bicycle long-term spaces and 8 bicycle short-term spaces are required for the proposed development. It is our understanding that the proposed development will provide a total of 190 bicycle parking spaces, which meets the requirement.

9.0 TRANSPORTATION DEMAND MANAGEMENT

9.1. City of Hamilton's TDM for Development (June 2015)

The City of Hamilton's TDM for Development Report (June 2015) has been reviewed and consulted to prepare the TDM requirement for the proposed development. In order to address the City's requirements, the following TDM recommendations are provided to support the proposed development.

Transportation Demand Management (TDM) is a coordinated series of actions aimed at maximizing the people-moving capability of the transportation system. According to the City's TDM Report, the main objectives of TDM are:

- Shifting travel modes (e.g., walking, cycling, taking transit, or carpooling instead of driving alone);
- Reducing the number of trips people must make (e.g., destinations and activities such as work and shopping, near each other); and,
- Travelling more efficiently (e.g., making trips outside of peak hours).

Potential TDM measures may include but are not limited to: TDM-supportive land use, bicycle and pedestrian programs and facilities, public transit improvements, preferential treatments for buses and high occupancy vehicles (if applicable), ridesharing, and employee incentives.

9.1.1. Site Design Elements

It is Nextrans' understanding that the proposed development has been designed to include the following design elements:

- Provide direct pedestrian/cycling connections onto Wilson Street East and Academy Street;
- Provide internal pedestrian circulation;
- Reduce vehicle parking for both phases of the development to encourage future residents to take transit or other sustainable modes of transportation instead of driving private vehicles

It is Nextrans' opinion that these compact design elements will help facilitate pedestrian and cyclist movements efficiently and safely.

9.1.2. Sidewalks and Pathways

The proposed development provides continuous sidewalks internally and direct connections to Wilson Avenue East and Academy Street, as illustrated in the proposed site plan.

9.1.3. Direct Connections to Transit

As indicated, the proposed development is located adjacent to the existing transit stops located at the Wilson Street East and Academy Street intersection for the HSR Transit Bus Routes 16 Ancaster and about 350m to the Bus Route 5 Delaware. The residents will have direct access to these existing bus stops located at the Wilson Street East and Academy Street intersection. It is Nextrans' opinion that the proposed development will contribute to a healthy transit ridership for the existing Hamilton transit system in the area.

9.1.4. Unbundle Parking

As parking is the best TDM incentive for residents to take alternative modes of transportation, it is recommended that the proposed development unbundle the parking sale from the unit.

9.1.5. On-Site Carshare Vehicle(s) and Parking Spot(s)

It is Nextrans' opinion that this requirement is more appropriate for larger-scale development in the Downtown or Transit Oriented Corridor setting, where carshare is economically viable. It is not appropriate for a small development like this without other high-rise/mid-rise buildings nearby to share the use or carrying costs. As such, it is Nextrans' opinion that this requirement is not appropriate or necessary for the proposed development, given the proposed development context and location.

9.1.6. On-Site Bikeshare

It is Nextrans' opinion that bike-share is more appropriate in the downtown setting surrounded by more mid-rise and high-rise uses, as well as other office and retail uses, to share the use and carrying costs to make bike-share more economically feasible. It is Nextrans' opinion that bikeshare is not appropriate for this proposed development.

9.1.7. Travel Planning Tools and Support for the Development of a School Travel Plan

It is recommended that the proposed development contact and coordinate with the Hamilton-Wentworth District School Board for any potential school travel plan in the area.

9.1.8. Opportunities for Transit Passes, Carshare Memberships, or Bikeshare Memberships

It is recommended that the proposed development provide a pre-loaded PRESTO CARD with a value of $50 (inclusive of registration fees) for each residential unit on a demand basis. This incentive will encourage residents to try the existing transit services in the area.

9.1.9. Proposed Monitoring Evaluation of TDM Measures

Based on our previous experience, monitoring and evaluation of TDM measures are important but very onerous for the Applicant. When the project is completed, and the Applicant transfers the ownership to the Condominium Board, the Board will have full control of the proposed development, and there are certain conditions and requirements that the Condominium Board may not agree with. It is Nextrans' opinion that the TDM measures and incentives provided in this report are sufficient and appropriate; as such, monitoring for the proposed development is not required.

9.2. Recommended TDM Measures and Incentives for the Proposed Development

Based on the review of the context of the proposed development about the TDM requirements by the City of Hamilton, several TDM measures and incentives are identified for the proposed development to consider, given the limited transit service and active transportation network in the area. **Table 15** summarizes the recommended TDM measures and incentives.

Table 15 – Recommended TDM Measures for the Proposed Development

Category	TDM Initiative required by the City or suggested by Nextrans	Recommended Actions	Responsibility
Walking	• Safe, attractive, and direct walkways for pedestrians linking building entrances with public sidewalks and with key destinations such as schools • Enhanced pedestrian amenities on-site (benches, landscaping, lighting)	• Provide direct shared pedestrian and cycling connections from the proposed development to Wilson Street E	Applicant
Transit	• Enhance walking routes between main building entrance(s) and transit stops/stations • Bicycle parking located at or near transit stops • Implement transit priority measures (queue jump lanes, traffic signal priority, bus-only lanes)	• The proposed development provides a shared pedestrian/cycling connection directly to Wilson Street E	Applicant
Parking	• Reduced minimum parking requirements based on proximity to transit • Shared parking with nearby developments or on-street spaces • Unbundle parking costs from unit costs	• Consider unbundling the parking sale with the unit.	Applicant
Information Brochure/ Letter	• Provide an information brochure/letter for each residential unit that includes HSR Transit System schedules, GO Transit schedules, cycling maps, and community maps.	• Provide a brochure (or a letter) to new residents that includes all website links to Hamilton Transit System schedules, community maps, and cycling maps. The information package can be distributed at the sales office.	Applicant
Transit Incentive	• Provide transit incentives	• Provide pre-loaded PRESTO CARD with a value of $50 (inclusive of registration fees) for each residential unit on-demand basis	Applicant

10.0 TRAFFIC CALMING ASSESSMENT

10.1. Development Overview

The subject site is currently occupied by a two-story building with a parking lot at 392-412 Wilson Street East, which is bounded by Wilson Street East to the west and Academy Street to the south. The proposed development consists of 118 residential dwelling units and 1475 m^2 GFA of retail on the related ground floor.

10.2. Site Trip Generation

Based on the site trip generation analysis, without any transit modal split reduction, the proposed development is expected to generate 107 total two-way trips (44 inbound and 63 outbound) and 145 total two-way trips (79 inbound and 66 outbound) during the morning and afternoon peak hours, respectively.

Based on the site trip assignment, approximately 30% of the AM peak hour trips and 36% of the PM peak hour trips are expected to access the site via Academy Street, with the remaining traffic distributed through the surrounding road network

10.3. Intersection Operational Analysis

The analysis indicates that under existing conditions, all signalized and unsignalized intersections within the study area are currently operating at acceptable levels of service during the AM and PM peak periods. In particular, the Wilson Street East & Academy Street intersection and the Academy Street & Rousseaux Street intersection are operating at acceptable levels of service with minimal delay. Based on the intersection operational capacity analysis, site visits and observations, as well as a review of available traffic camera footage, it is NexTrans' opinion that no improvements are required at this time, as all intersections included in the analysis operate within acceptable operational parameters.

Under future background traffic conditions, the study intersections are generally expected to continue operating at acceptable levels of service during both peak periods. While some individual movements may experience slightly higher delays, the intersection capacity analysis indicates that overall operations remain acceptable, and therefore, no intersection improvements are required for this horizon year. The Wilson Street East & Academy Street and Academy Street & Rousseaux Street intersections are also expected to continue operating at acceptable levels of service under future background conditions.

Similarly, under future total traffic conditions (background traffic plus site-generated traffic), the signalized and unsignalized intersections are expected to continue operating within acceptable levels of service during both peak periods. Some movements may experience increased delay and occasional queue spillback due to limited storage length; however, these conditions remain acceptable based on both delay and volume-to-capacity (v/c) ratios. As the 95th percentile queue represents conditions occurring only approximately 5% of the time, occasional queue spillback is considered acceptable provided the queue clears within the same signal cycle, which is confirmed by the analysis.

Overall, the Wilson Street East & Academy Street and Academy Street & Rousseaux Street intersections are expected to continue operating satisfactorily, and the analysis indicates that the proposed development will not result in significant impacts to the surrounding road network. Therefore, no intersection improvements are recommended at this time.

10.4. TRAFFIC CALMING MEASURES

Nextrans has reviewed the following documents, which were published by the City of Hamilton, in order to assess the appropriate traffic calming measures for the study area:

- Development of Policy Papers for Phase Two of the Transportation Master Plan for the City of Hamilton – Traffic
- Calming Policy Paper, final report dated January 2005
- Background Report: Road Safety – City of Hamilton Transportation Master Plan Review and Update
- The 2007 Transportation Master Plan

Based on Nextrans' review of the documents noted, the following are typical traffic calming measures are currently utilized by the City of Hamilton:

- Speed hump/cushions.
- Bump-out
- Median islands and knockdown sticks
- Chicane
- Curb extensions
- Traffic circle/mini roundabout
- Others

10.5. Traffic Calming Assessment

10.5.1. Existing Area Context

Currently, the Academy Street in the vicinity of the proposed development has a mixed urban and rural cross-section with a sidewalk generally located on the east side of the street. Academy Street has an existing pavement width of 8m, with one traffic lane in each direction.

The majority of the existing land use along Academy Street is low-rise residential. The main destinations in the area are located along Wilson Street East and Rousseaux Street, which lead to Highway 403.

10.5.2. Traffic Calming Measure Considerations

As indicated in the assessment noted above, speeding through the neighbourhood is one of the major factors that contributed to collisions with pedestrians, cyclists and motor vehicles. There are several traffic calming measures that can be implemented to reduce speed through the neighbourhood. However, the traffic calming measures are context sensitive, which means one solution will not fit all scenarios.

Table 16 below summarises the potential traffic calming measures, as well as the pros and cons for each measure.

Table 16 – Traffic Calming Measure Comparison

Traffic Calming Measures	Pros	Cons
Speed hump	▪ Effective in slowing down traffic ▪ Reasonable cost ▪ Quick installation ▪ Minimal modifications to the existing roadway	▪ Will slow down emergency vehicles and servicing vehicles
Speed cushion	▪ Effective in slowing down traffic ▪ Reasonable cost ▪ Quick installation ▪ Minimal modifications to the existing roadway ▪ It is a modified speed hump that can better accommodate emergency vehicles (i.e. it doesn't span the entire length of the lane)	▪ Will slow down emergency vehicles and servicing vehicles
Bump-out	▪ Effective in slowing down traffic	▪ Will slow down emergency vehicles and servicing vehicles ▪ Difficult for winter maintenance and snow removal/storage ▪ Challenges for cyclists ▪ Modifications to existing roadway will be required (i.e. Drainage)
Median island and knockdown stick	▪ Effective in slowing down traffic	▪ Will slow down emergency vehicles and servicing vehicles ▪ Difficult for winter maintenance and snow removal/storage ▪ Require pavement ▪ May requires additional lands

		▪ Modifications to existing roadway will be required (i.e. Drainage)
Chicane	▪ Effective in slowing down traffic	▪ Will slow down emergency vehicles and servicing vehicles ▪ Difficult for winter maintenance and snow removal/storage ▪ Challenges for cyclists
Curb extension	▪ Effective in slowing down traffic	▪ Will slow down emergency vehicles and servicing vehicles ▪ Challenges for cyclists
Traffic circle/mini roundabout	▪ Effective in slowing down traffic	▪ Will slow down emergency vehicles and servicing vehicles ▪ Difficult for winter maintenance and snow removal if the traffic circle is too small

Based on the comparison noted above, it is evident that speed cushion is a preferred traffic calming measure due to its effectiveness, quick installation, minimal modifications to the existing roadway and cost effectiveness.

Figure 16 illustrates the potential speed cushion location, all-way stop location and ladder crosswalk location. **Figure 17** illustrates the speed cushion example (*Source: City of Hamilton 2018 Annual Collision Report - Page 10*).

Figure 16 – Suggested Speed Cushion Locations

Figure 17 – Speed Cushion Example

11.0 CONCLUSIONS / FINDINGS

11.1. Study Conclusions

The findings and conclusions of the analysis are as follows:

- The proposed development is expected to generate 107 total two-way trips (44 inbound and 63 outbound) and 145 total two-way trips (79 inbound and 66 outbound) during the morning and afternoon peak hours, respectively.

- Overall, under the existing, future background and future total traffic conditions, the study area intersections are expected to continue operating at generally acceptable levels of service, and the site-generated traffic from the proposed development is anticipated to have a negligible impact on the surrounding road network.

- The analysis indicates that the transit passenger demands generated by the proposed development per transit vehicle are very low (at most 2 passengers per transit vehicle). As such, the proposed development impact on transit service is negligible and no improvements are required. In reality, some passengers could be bunched together during the peak 15 minutes, instead of spreading during the entire peak hour. Even if this is the case, our estimates indicate that the demand per vehicle is extremely low and can be accommodated without the need for additional transit vehicles or improvements during both the morning and afternoon peak periods.

- Based on the City's By-Law No. 05-200, a total of 234 parking spaces (including retail, resident, and visitor parking spaces) are required for the proposed development. It is our understanding that the proposed development will provide a total of 263 parking spaces, which meets the requirement.

- Based on the City's By-Law No. 05-200, a total of 61 bicycle long-term spaces and 8 bicycle short-term spaces are required for the proposed development. It is our understanding that the proposed development will provide a total of 190 bicycle parking spaces, which meets the requirement.

11.2. Study Recommendations

Based on the findings and conclusions of this study, the following recommendations are provided:

- The proposed development implements the TDM measures and incentives identified in this report to support active transportation and transit and to reduce the number of single-occupant-vehicle trips to and from the proposed development.
- The installation of speed cushions per the traffic calming assessment along Academy Street
- No additional physical improvements for the area at this time to accommodate the proposed development, under the future background and future total conditions.

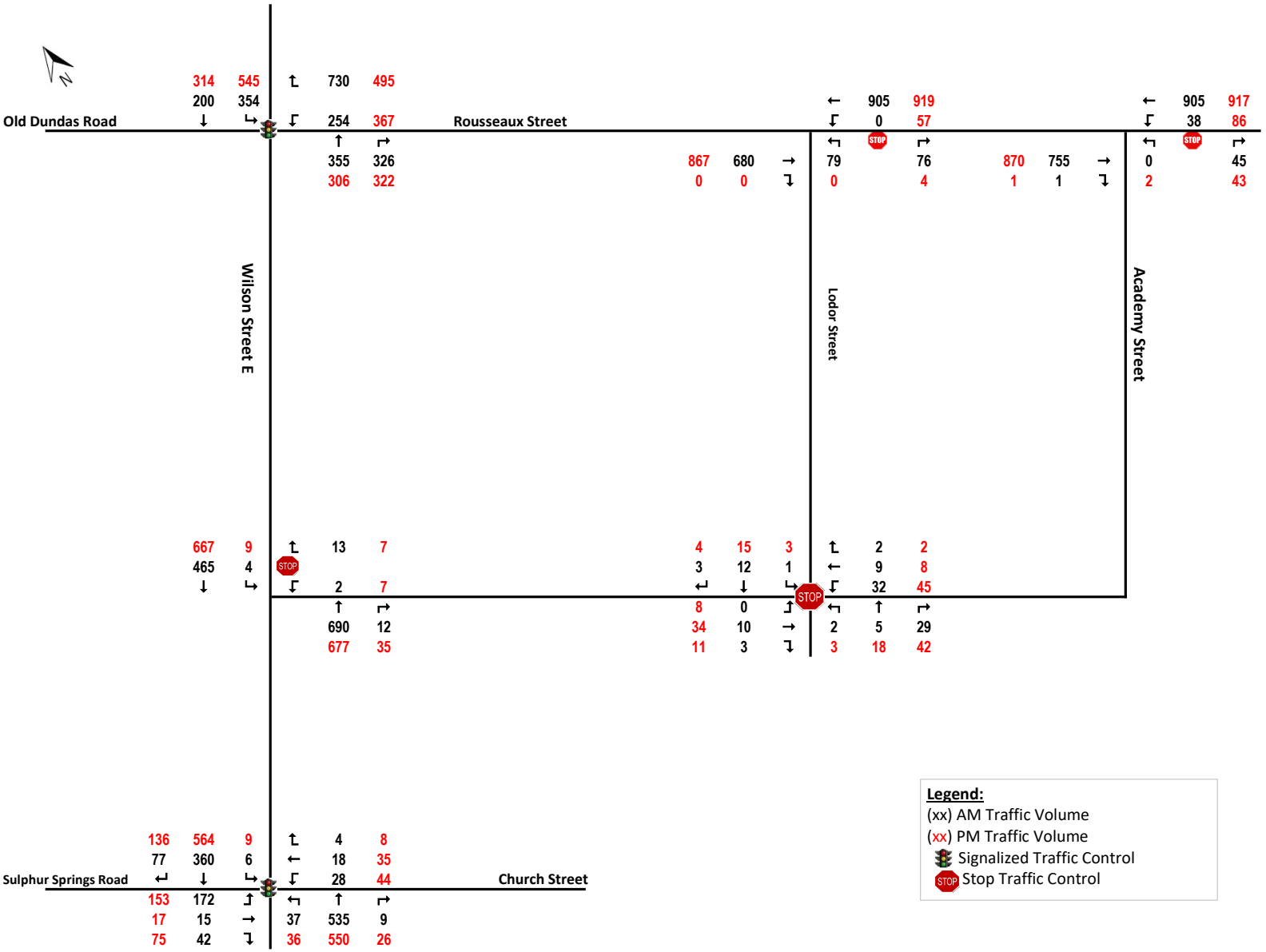


Figure 6 – Existing Traffic Volumes

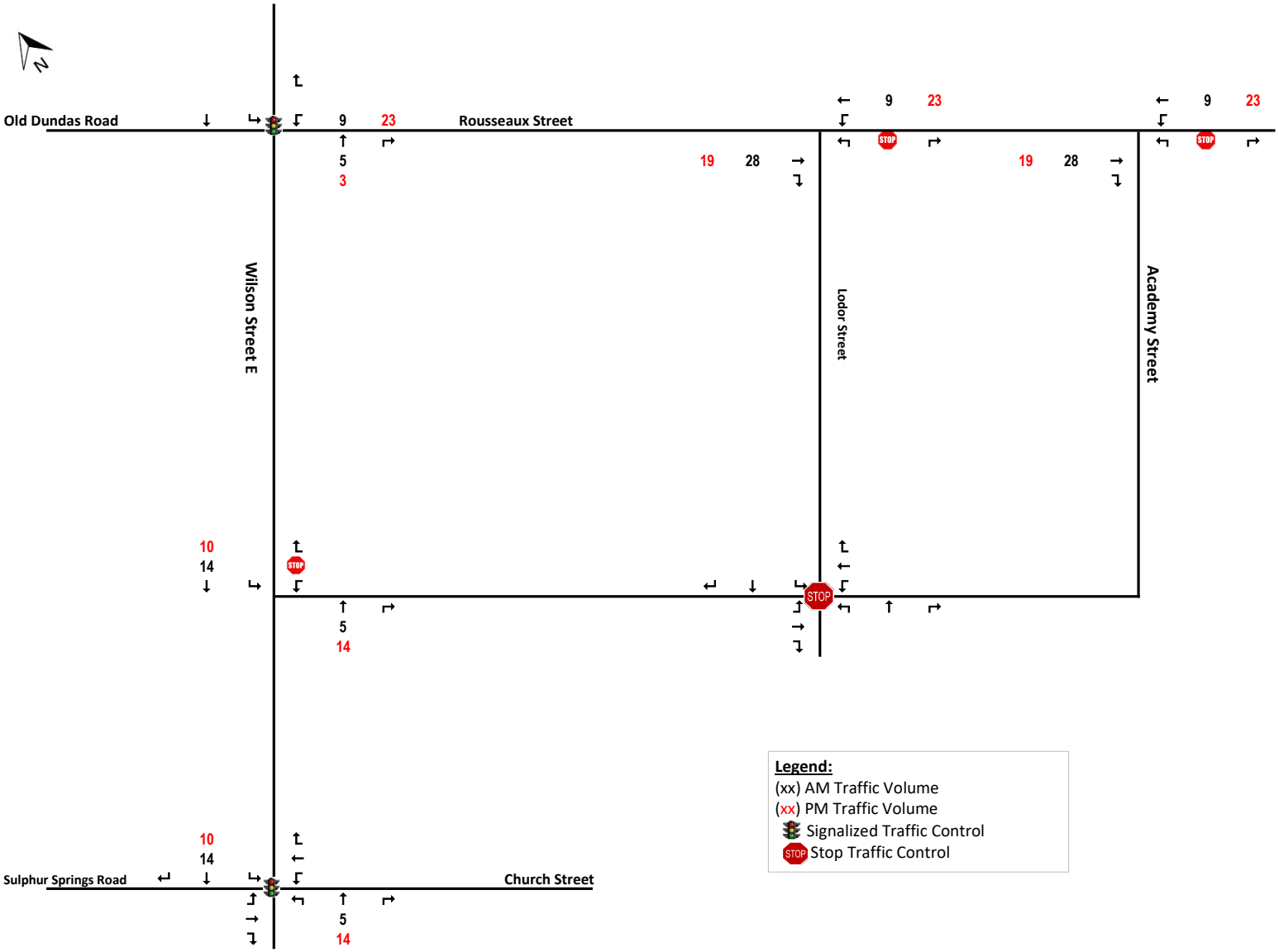


Figure 7 - Background Development Traffic Volumes

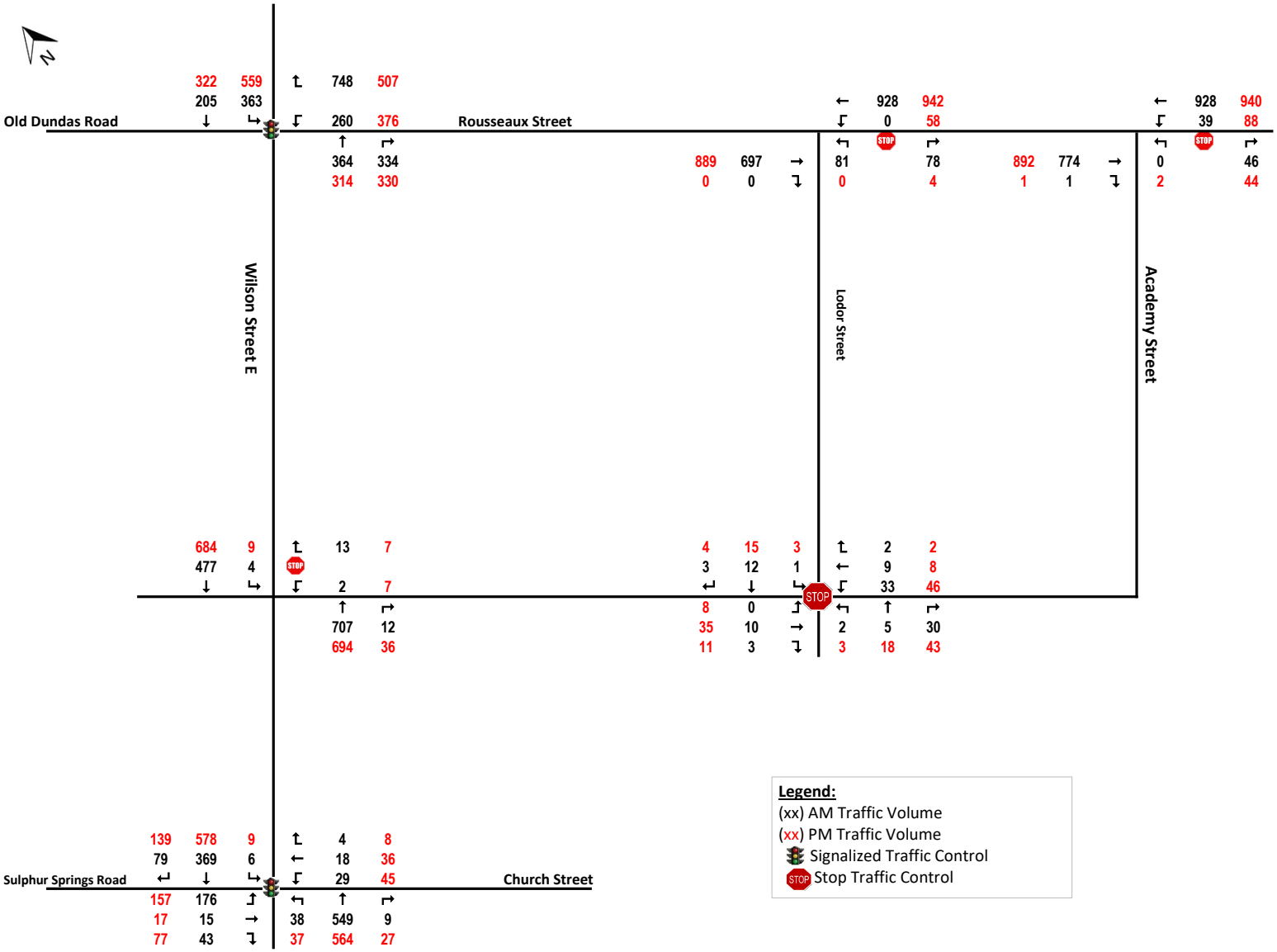


Figure 8 -2031 Growth Traffic Volumes

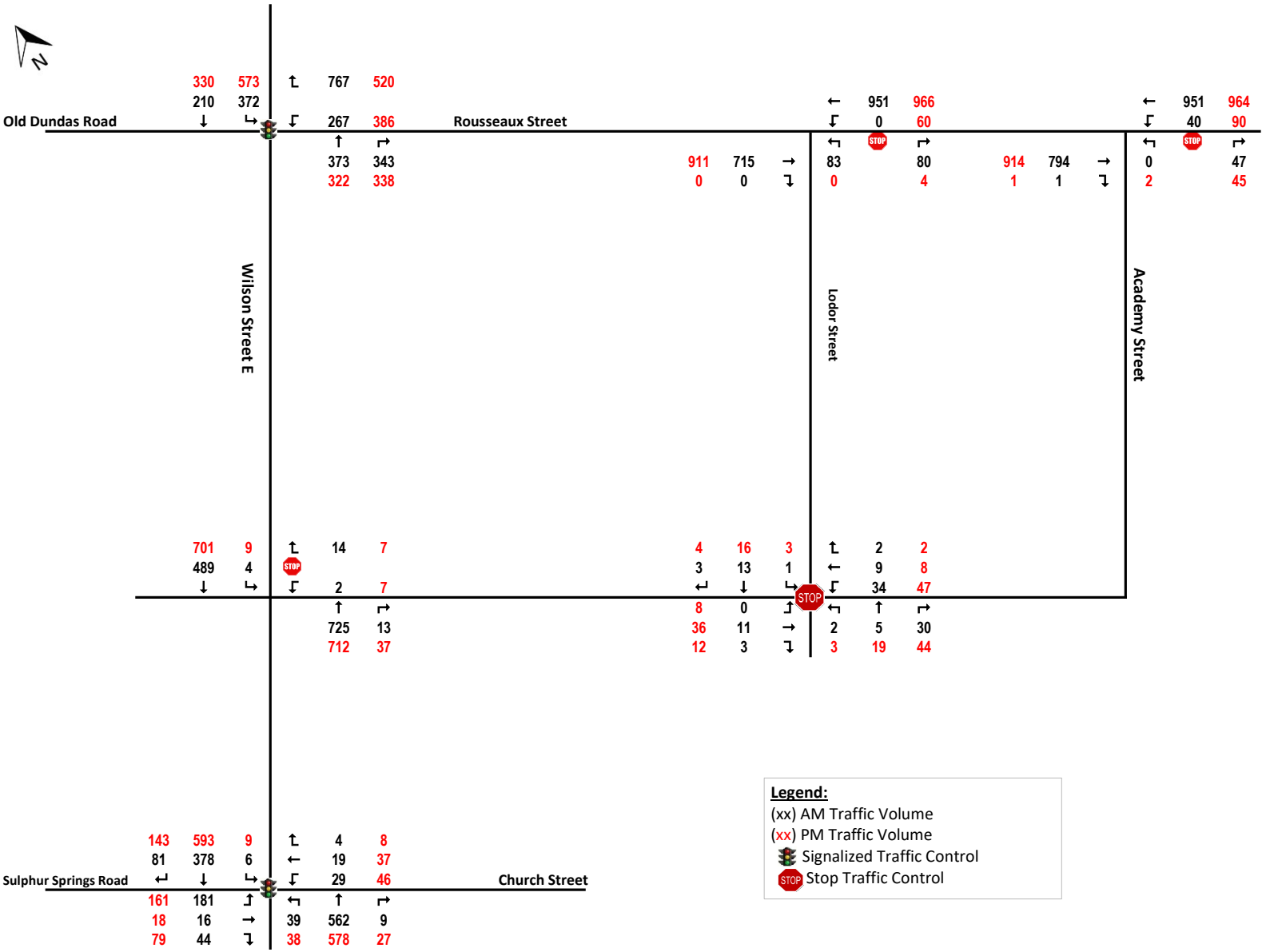


Figure 9 -2036 Growth Traffic Volumes

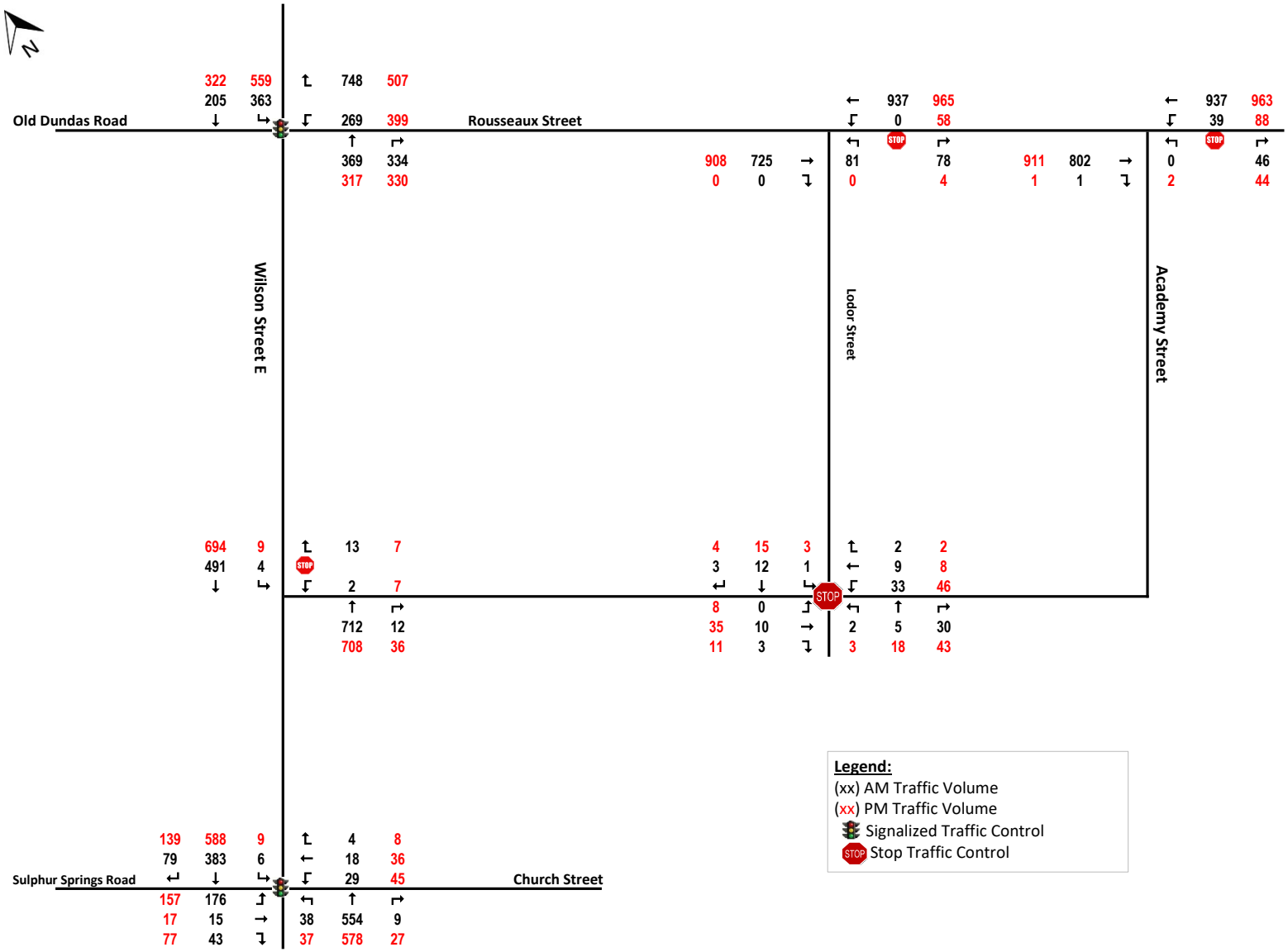


Figure 10 -Future 2031 Background Traffic Volumes

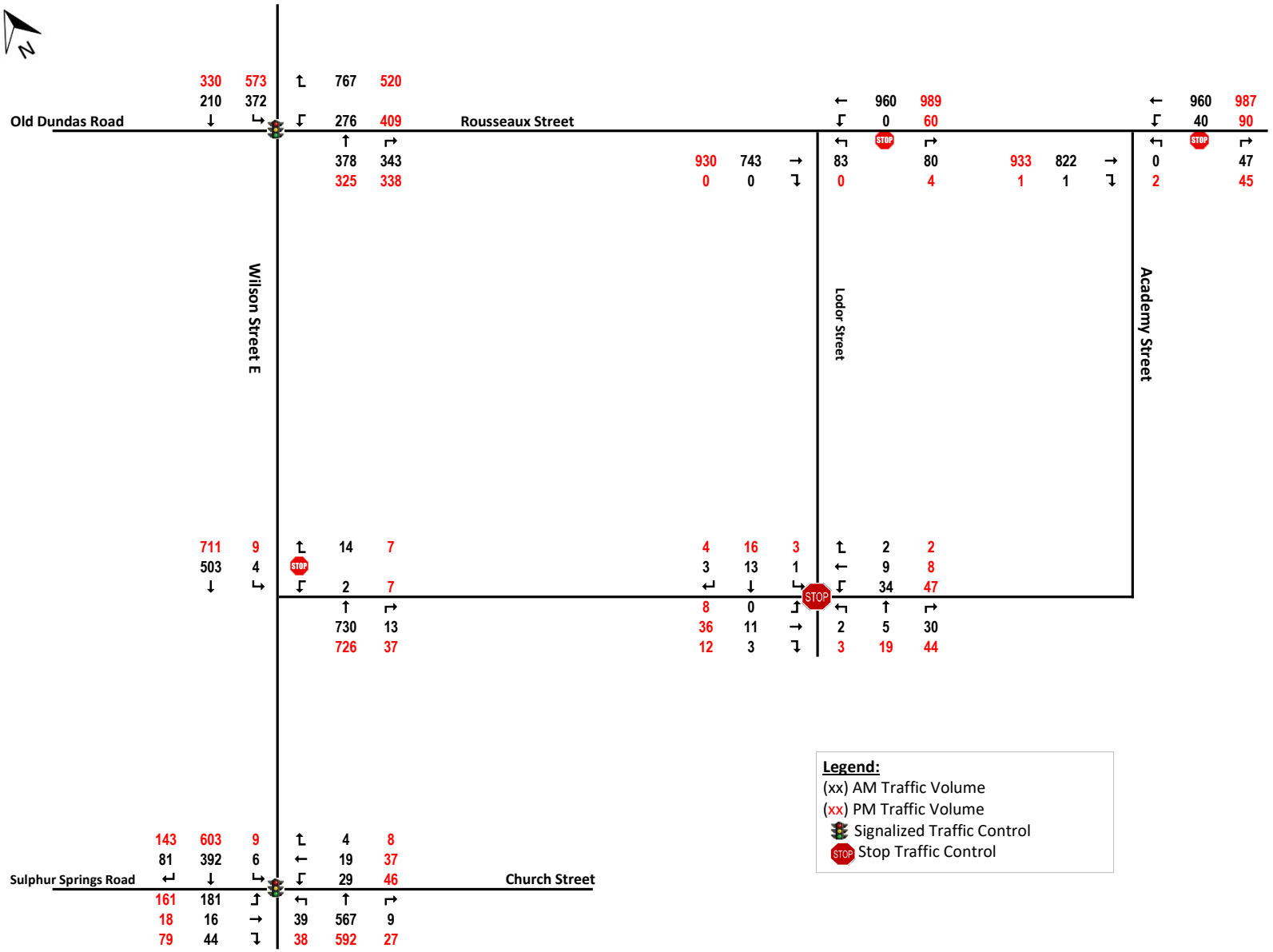


Figure 11 -Future 2036 Background Traffic Volumes

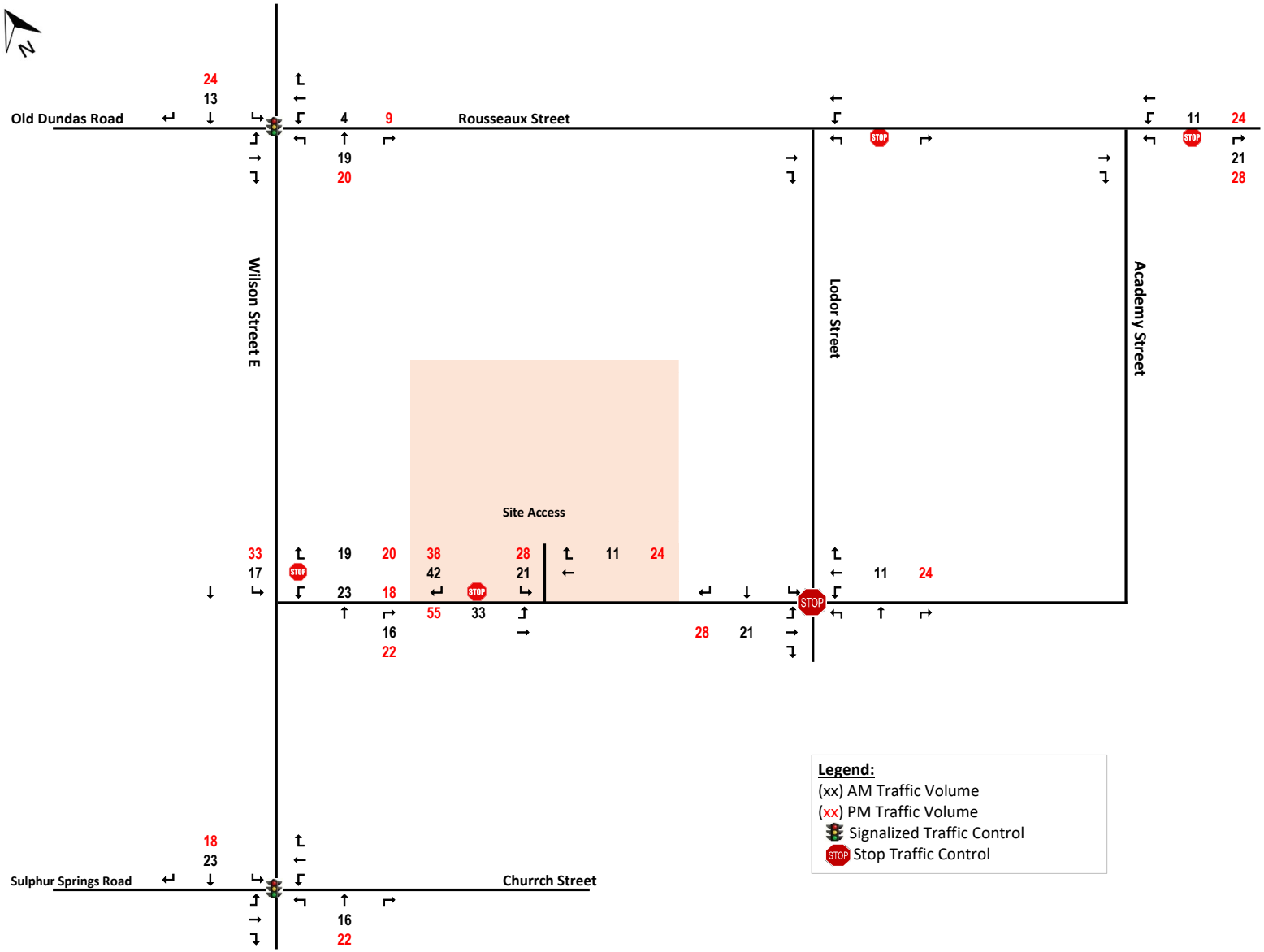


Figure 12 - Site Traffic Volumes

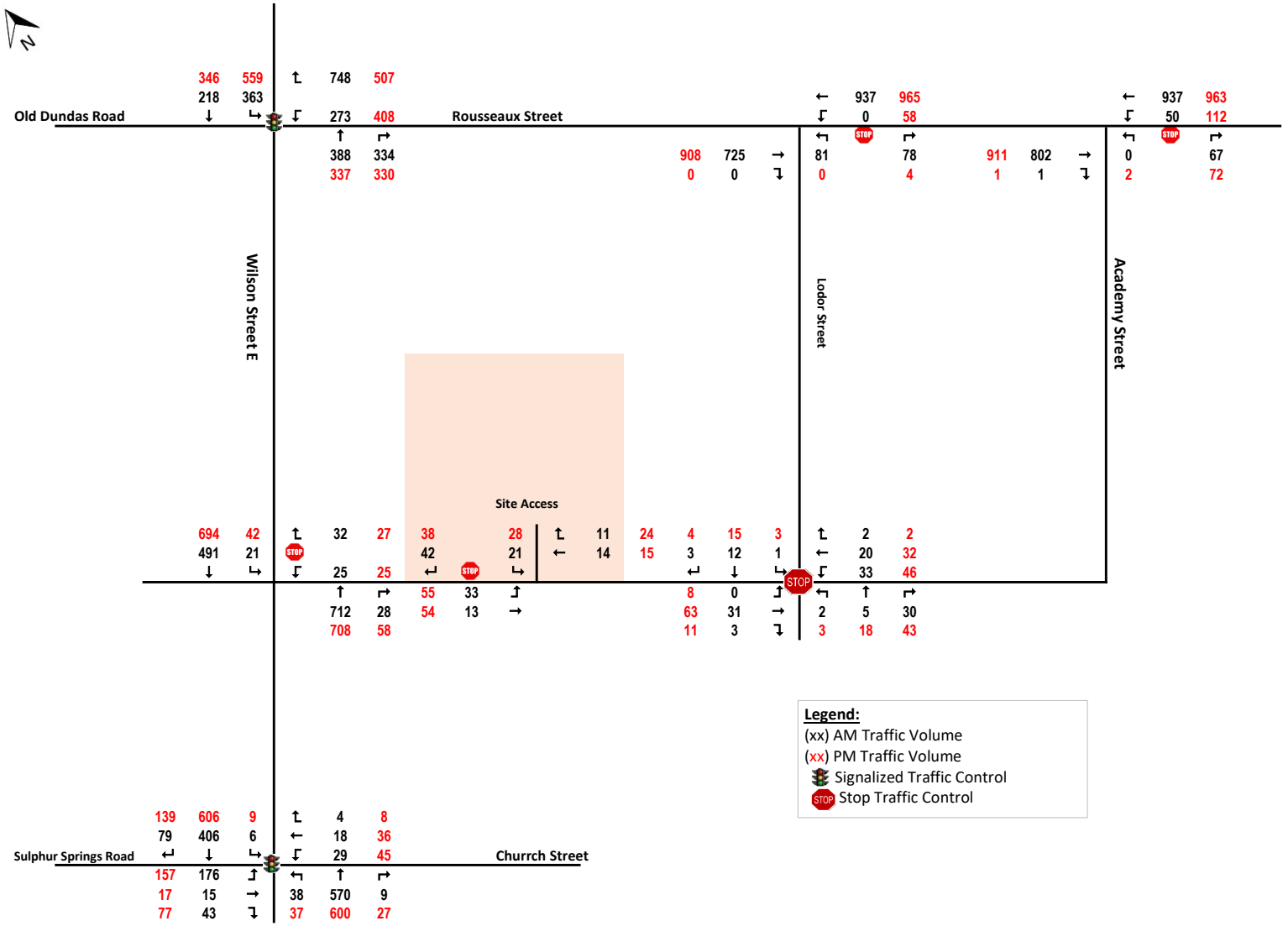


Figure 13 -Future 2031 Total Traffic Volumes

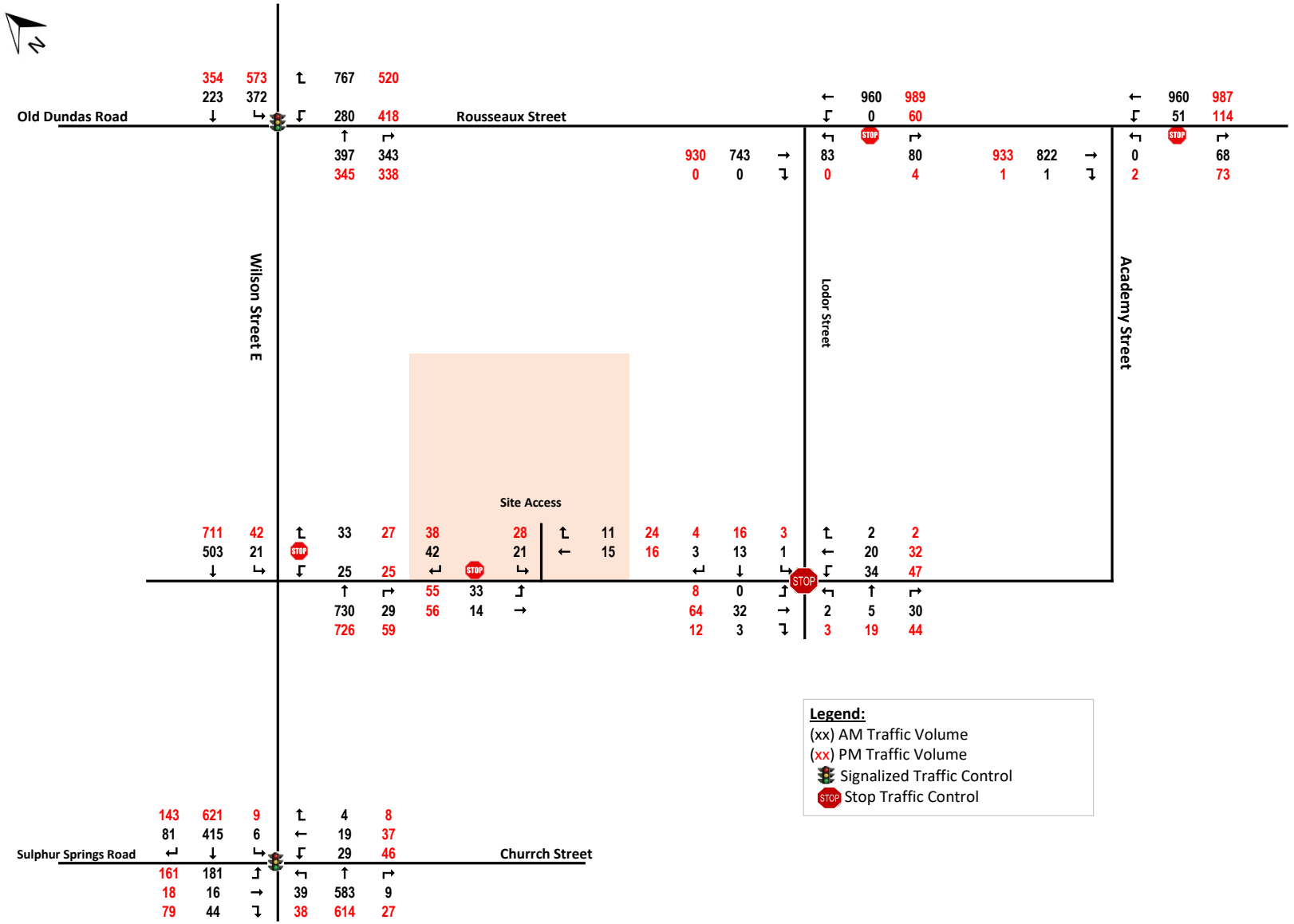
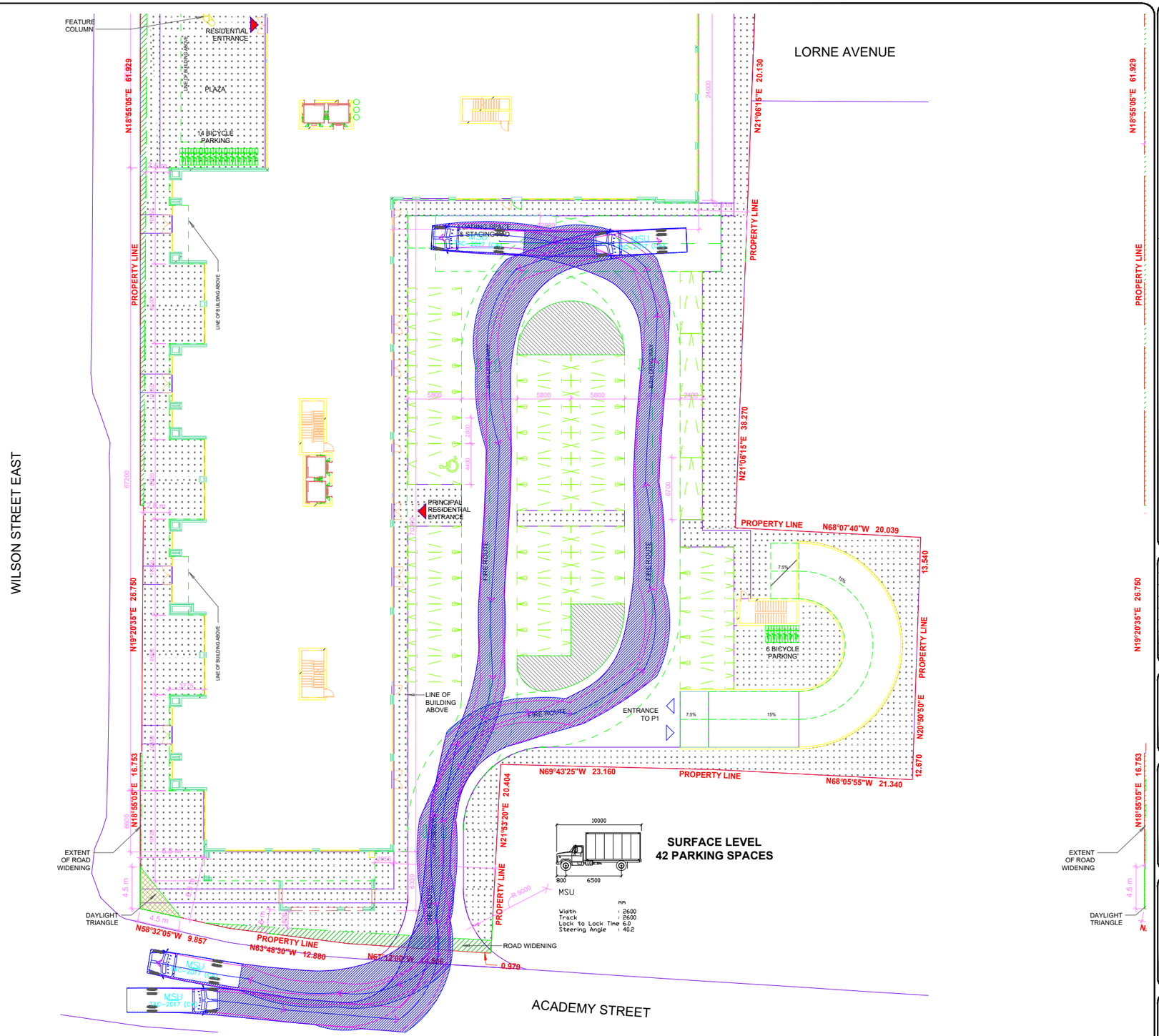


Figure 14 -Future 2036 Total Traffic Volumes



KEY PLAN

BENCHMARK

REVISIONS

NO	REVISION	DATE	BY

STAMP

nextrans
CONSULTING ENGINEERS
Suite 201, 520 Industrial Parkway South
Aurora ON L4G 6W8
Tel: 905-503-2563
Web: www.nextrans.ca

PROJECT NAME:

Mixed-Use Development

392-412 Wilson St E

City of Hamilton

DRAWING TITLE:

AutoTURN Analysis
MSU TAC-2017

DESIGN BY:	DATE: March 4, 2026
CHECKED BY: R.P.	PROJECT NO. NT-20-089
DRAWN BY:	
SCALE: NTS	DRAWING NO. Figure 15

Appendix A – Existing Traffic Data

Spectrum

Turning Movement Count
Location Name: ACADEMY STREET & LODOR STREET
Date: Thu, Jun 26, 2025 Deployment Lead: Constantinos Kotassidis

NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY
SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Turning Movement Count (3 . ACADEMY STREET & LODOR STREET) MioID: 1314200

Start Time	Southbound LODOR STREET						Westbound ACADEMY STREET						Northbound LODOR STREET						Eastbound ACADEMY STREET						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	U-Turn W:W	Peds W:	Approach Total		
2025-06-26 07:00:00	1	0	0	0	1	1	0	0	2	0	3	2	2	0	0	0	0	2	0	0	0	0	0	0	5	
2025-06-26 07:15:00	0	2	0	0	1	2	0	0	3	0	2	3	4	0	1	0	1	5	0	0	0	0	1	0	10	
2025-06-26 07:30:00	1	0	0	0	1	1	0	0	2	0	1	2	7	1	0	0	0	8	0	1	2	0	0	3	14	
2025-06-26 07:45:00	1	1	0	0	1	2	1	0	6	0	1	7	2	0	2	0	0	4	0	2	1	0	0	3	16	45
2025-06-26 08:00:00	1	5	1	0	0	7	0	5	4	0	2	9	9	3	1	0	5	13	1	2	0	0	5	3	32	72
2025-06-26 08:15:00	2	2	0	0	0	4	0	2	7	0	0	9	6	0	1	0	1	7	1	3	0	0	1	4	24	86
2025-06-26 08:30:00	0	0	0	0	0	0	2	2	10	0	0	14	8	2	0	0	0	10	1	3	0	0	1	4	28	100
2025-06-26 08:45:00	0	5	0	0	0	5	0	0	11	0	1	11	6	0	0	0	0	6	0	2	0	0	2	2	24	108
2025-06-26 09:00:00	2	1	1	0	1	4	2	3	6	0	1	11	3	1	0	0	0	4	2	0	1	0	0	3	22	98
2025-06-26 09:15:00	0	1	1	0	1	2	0	2	10	0	2	12	5	0	1	0	0	6	4	2	0	0	0	6	26	100
2025-06-26 09:30:00	2	4	1	0	0	7	0	1	8	0	0	9	2	1	3	0	0	6	2	2	0	0	0	4	26	98
2025-06-26 09:45:00	1	1	0	0	0	2	1	0	6	0	1	7	2	1	0	0	0	3	0	1	0	0	0	1	13	87
BREAK																										
2025-06-26 16:00:00	1	5	1	0	2	7	0	3	8	0	2	11	12	3	2	0	1	17	4	2	3	0	1	9	44	
2025-06-26 16:15:00	1	0	0	0	0	1	0	0	7	0	1	7	5	1	0	0	1	6	2	8	0	0	1	10	24	
2025-06-26 16:30:00	1	4	0	0	2	5	0	0	10	0	1	10	8	3	0	0	0	11	6	4	1	0	0	11	37	
2025-06-26 16:45:00	1	4	1	0	0	6	0	3	11	0	0	14	14	6	2	0	0	22	1	9	1	0	0	11	53	158
2025-06-26 17:00:00	1	2	2	0	1	5	1	4	7	0	0	12	12	7	0	0	0	19	1	14	3	0	0	18	54	168
2025-06-26 17:15:00	1	5	0	0	1	6	1	1	17	0	0	19	8	2	0	1	0	11	3	7	3	0	0	13	49	193
2025-06-26 17:30:00	0	1	0	0	1	1	0	1	19	0	1	20	7	0	0	0	0	7	2	4	1	0	0	7	35	191
2025-06-26 17:45:00	0	3	0	0	0	3	1	1	14	0	2	16	3	2	0	0	0	5	3	2	0	0	0	5	29	167
2025-06-26 18:00:00	1	5	0	0	0	6	1	1	23	0	0	25	8	2	0	0	3	10	2	4	0	0	3	6	47	160
2025-06-26 18:15:00	1	5	0	0	0	6	1	1	19	0	2	21	7	3	0	0	3	10	1	2	3	0	3	6	43	154
2025-06-26 18:30:00	1	5	0	0	1	6	0	0	3	0	0	3	8	0	1	0	0	9	3	2	2	0	0	7	25	144
2025-06-26 18:45:00	3	4	0	0	0	7	0	1	7	0	6	8	7	4	3	0	1	14	0	2	1	0	3	3	32	147
Grand Total	23	65	8	0	14	96	11	31	220	0	29	262	155	42	17	1	16	215	39	78	22	0	21	139	**712**	-
Approach%	24%	67.7%	8.3%	0%		-	4.2%	11.8%	84%	0%		-	72.1%	19.5%	7.9%	0.5%		-	28.1%	56.1%	15.8%	0%		-	-	-
Totals %	3.2%	9.1%	1.1%	0%		13.5%	1.5%	4.4%	30.9%	0%		36.8%	21.8%	5.9%	2.4%	0.1%		30.2%	5.5%	11%	3.1%	0%		19.5%	-	-
Heavy	0	0	0	0		-	1	0	3	0		-	2	0	0	0		-	1	0	0	0		-	-	-
Heavy %	0%	0%	0%	0%		-	9.1%	0%	1.4%	0%		-	1.3%	0%	0%	0%		-	2.6%	0%	0%	0%		-	-	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-

NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 08:00 AM - 09:00 AM Weather: Overcast Clouds (16 °C)

Start Time	Southbound LODOR STREET						Westbound ACADEMY STREET						Northbound LODOR STREET						Eastbound ACADEMY STREET						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
2025-06-26 08:00:00	1	5	1	0	0	7	0	5	4	0	2	9	9	3	1	0	5	13	1	2	0	0	5	3	32
2025-06-26 08:15:00	2	2	0	0	0	4	0	2	7	0	0	9	6	0	1	0	1	7	1	3	0	0	1	4	24
2025-06-26 08:30:00	0	0	0	0	0	0	2	2	10	0	0	14	8	2	0	0	0	10	1	3	0	0	1	4	28
2025-06-26 08:45:00	0	5	0	0	0	5	0	0	11	0	1	11	6	0	0	0	0	6	0	2	0	0	2	2	24
Grand Total	3	12	1	0	0	16	2	9	32	0	3	43	29	5	2	0	6	36	3	10	0	0	9	13	**108**
Approach%	18.8%	75%	6.3%	0%		-	4.7%	20.9%	74.4%	0%		-	80.6%	13.9%	5.6%	0%		-	23.1%	76.9%	0%	0%		-	**-**
Totals %	2.8%	11.1%	0.9%	0%		14.8%	1.9%	8.3%	29.6%	0%		39.8%	26.9%	4.6%	1.9%	0%		33.3%	2.8%	9.3%	0%	0%		12%	**-**
PHF	0.38	0.6	0.25	0		0.57	0.25	0.45	0.73	0		0.77	0.81	0.42	0.5	0		0.69	0.75	0.83	0	0		0.81	0.84
Heavy	0	0	0	0		0	1	0	0	0		1	1	0	0	0		1	0	0	0	0		0	2
Heavy %	0%	0%	0%	0%		0%	50%	0%	0%	0%		2.3%	3.4%	0%	0%	0%		2.8%	0%	0%	0%	0%		0%	1.9%
Lights	3	12	1	0		16	1	9	32	0		42	28	5	1	0		34	3	10	0	0		13	105
Lights %	100%	100%	100%	0%		100%	50%	100%	100%	0%		97.7%	96.6%	100%	50%	0%		94.4%	100%	100%	0%	0%		100%	97.2%
Single-Unit Trucks	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%
Buses	0	0	0	0		0	1	0	0	0		1	1	0	0	0		1	0	0	0	0		0	2
Buses %	0%	0%	0%	0%		0%	50%	0%	0%	0%		2.3%	3.4%	0%	0%	0%		2.8%	0%	0%	0%	0%		0%	1.9%
Bicycles on Road	0	0	0	0		0	0	0	0	0		0	0	0	1	0		1	0	0	0	0		0	1
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	50%	0%		2.8%	0%	0%	0%	0%		0%	0.9%
Pedestrians	-	-	-	-	0	-	-	-	-	-	3	-	-	-	-	-	6	-	-	-	-	-	9	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	16.7%		-	-	-	-	33.3%		-	-	-	-	50%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

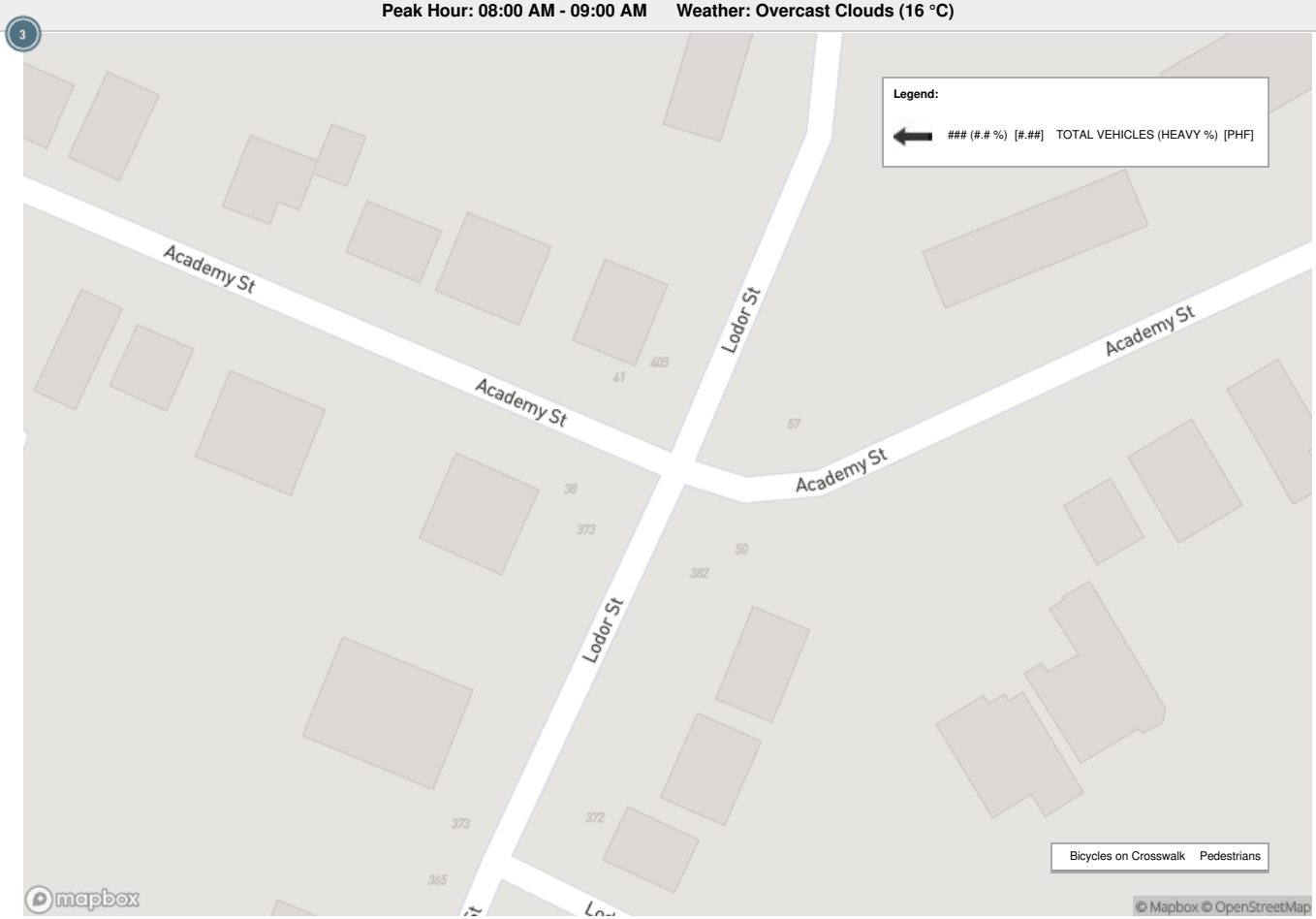
NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 04:30 PM - 05:30 PM Weather: Overcast Clouds (17 °C)

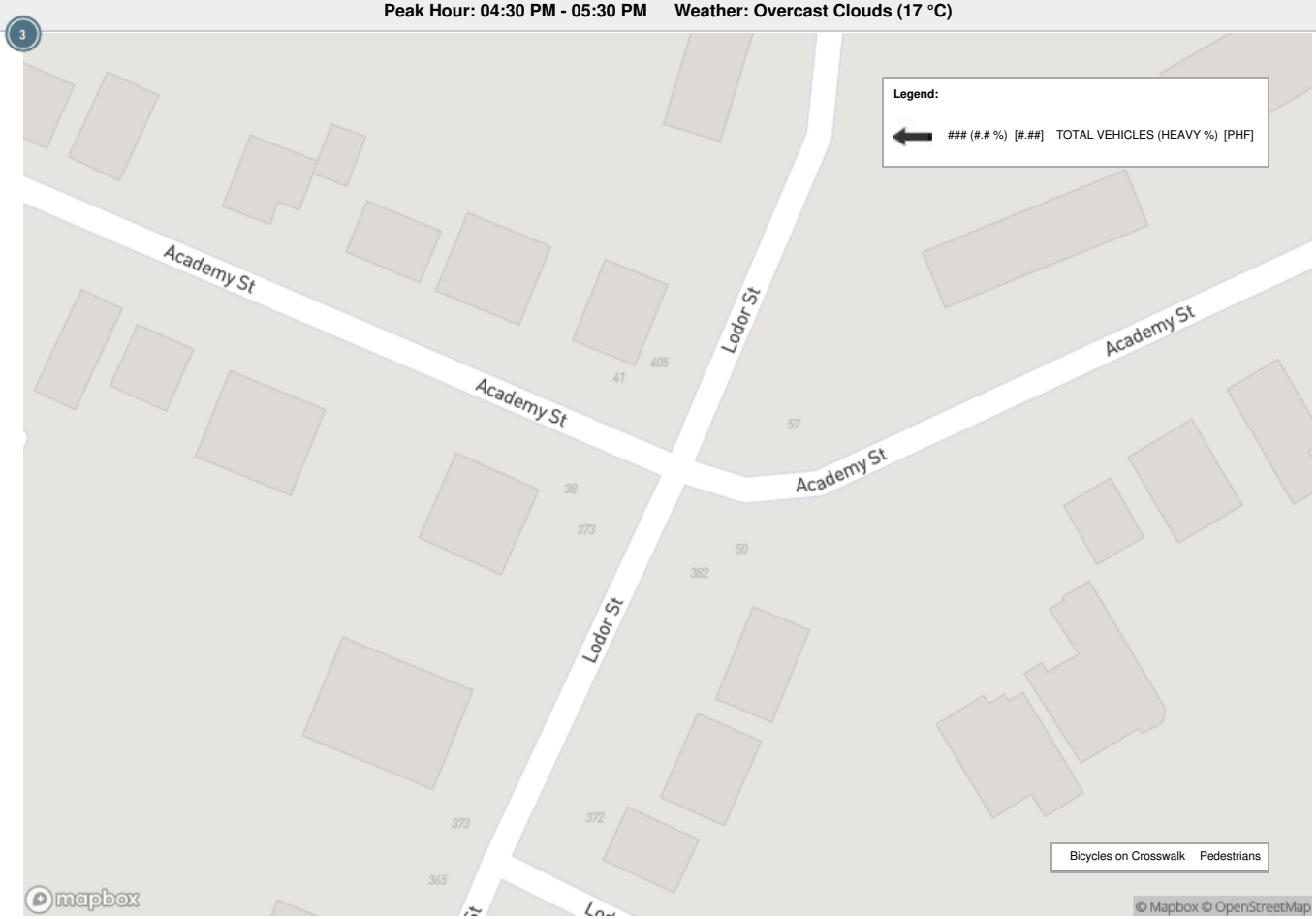
Start Time	Southbound LODOR STREET						Westbound ACADEMY STREET						Northbound LODOR STREET						Eastbound ACADEMY STREET						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
2025-06-26 16:30:00	1	4	0	0	2	5	0	0	10	0	1	10	8	3	0	0	0	11	6	4	1	0	0	11	37
2025-06-26 16:45:00	1	4	1	0	0	6	0	3	11	0	0	14	14	6	2	0	0	22	1	9	1	0	0	11	53
2025-06-26 17:00:00	1	2	2	0	1	5	1	4	7	0	0	12	12	7	0	0	0	19	1	14	3	0	0	18	54
2025-06-26 17:15:00	1	5	0	0	1	6	1	1	17	0	0	19	8	2	0	1	0	11	3	7	3	0	0	13	49
Grand Total	4	15	3	0	4	22	2	8	45	0	1	55	42	18	2	1	0	63	11	34	8	0	0	53	**193**
Approach%	18.2%	68.2%	13.6%	0%		-	3.6%	14.5%	81.8%	0%		-	66.7%	28.6%	3.2%	1.6%		-	20.8%	64.2%	15.1%	0%		-	**-**
Totals %	2.1%	7.8%	1.6%	0%		11.4%	1%	4.1%	23.3%	0%		28.5%	21.8%	9.3%	1%	0.5%		32.6%	5.7%	17.6%	4.1%	0%		27.5%	**-**
PHF	1	0.75	0.38	0		0.92	0.5	0.5	0.66	0		0.72	0.75	0.64	0.25	0.25		0.72	0.46	0.61	0.67	0		0.74	0.89
Heavy	0	0	0	0		0	0	0	1	0		1	0	0	0	0		0	1	0	0	0		1	2
Heavy %	0%	0%	0%	0%		0%	0%	0%	2.2%	0%		1.8%	0%	0%	0%	0%		0%	9.1%	0%	0%	0%		1.9%	1%
Lights	4	13	3	0		20	2	6	44	0		52	42	18	2	1		63	6	31	8	0		45	180
Lights %	100%	86.7%	100%	0%		90.9%	100%	75%	97.8%	0%		94.5%	100%	100%	100%	100%		100%	54.5%	91.2%	100%	0%		84.9%	93.3%
Single-Unit Trucks	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	1	0	0	0		1	1
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	9.1%	0%	0%	0%		1.9%	0.5%
Buses	0	0	0	0		0	0	0	1	0		1	0	0	0	0		0	0	0	0	0		0	1
Buses %	0%	0%	0%	0%		0%	0%	0%	2.2%	0%		1.8%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0.5%
Bicycles on Road	0	2	0	0		2	0	2	0	0		2	0	0	0	0		0	4	3	0	0		7	11
Bicycles on Road %	0%	13.3%	0%	0%		9.1%	0%	25%	0%	0%		3.6%	0%	0%	0%	0%		0%	36.4%	8.8%	0%	0%		13.2%	5.7%
Pedestrians	-	-	-	-	4	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	80%		-	-	-	-	20%		-	-	-	-	0%		-	-	-	-	0%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY
SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 08:00 AM - 09:00 AM **Weather: Overcast Clouds (16 °C)**



Peak Hour: 04:30 PM - 05:30 PM **Weather: Overcast Clouds (17 °C)**



NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Turning Movement Count (4 . ACADEMY STREET & WILSON STREET EAST) MioID: 1314201

Start Time	Westbound WILSON STREET EAST					Northbound ACADEMY STREET					Eastbound WILSON STREET EAST					Int. Total (15 min)	Int. Total (1 hr)
	Thru E:W	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	U-Turn W:W	Peds W:	Approach Total		
2025-06-26 07:00:00	51	0	0	0	51	0	1	0	0	1	0	107	0	0	107	159	
2025-06-26 07:15:00	78	0	0	1	78	1	2	0	1	3	0	116	0	0	116	197	
2025-06-26 07:30:00	86	0	0	0	86	0	1	0	3	1	5	162	0	0	167	254	
2025-06-26 07:45:00	134	1	0	0	135	2	0	0	2	2	3	164	0	0	167	304	914
2025-06-26 08:00:00	116	2	0	0	118	5	1	0	4	6	2	172	0	0	174	298	1053
2025-06-26 08:15:00	113	1	0	3	114	5	0	0	4	5	2	186	0	1	188	307	1163
2025-06-26 08:30:00	102	0	0	0	102	1	1	0	4	2	5	168	0	0	173	277	1186
2025-06-26 08:45:00	126	0	0	0	126	0	0	0	3	0	2	147	0	2	149	275	1157
2025-06-26 09:00:00	123	1	0	0	124	2	3	0	1	5	3	120	0	0	123	252	1111
2025-06-26 09:15:00	130	0	0	0	130	2	0	0	1	2	5	133	0	1	138	270	1074
2025-06-26 09:30:00	113	1	0	0	114	1	7	0	5	8	2	149	0	2	151	273	1070
2025-06-26 09:45:00	133	1	0	1	134	0	2	0	4	2	3	128	0	1	131	267	1062
BREAK																	
2025-06-26 16:00:00	145	3	0	1	148	3	1	0	9	4	10	174	0	1	184	336	
2025-06-26 16:15:00	152	1	0	1	153	0	2	0	9	2	5	143	0	0	148	303	
2025-06-26 16:30:00	147	3	0	2	150	1	1	0	0	2	7	151	0	0	158	310	
2025-06-26 16:45:00	161	2	0	0	163	3	1	0	7	4	8	185	0	0	193	360	1309
2025-06-26 17:00:00	167	2	0	1	169	0	4	0	4	4	13	172	0	0	185	358	1331
2025-06-26 17:15:00	173	3	0	0	176	4	1	0	3	5	10	142	0	0	152	333	1361
2025-06-26 17:30:00	166	2	0	0	168	0	1	0	3	1	4	178	0	0	182	351	1402
2025-06-26 17:45:00	165	1	0	0	166	0	2	0	2	2	4	122	0	0	126	294	1336
2025-06-26 18:00:00	161	3	0	0	164	1	1	0	10	2	2	160	0	0	162	328	1306
2025-06-26 18:15:00	171	1	0	1	172	1	1	0	6	2	5	111	0	0	116	290	1263
2025-06-26 18:30:00	105	1	0	0	106	1	1	0	14	2	4	105	0	0	109	217	1129
2025-06-26 18:45:00	132	2	0	1	134	4	2	0	8	6	4	121	0	0	125	265	1100
Grand Total	3150	31	0	12	3181	37	36	0	107	73	108	3516	0	8	3624	**6878**	-
Approach%	99%	1%	0%		-	50.7%	49.3%	0%		-	3%	97%	0%		-	**-**	-
Totals %	45.8%	0.5%	0%		46.2%	0.5%	0.5%	0%		1.1%	1.6%	51.1%	0%		52.7%	**-**	-
Heavy	66	1	0		-	0	0	0		-	0	72	0		-	**-**	-
Heavy %	2.1%	3.2%	0%		-	0%	0%	0%		-	0%	2%	0%		-	**-**	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-

NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 07:45 AM - 08:45 AM Weather: Overcast Clouds (16 °C)

Start Time	Westbound WILSON STREET EAST					Northbound ACADEMY STREET					Eastbound WILSON STREET EAST					Int. Total (15 min)
	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	
2025-06-26 07:45:00	134	1	0	0	135	2	0	0	2	2	3	164	0	0	167	304
2025-06-26 08:00:00	116	2	0	0	118	5	1	0	4	6	2	172	0	0	174	298
2025-06-26 08:15:00	113	1	0	3	114	5	0	0	4	5	2	186	0	1	188	307
2025-06-26 08:30:00	102	0	0	0	102	1	1	0	4	2	5	168	0	0	173	277
Grand Total	465	4	0	3	469	13	2	0	14	15	12	690	0	1	702	**1186**
Approach%	99.1%	0.9%	0%		-	86.7%	13.3%	0%		-	1.7%	98.3%	0%		-	**-**
Totals %	39.2%	0.3%	0%		39.5%	1.1%	0.2%	0%		1.3%	1%	58.2%	0%		59.2%	**-**
PHF	0.87	0.5	0		0.87	0.65	0.5	0		0.63	0.6	0.93	0		0.93	0.97
Heavy	12	0	0		12	0	0	0		0	0	20	0		20	32
Heavy %	2.6%	0%	0%		2.6%	0%	0%	0%		0%	0%	2.9%	0%		2.8%	2.7%
Lights	452	4	0		456	13	2	0		15	12	670	0		682	1153
Lights %	97.2%	100%	0%		97.2%	100%	100%	0%		100%	100%	97.1%	0%		97.2%	97.2%
Single-Unit Trucks	6	0	0		6	0	0	0		0	0	14	0		14	20
Single-Unit Trucks %	1.3%	0%	0%		1.3%	0%	0%	0%		0%	0%	2%	0%		2%	1.7%
Buses	6	0	0		6	0	0	0		0	0	4	0		4	10
Buses %	1.3%	0%	0%		1.3%	0%	0%	0%		0%	0%	0.6%	0%		0.6%	0.8%
Articulated Trucks	0	0	0		0	0	0	0		0	0	2	0		2	2
Articulated Trucks %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0.3%	0%		0.3%	0.2%
Bicycles on Road	1	0	0		1	0	0	0		0	0	0	0		0	1
Bicycles on Road %	0.2%	0%	0%		0.2%	0%	0%	0%		0%	0%	0%	0%		0%	0.1%
Pedestrians	-	-	-	3	-	-	-	-	14	-	-	-	-	1	-	**-**
Pedestrians%	-	-	-	16.7%		-	-	-	77.8%		-	-	-	5.6%		**-**
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**

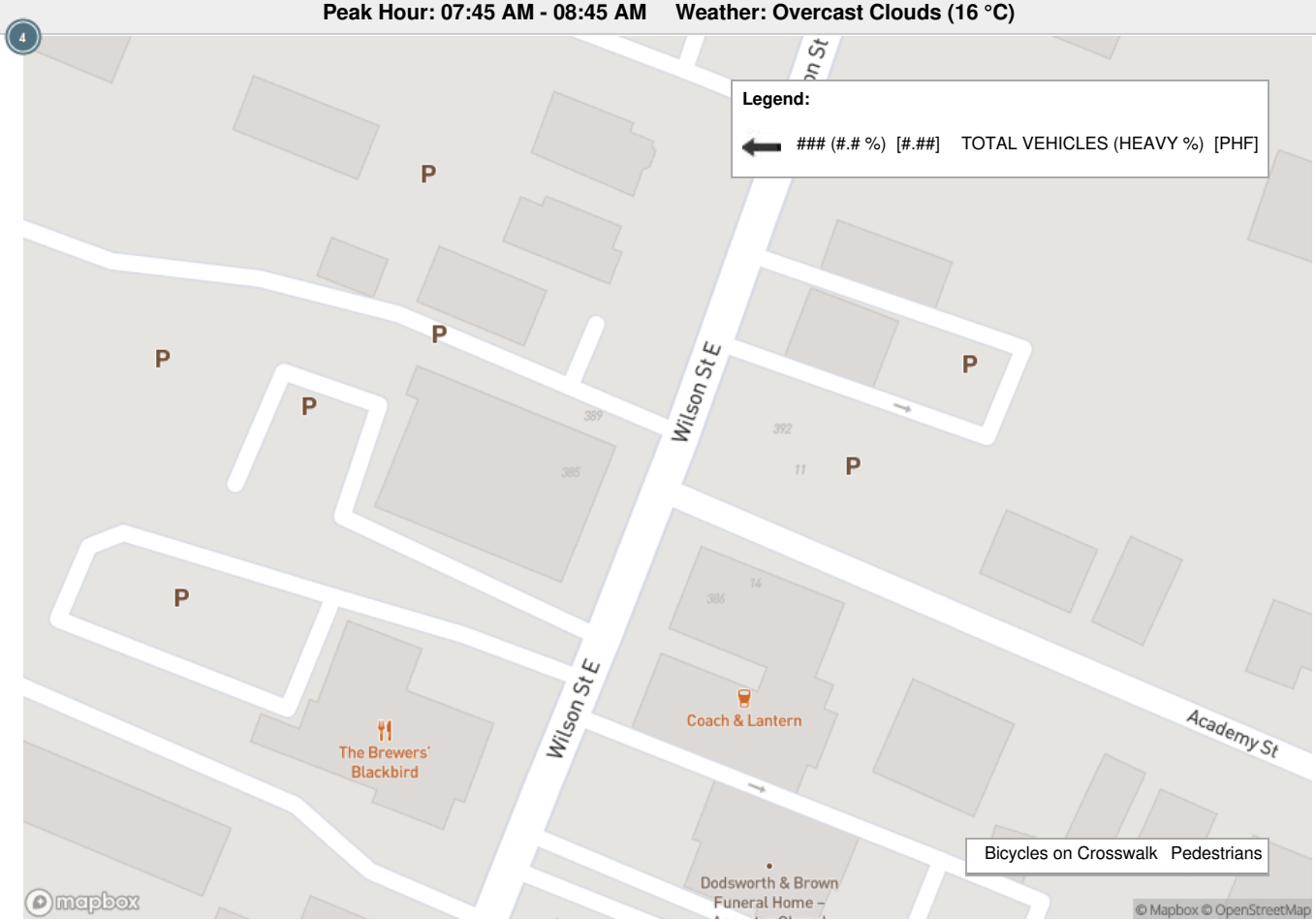
NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 04:45 PM - 05:45 PM Weather: Overcast Clouds (17 °C)

Start Time	Westbound WILSON STREET EAST					Northbound ACADEMY STREET					Eastbound WILSON STREET EAST					Int. Total (15 min)
	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	
2025-06-26 16:45:00	161	2	0	0	163	3	1	0	7	4	8	185	0	0	193	360
2025-06-26 17:00:00	167	2	0	1	169	0	4	0	4	4	13	172	0	0	185	358
2025-06-26 17:15:00	173	3	0	0	176	4	1	0	3	5	10	142	0	0	152	333
2025-06-26 17:30:00	166	2	0	0	168	0	1	0	3	1	4	178	0	0	182	351
Grand Total	667	9	0	1	676	7	7	0	17	14	35	677	0	0	712	**1402**
Approach%	98.7%	1.3%	0%		-	50%	50%	0%		-	4.9%	95.1%	0%		-	**-**
Totals %	47.6%	0.6%	0%		48.2%	0.5%	0.5%	0%		1%	2.5%	48.3%	0%		50.8%	**-**
PHF	0.96	0.75	0		0.96	0.44	0.44	0		0.7	0.67	0.91	0		0.92	0.97
Heavy	9	0	0		9	0	0	0		0	0	7	0		7	16
Heavy %	1.3%	0%	0%		1.3%	0%	0%	0%		0%	0%	1%	0%		1%	1.1%
Lights	658	9	0		667	7	7	0		14	35	670	0		705	1386
Lights %	98.7%	100%	0%		98.7%	100%	100%	0%		100%	100%	99%	0%		99%	98.9%
Single-Unit Trucks	4	0	0		4	0	0	0		0	0	3	0		3	7
Single-Unit Trucks %	0.6%	0%	0%		0.6%	0%	0%	0%		0%	0%	0.4%	0%		0.4%	0.5%
Buses	3	0	0		3	0	0	0		0	0	3	0		3	6
Buses %	0.4%	0%	0%		0.4%	0%	0%	0%		0%	0%	0.4%	0%		0.4%	0.4%
Articulated Trucks	2	0	0		2	0	0	0		0	0	1	0		1	3
Articulated Trucks %	0.3%	0%	0%		0.3%	0%	0%	0%		0%	0%	0.1%	0%		0.1%	0.2%
Bicycles on Road	0	0	0		0	0	0	0		0	0	0	0		0	0
Bicycles on Road %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	0%
Pedestrians	-	-	-	1	-	-	-	-	17	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	5.6%		-	-	-	94.4%		-	-	-	0%		**-**
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**

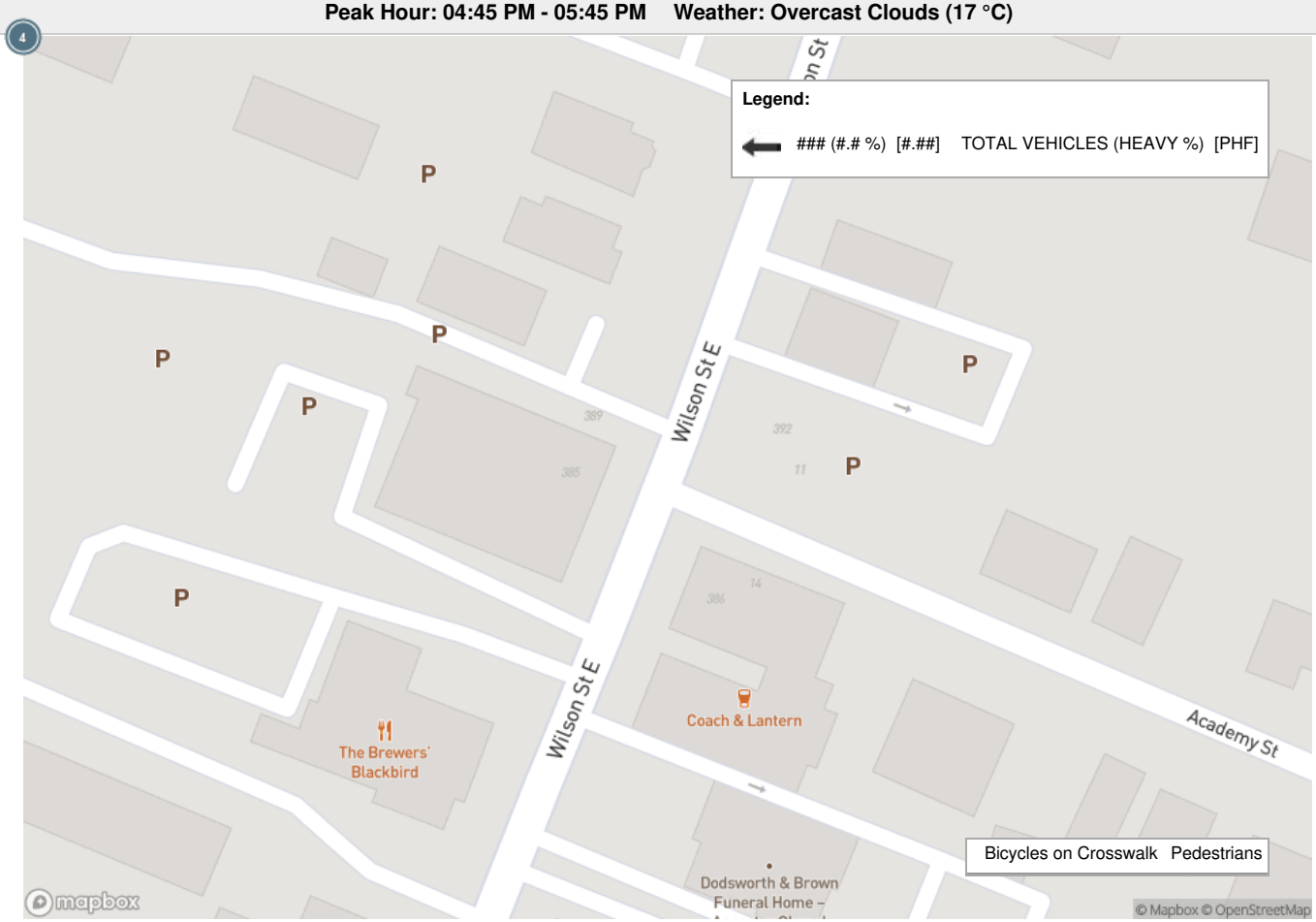
NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 07:45 AM - 08:45 AM Weather: Overcast Clouds (16 °C)



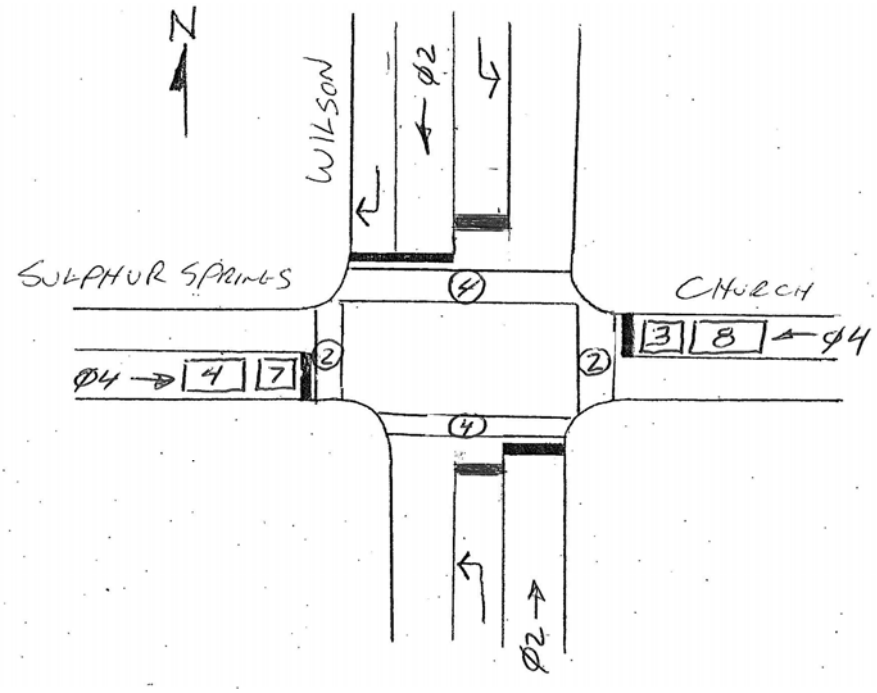
NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 04:45 PM - 05:45 PM Weather: Overcast Clouds (17 °C)



City of Hamilton - Traffic
Traffic Signal Controller Timing Data

Intersection:	**Church & Sulphur Springs & Wilson**				
Controller Type:	**3000E**	Page	**1**	of	**15**
Programmed By:	**RD**	Installed By:	**RD**		
Date:	**04-Jun-14**	Date:	**23-Jun-14**		



ϕ1:
ϕ2: **Wilson - NB/SB, East & West Xwalks**
ϕ3:
ϕ4: **Church / Sulphur Springs - EB/WB, North & South Xwalks**
ϕ5:
ϕ6:
ϕ7:
ϕ8:

Flash Operation: **Amber: Wilson**
Red: Church / Sulphur Springs

SEQUENCE/START-UP (MM-3-1-1)

START-UP PHASES/INTERVAL/SEQUENCE

(X = Enable for start-up phases. Must be compatible if more than one)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
START-UP	Phases		X														
	Interval	0	(0=Red, 1=Yel, 2= Grn, determines color of selected phases above on start-up)														
	Flash	10	(0-255 seconds start-up flash time)														
	Red	5.0	(0-25.5 secs = length of first red after start-up if start-up in yellow or red)														
	Sequence	2	(2=single ring, 3=dual ring, 4=123/567+48, 5=12/56+3478, 6=1234/56+78, 7=1234/5678, 8=dual quad, 9=12ph														

PHASE RING ASSIGNMENTS

X = Phase assigned to ring (if used). Phases in different rings but same co-phase group can time together.

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
RING	Ring 1		X		X												
	Ring 2																
	Ring 3																
	Ring 4																

CO-PHASE GRP 1-4 ASSIGNMENTS

X = phase assigned to co-phase group. All ph's assigned to rings must be assigned to co-phase group.

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
CO-PHASE	CO PH 1		X														
	CO PH 2				X												
	CO PH 3																
	CO PH 4																

CONTROLLER DATA

PHASE RECALLS/MODES; MIN, MAX, etc. (MM-3-1-2-1-PGDN, etc.) USE 1 TO ALL 4 TIMING PLANS

TP1 PHASE RECALLS

(X = ENABLE)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PHASE RECALLS	MIN RCL																
	MAX RCL																
	PED RCL																
	SOFT REC																
	NON-LOCK				X												
	VEH OMIT																
	PED OMIT																
	WLK REST																
	MAX II																
	RED REST																
	NO SKIP																

TP2 PHASE RECALLS

(X = ENABLE)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PHASE RECALLS	MIN RCL																
	MAX RCL																
	PED RCL																
	SOFT REC																
	NON-LOCK				X												
	VEH OMIT																
	PED OMIT																
	WLK REST																
	MAX II																
	RED REST																
	NO SKIP																

CONTROLLER DATA

TP3 PHASE RECALLS

(X = ENABLE)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PHASE RECALLS	MIN RCL																
	MAX RCL																
	PED RCL																
	SOFT REC																
	NON-LOCK				X												
	VEH OMIT																
	PED OMIT																
	WLK REST																
	MAX II																
	RED REST																
	NO SKIP																

PHASE RECALLS/MODES; CNA, INH MAX, PED OPTIONS, etc. (MM-3-1-2-2) ONLY 1 PLAN PER UNIT

(X = ENABLE)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PHASE RECALLS	CNA 1		X														
	CNA 2																
	CNA 3																
	CNA 4																
	WRM		X														
	INH MAX																
	PED RECY																
	FL WALK																
	FDW->YEL																
	FDW->RED																
	COND PED																

CONTROLLER DATA

PHASE TIMES (MM-3-1-3-PGDN, etc.)

USE 1 TO ALL 4 TIMING PLANS

		TP1															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PHASE TIMES	Initial		**30**		**10**												
	Passage				**3.0**												
	Yellow		**3.3**		**3.3**												
	Red		**2.1**		**2.0**												
	Walk		**7**		**7**												
	Ped Clr		**8**		**10**												
	Max 1		**55**		**30**												
	Max 2																
	Mx 3 Lim																
	Mx 3 Adh																
	TBR																
	TTR																
	Min Gap																
	Al/Act																
	Max In																

CONTROLLER DATA

TP2

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PHASE TIMES	Initial		**30**		**10**												
	Passage				**3.0**												
	Yellow		**3.3**		**3.3**												
	Red		**2.1**		**2.0**												
	Walk		**7**		**7**												
	Ped Clr		**8**		**10**												
	Max 1		**55**		**30**												
	Max 2																
	Mx 3 Lim																
	Mx 3 Adh																
	TBR																
	TTR																
	Min Gap																
	Al/Act																
	Max In																

TP3

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PHASE TIMES	Initial		**30**		**10**												
	Passage				**3.0**												
	Yellow		**3.3**		**3.3**												
	Red		**2.1**		**2.0**												
	Walk		**7**		**7**												
	Ped Clr		**8**		**10**												
	Max 1		**55**		**30**												
	Max 2																
	Mx 3 Lim																
	Mx 3 Adh																
	TBR																
	TTR																
	Min Gap																
	Al/Act																
	Max In																

CONTROLLER DATA

VEHICLE DETECTOR ASSIGNMENTS (MM-3-1-4-1, PGDN etc.)

(X = ASSIGN VEH DETECTOR TO THAT PHASE)

	DET/PH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
VEH	1																
DET	2																
ASSIGN-	3				X												
MENTS	4				X												
	5																
	6																
	7				X												
	8				X												

PED DETECTOR ASSIGNMENTS (MM-3-1-4-2)

(X = ASSIGN PED DETECTOR TO THAT PHASE)

	DET/PH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PED	1																
DET	2																
ASSIGN-	3																
MENTS	4				X												
	5																
	6																
	7																
	8																

CONTROLLER DATA

DETECTOR MODES (MM-3-1-4-3)

	DET	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
VEH DET	Mode			**2**	**2**			**2**	**2**								
MODES																	

DETECTOR TIMES (MM-3-1-4-4)

USE 1 TO ALL 3 DETECTOR TIMING PLANS

TP1

	DET	1	2	3	4	5	6	7	8
DET	Delay			**1**	**1**			**1**	**1**
TIMES	Str/Stp								
	DET	9	10	11	12	13	14	15	16
DET	Delay								
TIMES	Str/Stp								

SELECTION SOURCE (MM-3-2-2)

Entries determine how parameters get selected

Cycle Source:	**0**	0=TOD, 1=CL, 2=INT
Split Source:	**0**	0=TOD, 1=CL, 2=INT
Offset Source:	**0**	0=TOD, 1=CL, 2=INT

Free Source:	**0**	0=TOD, 1=CL, 2=INT
Flash Source:	**0**	0=TOD, 1=CL, 2=INT
Inter-TOD Revert:	**255**	0-255 SECS

TOD = Time of day control by internal clock, CL = Closed loop (comm), INT = Interconnect. Inter-TOD Revert is time allowed after failed interconnect before unit reverts to TOD (Time Base) control.

COORD BASIC OPTIONS (MM-3-2-3)

Reference to End (vs. begin) of Main St.:	**N**	Y/N: Y = Offset references to end of main st. green. N = Beginning of Main st. green.
Use % (vs. secs) for Phase Allocation:	**N**	Y/N: Y = Phase allocations loaded as percent of 100. N = Allocations in seconds.
Use % (vs. secs) for Offset Entry:	**N**	Y/N: Y = Offset loaded as percent of 100. N = Offset loaded in seconds.
Use Fixed (vs. floating) Force Offs:	**Y**	Y/N: Y = Force offs are fixed to cycle. N=Force offs like max times, begin with green.
Permissive Type:	**0**	0-2: 0=Yield, 1= Single, 2= Multiple. See Permissives note below

C/S TO TIMING PLAN (MM-3-2-9-6)

USE THIS CHART WHEN 4 SPLITS/CYCLE = Y

	CYCLE	1	2	3	4	5	6
SPLIT TO TIME PLAN	SPLIT 1	**1**	**2**	**3**			
	SPLIT 2						
	SPLIT 3						
	SPLIT 4						

(0-4 = TIME PLAN IMPLEMENTED WHEN SPLIT IN EFFECT)

CYCLES & OFFSETS (MM-3-2-4)

NOTE: FIRST SPECIFY OFSET SEEKING MODE AND 4 SPLITS CYCLE MODE (ENHANCED OPTIONS, OPERATING MODES)

	Cycle #	1/1	2/1	3/1	4/1		
CYCLE & OFFSETS	Length	**70**	**90**	**90**			
	Offset 1	**24**	**10**	**53**			
	Offset 2						
	Offset 3						
	Offset 4						
	Offset 5						
	Max Dwell	**32**	**32**	**32**			

COORD PHASES (MM-3-2-5)

	CYCLE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
COORD PHASES	**1-1**		**X**														
	2-1		**X**														
	3-1		**X**														

OFFSET SEEKING MODE (MM-3-2-7)

Offset Seeking Mode:	**0**

Mode

0 Add only, cycle times 20% slow only to get in sync
1 Dwell, cycle timer stops at cycle 0 up to max dwell time to get in step
2 Short Route, cycle times 20% fast or slow--whichever gets in step fastest

ENHANCED OPTIONS

OPERATING OPTIONS (MM-3-2-9-1)

Enhanced Perm:	**Y**	Y/N: See note	Invert Free In:	**N**	Y/N: See note
Central Override:	**N**	Y/N: See note	Split Matrix:	**N**	Y/N: See note
No PCL Offset Adjust:	**N**	Y/N: See note	4 Splits/Cycle:	**Y**	Y/N: See note
			No Early Coord Ped:	**N**	Y/N: See note

Yeild Percent	**1**	0-10%: See note
EGB%	**0**	0-100%: See note
RGB%	**10**	0-100%: See note
# Cycles to out of step:	**0**	0-255: 0=Disable

CYCLE SYNC OPTIONS (MM-3-2-9-2)

Sync Source:	**0**	0-2, 0=TOD/CL/Interconnect, 1= City Zero, 2= Absolute

Charts below only For City Zero offfsets or Absolute (0's). These are not daily reference times for Sync Source Option 0 (see TOD).

Cycle 1:	**0**	Cycle 2:	**0**	Cycle 3:	**0**
Cycle 4:	**0**	Cycle 5:	**0**	Cycle 6:	**0**

MANUAL/AUTO FORCE OFFS & PERMS

SET MANUAL MODE (MM-3-2-9-3-1)

Auto Perm and FO:	**Y**	Y/N: Y = Perms & Force offs auto-calculated from phase allocations. N = Manually entered
Ped Perm:	**0**	0-255: 0 = Auto calculated. 1-255 = secs each ped perm, starting with vehicle permissives

PHASE ALLOCATION (MM-3-2-6)

	ENTRY IN:	Secs	% or Secs: Not a controller entry--for reference only. Controller entry is under basic options.														
PHASE ALLO-CATION	PHASE	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
	C1 S1		**40**		**30**												
	C1 S2																
	C1 S3																
	C1 S4																
	C2 S1		**55**		**35**												
	C2 S2																
	C2 S3																
	C2 S4																
	C3 S1		**55**		**35**												
	C3 S2																
	C3 S3																
	C3 S4																
	C4 S1																
	C4 S2																
	C4 S3																
	C4 S4																

DAY PLANS (MM-3-3-1-#)

	HH	MM	CIRCUIT PLAN	C	O	S	CKT	ON/OFF
1	00	00					11(FRE)	ON
	06	30					11(FRE)	OFF
	06	30		1	1	1		
	23	00					11(FRE)	ON
2	00	00					11(FRE)	ON
	06	30					11(FRE)	OFF
	06	30		2	1	1		
	09	30		1	1	1		
	15	30		3	1	1		
	18	00		1	1	1		
	23	00					11(FRE)	ON

WEEK PLANS (MM-3-3-3)

Plan	SUN	MON	TUE	WED	THU	FRI	SAT
1	1	2	2	2	2	2	1
2							
3							
4							
5							

CIRCUIT OVERRIDES (MM-3-3-6)

For each ciruit specify TOD (time of day controlled), or manually ON or OFF. Default = TOD

CIRCUIT OVER-RIDES	Circuit	65	66	67	68	69	70	71	72
	Function	LL1	LL2	LL3	LL4	LL5	LL6	LL7	LL8
	State								
	Circuit	**73**	74	75	76	**77**	78	79	80
	Function	**CN1**	CN2	CN3	CN4	**WRM**	MIN	DIM	CVS
	State	**ON**				**ON**			
CIRCUIT OVER-RIDES	Circuit	113	114	115	116	117	118	119	120
	Function	UD1	UD2	UD3	UD4	UD5	UD6	UD7	UD8
	State								
	Circuit	121	122	123	124	**125**	**126**	127	128
	Function	PH2	DP2	DP3	3CD	**EVL**	**EML**	ASC	DCP
	State					**ON**	**ON**		

DAYLIGHT SAVINGS (MM-3-3-7)

DAY LIGHT SAVINGS	Spring		Fall	
	(0-12)	(0-5)	(0-12)	(0-5)
	Month	WOM	Month	WOM
	3	**2**	**11**	**1**

Enter Month and Week of Month for Spring Forward and Fall Back days
(typical 4 - 1 and 10 - 5). Unit will adjust at 2AM on Sunday of week specified.
Enter zero (or leave blank) if Daylight Savings not used.

SYNC REFERENCE MODE (MM-3-3-8)

Mode:	**0**	0 = Time dependent, 1 = C/O/S Event

	HH	MM	
Time Clock Reset:	**00**	**00**	TOD clock reset to by TBC input
Interrupter:		**N**	Y/N; Y = Interrupter pulses provided
Pulses:		**0**	0-6 = Number of interrupter pulses

TIME DEPENDENT CYCLE REFERENCES		HH	MM		HH	MM		HH	MM
	CYC 1:	**00**	**00**	CYC 2:	**00**	**00**	CYC 3:	**00**	**00**
	CYC 4:	**00**	**00**	CYC 5:	**00**	**00**	CYC 6:	**00**	**00**

When mode = Time dependent, enter reference times of day for each cycle. Default = 00:00 = midnight = most commonly used reference.
When mode = C/O/S Event, cycle restarts on each COS change. Only use this mode for specific reasons. Time dependent most common used mode.

CLOSED LOOP ID (MM-3-5-1)

CLOSED LOOP ID	Master Type:	**1**	0 = None, 1 = 3000 Series Master, 2 = 3800 EL master
	Intersection ID		0-255
	Master Identification		0-255
	Allow Comm Xfer Between Ports 2 & 3		Y/N: Y = Incoming signal on Master port (2 or 3), gets echo'd on other port

COMM SET-UP (MM-3-5-2)

PG1 PORT ASSIGN	Master (CL) Port:		0 = None, 2 = Port 2, 3 = Port 3 (Port to be used to receive Master Comm)
	Monitor Port		0 = None, 2 = Port 2, 3 = Port 3 (Port to be used for Monitor Data Upload)
	Central Port:		0 = None, 2 = Port 2, 3 = Port 3 (Port to be used for Direct Dial-up Modem)

PG2 PORT 2 SETUP	Data Rate:	**9600**	1200, 2400, 4800, 9600, 14400, 19200
	Parity	**0**	0 = None, 1 = Odd, 2=Even
	Data bits	**1**	0 = 7 bits, 1 = 8 bits

PG3 PORT 3 SETUP	Data Rate:	**1200**	1200, 2400, 4800, 9600, 14400, 19200
	Parity	**0**	0 = None, 1 = Odd, 2=Even
	Data bits	**1**	0 = 7 bits, 1 = 8 bits

PG4	Modem Set-up String:		Up to 40 charaters; A-Z, or # @ = , ! ; % \ &

PHONE NUMBERS (MM-3-5-3)

PHONE NUM-BERS	Tone:		Y/N
	Phone 1:		Number & control characters (W , ; # ' / T P) if used
	Phone 2:		Number & control characters (W , ; # ' / T P) if used

LOG DATA (MM-3-5-5)

PG1 SAMPLE	Volume Log Sample period:	**60**	0, 6, 10, 15, 20, 30, 60 minutes, Enabled by TOD Ckt. 125 (EVL)
	MOE Log Sample period:	**60**	0, 6, 10, 15, 20, 30, 60 minutes, Enabled by TOD Ckt. 126 (EML

CITY OF HAMILTON

Traffic Signal Timing Plan

Database Date:	Janurary 20th, 2026		Prepared Date:	Friday, February 27, 2026
			Completed By:	MM
			Checked By:	EM
Location:	**Wilson Street @ Rousseaux Street / Old Dundas Road**			

Phase #	Street Name - Direction	Vehicle Minimum (s)	Pedestrian Minimum (s)		Amber (s)	All Red (s)	Time Period (s) MAX = Green only, SPLITS = G+A+R		
			WALK	PED CLR			AM MAX	OFF MAX	PM MAX
1	Wilson St - SBRT & WBRT	5			3		50	30	50
2	Wilson Street - NB (East X-Walk)	15	7	17	3.3	2.5	50	40	40
3									
4	Rousseaux St - WB (North X-Walk & NBRT)	15	7	12	3.3	2.3	30	30	40
5									
6	Wilson Street - SB (West X-Walk)	20	7	5	3.3	2.5	40	40	40
7									
8	Old Ancaster/Dundas - Ped Only (South X-Walk)	0	5	17	3.3	2.3	0	0	0

Notes/Remarks

- Signal operation type: Fully Actuated
- 3.0 seconds of passage time for phases 1
- 2.0 seconds of passage time for phase 4
- 1.5 seconds of passage time for phase 2 and 6
- Phase 8: Ped Actuation Only

Time (Weekdays)	Operation	Peak	Cycle (s)	Offset (s)
Event 1: 6:00AM-10:00AM	FREE	AM		
Event 2: 10:00AM-14:30PM, 18:30PM-22:00PM	FREE	OFF		
Event 3: 14:30PM-18:30PM	FREE	PM		

NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Turning Movement Count (2 . ROUSSEAUX STREET & ACADEMY STREET) MioID: 1314199

Start Time	Southbound ROUSSEAUX STREET					Northbound ROUSSEAUX STREET					Eastbound ACADEMY STREET					Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	U-Turn N:N	Peds N:	Approach Total	Thru S:N	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Left W:N	U-Turn W:W	Peds W:	Approach Total		
2025-06-26 07:00:00	0	84	0	0	84	122	3	0	1	125	1	0	0	2	1	210	
2025-06-26 07:15:00	0	121	0	0	121	181	2	0	1	183	6	0	0	1	6	310	
2025-06-26 07:30:00	0	166	0	0	166	239	1	0	0	240	9	0	0	3	9	415	
2025-06-26 07:45:00	0	149	0	0	149	246	6	0	0	252	7	0	0	0	7	408	1343
2025-06-26 08:00:00	0	195	0	0	195	252	5	0	0	257	13	0	0	0	13	465	1598
2025-06-26 08:15:00	0	189	0	0	189	246	9	0	0	255	9	0	0	2	9	453	1741
2025-06-26 08:30:00	0	197	0	0	197	148	13	0	0	161	14	0	0	2	14	372	1698
2025-06-26 08:45:00	1	174	0	0	175	259	11	0	0	270	9	0	0	2	9	454	1744
2025-06-26 09:00:00	3	144	0	0	147	191	7	0	0	198	5	1	0	1	6	351	1630
2025-06-26 09:15:00	0	169	0	0	169	189	12	0	0	201	8	0	0	1	8	378	1555
2025-06-26 09:30:00	1	172	0	0	173	217	9	0	0	226	6	0	0	0	6	405	1588
2025-06-26 09:45:00	1	146	0	0	147	197	7	0	0	204	3	0	0	0	3	354	1488
BREAK																	
2025-06-26 16:00:00	1	223	0	0	224	204	10	0	0	214	10	1	0	0	11	449	
2025-06-26 16:15:00	0	228	0	0	228	187	9	0	1	196	16	0	0	2	16	440	
2025-06-26 16:30:00	0	227	0	0	227	202	9	0	0	211	13	0	0	3	13	451	
2025-06-26 16:45:00	0	232	0	0	232	230	15	0	0	245	22	0	0	6	22	499	1839
2025-06-26 17:00:00	0	227	0	0	227	208	14	0	0	222	22	0	0	1	22	471	1861
2025-06-26 17:15:00	0	221	0	1	221	206	22	0	1	228	14	0	0	2	14	463	1884
2025-06-26 17:30:00	0	222	0	0	222	226	20	0	0	246	11	0	0	1	11	479	1912
2025-06-26 17:45:00	1	233	0	0	234	239	19	0	0	258	4	1	0	1	5	497	1910
2025-06-26 18:00:00	0	194	0	0	194	246	25	0	0	271	14	1	0	1	15	480	1919
2025-06-26 18:15:00	1	192	0	0	193	238	20	0	0	258	10	0	0	0	10	461	1917
2025-06-26 18:30:00	0	167	0	0	167	199	4	0	0	203	11	1	0	0	12	382	1820
2025-06-26 18:45:00	0	176	0	0	176	192	8	0	0	200	7	0	0	4	7	383	1706
Grand Total	9	4448	0	1	4457	5064	260	0	4	5324	244	5	0	35	249	**10030**	-
Approach%	0.2%	99.8%	0%		-	95.1%	4.9%	0%		-	98%	2%	0%		-	**-**	-
Totals %	0.1%	44.3%	0%		44.4%	50.5%	2.6%	0%		53.1%	2.4%	0%	0%		2.5%	**-**	-
Heavy	0	118	0		-	107	3	0		-	2	0	0		-	**-**	-
Heavy %	0%	2.7%	0%		-	2.1%	1.2%	0%		-	0.8%	0%	0%		-	**-**	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-

NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 08:00 AM - 09:00 AM Weather: Overcast Clouds (16 °C)

Start Time	Southbound ROUSSEAUX STREET					Northbound ROUSSEAUX STREET					Eastbound ACADEMY STREET					Int. Total (15 min)
	Right	Thru	U-Turn	Peds	Approach Total	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	
2025-06-26 08:00:00	0	195	0	0	195	252	5	0	0	257	13	0	0	0	13	465
2025-06-26 08:15:00	0	189	0	0	189	246	9	0	0	255	9	0	0	2	9	453
2025-06-26 08:30:00	0	197	0	0	197	148	13	0	0	161	14	0	0	2	14	372
2025-06-26 08:45:00	1	174	0	0	175	259	11	0	0	270	9	0	0	2	9	454
Grand Total	1	755	0	0	756	905	38	0	0	943	45	0	0	6	45	**1744**
Approach%	0.1%	99.9%	0%		-	96%	4%	0%		-	100%	0%	0%		-	**-**
Totals %	0.1%	43.3%	0%		43.3%	51.9%	2.2%	0%		54.1%	2.6%	0%	0%		2.6%	**-**
PHF	0.25	0.96	0		0.96	0.87	0.73	0		0.87	0.8	0	0		0.8	0.94
Heavy	0	35	0		35	26	1	0		27	1	0	0		1	63
Heavy %	0%	4.6%	0%		4.6%	2.9%	2.6%	0%		2.9%	2.2%	0%	0%		2.2%	3.6%
Lights	1	720	0		721	879	37	0		916	44	0	0		44	1681
Lights %	100%	95.4%	0%		95.4%	97.1%	97.4%	0%		97.1%	97.8%	0%	0%		97.8%	96.4%
Single-Unit Trucks	0	15	0		15	11	0	0		11	0	0	0		0	26
Single-Unit Trucks %	0%	2%	0%		2%	1.2%	0%	0%		1.2%	0%	0%	0%		0%	1.5%
Buses	0	17	0		17	14	1	0		15	1	0	0		1	33
Buses %	0%	2.3%	0%		2.2%	1.5%	2.6%	0%		1.6%	2.2%	0%	0%		2.2%	1.9%
Articulated Trucks	0	3	0		3	1	0	0		1	0	0	0		0	4
Articulated Trucks %	0%	0.4%	0%		0.4%	0.1%	0%	0%		0.1%	0%	0%	0%		0%	0.2%
Bicycles on Road	0	0	0		0	0	0	0		0	0	0	0		0	0
Bicycles on Road %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	0%
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	5	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	83.3%		**-**
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	**-**
Bicycles on Crosswalk%	-	-	-	0%		-	-	-	0%		-	-	-	16.7%		**-**

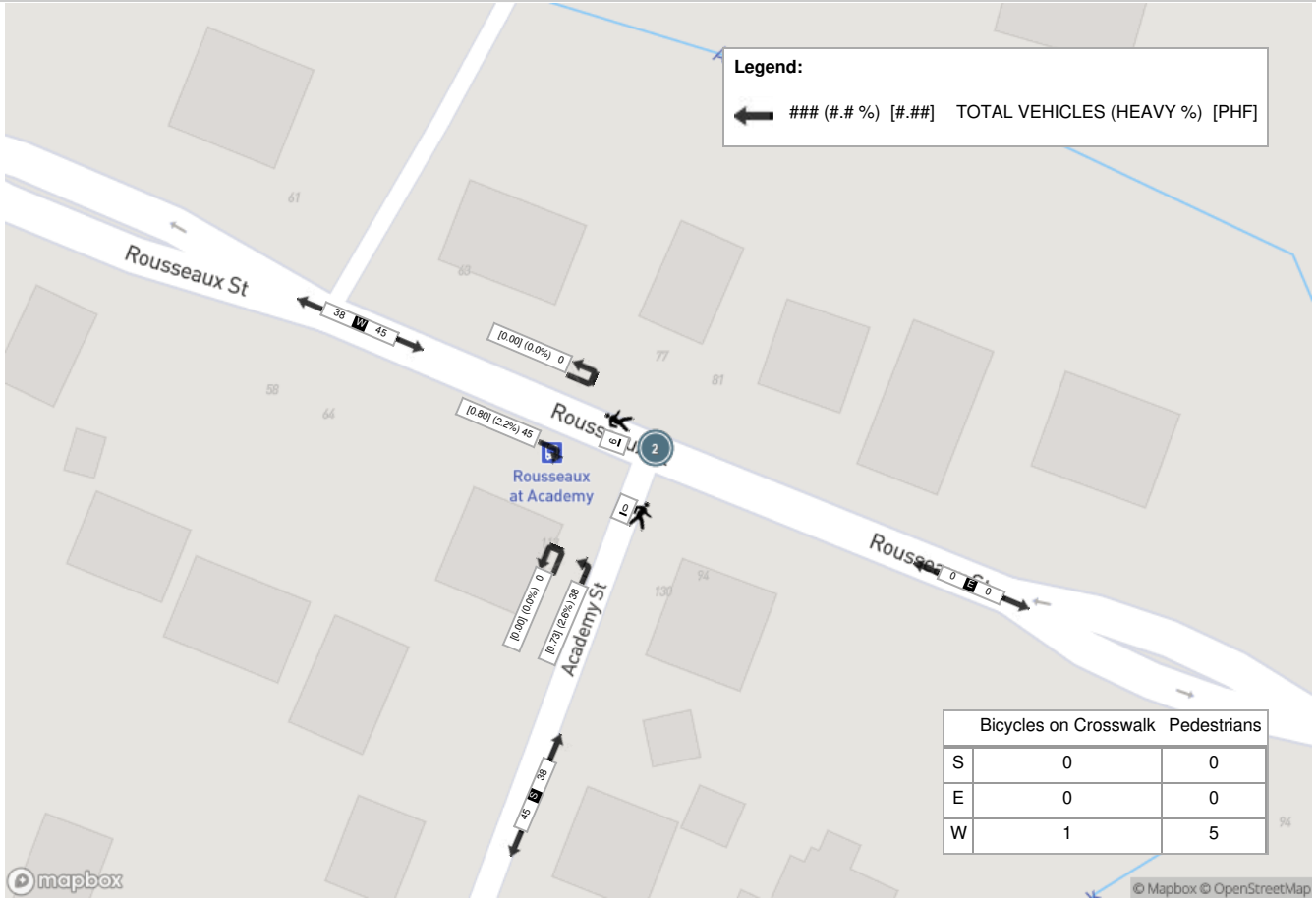
NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 05:15 PM - 06:15 PM Weather: Overcast Clouds (17 °C)

Start Time	Southbound ROUSSEAUX STREET					Northbound ROUSSEAUX STREET					Eastbound ACADEMY STREET					Int. Total (15 min)
	Right	Thru	U-Turn	Peds	Approach Total	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	
2025-06-26 17:15:00	0	221	0	1	221	206	22	0	1	228	14	0	0	2	14	463
2025-06-26 17:30:00	0	222	0	0	222	226	20	0	0	246	11	0	0	1	11	479
2025-06-26 17:45:00	1	233	0	0	234	239	19	0	0	258	4	1	0	1	5	497
2025-06-26 18:00:00	0	194	0	0	194	246	25	0	0	271	14	1	0	1	15	480
Grand Total	1	870	0	1	871	917	86	0	1	1003	43	2	0	5	45	**1919**
Approach%	0.1%	99.9%	0%		-	91.4%	8.6%	0%		-	95.6%	4.4%	0%		-	**-**
Totals %	0.1%	45.3%	0%		45.4%	47.8%	4.5%	0%		52.3%	2.2%	0.1%	0%		2.3%	**-**
PHF	0.25	0.93	0		0.93	0.93	0.86	0		0.93	0.77	0.5	0		0.75	0.97
Heavy	0	13	0		13	9	0	0		9	0	0	0		0	22
Heavy %	0%	1.5%	0%		1.5%	1%	0%	0%		0.9%	0%	0%	0%		0%	1.1%
Lights	1	857	0		858	907	86	0		993	43	2	0		45	1896
Lights %	100%	98.5%	0%		98.5%	98.9%	100%	0%		99%	100%	100%	0%		100%	98.8%
Single-Unit Trucks	0	6	0		6	2	0	0		2	0	0	0		0	8
Single-Unit Trucks %	0%	0.7%	0%		0.7%	0.2%	0%	0%		0.2%	0%	0%	0%		0%	0.4%
Buses	0	7	0		7	6	0	0		6	0	0	0		0	13
Buses %	0%	0.8%	0%		0.8%	0.7%	0%	0%		0.6%	0%	0%	0%		0%	0.7%
Articulated Trucks	0	0	0		0	1	0	0		1	0	0	0		0	1
Articulated Trucks %	0%	0%	0%		0%	0.1%	0%	0%		0.1%	0%	0%	0%		0%	0.1%
Bicycles on Road	0	0	0		0	1	0	0		1	0	0	0		0	1
Bicycles on Road %	0%	0%	0%		0%	0.1%	0%	0%		0.1%	0%	0%	0%		0%	0.1%
Pedestrians	-	-	-	1	-	-	-	-	1	-	-	-	-	3	-	**-**
Pedestrians%	-	-	-	14.3%		-	-	-	14.3%		-	-	-	42.9%		**-**
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	2	-	**-**
Bicycles on Crosswalk%	-	-	-	0%		-	-	-	0%		-	-	-	28.6%		**-**

NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY
SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

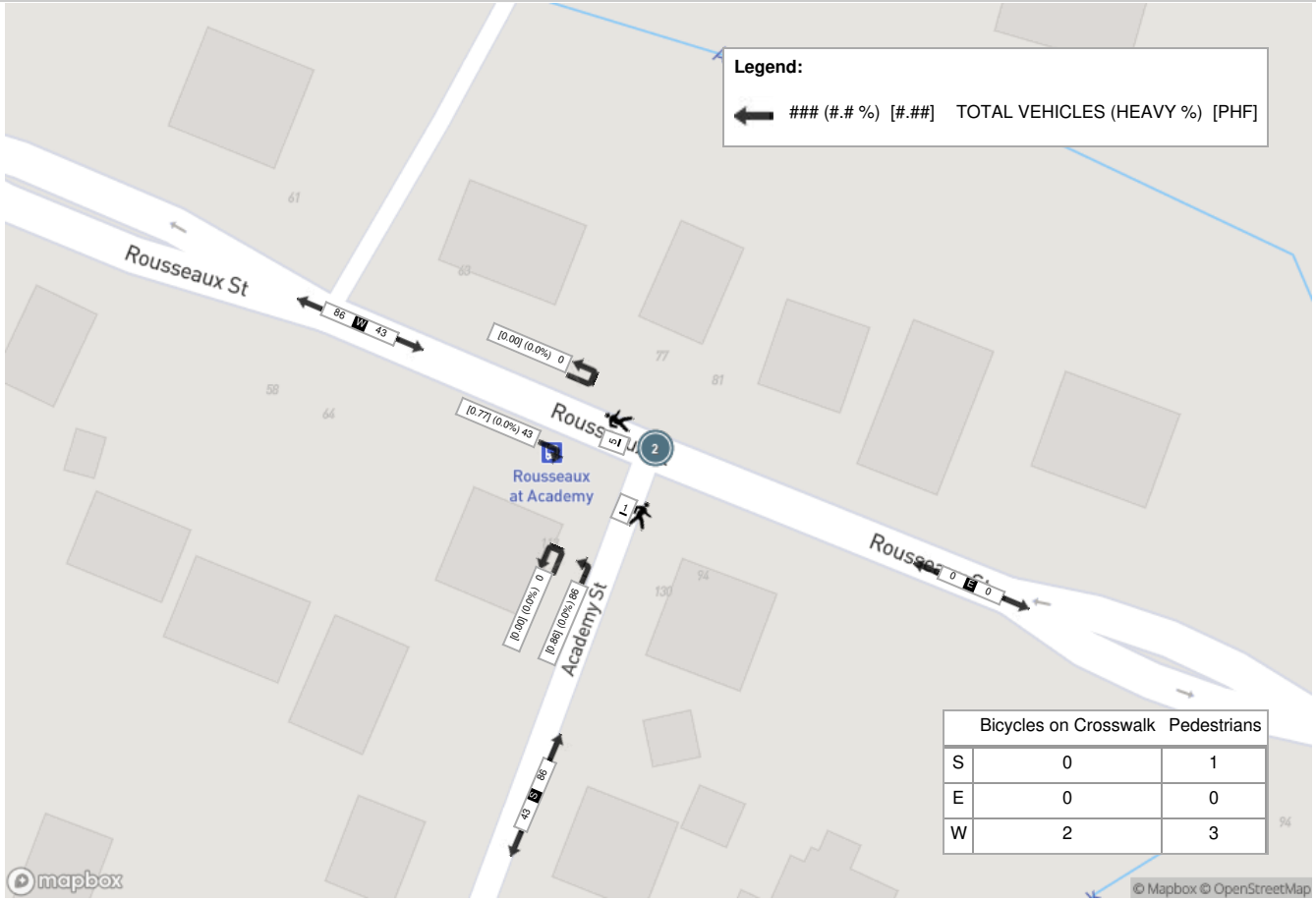
Peak Hour: 08:00 AM - 09:00 AM Weather: Overcast Clouds (16 °C)



	Bicycles on Crosswalk	Pedestrians
S	0	0
E	0	0
W	1	5

NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY
SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 05:15 PM - 06:15 PM Weather: Overcast Clouds (17 °C)



	Bicycles on Crosswalk	Pedestrians
S	0	1
E	0	0
W	2	3

Spectrum

Turning Movement Count
Location Name: WILSON STREET EAST & ROUSSEAUX STREET
Date: Thu, Jun 26, 2025 Deployment Lead: Constantinos Kotassidis

NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY
SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Turning Movement Count (1 . WILSON STREET EAST & ROUSSEAUX STREET) MioID: 1314198

Start Time	Southbound OLD DUNDAS RD						Westbound WILSON STREET EAST						Northbound ROUSSEAUX STREET						Eastbound WILSON STREET EAST						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	U-Turn W:W	Peds W:	Approach Total		
2025-06-26 07:00:00	7	14	0	0	0	21	0	18	28	0	0	46	91	0	24	0	2	115	45	50	0	0	7	95	277	
2025-06-26 07:15:00	2	30	0	0	0	32	0	33	32	0	0	65	152	0	43	0	7	195	57	64	0	0	0	121	413	
2025-06-26 07:30:00	10	32	0	0	0	42	0	26	58	0	1	84	185	0	48	0	1	233	74	92	0	0	5	166	525	
2025-06-26 07:45:00	14	31	0	0	1	45	0	48	53	0	0	101	181	0	80	0	5	261	64	89	0	0	0	153	560	1775
2025-06-26 08:00:00	9	44	0	0	0	53	0	43	45	0	0	88	190	0	61	0	2	251	92	86	0	0	0	178	570	2068
2025-06-26 08:15:00	14	37	0	0	0	51	0	36	54	0	1	90	174	0	65	0	5	239	96	88	0	0	3	184	564	2219
2025-06-26 08:30:00	16	60	0	0	0	76	0	43	66	0	0	109	116	0	34	0	1	150	80	83	0	0	0	163	498	2192
2025-06-26 08:45:00	24	41	0	0	0	65	0	38	50	0	1	88	188	0	70	0	3	258	68	68	0	0	1	136	547	2179
2025-06-26 09:00:00	13	39	0	0	1	52	0	50	51	0	1	101	132	1	63	0	1	196	51	79	0	0	0	130	479	2088
2025-06-26 09:15:00	18	37	0	0	1	55	0	42	59	0	0	101	114	0	68	0	1	182	72	62	0	0	1	134	472	1996
2025-06-26 09:30:00	13	40	0	0	0	53	0	39	57	0	3	96	143	0	57	0	1	200	71	77	0	0	0	148	497	1995
2025-06-26 09:45:00	12	43	0	0	16	55	0	48	42	0	0	90	138	0	68	0	2	206	61	57	0	0	0	118	469	1917
BREAK																										
2025-06-26 16:00:00	13	64	1	0	0	78	0	67	68	0	1	135	128	0	65	0	1	193	94	76	0	0	2	170	576	
2025-06-26 16:15:00	12	66	1	0	1	79	0	64	97	0	0	161	118	0	72	0	2	190	79	71	0	0	2	150	580	
2025-06-26 16:30:00	18	49	0	0	2	67	0	67	88	0	0	155	124	0	68	0	3	192	87	75	0	0	3	162	576	
2025-06-26 16:45:00	15	52	0	0	1	67	0	50	73	0	0	123	140	0	88	0	6	228	103	69	0	0	3	172	590	2322
2025-06-26 17:00:00	17	36	0	0	0	53	0	68	80	0	0	148	115	0	88	0	2	203	97	80	0	0	7	177	581	2327
2025-06-26 17:15:00	16	63	0	0	0	79	0	65	86	0	1	151	118	0	79	0	7	197	74	87	0	0	1	161	588	2335
2025-06-26 17:30:00	15	60	0	0	0	75	0	54	62	0	2	116	126	0	103	0	1	229	85	76	0	0	0	161	581	2340
2025-06-26 17:45:00	19	59	1	0	2	79	0	60	99	0	1	159	136	0	97	0	1	233	66	63	0	0	1	129	600	2350
2025-06-26 18:00:00	7	33	0	0	0	40	0	49	68	0	0	117	140	0	101	0	2	241	89	66	0	0	2	155	553	2322
2025-06-26 18:15:00	11	46	0	0	0	57	0	47	96	0	0	143	144	0	89	0	2	233	50	64	0	0	0	114	547	2281
2025-06-26 18:30:00	9	52	0	0	0	61	0	44	65	0	19	109	151	0	49	0	2	200	51	67	0	0	0	118	488	2188
2025-06-26 18:45:00	13	28	0	0	0	41	0	36	73	0	0	109	106	0	88	0	2	194	68	56	0	0	6	124	468	2056
Grand Total	317	1056	3	0	25	1376	0	1135	1550	0	31	2685	3350	1	1668	0	62	5019	1774	1745	0	0	44	3519	**12599**	-
Approach%	23%	76.7%	0.2%	0%		-	0%	42.3%	57.7%	0%		-	66.7%	0%	33.2%	0%		-	50.4%	49.6%	0%	0%		-	-	-
Totals %	2.5%	8.4%	0%	0%		10.9%	0%	9%	12.3%	0%		21.3%	26.6%	0%	13.2%	0%		39.8%	14.1%	13.9%	0%	0%		27.9%	-	-
Heavy	4	8	0	0		-	0	31	71	0		-	82	0	29	0		-	36	37	0	0		-	-	-
Heavy %	1.3%	0.8%	0%	0%		-	0%	2.7%	4.6%	0%		-	2.4%	0%	1.7%	0%		-	2%	2.1%	0%	0%		-	-	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-

NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY
SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 07:30 AM - 08:30 AM Weather: Overcast Clouds (16 °C)

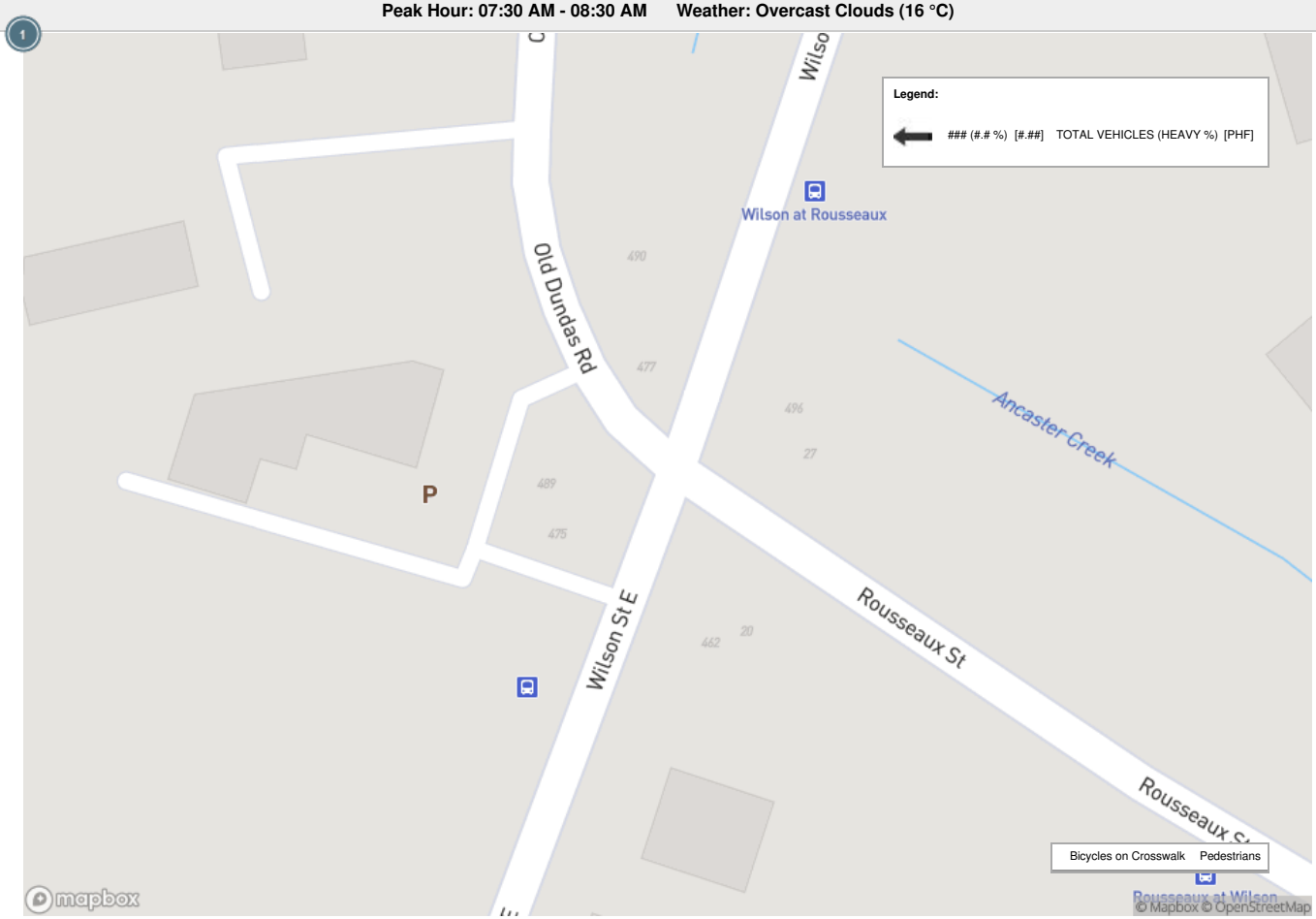
Start Time	Southbound OLD DUNDAS RD						Westbound WILSON STREET EAST						Northbound ROUSSEAUX STREET						Eastbound WILSON STREET EAST						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
2025-06-26 07:30:00	10	32	0	0	0	42	0	26	58	0	1	84	185	0	48	0	1	233	74	92	0	0	5	166	525
2025-06-26 07:45:00	14	31	0	0	1	45	0	48	53	0	0	101	181	0	80	0	5	261	64	89	0	0	0	153	560
2025-06-26 08:00:00	9	44	0	0	0	53	0	43	45	0	0	88	190	0	61	0	2	251	92	86	0	0	0	178	570
2025-06-26 08:15:00	14	37	0	0	0	51	0	36	54	0	1	90	174	0	65	0	5	239	96	88	0	0	3	184	564
Grand Total	47	144	0	0	1	191	0	153	210	0	2	363	730	0	254	0	13	984	326	355	0	0	8	681	**2219**
Approach%	24.6%	75.4%	0%	0%		-	0%	42.1%	57.9%	0%		-	74.2%	0%	25.8%	0%		-	47.9%	52.1%	0%	0%		-	**-**
Totals %	2.1%	6.5%	0%	0%		8.6%	0%	6.9%	9.5%	0%		16.4%	32.9%	0%	11.4%	0%		44.3%	14.7%	16%	0%	0%		30.7%	**-**
PHF	0.84	0.82	0	0		0.9	0	0.8	0.91	0		0.9	0.96	0	0.79	0		0.94	0.85	0.96	0	0		0.93	0.97
Heavy	0	2	0	0		2	0	2	20	0		22	22	0	11	0		33	8	11	0	0		19	76
Heavy %	0%	1.4%	0%	0%		1%	0%	1.3%	9.5%	0%		6.1%	3%	0%	4.3%	0%		3.4%	2.5%	3.1%	0%	0%		2.8%	3.4%
Lights	47	142	0	0		189	0	150	190	0		340	708	0	243	0		951	318	344	0	0		662	2142
Lights %	100%	98.6%	0%	0%		99%	0%	98%	90.5%	0%		93.7%	97%	0%	95.7%	0%		96.6%	97.5%	96.9%	0%	0%		97.2%	96.5%
Single-Unit Trucks	0	0	0	0		0	0	1	12	0		13	11	0	6	0		17	4	6	0	0		10	40
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	0.7%	5.7%	0%		3.6%	1.5%	0%	2.4%	0%		1.7%	1.2%	1.7%	0%	0%		1.5%	1.8%
Buses	0	2	0	0		2	0	1	7	0		8	9	0	5	0		14	4	2	0	0		6	30
Buses %	0%	1.4%	0%	0%		1%	0%	0.7%	3.3%	0%		2.2%	1.2%	0%	2%	0%		1.4%	1.2%	0.6%	0%	0%		0.9%	1.4%
Articulated Trucks	0	0	0	0		0	0	0	1	0		1	2	0	0	0		2	0	3	0	0		3	6
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0%	0.5%	0%		0.3%	0.3%	0%	0%	0%		0.2%	0%	0.8%	0%	0%		0.4%	0.3%
Bicycles on Road	0	0	0	0		0	0	1	0	0		1	0	0	0	0		0	0	0	0	0		0	1
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0.7%	0%	0%		0.3%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%
Pedestrians	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	13	-	-	-	-	-	8	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	8.3%		-	-	-	-	54.2%		-	-	-	-	33.3%		**-**
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	4.2%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

Peak Hour: 05:00 PM - 06:00 PM Weather: Overcast Clouds (17 °C)

Start Time	Southbound OLD DUNDAS RD						Westbound WILSON STREET EAST						Northbound ROUSSEAUX STREET						Eastbound WILSON STREET EAST						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
2025-06-26 17:00:00	17	36	0	0	0	53	0	68	80	0	0	148	115	0	88	0	2	203	97	80	0	0	7	177	581
2025-06-26 17:15:00	16	63	0	0	0	79	0	65	86	0	1	151	118	0	79	0	7	197	74	87	0	0	1	161	588
2025-06-26 17:30:00	15	60	0	0	0	75	0	54	62	0	2	116	126	0	103	0	1	229	85	76	0	0	0	161	581
2025-06-26 17:45:00	19	59	1	0	2	79	0	60	99	0	1	159	136	0	97	0	1	233	66	63	0	0	1	129	600
Grand Total	67	218	1	0	2	286	0	247	327	0	4	574	495	0	367	0	11	862	322	306	0	0	9	628	**2350**
Approach%	23.4%	76.2%	0.3%	0%		-	0%	43%	57%	0%		-	57.4%	0%	42.6%	0%		-	51.3%	48.7%	0%	0%		-	**-**
Totals %	2.9%	9.3%	0%	0%		12.2%	0%	10.5%	13.9%	0%		24.4%	21.1%	0%	15.6%	0%		36.7%	13.7%	13%	0%	0%		26.7%	**-**
PHF	0.88	0.87	0.25	0		0.91	0	0.91	0.83	0		0.9	0.91	0	0.89	0		0.92	0.83	0.88	0	0		0.89	0.98
Heavy	0	0	0	0		0	0	6	9	0		15	8	0	2	0		10	3	3	0	0		6	31
Heavy %	0%	0%	0%	0%		0%	0%	2.4%	2.8%	0%		2.6%	1.6%	0%	0.5%	0%		1.2%	0.9%	1%	0%	0%		1%	1.3%
Lights	67	218	1	0		286	0	239	318	0		557	487	0	365	0		852	319	303	0	0		622	2317
Lights %	100%	100%	100%	0%		100%	0%	96.8%	97.2%	0%		97%	98.4%	0%	99.5%	0%		98.8%	99.1%	99%	0%	0%		99%	98.6%
Single-Unit Trucks	0	0	0	0		0	0	3	5	0		8	1	0	0	0		1	1	3	0	0		4	13
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	1.2%	1.5%	0%		1.4%	0.2%	0%	0%	0%		0.1%	0.3%	1%	0%	0%		0.6%	0.6%
Buses	0	0	0	0		0	0	1	4	0		5	6	0	2	0		8	2	0	0	0		2	15
Buses %	0%	0%	0%	0%		0%	0%	0.4%	1.2%	0%		0.9%	1.2%	0%	0.5%	0%		0.9%	0.6%	0%	0%	0%		0.3%	0.6%
Articulated Trucks	0	0	0	0		0	0	2	0	0		2	1	0	0	0		1	0	0	0	0		0	3
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0.8%	0%	0%		0.3%	0.2%	0%	0%	0%		0.1%	0%	0%	0%	0%		0%	0.1%
Bicycles on Road	0	0	0	0		0	0	2	0	0		2	0	0	0	0		0	0	0	0	0		0	2
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0.8%	0%	0%		0.3%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0.1%
Pedestrians	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	10	-	-	-	-	-	8	-	**-**
Pedestrians%	-	-	-	-	3.8%		-	-	-	-	3.8%		-	-	-	-	38.5%		-	-	-	-	30.8%		**-**
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	3	-	-	-	-	-	1	-	-	-	-	-	1	-	**-**
Bicycles on Crosswalk%	-	-	-	-	3.8%		-	-	-	-	11.5%		-	-	-	-	3.8%		-	-	-	-	3.8%		**-**

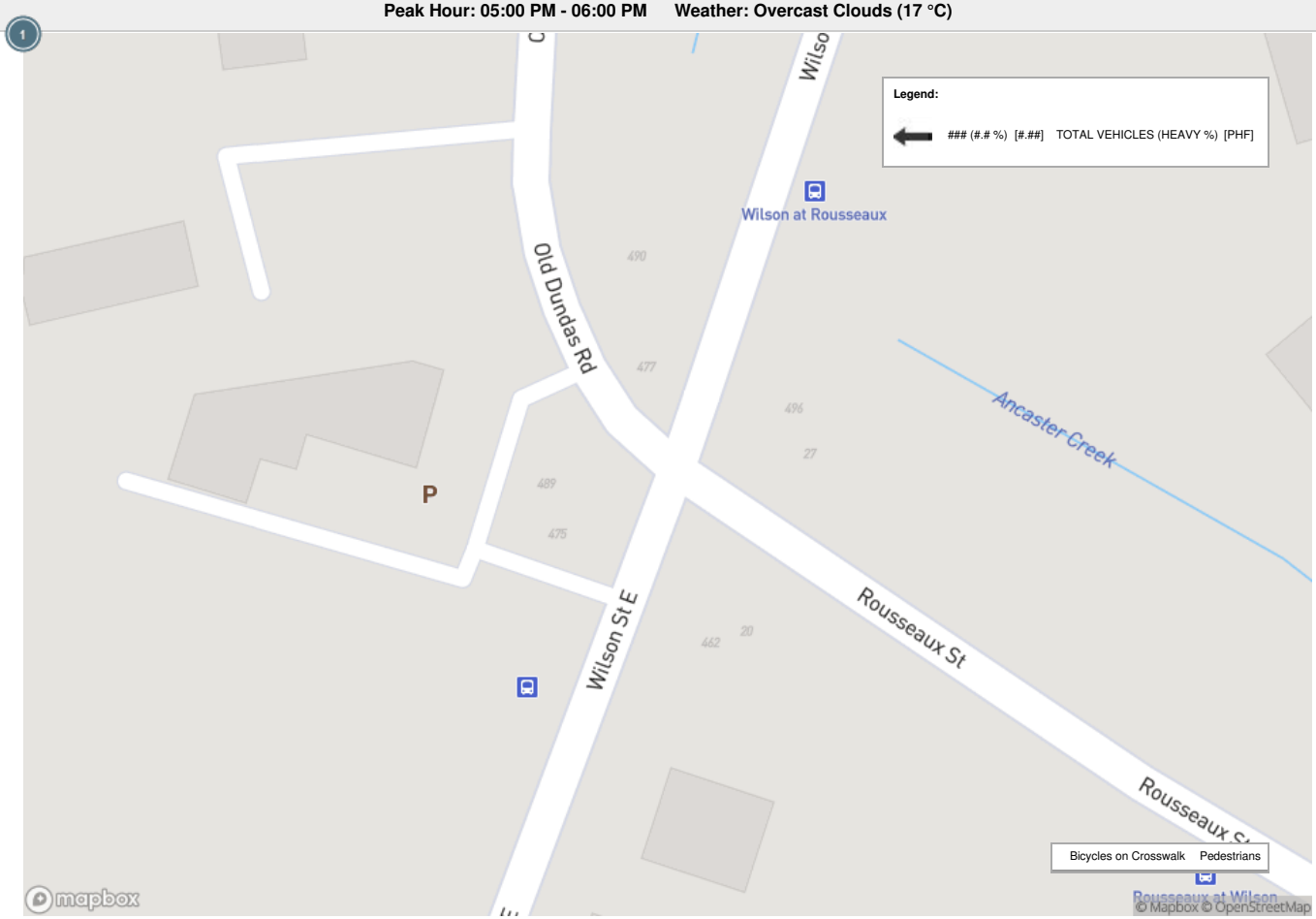
NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 07:30 AM - 08:30 AM **Weather: Overcast Clouds (16 °C)**



NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 05:00 PM - 06:00 PM **Weather: Overcast Clouds (17 °C)**



Spectrum

Turning Movement Count
Location Name: WILSON STREET EAST & SULPHUR SPRINGS ROAD
Date: Thu, Jun 26, 2025 Deployment Lead: Constantinos Kotassidis

NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Turning Movement Count (5 . WILSON STREET EAST & SULPHUR SPRINGS ROAD) MioID: 1314202

Start Time	Southbound SULPHUR SPRINGS ROAD						Westbound WILSON STREET EAST						Northbound CHURCH ST E						Eastbound WILSON STREET EAST						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	U-Turn W:W	Peds W:	Approach Total		
2025-06-26 07:00:00	2	1	27	0	1	30	7	49	0	0	0	56	0	0	1	0	0	1	1	86	4	0	0	91	178	
2025-06-26 07:15:00	1	1	30	0	0	32	11	68	0	0	0	79	1	1	4	0	0	6	4	91	2	0	0	97	214	
2025-06-26 07:30:00	5	3	38	0	0	46	15	66	1	0	0	82	1	0	2	0	4	3	2	132	13	0	1	147	278	
2025-06-26 07:45:00	4	0	50	0	2	54	28	100	1	0	0	129	1	1	3	0	2	5	3	127	7	0	2	137	325	995
2025-06-26 08:00:00	9	4	44	0	4	57	19	89	1	0	0	109	1	3	6	0	5	10	3	133	8	0	1	144	320	1137
2025-06-26 08:15:00	12	5	52	0	3	69	17	86	1	0	3	104	0	4	7	0	7	11	1	138	9	0	0	148	332	1255
2025-06-26 08:30:00	11	4	44	0	1	59	24	78	2	0	5	104	2	4	7	0	9	13	3	132	4	0	0	139	315	1292
2025-06-26 08:45:00	10	2	32	0	0	44	17	107	2	0	0	126	1	7	8	0	4	16	2	132	16	0	0	150	336	1303
2025-06-26 09:00:00	11	1	28	0	3	40	23	83	3	0	0	109	1	2	8	0	3	11	6	111	7	0	0	124	284	1267
2025-06-26 09:15:00	10	2	36	0	2	48	24	120	3	0	0	147	6	1	2	0	2	9	2	119	15	0	2	136	340	1275
2025-06-26 09:30:00	15	1	50	0	1	66	30	91	8	0	2	129	2	2	8	0	5	12	4	107	7	0	1	118	325	1285
2025-06-26 09:45:00	8	3	28	0	1	39	24	98	2	0	2	124	1	3	5	0	5	9	5	114	15	0	0	134	306	1255
BREAK																										
2025-06-26 16:00:00	10	5	47	0	2	62	30	118	4	0	3	152	5	8	5	0	8	18	7	142	12	0	2	161	393	
2025-06-26 16:15:00	6	4	41	0	1	51	28	133	1	0	1	162	0	3	5	0	5	8	1	123	10	0	2	134	355	
2025-06-26 16:30:00	12	8	35	0	1	55	29	122	3	0	1	154	2	7	10	0	7	19	2	116	22	0	1	140	368	
2025-06-26 16:45:00	28	6	40	0	0	74	39	135	2	0	0	176	3	5	11	0	6	19	5	162	8	0	1	175	444	1560
2025-06-26 17:00:00	20	5	41	0	0	66	37	140	4	0	0	181	1	5	12	0	0	18	10	136	9	0	0	155	420	1587
2025-06-26 17:15:00	9	4	38	0	0	51	25	160	2	0	1	187	3	13	12	0	2	28	6	127	12	0	0	145	411	1643
2025-06-26 17:30:00	18	2	34	0	3	54	35	129	1	0	1	165	1	12	9	0	2	22	5	125	7	0	3	137	378	1653
2025-06-26 17:45:00	9	2	24	0	2	35	22	146	0	0	2	168	2	2	11	0	6	15	4	115	11	0	1	130	348	1557
2025-06-26 18:00:00	17	1	43	0	1	61	35	135	2	0	1	172	0	16	18	0	5	34	2	116	14	0	0	132	399	1536
2025-06-26 18:15:00	11	3	21	0	1	35	34	143	0	0	0	177	1	6	17	0	6	24	1	93	5	0	2	99	335	1460
2025-06-26 18:30:00	10	2	18	0	0	30	23	94	1	0	3	118	2	3	3	0	8	8	5	89	8	0	1	102	258	1340
2025-06-26 18:45:00	5	0	26	0	2	31	21	90	2	0	1	113	2	0	1	0	4	3	3	96	7	0	4	106	253	1245
Grand Total	253	69	867	0	31	1189	597	2580	46	0	26	3223	39	108	175	0	105	322	87	2862	232	0	24	3181	**7915**	-
Approach%	21.3%	5.8%	72.9%	0%		-	18.5%	80%	1.4%	0%		-	12.1%	33.5%	54.3%	0%		-	2.7%	90%	7.3%	0%		-	-	-
Totals %	3.2%	0.9%	11%	0%		15%	7.5%	32.6%	0.6%	0%		40.7%	0.5%	1.4%	2.2%	0%		4.1%	1.1%	36.2%	2.9%	0%		40.2%	-	-
Heavy	2	0	10	0		-	6	53	0	0		-	0	2	2	0		-	1	61	2	0		-	-	-
Heavy %	0.8%	0%	1.2%	0%		-	1%	2.1%	0%	0%		-	0%	1.9%	1.1%	0%		-	1.1%	2.1%	0.9%	0%		-	-	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-

NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 08:00 AM - 09:00 AM Weather: Overcast Clouds (16 °C)

Start Time	Southbound SULPHUR SPRINGS ROAD						Westbound WILSON STREET EAST						Northbound CHURCH ST E						Eastbound WILSON STREET EAST						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
2025-06-26 08:00:00	9	4	44	0	4	57	19	89	1	0	0	109	1	3	6	0	5	10	3	133	8	0	1	144	320
2025-06-26 08:15:00	12	5	52	0	3	69	17	86	1	0	3	104	0	4	7	0	7	11	1	138	9	0	0	148	332
2025-06-26 08:30:00	11	4	44	0	1	59	24	78	2	0	5	104	2	4	7	0	9	13	3	132	4	0	0	139	315
2025-06-26 08:45:00	10	2	32	0	0	44	17	107	2	0	0	126	1	7	8	0	4	16	2	132	16	0	0	150	336
Grand Total	42	15	172	0	8	229	77	360	6	0	8	443	4	18	28	0	25	50	9	535	37	0	1	581	**1303**
Approach%	18.3%	6.6%	75.1%	0%		-	17.4%	81.3%	1.4%	0%		-	8%	36%	56%	0%		-	1.5%	92.1%	6.4%	0%		-	**-**
Totals %	3.2%	1.2%	13.2%	0%		17.6%	5.9%	27.6%	0.5%	0%		34%	0.3%	1.4%	2.1%	0%		3.8%	0.7%	41.1%	2.8%	0%		44.6%	**-**
PHF	0.88	0.75	0.83	0		0.83	0.8	0.84	0.75	0		0.88	0.5	0.64	0.88	0		0.78	0.75	0.97	0.58	0		0.97	0.97
Heavy	1	0	0	0		1	1	9	0	0		10	0	0	0	0		0	0	23	0	0		23	34
Heavy %	2.4%	0%	0%	0%		0.4%	1.3%	2.5%	0%	0%		2.3%	0%	0%	0%	0%		0%	0%	4.3%	0%	0%		4%	2.6%
Lights	41	15	172	0		228	76	351	6	0		433	4	18	28	0		50	9	511	37	0		557	1268
Lights %	97.6%	100%	100%	0%		99.6%	98.7%	97.5%	100%	0%		97.7%	100%	100%	100%	0%		100%	100%	95.5%	100%	0%		95.9%	97.3%
Single-Unit Trucks	1	0	0	0		1	0	6	0	0		6	0	0	0	0		0	0	15	0	0		15	22
Single-Unit Trucks %	2.4%	0%	0%	0%		0.4%	0%	1.7%	0%	0%		1.4%	0%	0%	0%	0%		0%	0%	2.8%	0%	0%		2.6%	1.7%
Buses	0	0	0	0		0	1	3	0	0		4	0	0	0	0		0	0	6	0	0		6	10
Buses %	0%	0%	0%	0%		0%	1.3%	0.8%	0%	0%		0.9%	0%	0%	0%	0%		0%	0%	1.1%	0%	0%		1%	0.8%
Articulated Trucks	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	2	0	0		2	2
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0.4%	0%	0%		0.3%	0.2%
Bicycles on Road	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	1	0	0		1	1
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0.2%	0%	0%		0.2%	0.1%
Pedestrians	-	-	-	-	8	-	-	-	-	-	8	-	-	-	-	-	25	-	-	-	-	-	1	-	**-**
Pedestrians%	-	-	-	-	19%		-	-	-	-	19%		-	-	-	-	59.5%		-	-	-	-	2.4%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

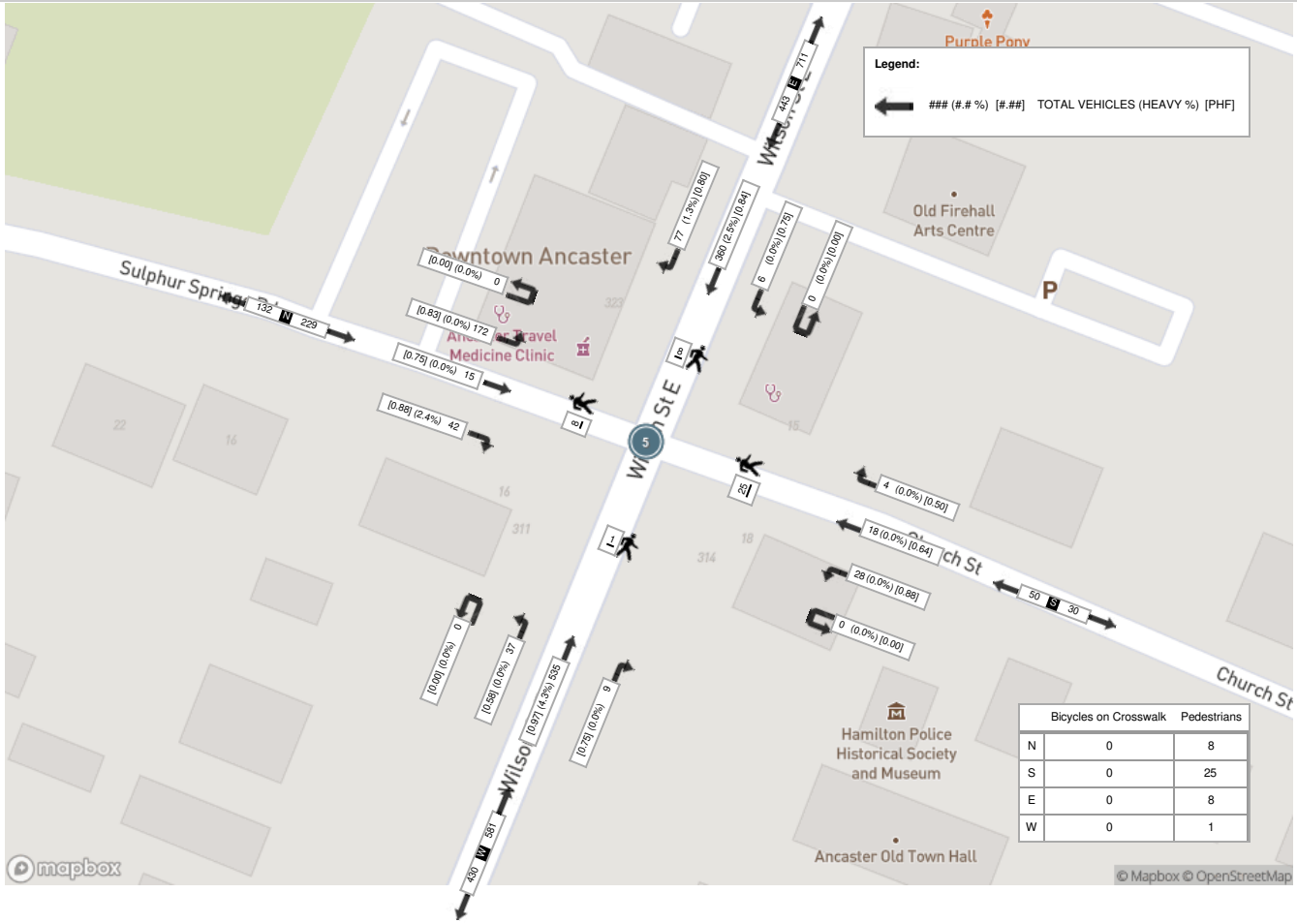
NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 04:45 PM - 05:45 PM Weather: Overcast Clouds (17 °C)

Start Time	Southbound SULPHUR SPRINGS ROAD						Westbound WILSON STREET EAST						Northbound CHURCH ST E						Eastbound WILSON STREET EAST						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
2025-06-26 16:45:00	28	6	40	0	0	74	39	135	2	0	0	176	3	5	11	0	6	19	5	162	8	0	1	175	444
2025-06-26 17:00:00	20	5	41	0	0	66	37	140	4	0	0	181	1	5	12	0	0	18	10	136	9	0	0	155	420
2025-06-26 17:15:00	9	4	38	0	0	51	25	160	2	0	1	187	3	13	12	0	2	28	6	127	12	0	0	145	411
2025-06-26 17:30:00	18	2	34	0	3	54	35	129	1	0	1	165	1	12	9	0	2	22	5	125	7	0	3	137	378
Grand Total	75	17	153	0	3	245	136	564	9	0	2	709	8	35	44	0	10	87	26	550	36	0	4	612	**1653**
Approach%	30.6%	6.9%	62.4%	0%		-	19.2%	79.5%	1.3%	0%		-	9.2%	40.2%	50.6%	0%		-	4.2%	89.9%	5.9%	0%		-	**-**
Totals %	4.5%	1%	9.3%	0%		14.8%	8.2%	34.1%	0.5%	0%		42.9%	0.5%	2.1%	2.7%	0%		5.3%	1.6%	33.3%	2.2%	0%		37%	**-**
PHF	0.67	0.71	0.93	0		0.83	0.87	0.88	0.56	0		0.95	0.67	0.67	0.92	0		0.78	0.65	0.85	0.75	0		0.87	0.93
Heavy	0	0	2	0		2	0	5	0	0		5	0	0	0	0		0	0	5	0	0		5	12
Heavy %	0%	0%	1.3%	0%		0.8%	0%	0.9%	0%	0%		0.7%	0%	0%	0%	0%		0%	0%	0.9%	0%	0%		0.8%	0.7%
Lights	75	17	151	0		243	136	558	9	0		703	8	35	44	0		87	26	545	36	0		607	1640
Lights %	100%	100%	98.7%	0%		99.2%	100%	98.9%	100%	0%		99.2%	100%	100%	100%	0%		100%	100%	99.1%	100%	0%		99.2%	99.2%
Single-Unit Trucks	0	0	1	0		1	0	2	0	0		2	0	0	0	0		0	0	3	0	0		3	6
Single-Unit Trucks %	0%	0%	0.7%	0%		0.4%	0%	0.4%	0%	0%		0.3%	0%	0%	0%	0%		0%	0%	0.5%	0%	0%		0.5%	0.4%
Buses	0	0	0	0		0	0	3	0	0		3	0	0	0	0		0	0	1	0	0		1	4
Buses %	0%	0%	0%	0%		0%	0%	0.5%	0%	0%		0.4%	0%	0%	0%	0%		0%	0%	0.2%	0%	0%		0.2%	0.2%
Articulated Trucks	0	0	1	0		1	0	0	0	0		0	0	0	0	0		0	0	1	0	0		1	2
Articulated Trucks %	0%	0%	0.7%	0%		0.4%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0.2%	0%	0%		0.2%	0.1%
Bicycles on Road	0	0	0	0		0	0	1	0	0		1	0	0	0	0		0	0	0	0	0		0	1
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0.2%	0%	0%		0.1%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0.1%
Pedestrians	-	-	-	-	2	-	-	-	-	-	2	-	-	-	-	-	10	-	-	-	-	-	4	-	**-**
Pedestrians%	-	-	-	-	10.5%		-	-	-	-	10.5%		-	-	-	-	52.6%		-	-	-	-	21.1%		**-**
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	5.3%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

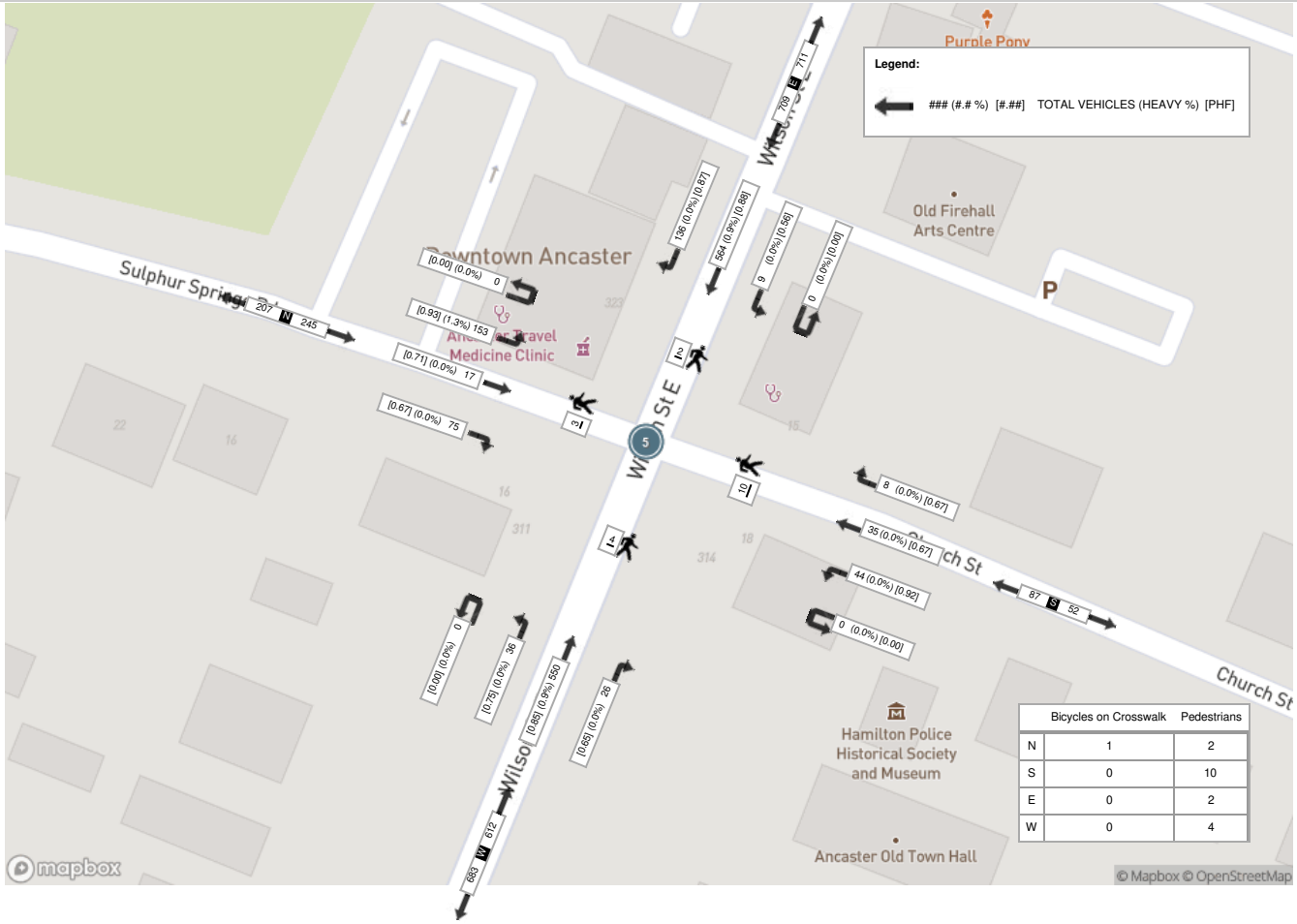
Peak Hour: 08:00 AM - 09:00 AM **Weather: Overcast Clouds (16 °C)**



	Bicycles on Crosswalk	Pedestrians
N	0	8
S	0	25
E	0	8
W	0	1

NexTrans
SUITE 201 520 INDUSTRIAL PARKWAY SOUTH
AURORA ONTARIO, L4G 6W8
CANADA

Peak Hour: 04:45 PM - 05:45 PM **Weather: Overcast Clouds (17 °C)**



	Bicycles on Crosswalk	Pedestrians
N	1	2
S	0	10
E	0	2
W	0	4

Appendix B – Existing Traffic Level of Service Calculations

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	276	793	386	354	385	217
Protected Phases			2			6
Permitted Phases	4	2		2	6	
Minimum Initial (s)	15.0	15.0	15.0	15.0	20.0	20.0
Minimum Split (s)	29.8	24.6	24.6	24.6	25.8	25.8
Total Split (s)	30.0	50.0	50.0	50.0	40.0	40.0
Total Split (%)	37.5%	62.5%	62.5%	62.5%	50.0%	50.0%
Maximum Green (s)	24.2	44.4	44.4	44.4	34.2	34.2
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.5	2.3	2.3	2.3	2.5	2.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	17.0	12.0	12.0	12.0	5.0	5.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	18.7	49.9	49.9	49.9	49.7	49.7
Actuated g/C Ratio	0.23	0.62	0.62	0.62	0.62	0.62
v/c Ratio	0.69	0.63	0.34	0.33	0.68	0.19
Control Delay	37.1	3.3	9.0	1.9	19.6	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.1	3.3	9.0	1.9	19.6	7.8
LOS	D	A	A	A	B	A
Approach Delay	12.1		5.6			15.4
Approach LOS	B		A			B
Queue Length 50th (m)	41.0	0.0	25.7	0.0	35.3	13.0
Queue Length 95th (m)	60.3	15.3	51.2	11.1	#98.3	27.9
Internal Link Dist (m)	154.1		316.4			401.7
Turn Bay Length (m)	30.0			100.0	40.0	
Base Capacity (vph)	517	1253	1123	1088	564	1119
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.63	0.34	0.33	0.68	0.19

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 30 (38%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.69	
Intersection Signal Delay: 10.9	Intersection LOS: B
Intersection Capacity Utilization 73.2%	ICU Level of Service D
Analysis Period (min) 15	

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	254	730	355	326	354	200
Future Volume (vph)	254	730	355	326	354	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.6	5.6	5.6	5.8	5.8
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1711	1531	1801	1531	1711	1801
Flt Permitted	0.95	1.00	1.00	1.00	0.51	1.00
Satd. Flow (perm)	1711	1531	1801	1531	910	1801
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	276	793	386	354	385	217
RTOR Reduction (vph)	0	298	0	133	0	0
Lane Group Flow (vph)	276	495	386	221	385	217
Turn Type	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	4	2		2	6	
Actuated Green, G (s)	18.7	49.9	49.9	49.9	49.7	49.7
Effective Green, g (s)	18.7	49.9	49.9	49.9	49.7	49.7
Actuated g/C Ratio	0.23	0.62	0.62	0.62	0.62	0.62
Clearance Time (s)	5.8	5.6	5.6	5.6	5.8	5.8
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	399	954	1123	954	565	1118
v/s Ratio Prot			0.21			0.12
v/s Ratio Perm	c0.16	0.32		0.14	c0.42	
v/c Ratio	0.69	0.52	0.34	0.23	0.68	0.19
Uniform Delay, d1	28.0	8.4	7.2	6.6	10.0	6.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.1	2.0	0.8	0.6	6.5	0.4
Delay (s)	33.1	10.4	8.0	7.2	16.5	6.9
Level of Service	C	B	A	A	B	A
Approach Delay (s)	16.3		7.6			13.0
Approach LOS	B		A			B

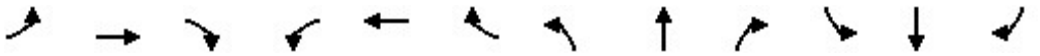
Intersection Summary			
HCM 2000 Control Delay	12.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	11.6
Intersection Capacity Utilization	73.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	13	690	12	4	465
Future Volume (Veh/h)	2	13	690	12	4	465
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	14	750	13	4	505
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (m)			262			340
pX, platoon unblocked	0.87	0.82			0.82	
vC, conflicting volume	1270	756			763	
vC1, stage 1 conf vol	756					
vC2, stage 2 conf vol	513					
vCu, unblocked vol	976	595			603	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	97			100	
cM capacity (veh/h)	406	414			801	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	16	763	4	505
Volume Left	2	0	4	0
Volume Right	14	13	0	0
cSH	413	1700	801	1700
Volume to Capacity	0.04	0.45	0.00	0.30
Queue Length 95th (m)	1.0	0.0	0.1	0.0
Control Delay (s)	14.1	0.0	9.5	0.0
Lane LOS	B		A	
Approach Delay (s)	14.1	0.0	0.1	
Approach LOS	B			

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	47.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	10	3	32	9	2	2	5	29	1	12	3
Future Volume (vph)	0	10	3	32	9	2	2	5	29	1	12	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	11	3	35	10	2	2	5	32	1	13	3

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	14	47	39	17
Volume Left (vph)	0	35	2	1
Volume Right (vph)	3	2	32	3
Hadj (s)	-0.09	0.16	-0.45	-0.06
Departure Headway (s)	4.0	4.2	3.6	4.0
Degree Utilization, x	0.02	0.05	0.04	0.02
Capacity (veh/h)	888	845	970	879
Control Delay (s)	7.0	7.4	6.7	7.1
Approach Delay (s)	7.0	7.4	6.7	7.1
Approach LOS	A	A	A	A

Intersection Summary			
Delay	7.1		
Level of Service	A		
Intersection Capacity Utilization	19.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	680	0	0	905	79	76
Future Volume (Veh/h)	680	0	0	905	79	76
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	739	0	0	984	86	83
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	178					
pX, platoon unblocked						
vC, conflicting volume			739		1723	739
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			739		1723	739
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		12	80
cM capacity (veh/h)			867		98	417

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	739	984	169
Volume Left	0	0	86
Volume Right	0	0	83
cSH	1700	867	157
Volume to Capacity	0.43	0.00	1.08
Queue Length 95th (m)	0.0	0.0	70.0
Control Delay (s)	0.0	0.0	152.1
Lane LOS			F
Approach Delay (s)	0.0	0.0	152.1
Approach LOS			F

Intersection Summary			
Average Delay	13.6		
Intersection Capacity Utilization	63.3%	ICU Level of Service	B
Analysis Period (min)	15		

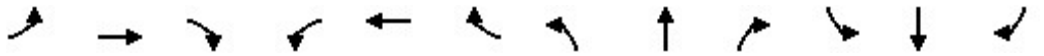
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	755	1	38	905	0	45
Future Volume (Veh/h)	755	1	38	905	0	45
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	821	1	41	984	0	49
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	318					
pX, platoon unblocked						
vC, conflicting volume			822		1888	822
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			822		1888	822
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			95		100	87
cM capacity (veh/h)			807		73	374

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	822	1025	49
Volume Left	0	41	0
Volume Right	1	0	49
cSH	1700	807	374
Volume to Capacity	0.48	0.05	0.13
Queue Length 95th (m)	0.0	1.3	3.6
Control Delay (s)	0.0	1.5	16.1
Lane LOS		A	C
Approach Delay (s)	0.0	1.5	16.1
Approach LOS			C

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	88.5%	ICU Level of Service	E
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	0	249	0	54	40	592	7	391	84
Protected Phases		4		8		2		6	
Permitted Phases	4		8		2		6		6
Minimum Initial (s)	10.0	10.0	10.0	10.0	30.0	30.0	30.0	30.0	30.0
Minimum Split (s)	23.3	23.3	23.3	23.3	35.4	35.4	35.4	35.4	35.4
Total Split (s)	30.0	30.0	30.0	30.0	55.0	55.0	55.0	55.0	55.0
Total Split (%)	35.3%	35.3%	35.3%	35.3%	64.7%	64.7%	64.7%	64.7%	64.7%
Maximum Green (s)	24.7	24.7	24.7	24.7	49.6	49.6	49.6	49.6	49.6
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1
Lead/Lag									
Lead-Lag Optimize?									
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Max	C-Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	10.0	10.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0
Act Effct Green (s)		19.7		19.7	54.6	54.6	54.6	54.6	54.6
Actuated g/C Ratio		0.23		0.23	0.64	0.64	0.64	0.64	0.64
v/c Ratio		0.80		0.16	0.07	0.51	0.02	0.34	0.08
Control Delay		47.1		23.6	7.5	11.0	7.3	8.8	2.1
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		47.1		23.6	7.5	11.0	7.3	8.8	2.1
LOS		D		C	A	B	A	A	A
Approach Delay		47.1		23.6		10.8		7.6	
Approach LOS		D		C		B		A	
Queue Length 50th (m)		37.5		6.7	2.4	49.5	0.4	28.1	0.0
Queue Length 95th (m)		61.1		15.3	7.1	87.2	2.2	50.9	5.5
Internal Link Dist (m)		110.0		170.7		303.3		238.3	
Turn Bay Length (m)					20.0		20.0		25.0
Base Capacity (vph)		389		420	579	1154	420	1156	1013
Starvation Cap Reductn		0		0	0	0	0	0	0
Spillback Cap Reductn		0		0	0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0	0
Reduced v/c Ratio		0.64		0.13	0.07	0.51	0.02	0.34	0.08

Intersection Summary	
Cycle Length: 85	
Actuated Cycle Length: 85	
Offset: 0 (0%), Referenced to phase 2:NBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.80	
Intersection Signal Delay: 16.6	Intersection LOS: B
Intersection Capacity Utilization 71.7%	ICU Level of Service C
Analysis Period (min) 15	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	172	15	42	28	18	4	37	535	9	6	360	77
Future Volume (vph)	172	15	42	28	18	4	37	535	9	6	360	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.3			5.3		5.4	5.4		5.4	5.4	5.4
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frt		0.98			0.99		1.00	1.00		1.00	1.00	0.85
Flt Protected		0.96			0.97		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1692			1734		1711	1796		1711	1801	1531
Flt Permitted		0.74			0.81		0.50	1.00		0.36	1.00	1.00
Satd. Flow (perm)		1307			1437		903	1796		656	1801	1531
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)	187	16	46	30	20	4	40	582	10	7	391	84
RTOR Reduction (vph)	0	11	0	0	3	0	0	1	0	0	0	30
Lane Group Flow (vph)	0	238	0	0	51	0	40	591	0	7	391	54
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		19.7			19.7		54.6	54.6		54.6	54.6	54.6
Effective Green, g (s)		19.7			19.7		54.6	54.6		54.6	54.6	54.6
Actuated g/C Ratio		0.23			0.23		0.64	0.64		0.64	0.64	0.64
Clearance Time (s)		5.3			5.3		5.4	5.4		5.4	5.4	5.4
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		302			333		580	1153		421	1156	983
v/s Ratio Prot								c0.33			0.22	
v/s Ratio Perm		c0.18			0.04		0.04			0.01		0.04
v/c Ratio		0.79			0.15		0.07	0.51		0.02	0.34	0.05
Uniform Delay, d1		30.7			26.0		5.7	8.1		5.5	6.9	5.6
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		12.8			0.2		0.2	1.6		0.1	0.8	0.1
Delay (s)		43.5			26.2		5.9	9.7		5.6	7.7	5.7
Level of Service		D			C		A	A		A	A	A
Approach Delay (s)		43.5			26.2			9.5			7.4	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	15.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	10.7
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		

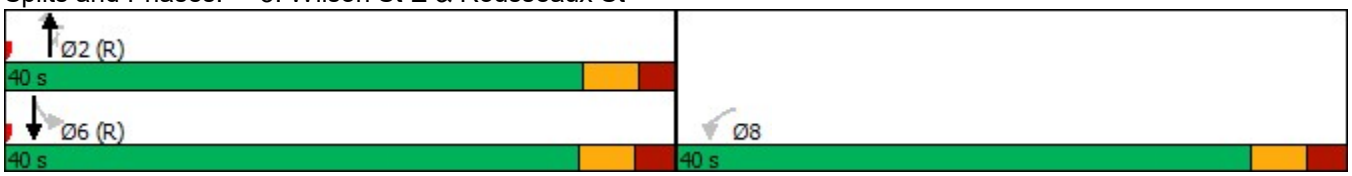
c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	367	495	306	322	545	314
Future Volume (vph)	367	495	306	322	545	314
Lane Group Flow (vph)	399	538	333	350	592	341
Turn Type	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8	2		2	6	
Detector Phase	8	2	2	2	6	6
Switch Phase						
Minimum Initial (s)	20.0	15.0	15.0	15.0	20.0	20.0
Minimum Split (s)	25.8	24.6	24.6	24.6	25.8	25.8
Total Split (s)	40.0	40.0	40.0	40.0	40.0	40.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Maximum Green (s)	34.2	34.4	34.4	34.4	34.2	34.2
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.5	2.3	2.3	2.3	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.6	5.6	5.6	5.8	5.8
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	C-Max	C-Min	C-Min
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	5.0	12.0	12.0	12.0	5.0	5.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	24.9	43.7	43.7	43.7	43.5	43.5
Actuated g/C Ratio	0.31	0.55	0.55	0.55	0.54	0.54
v/c Ratio	0.75	0.50	0.34	0.35	1.15	0.35
Control Delay	33.7	3.0	12.5	2.6	110.8	12.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.7	3.0	12.5	2.6	110.8	12.7
LOS	C	A	B	A	F	B
Approach Delay	16.1		7.4			74.9
Approach LOS	B		A			E
Queue Length 50th (m)	57.4	0.0	27.1	0.0	~112.1	28.1
Queue Length 95th (m)	77.3	16.6	54.4	13.8	#188.6	56.4
Internal Link Dist (m)	154.1		316.4			401.7
Turn Bay Length (m)	30.0			100.0	40.0	
Base Capacity (vph)	731	1080	984	995	515	980
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.50	0.34	0.35	1.15	0.35

Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 40 (50%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 90

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.15
Intersection Signal Delay: 35.3 Intersection LOS: D
Intersection Capacity Utilization 81.0% ICU Level of Service D
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Wilson St E & Rousseaux St



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	367	495	306	322	545	314
Future Volume (vph)	367	495	306	322	545	314
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.6	5.6	5.6	5.8	5.8
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1711	1531	1801	1531	1711	1801
Flt Permitted	0.95	1.00	1.00	1.00	0.53	1.00
Satd. Flow (perm)	1711	1531	1801	1531	947	1801
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	399	538	333	350	592	341
RTOR Reduction (vph)	0	244	0	159	0	0
Lane Group Flow (vph)	399	294	333	191	592	341
Turn Type	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8	2		2	6	
Actuated Green, G (s)	24.9	43.7	43.7	43.7	43.5	43.5
Effective Green, g (s)	24.9	43.7	43.7	43.7	43.5	43.5
Actuated g/C Ratio	0.31	0.55	0.55	0.55	0.54	0.54
Clearance Time (s)	5.8	5.6	5.6	5.6	5.8	5.8
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	532	836	983	836	514	979
v/s Ratio Prot			0.18			0.19
v/s Ratio Perm	c0.23	0.19		0.12	c0.63	
v/c Ratio	0.75	0.35	0.34	0.23	1.15	0.35
Uniform Delay, d1	24.8	10.2	10.1	9.4	18.2	10.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.9	1.2	0.9	0.6	88.7	1.0
Delay (s)	30.6	11.4	11.0	10.0	107.0	11.3
Level of Service	C	B	B	B	F	B
Approach Delay (s)	19.6		10.5			72.0
Approach LOS	B		B			E

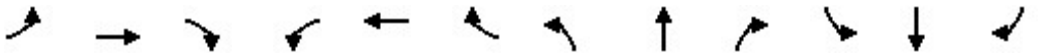
Intersection Summary			
HCM 2000 Control Delay	36.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	11.6
Intersection Capacity Utilization	81.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	7	7	677	35	9	667
Future Volume (Veh/h)	7	7	677	35	9	667
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	8	736	38	10	725
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (m)			262			340
pX, platoon unblocked	0.86	0.80			0.80	
vC, conflicting volume	1500	755			774	
vC1, stage 1 conf vol	755					
vC2, stage 2 conf vol	745					
vCu, unblocked vol	992	574			598	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	98			99	
cM capacity (veh/h)	371	417			788	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	16	774	10	725
Volume Left	8	0	10	0
Volume Right	8	38	0	0
cSH	393	1700	788	1700
Volume to Capacity	0.04	0.46	0.01	0.43
Queue Length 95th (m)	1.0	0.0	0.3	0.0
Control Delay (s)	14.6	0.0	9.6	0.0
Lane LOS	B		A	
Approach Delay (s)	14.6	0.0	0.1	
Approach LOS	B			

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	47.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	8	34	11	45	8	2	3	18	42	4	15	3
Future Volume (vph)	8	34	11	45	8	2	3	18	42	4	15	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	37	12	49	9	2	3	20	46	4	16	3

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	58	60	69	23
Volume Left (vph)	9	49	3	4
Volume Right (vph)	12	2	46	3
Hadj (s)	-0.06	0.18	-0.36	-0.01
Departure Headway (s)	4.1	4.3	3.8	4.2
Degree Utilization, x	0.07	0.07	0.07	0.03
Capacity (veh/h)	853	810	903	824
Control Delay (s)	7.4	7.7	7.1	7.3
Approach Delay (s)	7.4	7.7	7.1	7.3
Approach LOS	A	A	A	A

Intersection Summary				
Delay	7.4			
Level of Service	A			
Intersection Capacity Utilization	20.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	867	0	57	919	0	4
Future Volume (Veh/h)	867	0	57	919	0	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	942	0	62	999	0	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	178					
pX, platoon unblocked						
vC, conflicting volume			942		2065	942
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			942		2065	942
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			91		100	99
cM capacity (veh/h)			728		55	319

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	942	1061	4
Volume Left	0	62	0
Volume Right	0	0	4
cSH	1700	728	319
Volume to Capacity	0.55	0.09	0.01
Queue Length 95th (m)	0.0	2.2	0.3
Control Delay (s)	0.0	2.6	16.4
Lane LOS		A	C
Approach Delay (s)	0.0	2.6	16.4
Approach LOS			C

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	105.0%	ICU Level of Service	G
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	870	1	86	917	2	43
Future Volume (Veh/h)	870	1	86	917	2	43
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	946	1	93	997	2	47
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	318					
pX, platoon unblocked						
vC, conflicting volume			947		2130	946
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			947		2130	946
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			87		96	85
cM capacity (veh/h)			725		48	317

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	947	1090	49
Volume Left	0	93	2
Volume Right	1	0	47
cSH	1700	725	257
Volume to Capacity	0.56	0.13	0.19
Queue Length 95th (m)	0.0	3.5	5.5
Control Delay (s)	0.0	3.9	22.2
Lane LOS		A	C
Approach Delay (s)	0.0	3.9	22.2
Approach LOS			C

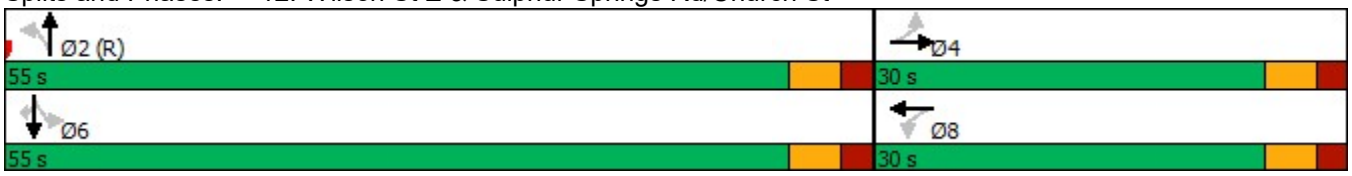
Intersection Summary			
Average Delay	2.6		
Intersection Capacity Utilization	112.2%	ICU Level of Service	H
Analysis Period (min)	15		

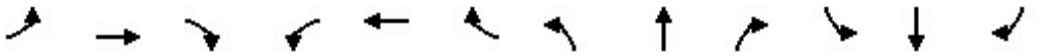
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	153	17	44	35	36	550	9	564	136
Future Volume (vph)	153	17	44	35	36	550	9	564	136
Lane Group Flow (vph)	0	266	0	95	39	626	10	613	148
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases		4		8		2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	6	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	30.0	30.0	30.0	30.0	30.0
Minimum Split (s)	23.3	23.3	23.3	23.3	35.4	35.4	35.4	35.4	35.4
Total Split (s)	30.0	30.0	30.0	30.0	55.0	55.0	55.0	55.0	55.0
Total Split (%)	35.3%	35.3%	35.3%	35.3%	64.7%	64.7%	64.7%	64.7%	64.7%
Maximum Green (s)	24.7	24.7	24.7	24.7	49.6	49.6	49.6	49.6	49.6
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.3		5.3	5.4	5.4	5.4	5.4	5.4
Lead/Lag									
Lead-Lag Optimize?									
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Max	C-Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	10.0	10.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0
Act Effct Green (s)		19.7		19.7	54.6	54.6	54.6	54.6	54.6
Actuated g/C Ratio		0.23		0.23	0.64	0.64	0.64	0.64	0.64
v/c Ratio		0.80		0.30	0.10	0.54	0.03	0.53	0.15
Control Delay		45.1		26.0	8.0	11.5	7.4	11.3	3.2
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		45.1		26.0	8.0	11.5	7.4	11.3	3.2
LOS		D		C	A	B	A	B	A
Approach Delay		45.1		26.0		11.3		9.7	
Approach LOS		D		C		B		A	
Queue Length 50th (m)		38.2		12.4	2.4	53.7	0.6	52.4	2.7
Queue Length 95th (m)		62.8		23.9	7.3	95.1	2.8	91.9	10.8
Internal Link Dist (m)		110.0		170.7		303.3		238.3	
Turn Bay Length (m)					20.0		20.0		25.0
Base Capacity (vph)		411		402	406	1151	397	1157	1020
Starvation Cap Reductn		0		0	0	0	0	0	0
Spillback Cap Reductn		0		0	0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0	0
Reduced v/c Ratio		0.65		0.24	0.10	0.54	0.03	0.53	0.15

Intersection Summary
Cycle Length: 85
Actuated Cycle Length: 85
Offset: 0 (0%), Referenced to phase 2:NBTL, Start of Green
Natural Cycle: 60

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 16.4 Intersection LOS: B
Intersection Capacity Utilization 71.7% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 12: Wilson St E & Sulphur Springs Rd/Church St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	153	17	75	44	35	8	36	550	26	9	564	136
Future Volume (vph)	153	17	75	44	35	8	36	550	26	9	564	136
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.3			5.3		5.4	5.4		5.4	5.4	5.4
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frt		0.96			0.99		1.00	0.99		1.00	1.00	0.85
Flt Protected		0.97			0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1673			1734		1711	1789		1711	1801	1531
Flt Permitted		0.78			0.77		0.35	1.00		0.34	1.00	1.00
Satd. Flow (perm)		1350			1371		632	1789		617	1801	1531
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)	166	18	82	48	38	9	39	598	28	10	613	148
RTOR Reduction (vph)	0	21	0	0	5	0	0	2	0	0	0	36
Lane Group Flow (vph)	0	245	0	0	90	0	39	624	0	10	613	112
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		19.7			19.7		54.6	54.6		54.6	54.6	54.6
Effective Green, g (s)		19.7			19.7		54.6	54.6		54.6	54.6	54.6
Actuated g/C Ratio		0.23			0.23		0.64	0.64		0.64	0.64	0.64
Clearance Time (s)		5.3			5.3		5.4	5.4		5.4	5.4	5.4
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		312			317		405	1149		396	1156	983
v/s Ratio Prot								c0.35			0.34	
v/s Ratio Perm		c0.18			0.07		0.06			0.02		0.07
v/c Ratio		0.79			0.29		0.10	0.54		0.03	0.53	0.11
Uniform Delay, d1		30.7			26.9		5.8	8.4		5.5	8.2	5.9
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		12.3			0.5		0.5	1.8		0.1	1.7	0.2
Delay (s)		42.9			27.4		6.3	10.2		5.6	10.0	6.1
Level of Service		D			C		A	B		A	A	A
Approach Delay (s)		42.9			27.4			10.0			9.2	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	15.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	10.7
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Appendix C – Background Developments

The Wilson/Rousseaux intersection operations are expected to deteriorate over time with the growth in background traffic. Delays will increase on all movements and queues will get longer.

6 Site Traffic

The amount of traffic generated by the site was estimated based on a review of rates outlined in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition. Two categories were chosen to estimate traffic for the potential uses of the site.

The Multifamily Housing (Mid-Rise) (land use code 221) category was chosen for the residential apartment uses and the Strip Retail Plaza <40,000 s.f. (land use code 822) category was chosen for the commercial uses. The commercial traffic was adjusted by half to reflect that no parking is required for the commercial uses and that they will be chosen to support the residential uses in the building and the many pedestrians and cyclists nearby.

The traffic generation estimates for the site are summarized in the table below.

Table 3: Site Traffic Generation Rates and Estimated Trips

Land Use		AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	
Multifamily Housing Mid-Rise (ITE LU 221) 158 units	Rate (t/u)	0.09	0.28	0.37	0.24	0.15	0.39	4.54
	Trips (t)	13	45	58	38	24	62	717
Strip Retail Plaza <40k (ITE LU 822) 5,000 s.f.	Rate (t/1,000 sf)	1.42	0.94	2.36	3.30	3.30	6.59	54.45
	Trips	7	5	12	16	16	33	272
	50% Trips	4	2	6	8	8	16	136
Total Trips		**17**	**47**	**64**	**46**	**32**	**78**	**853**

The proposal is estimated to generate between 64 and 78 two-way trips in the weekday morning and afternoon peak hours or about 853 daily trips.

Allowances for commercial pass-by traffic were not made given that the volumes are expected to be low.

The site traffic trips were distributed in accordance with local traffic patterns through the study area in the following manner:

Table 4: Site Trip Distribution

Direction	Direction	
	Inbound	Outbound
To/from the north on Wilson	15%	10%
To/from the south on Wilson	30%	30%
From the west on Old Dundas	5%	0%
To/from the east on Rousseaux	50%	60%
Total	100%	100%

From:	Juhlke, Jill
To:	Sam Nguyen
Cc:	Collingwood, Tricia
Subject:	RE: UHOPA-25-001 for 392, 398-402 & 412 Wilson Street East and 15 Lorne Avenue
Date:	March 3, 2026 12:00:36 PM
Attachments:	image001.png 2025 (03) Mar 07 - 392, 398-402, 406 & 412 Wilson St E & 15 Lorne Ave - UHOPA-25-001 - 2025 (02) Feb Sub.pdf

---

Hi Sam,

Responses regarding study area intersections, growth rate, and background developments provided in green below.

Several things to note:

- Report should follow the City's 2024 TA Guidelines.
- Horizon year is to be five years beyond buildout. If development is proposed to be phased, a horizon year of five years beyond each phase is to be assessed.
- If TTS will be used to determine trip distribution, the TTS summaries are to be updated as per the attached Transportation Planning comments.
- All foundational and general report errors identified in the attached Transportation Planning comments should be addressed within the forthcoming submission (except Synchro, as discussed below).
- To be deemed a completed submission by Transportation Planning, the report is to be signed, stamped and dated by a P.Eng., include all appendix materials and the relevant Synchro files are to be included with the report submission. If the above are not provided with the submission, the report may be deemed incomplete and may not be reviewed until such time as the required items are included/provided.

For the purposes of the UHOPA report only*, *Transportation Planning will accept Synchro version 11 analyses. Any future analyses that may be required as part of the future site plan application will be required to be completed using the most recent version of Synchro to conform to the City's TA Guidelines.

Let me know if you have any questions or require further information.

Regards,

Jill Juhlke, C.E.T., FITE
Manager, Transportation Planning Services (Acting)
Transportation Planning and Parking
Planning and Economic Development
Phone: 905-546-2489 x 4575
Cell: 905-977-7541

Hamilton

From: Transportation Planning <Transportation.Planning@hamilton.ca>
Sent: Tuesday, March 3, 2026 9:35 AM
To: Juhlke, Jill <Jill.Juhlke@hamilton.ca>
Subject: FW: UHOPA-25-001 for 392, 398-402 & 412 Wilson Street East and 15 Lorne Avenue
Importance: High

FYI

Tiffany Wolsey
On Behalf of Transportation Planning

From: Sam Nguyen <sam@nextrans.ca>
Sent: Tuesday, March 3, 2026 9:09 AM
To: Transportation Planning <Transportation.Planning@hamilton.ca>
Subject: UHOPA-25-001 for 392, 398-402 & 412 Wilson Street East and 15 Lorne Avenue
Importance: High

Good morning,

We are currently in the process of preparing the Transportation Impact Study for the proposed development at 392, 398-402 & 412 Wilson Street East and 15 Lorne Avenue and we are writing to request confirmation of the background development list and the applicable background traffic growth rate to be used for our analysis.

For the purposes of our study, the following intersections will be included in the operational analysis:

- Wilson Street East & Rousseaux Street
- Rousseaux Street & Academy Street
- Academy Street & Lodor Street
- Academy Street & Wilson Street East
- Wilson Street East & Sulphur Springs Road
- Add: Lodor Street and Rousseaux Street (can be estimated based on Wilson and Rousseaux and Rousseaux and Academy count data)

To ensure consistency with the City's expectations and any ongoing studies in the area, we kindly request:

1. A list of approved and/or pending background developments to be included in the background traffic scenario; and

- 442 – 462 Wilson Street East:
    - 158 residential units and 650 sq metres commercial space in a mid-rise building.
    - Two accesses: one to Rousseaux Street limited to right-in/right-out/left-in and one all-moves to Wilson St E
- The other area developments will generate nominal additional traffic that will be accounted for in the general background traffic growth.

2. The applicable annual background traffic growth rate to be applied to the future horizon year(s). Annual 2% growth, compounded.

As we are currently working toward an upcoming submission deadline, we would greatly appreciate receiving this information at your earliest convenience. Your assistance in providing the above as soon as possible would be sincerely appreciated.

Thanks,

Trang Nguyen (Sam) (She/Her)
Transportation Analyst

o: 905-503-2563 ext. 207
e: sam@nextrans.ca
w: www.nextrans.ca

NexTrans Consulting Engineers
A Division of NextEng Consulting Group Inc.
520 Industrial Parkway South, Suite 201
Aurora ON L4G 6W8

Appendix D – Future Background Traffic Level of Service Calculations

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	292	813	401	363	395	223
v/c Ratio	0.68	0.65	0.36	0.33	0.72	0.20
Control Delay	39.0	3.5	9.9	1.9	23.0	8.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.0	3.5	9.9	1.9	23.0	8.5
Queue Length 50th (m)	49.8	0.0	29.6	0.0	41.7	14.8
Queue Length 95th (m)	69.8	15.8	58.6	11.7	#113.6	31.4
Internal Link Dist (m)	154.1		316.4			401.7
Turn Bay Length (m)	30.0			100.0	40.0	
Base Capacity (vph)	650	1260	1122	1091	545	1118
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.65	0.36	0.33	0.72	0.20

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	269	748	369	334	363	205
Future Volume (vph)	269	748	369	334	363	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.6	5.6	5.6	5.8	5.8
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1711	1531	1801	1531	1711	1801
Flt Permitted	0.95	1.00	1.00	1.00	0.49	1.00
Satd. Flow (perm)	1711	1531	1801	1531	877	1801
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	292	813	401	363	395	223
RTOR Reduction (vph)	0	306	0	137	0	0
Lane Group Flow (vph)	292	507	401	226	395	223
Turn Type	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8	2		2	6	
Actuated Green, G (s)	22.5	56.1	56.1	56.1	55.9	55.9
Effective Green, g (s)	22.5	56.1	56.1	56.1	55.9	55.9
Actuated g/C Ratio	0.25	0.62	0.62	0.62	0.62	0.62
Clearance Time (s)	5.8	5.6	5.6	5.6	5.8	5.8
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	427	954	1122	954	544	1118
v/s Ratio Prot			0.22			0.12
v/s Ratio Perm	c0.17	0.33		0.15	c0.45	
v/c Ratio	0.68	0.53	0.36	0.24	0.73	0.20
Uniform Delay, d1	30.5	9.5	8.2	7.5	11.8	7.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.5	2.1	0.9	0.6	8.2	0.4
Delay (s)	35.0	11.7	9.1	8.1	20.0	7.8
Level of Service	D	B	A	A	B	A
Approach Delay (s)	17.8		8.6			15.6
Approach LOS	B		A			B

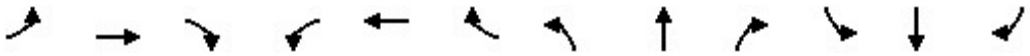
Intersection Summary			
HCM 2000 Control Delay	14.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	11.6
Intersection Capacity Utilization	75.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	13	712	12	4	491
Future Volume (Veh/h)	2	13	712	12	4	491
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	14	774	13	4	534
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (m)			262			340
pX, platoon unblocked	0.87	0.81			0.81	
vC, conflicting volume	1322	780			787	
vC1, stage 1 conf vol	780					
vC2, stage 2 conf vol	542					
vCu, unblocked vol	985	610			618	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	96			99	
cM capacity (veh/h)	394	400			778	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	16	787	4	534
Volume Left	2	0	4	0
Volume Right	14	13	0	0
cSH	399	1700	778	1700
Volume to Capacity	0.04	0.46	0.01	0.31
Queue Length 95th (m)	1.0	0.0	0.1	0.0
Control Delay (s)	14.4	0.0	9.7	0.0
Lane LOS	B		A	
Approach Delay (s)	14.4	0.0	0.1	
Approach LOS	B			

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	48.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	10	3	33	9	2	2	5	30	1	12	3
Future Volume (vph)	0	10	3	33	9	2	2	5	30	1	12	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	11	3	36	10	2	2	5	33	1	13	3

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	14	48	40	17
Volume Left (vph)	0	36	2	1
Volume Right (vph)	3	2	33	3
Hadj (s)	-0.09	0.16	-0.45	-0.06
Departure Headway (s)	4.0	4.2	3.6	4.0
Degree Utilization, x	0.02	0.06	0.04	0.02
Capacity (veh/h)	887	844	970	878
Control Delay (s)	7.0	7.4	6.8	7.1
Approach Delay (s)	7.0	7.4	6.8	7.1
Approach LOS	A	A	A	A

Intersection Summary			
Delay	7.1		
Level of Service	A		
Intersection Capacity Utilization	19.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	725	0	0	937	81	78
Future Volume (Veh/h)	725	0	0	937	81	78
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	788	0	0	1018	88	85
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	178					
pX, platoon unblocked						
vC, conflicting volume			788		1806	788
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			788		1806	788
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		0	78
cM capacity (veh/h)			831		87	391

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	788	1018	173
Volume Left	0	0	88
Volume Right	0	0	85
cSH	1700	831	141
Volume to Capacity	0.46	0.00	1.23
Queue Length 95th (m)	0.0	0.0	82.5
Control Delay (s)	0.0	0.0	211.6
Lane LOS			F
Approach Delay (s)	0.0	0.0	211.6
Approach LOS			F

Intersection Summary			
Average Delay	18.5		
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	802	1	39	937	0	46
Future Volume (Veh/h)	802	1	39	937	0	46
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	872	1	42	1018	0	50
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	318					
pX, platoon unblocked						
vC, conflicting volume			873		1974	872
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			873		1974	872
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			95		100	86
cM capacity (veh/h)			773		65	350

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	873	1060	50
Volume Left	0	42	0
Volume Right	1	0	50
cSH	1700	773	350
Volume to Capacity	0.51	0.05	0.14
Queue Length 95th (m)	0.0	1.4	4.0
Control Delay (s)	0.0	1.7	17.0
Lane LOS		A	C
Approach Delay (s)	0.0	1.7	17.0
Approach LOS			C

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	90.9%	ICU Level of Service	E
Analysis Period (min)	15		

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	254	56	41	612	7	416	86
v/c Ratio	0.80	0.17	0.07	0.53	0.02	0.36	0.09
Control Delay	47.5	23.6	7.7	11.5	7.5	9.2	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.5	23.6	7.7	11.5	7.5	9.2	2.1
Queue Length 50th (m)	38.3	7.0	2.5	52.6	0.4	30.7	0.0
Queue Length 95th (m)	62.9	15.5	7.3	91.6	2.2	54.8	5.6
Internal Link Dist (m)	110.0	170.7		303.3		238.3	
Turn Bay Length (m)			20.0		20.0		25.0
Base Capacity (vph)	388	416	556	1149	402	1151	1010
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.65	0.13	0.07	0.53	0.02	0.36	0.09

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	176	15	43	29	18	4	38	554	9	6	383	79
Future Volume (vph)	176	15	43	29	18	4	38	554	9	6	383	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.3			5.3		5.4	5.4		5.4	5.4	5.4
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frt		0.98			0.99		1.00	1.00		1.00	1.00	0.85
Flt Protected		0.96			0.97		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1692			1734		1711	1796		1711	1801	1531
Flt Permitted		0.74			0.80		0.48	1.00		0.35	1.00	1.00
Satd. Flow (perm)		1304			1424		869	1796		631	1801	1531
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)	191	16	47	32	20	4	41	602	10	7	416	86
RTOR Reduction (vph)	0	11	0	0	3	0	0	1	0	0	0	31
Lane Group Flow (vph)	0	243	0	0	53	0	41	611	0	7	416	55
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		19.9			19.9		54.4	54.4		54.4	54.4	54.4
Effective Green, g (s)		19.9			19.9		54.4	54.4		54.4	54.4	54.4
Actuated g/C Ratio		0.23			0.23		0.64	0.64		0.64	0.64	0.64
Clearance Time (s)		5.3			5.3		5.4	5.4		5.4	5.4	5.4
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		305			333		556	1149		403	1152	979
v/s Ratio Prot								c0.34			0.23	
v/s Ratio Perm		c0.19			0.04		0.05			0.01		0.04
v/c Ratio		0.80			0.16		0.07	0.53		0.02	0.36	0.06
Uniform Delay, d1		30.7			25.9		5.8	8.4		5.6	7.2	5.7
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		13.5			0.2		0.3	1.8		0.1	0.9	0.1
Delay (s)		44.1			26.1		6.0	10.1		5.6	8.0	5.8
Level of Service		D			C		A	B		A	A	A
Approach Delay (s)		44.1			26.1			9.9			7.6	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	15.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	10.7
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	434	551	345	359	608	350
Protected Phases			2			6
Permitted Phases	8	2		2	6	
Minimum Initial (s)	20.0	15.0	15.0	15.0	20.0	20.0
Minimum Split (s)	25.8	24.6	24.6	24.6	25.8	25.8
Total Split (s)	40.0	40.0	40.0	40.0	40.0	40.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Maximum Green (s)	34.2	34.4	34.4	34.4	34.2	34.2
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.5	2.3	2.3	2.3	2.5	2.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	5.0	12.0	12.0	12.0	5.0	5.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	26.2	42.4	42.4	42.4	42.2	42.2
Actuated g/C Ratio	0.33	0.53	0.53	0.53	0.53	0.53
v/c Ratio	0.78	0.51	0.36	0.37	1.26	0.37
Control Delay	33.8	3.3	13.6	2.8	154.2	13.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.8	3.3	13.6	2.8	154.2	13.8
LOS	C	A	B	A	F	B
Approach Delay	16.7		8.1			102.9
Approach LOS	B		A			F
Queue Length 50th (m)	62.1	0.0	29.8	0.0	~123.3	30.5
Queue Length 95th (m)	83.0	17.4	58.9	14.6	#199.8	60.0
Internal Link Dist (m)	154.1		316.4			401.7
Turn Bay Length (m)	30.0			100.0	40.0	
Base Capacity (vph)	731	1070	955	980	484	950
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.51	0.36	0.37	1.26	0.37

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 40 (50%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.26	
Intersection Signal Delay: 45.6	Intersection LOS: D
Intersection Capacity Utilization 84.1%	ICU Level of Service E
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	399	507	317	330	559	322
Future Volume (vph)	399	507	317	330	559	322
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.6	5.6	5.6	5.8	5.8
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1711	1531	1801	1531	1711	1801
Flt Permitted	0.95	1.00	1.00	1.00	0.51	1.00
Satd. Flow (perm)	1711	1531	1801	1531	919	1801
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	434	551	345	359	608	350
RTOR Reduction (vph)	0	259	0	169	0	0
Lane Group Flow (vph)	434	292	345	190	608	350
Turn Type	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8	2		2	6	
Actuated Green, G (s)	26.2	42.4	42.4	42.4	42.2	42.2
Effective Green, g (s)	26.2	42.4	42.4	42.4	42.2	42.2
Actuated g/C Ratio	0.33	0.53	0.53	0.53	0.53	0.53
Clearance Time (s)	5.8	5.6	5.6	5.6	5.8	5.8
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	560	811	954	811	484	950
v/s Ratio Prot			0.19			0.19
v/s Ratio Perm	c0.25	0.19		0.12	c0.66	
v/c Ratio	0.78	0.36	0.36	0.23	1.26	0.37
Uniform Delay, d1	24.2	10.9	10.9	10.1	18.9	11.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.6	1.2	1.1	0.7	131.3	1.1
Delay (s)	30.9	12.2	12.0	10.8	150.2	12.2
Level of Service	C	B	B	B	F	B
Approach Delay (s)	20.4		11.4			99.8
Approach LOS	C		B			F

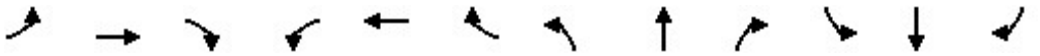
Intersection Summary			
HCM 2000 Control Delay	46.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	11.6
Intersection Capacity Utilization	84.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	7	7	708	36	9	694
Future Volume (Veh/h)	7	7	708	36	9	694
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	8	770	39	10	754
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (m)			262			340
pX, platoon unblocked	0.85	0.78			0.78	
vC, conflicting volume	1564	790			809	
vC1, stage 1 conf vol	790					
vC2, stage 2 conf vol	774					
vCu, unblocked vol	999	592			617	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	98			99	
cM capacity (veh/h)	356	396			754	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	16	809	10	754
Volume Left	8	0	10	0
Volume Right	8	39	0	0
cSH	375	1700	754	1700
Volume to Capacity	0.04	0.48	0.01	0.44
Queue Length 95th (m)	1.1	0.0	0.3	0.0
Control Delay (s)	15.0	0.0	9.8	0.0
Lane LOS	C		A	
Approach Delay (s)	15.0	0.0	0.1	
Approach LOS	C			

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	49.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	8	35	11	46	8	2	3	18	43	3	15	4
Future Volume (vph)	8	35	11	46	8	2	3	18	43	3	15	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	38	12	50	9	2	3	20	47	3	16	4

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	59	61	70	23
Volume Left (vph)	9	50	3	3
Volume Right (vph)	12	2	47	4
Hadj (s)	-0.06	0.18	-0.36	-0.04
Departure Headway (s)	4.1	4.3	3.8	4.2
Degree Utilization, x	0.07	0.07	0.07	0.03
Capacity (veh/h)	852	809	902	829
Control Delay (s)	7.4	7.7	7.1	7.3
Approach Delay (s)	7.4	7.7	7.1	7.3
Approach LOS	A	A	A	A

Intersection Summary				
Delay	7.4			
Level of Service	A			
Intersection Capacity Utilization	20.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	908	0	58	965	0	4
Future Volume (Veh/h)	908	0	58	965	0	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	987	0	63	1049	0	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	178					
pX, platoon unblocked						
vC, conflicting volume			987		2162	987
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			987		2162	987
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			91		100	99
cM capacity (veh/h)			700		47	300

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	987	1112	4
Volume Left	0	63	0
Volume Right	0	0	4
cSH	1700	700	300
Volume to Capacity	0.58	0.09	0.01
Queue Length 95th (m)	0.0	2.4	0.3
Control Delay (s)	0.0	3.0	17.2
Lane LOS		A	C
Approach Delay (s)	0.0	3.0	17.2
Approach LOS			C

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	108.2%	ICU Level of Service	G
Analysis Period (min)	15		

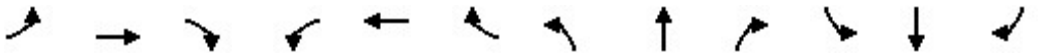
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	911	1	88	963	2	44
Future Volume (Veh/h)	911	1	88	963	2	44
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	990	1	96	1047	2	48
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	318					
pX, platoon unblocked						
vC, conflicting volume			991		2230	990
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			991		2230	990
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			86		95	84
cM capacity (veh/h)			698		41	299

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	991	1143	50
Volume Left	0	96	2
Volume Right	1	0	48
cSH	1700	698	238
Volume to Capacity	0.58	0.14	0.21
Queue Length 95th (m)	0.0	3.8	6.2
Control Delay (s)	0.0	4.5	24.1
Lane LOS		A	C
Approach Delay (s)	0.0	4.5	24.1
Approach LOS			C

Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	116.9%	ICU Level of Service	H
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	0	273	0	97	40	657	10	639	151
Protected Phases		4		8		2		6	
Permitted Phases	4		8		2		6		6
Minimum Initial (s)	10.0	10.0	10.0	10.0	30.0	30.0	30.0	30.0	30.0
Minimum Split (s)	23.3	23.3	23.3	23.3	35.4	35.4	35.4	35.4	35.4
Total Split (s)	30.0	30.0	30.0	30.0	55.0	55.0	55.0	55.0	55.0
Total Split (%)	35.3%	35.3%	35.3%	35.3%	64.7%	64.7%	64.7%	64.7%	64.7%
Maximum Green (s)	24.7	24.7	24.7	24.7	49.6	49.6	49.6	49.6	49.6
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1
Lead/Lag									
Lead-Lag Optimize?									
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Max	C-Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	10.0	10.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0
Act Effct Green (s)		20.0		20.0	54.3	54.3	54.3	54.3	54.3
Actuated g/C Ratio		0.24		0.24	0.64	0.64	0.64	0.64	0.64
v/c Ratio		0.81		0.30	0.10	0.57	0.03	0.56	0.15
Control Delay		45.6		25.9	8.3	12.3	7.7	12.0	3.5
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		45.6		25.9	8.3	12.3	7.7	12.0	3.5
LOS		D		C	A	B	A	B	A
Approach Delay		45.6		25.9		12.0		10.3	
Approach LOS		D		C		B		B	
Queue Length 50th (m)		39.3		12.6	2.5	59.0	0.6	56.9	3.1
Queue Length 95th (m)		64.7		24.4	7.6	102.3	2.8	98.4	11.4
Internal Link Dist (m)		110.0		170.7		303.3		238.3	
Turn Bay Length (m)					20.0		20.0		25.0
Base Capacity (vph)		410		401	383	1143	370	1149	1013
Starvation Cap Reductn		0		0	0	0	0	0	0
Spillback Cap Reductn		0		0	0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0	0
Reduced v/c Ratio		0.67		0.24	0.10	0.57	0.03	0.56	0.15

Intersection Summary			
Cycle Length: 85			
Actuated Cycle Length: 85			
Offset: 0 (0%), Referenced to phase 2:NBTL, Start of Green			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 16.9		Intersection LOS: B	
Intersection Capacity Utilization 71.7%		ICU Level of Service C	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	157	17	77	45	36	8	37	578	27	9	588	139
Future Volume (vph)	157	17	77	45	36	8	37	578	27	9	588	139
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.3			5.3		5.4	5.4		5.4	5.4	5.4
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frt		0.96			0.99		1.00	0.99		1.00	1.00	0.85
Flt Protected		0.97			0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1673			1734		1711	1789		1711	1801	1531
Flt Permitted		0.78			0.77		0.33	1.00		0.32	1.00	1.00
Satd. Flow (perm)		1346			1369		599	1789		579	1801	1531
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)	171	18	84	49	39	9	40	628	29	10	639	151
RTOR Reduction (vph)	0	21	0	0	5	0	0	2	0	0	0	36
Lane Group Flow (vph)	0	252	0	0	92	0	40	655	0	10	639	115
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		20.0			20.0		54.3	54.3		54.3	54.3	54.3
Effective Green, g (s)		20.0			20.0		54.3	54.3		54.3	54.3	54.3
Actuated g/C Ratio		0.24			0.24		0.64	0.64		0.64	0.64	0.64
Clearance Time (s)		5.3			5.3		5.4	5.4		5.4	5.4	5.4
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		316			322		382	1142		369	1150	978
v/s Ratio Prot								c0.37			0.35	
v/s Ratio Perm		c0.19			0.07		0.07			0.02		0.08
v/c Ratio		0.80			0.29		0.10	0.57		0.03	0.56	0.12
Uniform Delay, d1		30.6			26.7		5.9	8.8		5.6	8.6	6.0
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		13.1			0.5		0.6	2.1		0.1	1.9	0.2
Delay (s)		43.7			27.1		6.5	10.9		5.8	10.5	6.2
Level of Service		D			C		A	B		A	B	A
Approach Delay (s)		43.7			27.1			10.6			9.7	
Approach LOS		D			C			B			A	

Intersection Summary			
HCM 2000 Control Delay	15.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	10.7
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		

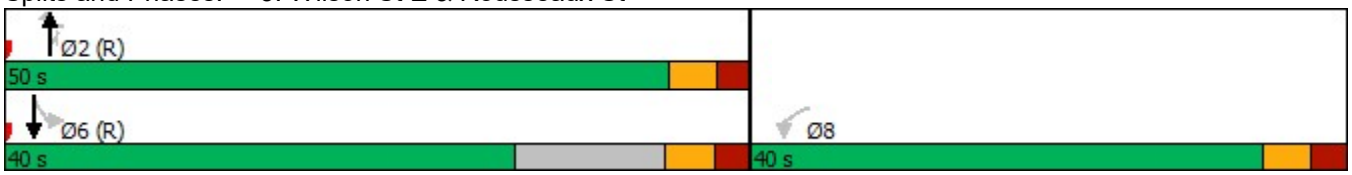
c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	276	767	378	343	372	210
Future Volume (vph)	276	767	378	343	372	210
Lane Group Flow (vph)	300	834	411	373	404	228
Turn Type	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8	2		2	6	
Detector Phase	8	2	2	2	6	6
Switch Phase						
Minimum Initial (s)	20.0	15.0	15.0	15.0	20.0	20.0
Minimum Split (s)	25.8	24.6	24.6	24.6	25.8	25.8
Total Split (s)	40.0	50.0	50.0	50.0	40.0	40.0
Total Split (%)	44.4%	55.6%	55.6%	55.6%	44.4%	44.4%
Maximum Green (s)	34.2	44.4	44.4	44.4	34.2	34.2
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.5	2.3	2.3	2.3	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.6	5.6	5.6	5.8	5.8
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	5.0	12.0	12.0	12.0	5.0	5.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	22.8	55.8	55.8	55.8	55.6	55.6
Actuated g/C Ratio	0.25	0.62	0.62	0.62	0.62	0.62
v/c Ratio	0.69	0.66	0.37	0.34	0.76	0.21
Control Delay	39.1	3.6	10.2	2.0	25.5	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.1	3.6	10.2	2.0	25.5	8.8
LOS	D	A	B	A	C	A
Approach Delay	13.0		6.3			19.4
Approach LOS	B		A			B
Queue Length 50th (m)	51.0	0.0	31.2	0.0	44.9	15.4
Queue Length 95th (m)	71.2	16.1	61.4	12.0	#119.8	32.7
Internal Link Dist (m)	154.1		316.4			401.7
Turn Bay Length (m)	30.0			100.0	40.0	
Base Capacity (vph)	650	1266	1116	1091	533	1112
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.66	0.37	0.34	0.76	0.21

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 30 (33%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 70

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 12.5 Intersection LOS: B
Intersection Capacity Utilization 76.7% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Wilson St E & Rousseaux St



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	276	767	378	343	372	210
Future Volume (vph)	276	767	378	343	372	210
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.6	5.6	5.6	5.8	5.8
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1711	1531	1801	1531	1711	1801
Flt Permitted	0.95	1.00	1.00	1.00	0.48	1.00
Satd. Flow (perm)	1711	1531	1801	1531	862	1801
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	300	834	411	373	404	228
RTOR Reduction (vph)	0	317	0	142	0	0
Lane Group Flow (vph)	300	517	411	231	404	228
Turn Type	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8	2		2	6	
Actuated Green, G (s)	22.8	55.8	55.8	55.8	55.6	55.6
Effective Green, g (s)	22.8	55.8	55.8	55.8	55.6	55.6
Actuated g/C Ratio	0.25	0.62	0.62	0.62	0.62	0.62
Clearance Time (s)	5.8	5.6	5.6	5.6	5.8	5.8
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	433	949	1116	949	532	1112
v/s Ratio Prot			0.23			0.13
v/s Ratio Perm	c0.18	0.34		0.15	c0.47	
v/c Ratio	0.69	0.54	0.37	0.24	0.76	0.21
Uniform Delay, d1	30.4	9.8	8.4	7.7	12.4	7.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.8	2.2	0.9	0.6	9.8	0.4
Delay (s)	35.2	12.1	9.4	8.3	22.2	7.9
Level of Service	D	B	A	A	C	A
Approach Delay (s)	18.2		8.8			17.0
Approach LOS	B		A			B

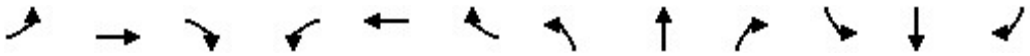
Intersection Summary			
HCM 2000 Control Delay	15.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	11.6
Intersection Capacity Utilization	76.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	14	730	13	4	503
Future Volume (Veh/h)	2	14	730	13	4	503
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	15	793	14	4	547
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (m)			262			340
pX, platoon unblocked	0.86	0.80			0.80	
vC, conflicting volume	1355	800			807	
vC1, stage 1 conf vol	800					
vC2, stage 2 conf vol	555					
vCu, unblocked vol	1002	621			629	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	96			99	
cM capacity (veh/h)	384	388			758	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	17	807	4	547
Volume Left	2	0	4	0
Volume Right	15	14	0	0
cSH	388	1700	758	1700
Volume to Capacity	0.04	0.47	0.01	0.32
Queue Length 95th (m)	1.1	0.0	0.1	0.0
Control Delay (s)	14.7	0.0	9.8	0.0
Lane LOS	B		A	
Approach Delay (s)	14.7	0.0	0.1	
Approach LOS	B			

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	49.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	11	3	34	9	2	2	5	30	1	13	3
Future Volume (vph)	0	11	3	34	9	2	2	5	30	1	13	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	12	3	37	10	2	2	5	33	1	14	3

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	15	49	40	18
Volume Left (vph)	0	37	2	1
Volume Right (vph)	3	2	33	3
Hadj (s)	-0.09	0.16	-0.45	-0.05
Departure Headway (s)	4.0	4.2	3.6	4.0
Degree Utilization, x	0.02	0.06	0.04	0.02
Capacity (veh/h)	884	843	968	875
Control Delay (s)	7.0	7.4	6.8	7.1
Approach Delay (s)	7.0	7.4	6.8	7.1
Approach LOS	A	A	A	A

Intersection Summary			
Delay	7.1		
Level of Service	A		
Intersection Capacity Utilization	19.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	743	0	0	960	83	80
Future Volume (Veh/h)	743	0	0	960	83	80
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	808	0	0	1043	90	87
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	178					
pX, platoon unblocked						
vC, conflicting volume			808		1851	808
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			808		1851	808
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		0	77
cM capacity (veh/h)			817		82	381

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	808	1043	177
Volume Left	0	0	90
Volume Right	0	0	87
cSH	1700	817	133
Volume to Capacity	0.48	0.00	1.33
Queue Length 95th (m)	0.0	0.0	90.8
Control Delay (s)	0.0	0.0	254.4
Lane LOS			F
Approach Delay (s)	0.0	0.0	254.4
Approach LOS			F

Intersection Summary			
Average Delay	22.2		
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	822	1	40	960	0	47
Future Volume (Veh/h)	822	1	40	960	0	47
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	893	1	43	1043	0	51
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	318					
pX, platoon unblocked						
vC, conflicting volume			894		2022	894
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			894		2022	894
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			94		100	85
cM capacity (veh/h)			759		60	340

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	894	1086	51
Volume Left	0	43	0
Volume Right	1	0	51
cSH	1700	759	340
Volume to Capacity	0.53	0.06	0.15
Queue Length 95th (m)	0.0	1.4	4.2
Control Delay (s)	0.0	1.8	17.4
Lane LOS		A	C
Approach Delay (s)	0.0	1.8	17.4
Approach LOS			C

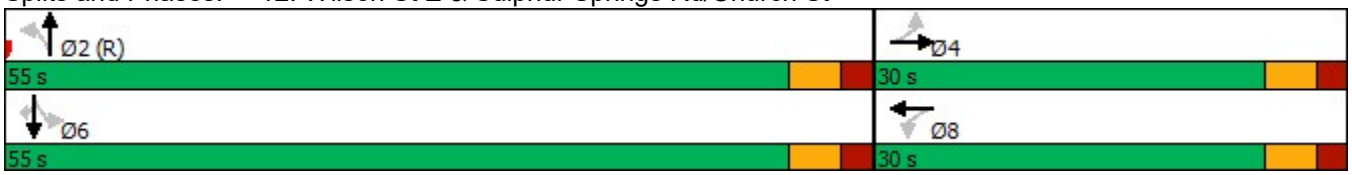
Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	93.0%	ICU Level of Service	F
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	181	16	29	19	39	567	6	392	81
Future Volume (vph)	181	16	29	19	39	567	6	392	81
Lane Group Flow (vph)	0	262	0	57	42	626	7	426	88
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases		4		8		2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	6	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	30.0	30.0	30.0	30.0	30.0
Minimum Split (s)	23.3	23.3	23.3	23.3	35.4	35.4	35.4	35.4	35.4
Total Split (s)	30.0	30.0	30.0	30.0	55.0	55.0	55.0	55.0	55.0
Total Split (%)	35.3%	35.3%	35.3%	35.3%	64.7%	64.7%	64.7%	64.7%	64.7%
Maximum Green (s)	24.7	24.7	24.7	24.7	49.6	49.6	49.6	49.6	49.6
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.3		5.3	5.4	5.4	5.4	5.4	5.4
Lead/Lag									
Lead-Lag Optimize?									
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Max	C-Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	10.0	10.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0
Act Effct Green (s)		20.4		20.4	53.9	53.9	53.9	53.9	53.9
Actuated g/C Ratio		0.24		0.24	0.63	0.63	0.63	0.63	0.63
v/c Ratio		0.81		0.16	0.08	0.55	0.02	0.37	0.09
Control Delay		48.2		23.4	7.8	12.0	7.5	9.5	2.1
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		48.2		23.4	7.8	12.0	7.5	9.5	2.1
LOS		D		C	A	B	A	A	A
Approach Delay		48.2		23.4		11.7		8.2	
Approach LOS		D		C		B		A	
Queue Length 50th (m)		39.5		7.0	2.6	56.0	0.4	32.7	0.1
Queue Length 95th (m)		#66.3		15.8	7.4	95.1	2.2	56.3	5.7
Internal Link Dist (m)		110.0		170.7		303.3		238.3	
Turn Bay Length (m)					20.0		20.0		25.0
Base Capacity (vph)		387		417	541	1139	386	1140	1002
Starvation Cap Reductn		0		0	0	0	0	0	0
Spillback Cap Reductn		0		0	0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0	0
Reduced v/c Ratio		0.68		0.14	0.08	0.55	0.02	0.37	0.09

Intersection Summary
Cycle Length: 85
Actuated Cycle Length: 85
Offset: 0 (0%), Referenced to phase 2:NBTL, Start of Green
Natural Cycle: 60

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 17.3 Intersection LOS: B
Intersection Capacity Utilization 71.7% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 12: Wilson St E & Sulphur Springs Rd/Church St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	181	16	44	29	19	4	39	567	9	6	392	81
Future Volume (vph)	181	16	44	29	19	4	39	567	9	6	392	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.3			5.3		5.4	5.4		5.4	5.4	5.4
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frt		0.98			0.99		1.00	1.00		1.00	1.00	0.85
Flt Protected		0.96			0.97		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1692			1735		1711	1796		1711	1801	1531
Flt Permitted		0.74			0.80		0.47	1.00		0.34	1.00	1.00
Satd. Flow (perm)		1304			1427		853	1796		610	1801	1531
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)	197	17	48	32	21	4	42	616	10	7	426	88
RTOR Reduction (vph)	0	10	0	0	3	0	0	1	0	0	0	32
Lane Group Flow (vph)	0	252	0	0	54	0	42	625	0	7	426	56
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		20.4			20.4		53.9	53.9		53.9	53.9	53.9
Effective Green, g (s)		20.4			20.4		53.9	53.9		53.9	53.9	53.9
Actuated g/C Ratio		0.24			0.24		0.63	0.63		0.63	0.63	0.63
Clearance Time (s)		5.3			5.3		5.4	5.4		5.4	5.4	5.4
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		312			342		540	1138		386	1142	970
v/s Ratio Prot								c0.35			0.24	
v/s Ratio Perm		c0.19			0.04		0.05			0.01		0.04
v/c Ratio		0.81			0.16		0.08	0.55		0.02	0.37	0.06
Uniform Delay, d1		30.5			25.5		6.0	8.7		5.8	7.5	5.9
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		14.2			0.2		0.3	1.9		0.1	0.9	0.1
Delay (s)		44.6			25.7		6.3	10.6		5.8	8.4	6.0
Level of Service		D			C		A	B		A	A	A
Approach Delay (s)		44.6			25.7			10.4			8.0	
Approach LOS		D			C			B			A	

Intersection Summary			
HCM 2000 Control Delay	16.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	10.7
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		

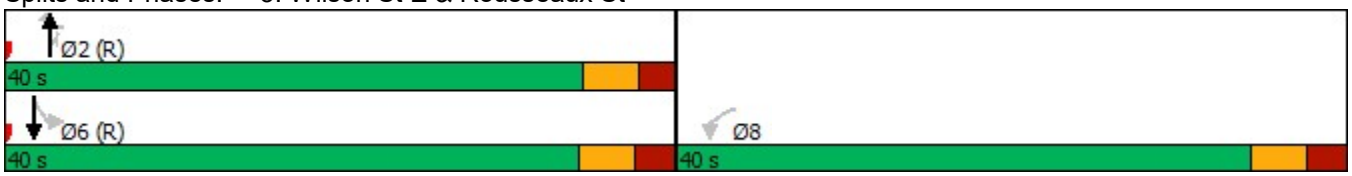
c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	409	520	325	338	573	330
Future Volume (vph)	409	520	325	338	573	330
Lane Group Flow (vph)	445	565	353	367	623	359
Turn Type	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8	2		2	6	
Detector Phase	8	2	2	2	6	6
Switch Phase						
Minimum Initial (s)	20.0	15.0	15.0	15.0	20.0	20.0
Minimum Split (s)	25.8	24.6	24.6	24.6	25.8	25.8
Total Split (s)	40.0	40.0	40.0	40.0	40.0	40.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Maximum Green (s)	34.2	34.4	34.4	34.4	34.2	34.2
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.5	2.3	2.3	2.3	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.6	5.6	5.6	5.8	5.8
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	5.0	12.0	12.0	12.0	5.0	5.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	26.6	42.0	42.0	42.0	41.8	41.8
Actuated g/C Ratio	0.33	0.52	0.52	0.52	0.52	0.52
v/c Ratio	0.78	0.53	0.37	0.38	1.32	0.38
Control Delay	33.8	3.4	14.0	2.8	182.3	14.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.8	3.4	14.0	2.8	182.3	14.3
LOS	C	A	B	A	F	B
Approach Delay	16.8		8.3			120.9
Approach LOS	B		A			F
Queue Length 50th (m)	63.3	0.0	31.3	0.0	~130.9	32.1
Queue Length 95th (m)	84.7	17.7	61.0	14.8	#207.2	62.4
Internal Link Dist (m)	154.1		316.4			401.7
Turn Bay Length (m)	30.0			100.0	40.0	
Base Capacity (vph)	731	1072	945	978	471	940
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.53	0.37	0.38	1.32	0.38

Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 40 (50%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 120

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.32
Intersection Signal Delay: 52.2 Intersection LOS: D
Intersection Capacity Utilization 85.8% ICU Level of Service E
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Wilson St E & Rousseaux St



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	409	520	325	338	573	330
Future Volume (vph)	409	520	325	338	573	330
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.6	5.6	5.6	5.8	5.8
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1711	1531	1801	1531	1711	1801
Flt Permitted	0.95	1.00	1.00	1.00	0.50	1.00
Satd. Flow (perm)	1711	1531	1801	1531	903	1801
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	445	565	353	367	623	359
RTOR Reduction (vph)	0	268	0	174	0	0
Lane Group Flow (vph)	445	297	353	193	623	359
Turn Type	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8	2		2	6	
Actuated Green, G (s)	26.6	42.0	42.0	42.0	41.8	41.8
Effective Green, g (s)	26.6	42.0	42.0	42.0	41.8	41.8
Actuated g/C Ratio	0.33	0.52	0.52	0.52	0.52	0.52
Clearance Time (s)	5.8	5.6	5.6	5.6	5.8	5.8
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	568	803	945	803	471	941
v/s Ratio Prot			0.20			0.20
v/s Ratio Perm	c0.26	0.19		0.13	c0.69	
v/c Ratio	0.78	0.37	0.37	0.24	1.32	0.38
Uniform Delay, d1	24.1	11.2	11.2	10.3	19.1	11.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.0	1.3	1.1	0.7	159.5	1.2
Delay (s)	31.1	12.5	12.4	11.0	178.6	12.6
Level of Service	C	B	B	B	F	B
Approach Delay (s)	20.7		11.7			117.9
Approach LOS	C		B			F

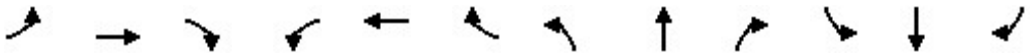
Intersection Summary			
HCM 2000 Control Delay	53.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	11.6
Intersection Capacity Utilization	85.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	7	7	726	37	9	711
Future Volume (Veh/h)	7	7	726	37	9	711
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	8	789	40	10	773
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (m)			262			340
pX, platoon unblocked	0.84	0.77			0.77	
vC, conflicting volume	1602	809			829	
vC1, stage 1 conf vol	809					
vC2, stage 2 conf vol	793					
vCu, unblocked vol	1003	601			627	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	98			99	
cM capacity (veh/h)	348	385			734	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	16	829	10	773
Volume Left	8	0	10	0
Volume Right	8	40	0	0
cSH	365	1700	734	1700
Volume to Capacity	0.04	0.49	0.01	0.45
Queue Length 95th (m)	1.1	0.0	0.3	0.0
Control Delay (s)	15.3	0.0	10.0	0.0
Lane LOS	C		A	
Approach Delay (s)	15.3	0.0	0.1	
Approach LOS	C			

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	50.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	8	36	12	47	8	2	3	19	44	3	16	4
Future Volume (vph)	8	36	12	47	8	2	3	19	44	3	16	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	39	13	51	9	2	3	21	48	3	17	4

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	61	62	72	24
Volume Left (vph)	9	51	3	3
Volume Right (vph)	13	2	48	4
Hadj (s)	-0.06	0.18	-0.36	-0.04
Departure Headway (s)	4.1	4.3	3.8	4.2
Degree Utilization, x	0.07	0.07	0.08	0.03
Capacity (veh/h)	851	807	899	826
Control Delay (s)	7.4	7.7	7.2	7.3
Approach Delay (s)	7.4	7.7	7.2	7.3
Approach LOS	A	A	A	A

Intersection Summary			
Delay	7.4		
Level of Service	A		
Intersection Capacity Utilization	20.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	930	0	60	989	0	4
Future Volume (Veh/h)	930	0	60	989	0	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1011	0	65	1075	0	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	178					
pX, platoon unblocked						
vC, conflicting volume			1011		2216	1011
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1011		2216	1011
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			91		100	99
cM capacity (veh/h)			686		44	291

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	1011	1140	4
Volume Left	0	65	0
Volume Right	0	0	4
cSH	1700	686	291
Volume to Capacity	0.59	0.09	0.01
Queue Length 95th (m)	0.0	2.5	0.3
Control Delay (s)	0.0	3.2	17.6
Lane LOS		A	C
Approach Delay (s)	0.0	3.2	17.6
Approach LOS			C

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	111.2%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	933	1	90	987	2	45
Future Volume (Veh/h)	933	1	90	987	2	45
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1014	1	98	1073	2	49
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	318					
pX, platoon unblocked						
vC, conflicting volume			1015		2284	1014
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1015		2284	1014
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			86		95	83
cM capacity (veh/h)			683		37	289

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	1015	1171	51
Volume Left	0	98	2
Volume Right	1	0	49
cSH	1700	683	229
Volume to Capacity	0.60	0.14	0.22
Queue Length 95th (m)	0.0	4.0	6.6
Control Delay (s)	0.0	4.9	25.2
Lane LOS		A	D
Approach Delay (s)	0.0	4.9	25.2
Approach LOS			D

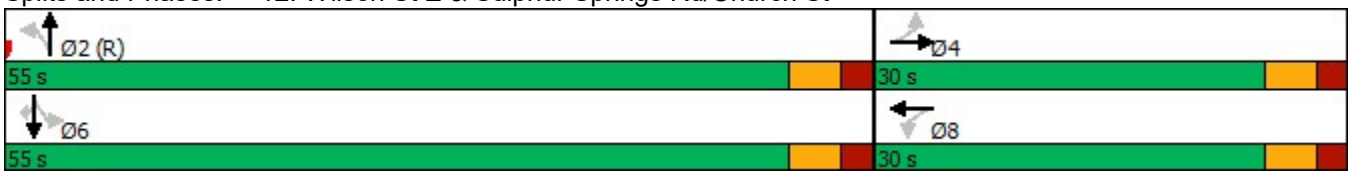
Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	119.4%	ICU Level of Service	H
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	161	18	46	37	38	592	9	603	143
Future Volume (vph)	161	18	46	37	38	592	9	603	143
Lane Group Flow (vph)	0	281	0	99	41	672	10	655	155
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases		4		8		2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	6	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	30.0	30.0	30.0	30.0	30.0
Minimum Split (s)	23.3	23.3	23.3	23.3	35.4	35.4	35.4	35.4	35.4
Total Split (s)	30.0	30.0	30.0	30.0	55.0	55.0	55.0	55.0	55.0
Total Split (%)	35.3%	35.3%	35.3%	35.3%	64.7%	64.7%	64.7%	64.7%	64.7%
Maximum Green (s)	24.7	24.7	24.7	24.7	49.6	49.6	49.6	49.6	49.6
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.3		5.3	5.4	5.4	5.4	5.4	5.4
Lead/Lag									
Lead-Lag Optimize?									
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Max	C-Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	10.0	10.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0
Act Effct Green (s)		20.5		20.5	53.8	53.8	53.8	53.8	53.8
Actuated g/C Ratio		0.24		0.24	0.63	0.63	0.63	0.63	0.63
v/c Ratio		0.82		0.30	0.11	0.59	0.03	0.57	0.15
Control Delay		46.4		25.7	8.6	12.8	7.7	12.5	3.6
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		46.4		25.7	8.6	12.8	7.7	12.5	3.6
LOS		D		C	A	B	A	B	A
Approach Delay		46.4		25.7		12.5		10.8	
Approach LOS		D		C		B		B	
Queue Length 50th (m)		40.5		12.7	2.6	62.7	0.6	60.6	3.4
Queue Length 95th (m)		#68.5		24.9	7.8	106.3	2.8	102.1	11.7
Internal Link Dist (m)		110.0		170.7		303.3		238.3	
Turn Bay Length (m)					20.0		20.0		25.0
Base Capacity (vph)		409		400	364	1135	351	1140	1005
Starvation Cap Reductn		0		0	0	0	0	0	0
Spillback Cap Reductn		0		0	0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0	0
Reduced v/c Ratio		0.69		0.25	0.11	0.59	0.03	0.57	0.15

Intersection Summary
Cycle Length: 85
Actuated Cycle Length: 85
Offset: 0 (0%), Referenced to phase 2:NBTL, Start of Green
Natural Cycle: 60

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.82
Intersection Signal Delay: 17.4 Intersection LOS: B
Intersection Capacity Utilization 71.7% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 12: Wilson St E & Sulphur Springs Rd/Church St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	161	18	79	46	37	8	38	592	27	9	603	143
Future Volume (vph)	161	18	79	46	37	8	38	592	27	9	603	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.3			5.3		5.4	5.4		5.4	5.4	5.4
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frt		0.96			0.99		1.00	0.99		1.00	1.00	0.85
Flt Protected		0.97			0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1674			1735		1711	1789		1711	1801	1531
Flt Permitted		0.78			0.77		0.32	1.00		0.31	1.00	1.00
Satd. Flow (perm)		1344			1365		576	1789		557	1801	1531
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)	175	20	86	50	40	9	41	643	29	10	655	155
RTOR Reduction (vph)	0	20	0	0	5	0	0	2	0	0	0	36
Lane Group Flow (vph)	0	261	0	0	94	0	41	670	0	10	655	119
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		20.5			20.5		53.8	53.8		53.8	53.8	53.8
Effective Green, g (s)		20.5			20.5		53.8	53.8		53.8	53.8	53.8
Actuated g/C Ratio		0.24			0.24		0.63	0.63		0.63	0.63	0.63
Clearance Time (s)		5.3			5.3		5.4	5.4		5.4	5.4	5.4
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		324			329		364	1132		352	1139	969
v/s Ratio Prot								c0.37			0.36	
v/s Ratio Perm		c0.19			0.07		0.07			0.02		0.08
v/c Ratio		0.81			0.29		0.11	0.59		0.03	0.58	0.12
Uniform Delay, d1		30.4			26.3		6.2	9.2		5.8	9.0	6.2
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		13.6			0.5		0.6	2.3		0.1	2.1	0.3
Delay (s)		44.0			26.8		6.8	11.4		6.0	11.1	6.5
Level of Service		D			C		A	B		A	B	A
Approach Delay (s)		44.0			26.8			11.2			10.2	
Approach LOS		D			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	10.7
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Appendix E – 2022 TTS Data Analysis

Tue Mar 03 2026 22:47:05 GMT-0500 (Eastern Standard Time) - Run Time: 3033ms

Cross Tabulation Query Form - Trip - 2022

Row: 2022 TTS zone of origin - tts22_orig
Column: Planning district of destination - pd_dest

Filters:
2022 TTS zone of origin - tts22_orig In 6052
and
Primary trav m t u
and
Start time of trip - start_time In 700-1000

Trip 2022
Table:

	PD 7 of Tor	Mississaug	Burlington	Flamborou	Dundas	Ancaster	Glanbrook	Stoney Cre	Hamilton	Lincoln	Waterloo	Cambridge	Guelph	
6052	11	34	37	18	65	204	37	16	454	21	28	23	44	992
	1%	3%	4%	2%	7%	21%	4%	2%	46%	2%	3%	2%	4%	

Tue Mar 03 2026 22:47:58 GMT-0500 (Eastern Standard Time) - Run Time: 3034ms

Cross Tabulation Query Form - Trip - 2022

Row: 2022 TTS zone of origin - tts22_orig
Column: Planning district of destination - pd_dest

Filters:
2022 TTS zone of origin - tts22_orig In 6052
and
Primary trav m t u
and
Start time of trip - start_time In 1600-1900

Trip 2022
Table:

	Mississaug	Milton	Burlington	Dundas	Ancaster	Hamilton	Grimsby	Brantford	
6052	36	50	18	24	332	139	4	12	615
	6%	8%	3%	4%	54%	23%	1%	2%	100%

Wed Mar 04 2026 15:34:25 GMT-0500 (Eastern Standard Time) - Run Time: 2922ms

Cross Tabulation Query Form - Trip - 2022

Row: 2022 TTS zone of origin - tts22_orig
Column: Primary travel mode of trip - mode_prime

Filters:
2022 TTS zone of origin - tts22_orig In 6052
and
Primary trav c d g j m p t u w
and
Start time of trip - start_time In 700-1000

Trip 2022
Table:

	Transit exc	Auto drive	GO rail onl	Auto passe	Walk	
6052	23	1005	5	129	189	1351
	2%	74%	0%	10%	14%	

Wed Mar 04 2026 15:35:54 GMT-0500 (Eastern Standard Time) - Run Time: 2992ms

Cross Tabulation Query Form - Trip - 2022

Row: 2022 TTS zone of origin - tts22_orig
Column: Primary travel mode of trip - mode_prime

Filters:
2022 TTS zone of origin - tts22_orig In 6052
and
Primary trav c d g j m p t u w
and
Start time of trip - start_time In 1600-1900

Trip 2022
Table:

	Transit exc	Auto drive	Auto passe	Walk	
6052	11	614	204	92	921
	1%	67%	22%	10%	

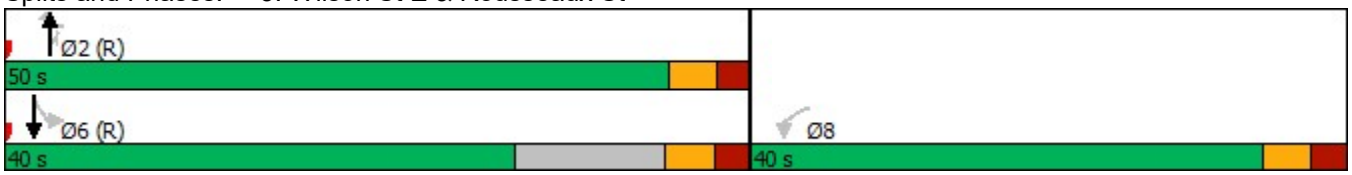
Appendix F – Future Total Traffic Level of Service Calculations

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	273	748	388	334	363	218
Future Volume (vph)	273	748	388	334	363	218
Lane Group Flow (vph)	297	813	422	363	395	237
Turn Type	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8	2		2	6	
Detector Phase	8	2	2	2	6	6
Switch Phase						
Minimum Initial (s)	20.0	15.0	15.0	15.0	20.0	20.0
Minimum Split (s)	25.8	24.6	24.6	24.6	25.8	25.8
Total Split (s)	40.0	50.0	50.0	50.0	40.0	40.0
Total Split (%)	44.4%	55.6%	55.6%	55.6%	44.4%	44.4%
Maximum Green (s)	34.2	44.4	44.4	44.4	34.2	34.2
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.5	2.3	2.3	2.3	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.6	5.6	5.6	5.8	5.8
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	5.0	12.0	12.0	12.0	5.0	5.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	22.7	55.9	55.9	55.9	55.7	55.7
Actuated g/C Ratio	0.25	0.62	0.62	0.62	0.62	0.62
v/c Ratio	0.69	0.65	0.38	0.33	0.75	0.21
Control Delay	39.0	3.5	10.3	1.9	25.2	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.0	3.5	10.3	1.9	25.2	8.8
LOS	D	A	B	A	C	A
Approach Delay	13.0		6.4			19.1
Approach LOS	B		A			B
Queue Length 50th (m)	50.5	0.0	32.0	0.0	43.2	15.9
Queue Length 95th (m)	70.4	16.0	63.1	11.8	#117.4	33.8
Internal Link Dist (m)	154.1		316.4			401.7
Turn Bay Length (m)	30.0			100.0	40.0	
Base Capacity (vph)	650	1258	1118	1088	525	1114
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.65	0.38	0.33	0.75	0.21

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 30 (33%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 70

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.75
Intersection Signal Delay: 12.5 Intersection LOS: B
Intersection Capacity Utilization 76.1% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

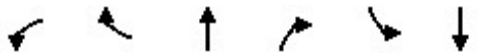
Splits and Phases: 3: Wilson St E & Rousseaux St



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	273	748	388	334	363	218
Future Volume (vph)	273	748	388	334	363	218
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.6	5.6	5.6	5.8	5.8
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1711	1531	1801	1531	1711	1801
Flt Permitted	0.95	1.00	1.00	1.00	0.47	1.00
Satd. Flow (perm)	1711	1531	1801	1531	848	1801
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	297	813	422	363	395	237
RTOR Reduction (vph)	0	308	0	138	0	0
Lane Group Flow (vph)	297	505	422	225	395	237
Turn Type	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8	2		2	6	
Actuated Green, G (s)	22.7	55.9	55.9	55.9	55.7	55.7
Effective Green, g (s)	22.7	55.9	55.9	55.9	55.7	55.7
Actuated g/C Ratio	0.25	0.62	0.62	0.62	0.62	0.62
Clearance Time (s)	5.8	5.6	5.6	5.6	5.8	5.8
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	431	950	1118	950	524	1114
v/s Ratio Prot			0.23			0.13
v/s Ratio Perm	c0.17	0.33		0.15	c0.47	
v/c Ratio	0.69	0.53	0.38	0.24	0.75	0.21
Uniform Delay, d1	30.5	9.6	8.4	7.6	12.3	7.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.6	2.1	1.0	0.6	9.7	0.4
Delay (s)	35.0	11.8	9.4	8.2	21.9	8.0
Level of Service	D	B	A	A	C	A
Approach Delay (s)	18.0		8.8			16.7
Approach LOS	B		A			B

Intersection Summary			
HCM 2000 Control Delay	14.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	11.6
Intersection Capacity Utilization	76.1%	ICU Level of Service	D
Analysis Period (min)	15		

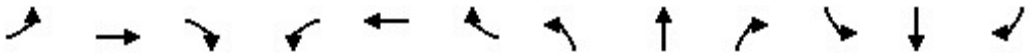
c Critical Lane Group



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	25	32	712	28	21	491
Future Volume (Veh/h)	25	32	712	28	21	491
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	27	35	774	30	23	534
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (m)			262			340
pX, platoon unblocked	0.85	0.80			0.80	
vC, conflicting volume	1369	789			804	
vC1, stage 1 conf vol	789					
vC2, stage 2 conf vol	580					
vCu, unblocked vol	1044	608			627	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	93	91			97	
cM capacity (veh/h)	377	395			761	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	62	804	23	534
Volume Left	27	0	23	0
Volume Right	35	30	0	0
cSH	387	1700	761	1700
Volume to Capacity	0.16	0.47	0.03	0.31
Queue Length 95th (m)	4.5	0.0	0.7	0.0
Control Delay (s)	16.1	0.0	9.9	0.0
Lane LOS	C		A	
Approach Delay (s)	16.1	0.0	0.4	
Approach LOS	C			

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	49.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	31	3	33	20	2	2	5	30	1	12	3
Future Volume (vph)	0	31	3	33	20	2	2	5	30	1	12	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	34	3	36	22	2	2	5	33	1	13	3

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	37	60	40	17
Volume Left (vph)	0	36	2	1
Volume Right (vph)	3	2	33	3
Hadj (s)	-0.01	0.13	-0.45	-0.06
Departure Headway (s)	4.1	4.2	3.7	4.1
Degree Utilization, x	0.04	0.07	0.04	0.02
Capacity (veh/h)	866	844	942	854
Control Delay (s)	7.2	7.5	6.8	7.2
Approach Delay (s)	7.2	7.5	6.8	7.2
Approach LOS	A	A	A	A

Intersection Summary				
Delay	7.2			
Level of Service	A			
Intersection Capacity Utilization	19.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	725	0	0	937	81	78
Future Volume (Veh/h)	725	0	0	937	81	78
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	788	0	0	1018	88	85
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	178					
pX, platoon unblocked						
vC, conflicting volume			788		1806	788
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			788		1806	788
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		0	78
cM capacity (veh/h)			831		87	391

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	788	1018	173
Volume Left	0	0	88
Volume Right	0	0	85
cSH	1700	831	141
Volume to Capacity	0.46	0.00	1.23
Queue Length 95th (m)	0.0	0.0	82.5
Control Delay (s)	0.0	0.0	211.6
Lane LOS			F
Approach Delay (s)	0.0	0.0	211.6
Approach LOS			F

Intersection Summary			
Average Delay	18.5		
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	802	1	50	937	0	67
Future Volume (Veh/h)	802	1	50	937	0	67
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	872	1	54	1018	0	73
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	318					
pX, platoon unblocked						
vC, conflicting volume			873		1998	872
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			873		1998	872
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			93		100	79
cM capacity (veh/h)			773		61	350

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	873	1072	73
Volume Left	0	54	0
Volume Right	1	0	73
cSH	1700	773	350
Volume to Capacity	0.51	0.07	0.21
Queue Length 95th (m)	0.0	1.8	6.2
Control Delay (s)	0.0	2.2	18.0
Lane LOS		A	C
Approach Delay (s)	0.0	2.2	18.0
Approach LOS			C

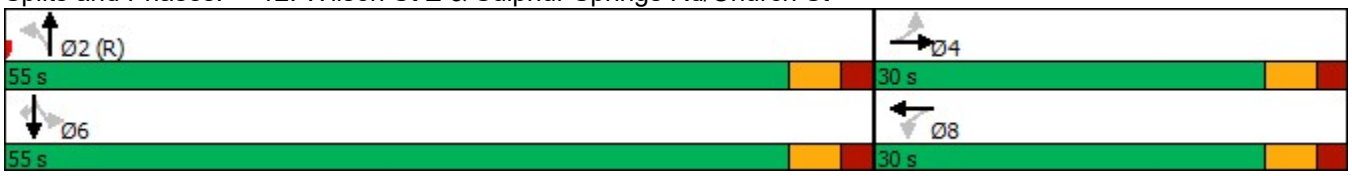
Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	100.9%	ICU Level of Service	G
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	176	15	29	18	38	570	6	406	79
Future Volume (vph)	176	15	29	18	38	570	6	406	79
Lane Group Flow (vph)	0	254	0	56	41	630	7	441	86
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases		4		8		2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	6	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	30.0	30.0	30.0	30.0	30.0
Minimum Split (s)	23.3	23.3	23.3	23.3	35.4	35.4	35.4	35.4	35.4
Total Split (s)	30.0	30.0	30.0	30.0	55.0	55.0	55.0	55.0	55.0
Total Split (%)	35.3%	35.3%	35.3%	35.3%	64.7%	64.7%	64.7%	64.7%	64.7%
Maximum Green (s)	24.7	24.7	24.7	24.7	49.6	49.6	49.6	49.6	49.6
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.3		5.3	5.4	5.4	5.4	5.4	5.4
Lead/Lag									
Lead-Lag Optimize?									
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Max	C-Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	10.0	10.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0
Act Effct Green (s)		19.9		19.9	54.4	54.4	54.4	54.4	54.4
Actuated g/C Ratio		0.23		0.23	0.64	0.64	0.64	0.64	0.64
v/c Ratio		0.80		0.17	0.08	0.55	0.02	0.38	0.09
Control Delay		47.5		23.6	7.7	11.7	7.5	9.4	2.3
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		47.5		23.6	7.7	11.7	7.5	9.4	2.3
LOS		D		C	A	B	A	A	A
Approach Delay		47.5		23.6		11.5		8.2	
Approach LOS		D		C		B		A	
Queue Length 50th (m)		38.3		7.0	2.5	55.1	0.4	33.3	0.3
Queue Length 95th (m)		62.9		15.5	7.4	96.1	2.2	58.6	5.9
Internal Link Dist (m)		110.0		170.7		303.3		238.3	
Turn Bay Length (m)					20.0		20.0		25.0
Base Capacity (vph)		388		416	535	1149	390	1151	1008
Starvation Cap Reductn		0		0	0	0	0	0	0
Spillback Cap Reductn		0		0	0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0	0
Reduced v/c Ratio		0.65		0.13	0.08	0.55	0.02	0.38	0.09

Intersection Summary
Cycle Length: 85
Actuated Cycle Length: 85
Offset: 0 (0%), Referenced to phase 2:NBTL, Start of Green
Natural Cycle: 60

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 16.8 Intersection LOS: B
Intersection Capacity Utilization 71.7% ICU Level of Service C
Analysis Period (min) 15

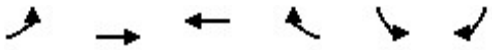
Splits and Phases: 12: Wilson St E & Sulphur Springs Rd/Church St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	176	15	43	29	18	4	38	570	9	6	406	79
Future Volume (vph)	176	15	43	29	18	4	38	570	9	6	406	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.3			5.3		5.4	5.4		5.4	5.4	5.4
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frt		0.98			0.99		1.00	1.00		1.00	1.00	0.85
Flt Protected		0.96			0.97		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1692			1734		1711	1796		1711	1801	1531
Flt Permitted		0.74			0.80		0.46	1.00		0.34	1.00	1.00
Satd. Flow (perm)		1304			1424		837	1796		611	1801	1531
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)	191	16	47	32	20	4	41	620	10	7	441	86
RTOR Reduction (vph)	0	11	0	0	3	0	0	1	0	0	0	30
Lane Group Flow (vph)	0	243	0	0	53	0	41	629	0	7	441	56
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		19.9			19.9		54.4	54.4		54.4	54.4	54.4
Effective Green, g (s)		19.9			19.9		54.4	54.4		54.4	54.4	54.4
Actuated g/C Ratio		0.23			0.23		0.64	0.64		0.64	0.64	0.64
Clearance Time (s)		5.3			5.3		5.4	5.4		5.4	5.4	5.4
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		305			333		535	1149		391	1152	979
v/s Ratio Prot								c0.35			0.24	
v/s Ratio Perm		c0.19			0.04		0.05			0.01		0.04
v/c Ratio		0.80			0.16		0.08	0.55		0.02	0.38	0.06
Uniform Delay, d1		30.7			25.9		5.8	8.5		5.6	7.3	5.7
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		13.5			0.2		0.3	1.9		0.1	1.0	0.1
Delay (s)		44.1			26.1		6.1	10.4		5.7	8.3	5.8
Level of Service		D			C		A	B		A	A	A
Approach Delay (s)		44.1			26.1			10.1			7.8	
Approach LOS		D			C			B			A	

Intersection Summary			
HCM 2000 Control Delay	15.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	10.7
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	33	13	14	11	21	42
Future Volume (Veh/h)	33	13	14	11	21	42
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	36	14	15	12	23	46
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	27				107	21
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	27				107	21
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				97	96
cM capacity (veh/h)	1587				870	1056

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	50	27	69
Volume Left	36	0	23
Volume Right	0	12	46
cSH	1587	1700	986
Volume to Capacity	0.02	0.02	0.07
Queue Length 95th (m)	0.6	0.0	1.8
Control Delay (s)	5.3	0.0	8.9
Lane LOS	A		A
Approach Delay (s)	5.3	0.0	8.9
Approach LOS			A

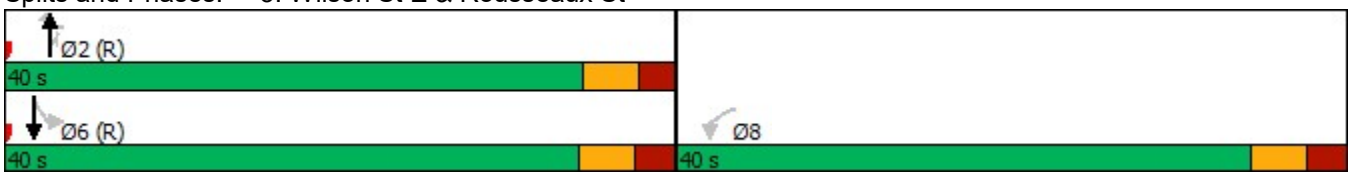
Intersection Summary			
Average Delay	6.0		
Intersection Capacity Utilization	19.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	408	507	337	330	559	346
Future Volume (vph)	408	507	337	330	559	346
Lane Group Flow (vph)	443	551	366	359	608	376
Turn Type	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8	2		2	6	
Detector Phase	8	2	2	2	6	6
Switch Phase						
Minimum Initial (s)	20.0	15.0	15.0	15.0	20.0	20.0
Minimum Split (s)	25.8	24.6	24.6	24.6	25.8	25.8
Total Split (s)	40.0	40.0	40.0	40.0	40.0	40.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Maximum Green (s)	34.2	34.4	34.4	34.4	34.2	34.2
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.5	2.3	2.3	2.3	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.6	5.6	5.6	5.8	5.8
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	5.0	12.0	12.0	12.0	5.0	5.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	26.5	42.1	42.1	42.1	41.9	41.9
Actuated g/C Ratio	0.33	0.53	0.53	0.53	0.52	0.52
v/c Ratio	0.78	0.52	0.39	0.37	1.32	0.40
Control Delay	33.8	3.3	14.2	2.8	181.0	14.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.8	3.3	14.2	2.8	181.0	14.4
LOS	C	A	B	A	F	B
Approach Delay	16.9		8.5			117.3
Approach LOS	B		A			F
Queue Length 50th (m)	63.1	0.0	32.6	0.0	~127.5	33.9
Queue Length 95th (m)	84.2	17.6	63.5	14.7	#203.2	65.9
Internal Link Dist (m)	154.1		316.4			401.7
Turn Bay Length (m)	30.0			100.0	40.0	
Base Capacity (vph)	731	1066	947	975	461	942
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.52	0.39	0.37	1.32	0.40

Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 40 (50%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 110

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.32
Intersection Signal Delay: 51.2 Intersection LOS: D
Intersection Capacity Utilization 85.6% ICU Level of Service E
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

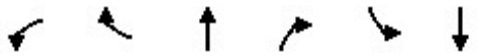
Splits and Phases: 3: Wilson St E & Rousseaux St



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	408	507	337	330	559	346
Future Volume (vph)	408	507	337	330	559	346
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.6	5.6	5.6	5.8	5.8
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1711	1531	1801	1531	1711	1801
Flt Permitted	0.95	1.00	1.00	1.00	0.49	1.00
Satd. Flow (perm)	1711	1531	1801	1531	883	1801
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	443	551	366	359	608	376
RTOR Reduction (vph)	0	261	0	170	0	0
Lane Group Flow (vph)	443	290	366	189	608	376
Turn Type	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8	2		2	6	
Actuated Green, G (s)	26.5	42.1	42.1	42.1	41.9	41.9
Effective Green, g (s)	26.5	42.1	42.1	42.1	41.9	41.9
Actuated g/C Ratio	0.33	0.53	0.53	0.53	0.52	0.52
Clearance Time (s)	5.8	5.6	5.6	5.6	5.8	5.8
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	566	805	947	805	462	943
v/s Ratio Prot			0.20			0.21
v/s Ratio Perm	c0.26	0.19		0.12	c0.69	
v/c Ratio	0.78	0.36	0.39	0.23	1.32	0.40
Uniform Delay, d1	24.2	11.1	11.3	10.2	19.1	11.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.0	1.3	1.2	0.7	156.9	1.3
Delay (s)	31.1	12.3	12.5	10.9	176.0	12.7
Level of Service	C	B	B	B	F	B
Approach Delay (s)	20.7		11.7			113.6
Approach LOS	C		B			F

Intersection Summary			
HCM 2000 Control Delay	52.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	11.6
Intersection Capacity Utilization	85.6%	ICU Level of Service	E
Analysis Period (min)	15		

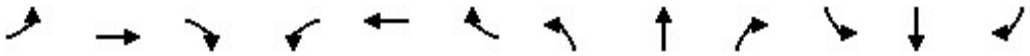
c Critical Lane Group



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	25	27	708	58	42	694
Future Volume (Veh/h)	25	27	708	58	42	694
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	27	29	770	63	46	754
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (m)			262			340
pX, platoon unblocked	0.86	0.77			0.77	
vC, conflicting volume	1648	802			833	
vC1, stage 1 conf vol	802					
vC2, stage 2 conf vol	846					
vCu, unblocked vol	1059	589			630	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	92	93			94	
cM capacity (veh/h)	322	390			730	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	56	833	46	754
Volume Left	27	0	46	0
Volume Right	29	63	0	0
cSH	354	1700	730	1700
Volume to Capacity	0.16	0.49	0.06	0.44
Queue Length 95th (m)	4.4	0.0	1.6	0.0
Control Delay (s)	17.1	0.0	10.3	0.0
Lane LOS	C		B	
Approach Delay (s)	17.1	0.0	0.6	
Approach LOS	C			

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	50.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	8	63	11	46	32	2	3	18	43	3	15	4
Future Volume (vph)	8	63	11	46	32	2	3	18	43	3	15	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	68	12	50	35	2	3	20	47	3	16	4

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	89	87	70	23
Volume Left (vph)	9	50	3	3
Volume Right (vph)	12	2	47	4
Hadj (s)	-0.03	0.14	-0.36	-0.04
Departure Headway (s)	4.2	4.3	4.0	4.3
Degree Utilization, x	0.10	0.10	0.08	0.03
Capacity (veh/h)	839	810	863	793
Control Delay (s)	7.6	7.8	7.3	7.4
Approach Delay (s)	7.6	7.8	7.3	7.4
Approach LOS	A	A	A	A

Intersection Summary			
Delay	7.6		
Level of Service	A		
Intersection Capacity Utilization	21.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	908	0	58	965	0	4
Future Volume (Veh/h)	908	0	58	965	0	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	987	0	63	1049	0	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	178					
pX, platoon unblocked						
vC, conflicting volume			987		2162	987
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			987		2162	987
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			91		100	99
cM capacity (veh/h)			700		47	300

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	987	1112	4
Volume Left	0	63	0
Volume Right	0	0	4
cSH	1700	700	300
Volume to Capacity	0.58	0.09	0.01
Queue Length 95th (m)	0.0	2.4	0.3
Control Delay (s)	0.0	3.0	17.2
Lane LOS		A	C
Approach Delay (s)	0.0	3.0	17.2
Approach LOS			C

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	108.2%	ICU Level of Service	G
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	911	1	112	963	2	72
Future Volume (Veh/h)	911	1	112	963	2	72
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	990	1	122	1047	2	78
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	318					
pX, platoon unblocked						
vC, conflicting volume			991		2282	990
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			991		2282	990
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			83		94	74
cM capacity (veh/h)			698		36	299

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	991	1169	80
Volume Left	0	122	2
Volume Right	1	0	78
cSH	1700	698	253
Volume to Capacity	0.58	0.17	0.32
Queue Length 95th (m)	0.0	5.0	10.5
Control Delay (s)	0.0	5.8	25.7
Lane LOS		A	D
Approach Delay (s)	0.0	5.8	25.7
Approach LOS			D

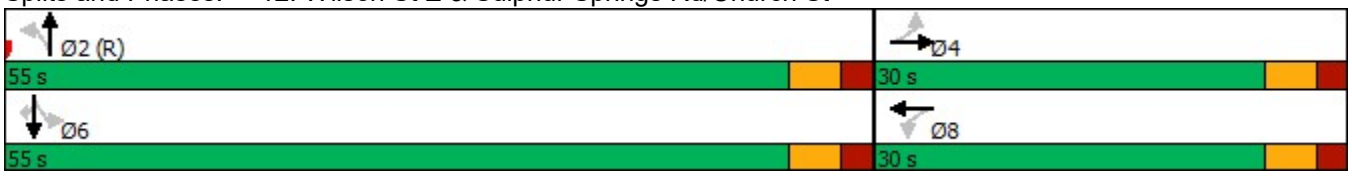
Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	119.4%	ICU Level of Service	H
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	157	17	45	36	37	600	9	606	139
Future Volume (vph)	157	17	45	36	37	600	9	606	139
Lane Group Flow (vph)	0	273	0	97	40	681	10	659	151
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases		4		8		2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	6	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	30.0	30.0	30.0	30.0	30.0
Minimum Split (s)	23.3	23.3	23.3	23.3	35.4	35.4	35.4	35.4	35.4
Total Split (s)	30.0	30.0	30.0	30.0	55.0	55.0	55.0	55.0	55.0
Total Split (%)	35.3%	35.3%	35.3%	35.3%	64.7%	64.7%	64.7%	64.7%	64.7%
Maximum Green (s)	24.7	24.7	24.7	24.7	49.6	49.6	49.6	49.6	49.6
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.3		5.3	5.4	5.4	5.4	5.4	5.4
Lead/Lag									
Lead-Lag Optimize?									
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Max	C-Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	10.0	10.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0
Act Effct Green (s)		20.0		20.0	54.3	54.3	54.3	54.3	54.3
Actuated g/C Ratio		0.24		0.24	0.64	0.64	0.64	0.64	0.64
v/c Ratio		0.81		0.30	0.11	0.60	0.03	0.57	0.15
Control Delay		45.6		25.9	8.4	12.7	7.7	12.3	3.6
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		45.6		25.9	8.4	12.7	7.7	12.3	3.6
LOS		D		C	A	B	A	B	A
Approach Delay		45.6		25.9		12.4		10.6	
Approach LOS		D		C		B		B	
Queue Length 50th (m)		39.3		12.6	2.5	62.5	0.6	59.7	3.3
Queue Length 95th (m)		64.7		24.4	7.6	108.6	2.8	103.3	11.6
Internal Link Dist (m)		110.0		170.7		303.3		238.3	
Turn Bay Length (m)					20.0		20.0		25.0
Base Capacity (vph)		410		401	367	1144	352	1149	1012
Starvation Cap Reductn		0		0	0	0	0	0	0
Spillback Cap Reductn		0		0	0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0	0
Reduced v/c Ratio		0.67		0.24	0.11	0.60	0.03	0.57	0.15

Intersection Summary
Cycle Length: 85
Actuated Cycle Length: 85
Offset: 0 (0%), Referenced to phase 2:NBTL, Start of Green
Natural Cycle: 60

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 17.1 Intersection LOS: B
Intersection Capacity Utilization 71.7% ICU Level of Service C
Analysis Period (min) 15

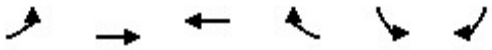
Splits and Phases: 12: Wilson St E & Sulphur Springs Rd/Church St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	157	17	77	45	36	8	37	600	27	9	606	139
Future Volume (vph)	157	17	77	45	36	8	37	600	27	9	606	139
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.3			5.3		5.4	5.4		5.4	5.4	5.4
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frt		0.96			0.99		1.00	0.99		1.00	1.00	0.85
Flt Protected		0.97			0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1673			1734		1711	1789		1711	1801	1531
Flt Permitted		0.78			0.77		0.32	1.00		0.31	1.00	1.00
Satd. Flow (perm)		1346			1369		577	1789		552	1801	1531
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)	171	18	84	49	39	9	40	652	29	10	659	151
RTOR Reduction (vph)	0	21	0	0	5	0	0	2	0	0	0	35
Lane Group Flow (vph)	0	252	0	0	92	0	40	679	0	10	659	116
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		20.0			20.0		54.3	54.3		54.3	54.3	54.3
Effective Green, g (s)		20.0			20.0		54.3	54.3		54.3	54.3	54.3
Actuated g/C Ratio		0.24			0.24		0.64	0.64		0.64	0.64	0.64
Clearance Time (s)		5.3			5.3		5.4	5.4		5.4	5.4	5.4
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		316			322		368	1142		352	1150	978
v/s Ratio Prot								c0.38			0.37	
v/s Ratio Perm		c0.19			0.07		0.07			0.02		0.08
v/c Ratio		0.80			0.29		0.11	0.59		0.03	0.57	0.12
Uniform Delay, d1		30.6			26.7		6.0	8.9		5.6	8.7	6.0
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		13.1			0.5		0.6	2.3		0.1	2.1	0.2
Delay (s)		43.7			27.1		6.6	11.2		5.8	10.8	6.2
Level of Service		D			C		A	B		A	B	A
Approach Delay (s)		43.7			27.1			11.0			9.9	
Approach LOS		D			C			B			A	

Intersection Summary			
HCM 2000 Control Delay	16.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	10.7
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	55	54	15	24	28	38
Future Volume (Veh/h)	55	54	15	24	28	38
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	60	59	16	26	30	41
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	42				208	29
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	42				208	29
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				96	96
cM capacity (veh/h)	1567				750	1046

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	119	42	71
Volume Left	60	0	30
Volume Right	0	26	41
cSH	1567	1700	897
Volume to Capacity	0.04	0.02	0.08
Queue Length 95th (m)	1.0	0.0	2.1
Control Delay (s)	3.9	0.0	9.4
Lane LOS	A		A
Approach Delay (s)	3.9	0.0	9.4
Approach LOS			A

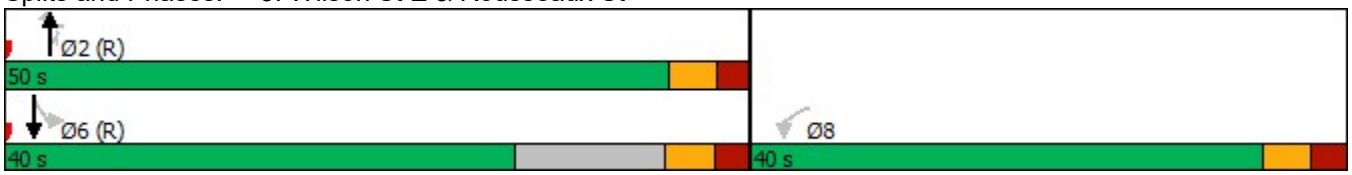
Intersection Summary			
Average Delay	4.8		
Intersection Capacity Utilization	23.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	280	767	397	434	372	223
Future Volume (vph)	280	767	397	434	372	223
Lane Group Flow (vph)	304	834	432	472	404	242
Turn Type	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8	2		2	6	
Detector Phase	8	2	2	2	6	6
Switch Phase						
Minimum Initial (s)	20.0	15.0	15.0	15.0	20.0	20.0
Minimum Split (s)	25.8	24.6	24.6	24.6	25.8	25.8
Total Split (s)	40.0	50.0	50.0	50.0	40.0	40.0
Total Split (%)	44.4%	55.6%	55.6%	55.6%	44.4%	44.4%
Maximum Green (s)	34.2	44.4	44.4	44.4	34.2	34.2
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.5	2.3	2.3	2.3	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.6	5.6	5.6	5.8	5.8
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	5.0	12.0	12.0	12.0	5.0	5.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	22.9	55.7	55.7	55.7	55.5	55.5
Actuated g/C Ratio	0.25	0.62	0.62	0.62	0.62	0.62
v/c Ratio	0.70	0.66	0.39	0.42	0.79	0.22
Control Delay	39.1	3.7	10.6	2.2	28.0	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.1	3.7	10.6	2.2	28.0	9.0
LOS	D	A	B	A	C	A
Approach Delay	13.1		6.2			20.9
Approach LOS	B		A			C
Queue Length 50th (m)	51.7	0.0	33.5	0.0	46.6	16.6
Queue Length 95th (m)	71.9	16.3	65.6	13.3	#123.4	35.0
Internal Link Dist (m)	154.1		316.4			401.7
Turn Bay Length (m)	30.0			100.0	40.0	
Base Capacity (vph)	650	1265	1114	1127	514	1110
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.66	0.39	0.42	0.79	0.22

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 30 (33%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 75

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.79
Intersection Signal Delay: 12.7 Intersection LOS: B
Intersection Capacity Utilization 77.7% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Wilson St E & Rousseaux St



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	280	767	397	434	372	223
Future Volume (vph)	280	767	397	434	372	223
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.6	5.6	5.6	5.8	5.8
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1711	1531	1801	1531	1711	1801
Flt Permitted	0.95	1.00	1.00	1.00	0.46	1.00
Satd. Flow (perm)	1711	1531	1801	1531	834	1801
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	304	834	432	472	404	242
RTOR Reduction (vph)	0	318	0	180	0	0
Lane Group Flow (vph)	304	516	432	292	404	242
Turn Type	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8	2		2	6	
Actuated Green, G (s)	22.9	55.7	55.7	55.7	55.5	55.5
Effective Green, g (s)	22.9	55.7	55.7	55.7	55.5	55.5
Actuated g/C Ratio	0.25	0.62	0.62	0.62	0.62	0.62
Clearance Time (s)	5.8	5.6	5.6	5.6	5.8	5.8
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	435	947	1114	947	514	1110
v/s Ratio Prot			0.24			0.13
v/s Ratio Perm	c0.18	0.34		0.19	c0.48	
v/c Ratio	0.70	0.55	0.39	0.31	0.79	0.22
Uniform Delay, d1	30.4	9.9	8.6	8.1	12.8	7.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.9	2.3	1.0	0.8	11.5	0.5
Delay (s)	35.3	12.1	9.6	8.9	24.3	8.1
Level of Service	D	B	A	A	C	A
Approach Delay (s)	18.3		9.3			18.2
Approach LOS	B		A			B

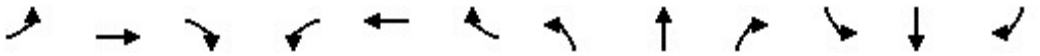
Intersection Summary			
HCM 2000 Control Delay	15.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	11.6
Intersection Capacity Utilization	77.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	25	33	730	29	21	503
Future Volume (Veh/h)	25	33	730	29	21	503
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	27	36	793	32	23	547
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (m)			262			340
pX, platoon unblocked	0.84	0.78			0.78	
vC, conflicting volume	1402	809			825	
vC1, stage 1 conf vol	809					
vC2, stage 2 conf vol	593					
vCu, unblocked vol	1063	619			639	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	93	91			97	
cM capacity (veh/h)	367	383			741	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	63	825	23	547
Volume Left	27	0	23	0
Volume Right	36	32	0	0
cSH	376	1700	741	1700
Volume to Capacity	0.17	0.49	0.03	0.32
Queue Length 95th (m)	4.8	0.0	0.8	0.0
Control Delay (s)	16.5	0.0	10.0	0.0
Lane LOS	C		B	
Approach Delay (s)	16.5	0.0	0.4	
Approach LOS	C			

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	50.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	32	3	34	20	2	2	5	30	1	13	3
Future Volume (vph)	0	32	3	34	20	2	2	5	30	1	13	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	35	3	37	22	2	2	5	33	1	14	3

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	38	61	40	18
Volume Left (vph)	0	37	2	1
Volume Right (vph)	3	2	33	3
Hadj (s)	-0.01	0.14	-0.45	-0.05
Departure Headway (s)	4.1	4.2	3.7	4.1
Degree Utilization, x	0.04	0.07	0.04	0.02
Capacity (veh/h)	865	842	940	852
Control Delay (s)	7.2	7.5	6.8	7.2
Approach Delay (s)	7.2	7.5	6.8	7.2
Approach LOS	A	A	A	A

Intersection Summary			
Delay	7.2		
Level of Service	A		
Intersection Capacity Utilization	19.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	743	0	0	960	83	80
Future Volume (Veh/h)	743	0	0	960	83	80
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	808	0	0	1043	90	87
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	178					
pX, platoon unblocked						
vC, conflicting volume			808		1851	808
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			808		1851	808
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		0	77
cM capacity (veh/h)			817		82	381

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	808	1043	177
Volume Left	0	0	90
Volume Right	0	0	87
cSH	1700	817	133
Volume to Capacity	0.48	0.00	1.33
Queue Length 95th (m)	0.0	0.0	90.8
Control Delay (s)	0.0	0.0	254.4
Lane LOS			F
Approach Delay (s)	0.0	0.0	254.4
Approach LOS			F

Intersection Summary			
Average Delay	22.2		
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	822	1	51	960	0	68
Future Volume (Veh/h)	822	1	51	960	0	68
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	893	1	55	1043	0	74
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	318					
pX, platoon unblocked						
vC, conflicting volume			894		2046	894
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			894		2046	894
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			93		100	78
cM capacity (veh/h)			759		57	340

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	894	1098	74
Volume Left	0	55	0
Volume Right	1	0	74
cSH	1700	759	340
Volume to Capacity	0.53	0.07	0.22
Queue Length 95th (m)	0.0	1.9	6.5
Control Delay (s)	0.0	2.3	18.5
Lane LOS		A	C
Approach Delay (s)	0.0	2.3	18.5
Approach LOS			C

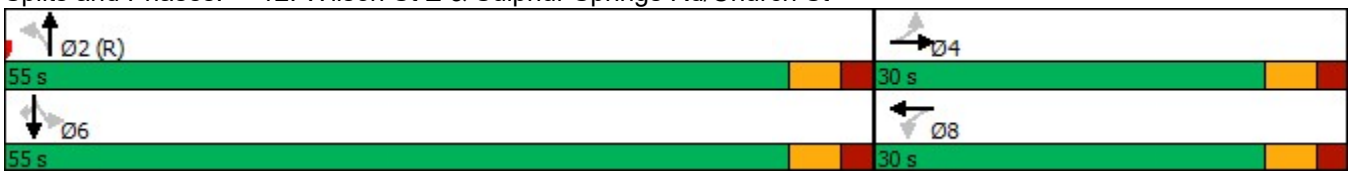
Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	103.0%	ICU Level of Service	G
Analysis Period (min)	15		

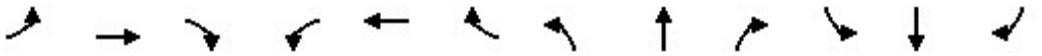
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	181	16	29	19	39	583	6	415	81
Future Volume (vph)	181	16	29	19	39	583	6	415	81
Lane Group Flow (vph)	0	262	0	57	42	644	7	451	88
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases		4		8		2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	6	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	30.0	30.0	30.0	30.0	30.0
Minimum Split (s)	23.3	23.3	23.3	23.3	35.4	35.4	35.4	35.4	35.4
Total Split (s)	30.0	30.0	30.0	30.0	55.0	55.0	55.0	55.0	55.0
Total Split (%)	35.3%	35.3%	35.3%	35.3%	64.7%	64.7%	64.7%	64.7%	64.7%
Maximum Green (s)	24.7	24.7	24.7	24.7	49.6	49.6	49.6	49.6	49.6
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.3		5.3	5.4	5.4	5.4	5.4	5.4
Lead/Lag									
Lead-Lag Optimize?									
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Max	C-Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	10.0	10.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0
Act Effct Green (s)		20.4		20.4	53.9	53.9	53.9	53.9	53.9
Actuated g/C Ratio		0.24		0.24	0.63	0.63	0.63	0.63	0.63
v/c Ratio		0.81		0.16	0.08	0.57	0.02	0.40	0.09
Control Delay		48.2		23.4	7.9	12.3	7.5	9.7	2.4
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		48.2		23.4	7.9	12.3	7.5	9.7	2.4
LOS		D		C	A	B	A	A	A
Approach Delay		48.2		23.4		12.0		8.5	
Approach LOS		D		C		B		A	
Queue Length 50th (m)		39.5		7.0	2.6	58.5	0.4	35.1	0.4
Queue Length 95th (m)		#66.3		15.8	7.5	99.4	2.2	60.3	6.0
Internal Link Dist (m)		110.0		170.7		303.3		238.3	
Turn Bay Length (m)					20.0		20.0		25.0
Base Capacity (vph)		387		417	520	1139	373	1140	1000
Starvation Cap Reductn		0		0	0	0	0	0	0
Spillback Cap Reductn		0		0	0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0	0
Reduced v/c Ratio		0.68		0.14	0.08	0.57	0.02	0.40	0.09

Intersection Summary
Cycle Length: 85
Actuated Cycle Length: 85
Offset: 0 (0%), Referenced to phase 2:NBTL, Start of Green
Natural Cycle: 60

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 17.3 Intersection LOS: B
Intersection Capacity Utilization 71.7% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 12: Wilson St E & Sulphur Springs Rd/Church St

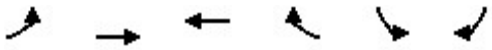




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	181	16	44	29	19	4	39	583	9	6	415	81
Future Volume (vph)	181	16	44	29	19	4	39	583	9	6	415	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.3			5.3		5.4	5.4		5.4	5.4	5.4
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frt		0.98			0.99		1.00	1.00		1.00	1.00	0.85
Flt Protected		0.96			0.97		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1692			1735		1711	1796		1711	1801	1531
Flt Permitted		0.74			0.80		0.46	1.00		0.33	1.00	1.00
Satd. Flow (perm)		1304			1427		821	1796		589	1801	1531
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)	197	17	48	32	21	4	42	634	10	7	451	88
RTOR Reduction (vph)	0	10	0	0	3	0	0	1	0	0	0	30
Lane Group Flow (vph)	0	252	0	0	54	0	42	643	0	7	451	58
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		20.4			20.4		53.9	53.9		53.9	53.9	53.9
Effective Green, g (s)		20.4			20.4		53.9	53.9		53.9	53.9	53.9
Actuated g/C Ratio		0.24			0.24		0.63	0.63		0.63	0.63	0.63
Clearance Time (s)		5.3			5.3		5.4	5.4		5.4	5.4	5.4
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		312			342		520	1138		373	1142	970
v/s Ratio Prot								c0.36			0.25	
v/s Ratio Perm		c0.19			0.04		0.05			0.01		0.04
v/c Ratio		0.81			0.16		0.08	0.57		0.02	0.39	0.06
Uniform Delay, d1		30.5			25.5		6.0	8.9		5.8	7.6	5.9
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		14.2			0.2		0.3	2.0		0.1	1.0	0.1
Delay (s)		44.6			25.7		6.3	10.9		5.9	8.6	6.0
Level of Service		D			C		A	B		A	A	A
Approach Delay (s)		44.6			25.7			10.6			8.2	
Approach LOS		D			C			B			A	

Intersection Summary			
HCM 2000 Control Delay	16.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	10.7
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	33	13	15	11	21	42
Future Volume (Veh/h)	33	13	15	11	21	42
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	36	14	16	12	23	46
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	28				108	22
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	28				108	22
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				97	96
cM capacity (veh/h)	1585				869	1055

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	50	28	69
Volume Left	36	0	23
Volume Right	0	12	46
cSH	1585	1700	985
Volume to Capacity	0.02	0.02	0.07
Queue Length 95th (m)	0.6	0.0	1.8
Control Delay (s)	5.3	0.0	8.9
Lane LOS	A		A
Approach Delay (s)	5.3	0.0	8.9
Approach LOS			A

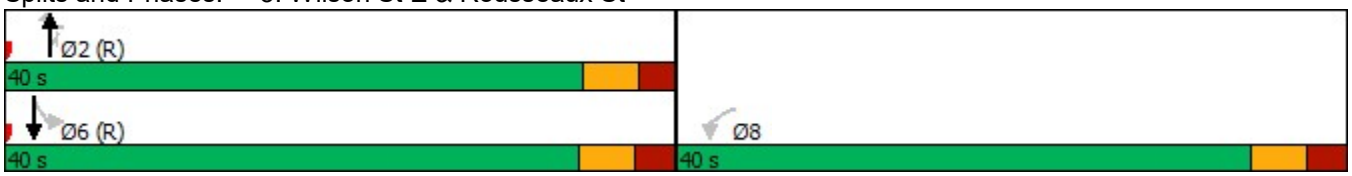
Intersection Summary			
Average Delay	6.0		
Intersection Capacity Utilization	19.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	418	520	345	338	573	354
Future Volume (vph)	418	520	345	338	573	354
Lane Group Flow (vph)	454	565	375	367	623	385
Turn Type	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8	2		2	6	
Detector Phase	8	2	2	2	6	6
Switch Phase						
Minimum Initial (s)	20.0	15.0	15.0	15.0	20.0	20.0
Minimum Split (s)	25.8	24.6	24.6	24.6	25.8	25.8
Total Split (s)	40.0	40.0	40.0	40.0	40.0	40.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Maximum Green (s)	34.2	34.4	34.4	34.4	34.2	34.2
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.5	2.3	2.3	2.3	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.6	5.6	5.6	5.8	5.8
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	5.0	12.0	12.0	12.0	5.0	5.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	26.9	41.7	41.7	41.7	41.5	41.5
Actuated g/C Ratio	0.34	0.52	0.52	0.52	0.52	0.52
v/c Ratio	0.79	0.53	0.40	0.38	1.39	0.41
Control Delay	33.9	3.4	14.6	2.9	211.0	14.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.9	3.4	14.6	2.9	211.0	14.9
LOS	C	A	B	A	F	B
Approach Delay	17.0		8.8			136.1
Approach LOS	B		A			F
Queue Length 50th (m)	64.5	0.0	34.1	0.0	~134.8	35.5
Queue Length 95th (m)	86.1	17.9	66.2	15.0	#210.5	68.6
Internal Link Dist (m)	154.1		316.4			401.7
Turn Bay Length (m)	30.0			100.0	40.0	
Base Capacity (vph)	731	1068	938	973	449	933
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.53	0.40	0.38	1.39	0.41

Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 40 (50%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 120

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.39
Intersection Signal Delay: 58.2 Intersection LOS: E
Intersection Capacity Utilization 87.4% ICU Level of Service E
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Wilson St E & Rousseaux St



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	418	520	345	338	573	354
Future Volume (vph)	418	520	345	338	573	354
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.6	5.6	5.6	5.8	5.8
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1711	1531	1801	1531	1711	1801
Flt Permitted	0.95	1.00	1.00	1.00	0.48	1.00
Satd. Flow (perm)	1711	1531	1801	1531	865	1801
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	454	565	375	367	623	385
RTOR Reduction (vph)	0	270	0	176	0	0
Lane Group Flow (vph)	454	295	375	191	623	385
Turn Type	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8	2		2	6	
Actuated Green, G (s)	26.9	41.7	41.7	41.7	41.5	41.5
Effective Green, g (s)	26.9	41.7	41.7	41.7	41.5	41.5
Actuated g/C Ratio	0.34	0.52	0.52	0.52	0.52	0.52
Clearance Time (s)	5.8	5.6	5.6	5.6	5.8	5.8
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	575	798	938	798	448	934
v/s Ratio Prot			0.21			0.21
v/s Ratio Perm	c0.27	0.19		0.12	c0.72	
v/c Ratio	0.79	0.37	0.40	0.24	1.39	0.41
Uniform Delay, d1	24.0	11.4	11.6	10.5	19.2	11.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.1	1.3	1.3	0.7	189.1	1.3
Delay (s)	31.1	12.7	12.9	11.2	208.3	13.1
Level of Service	C	B	B	B	F	B
Approach Delay (s)	20.9		12.0			133.8
Approach LOS	C		B			F

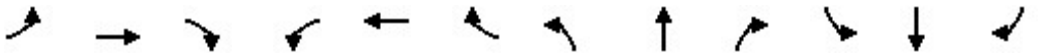
Intersection Summary			
HCM 2000 Control Delay	59.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	11.6
Intersection Capacity Utilization	87.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	25	27	726	59	42	711
Future Volume (Veh/h)	25	27	726	59	42	711
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	27	29	789	64	46	773
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (m)			262			340
pX, platoon unblocked	0.85	0.75			0.75	
vC, conflicting volume	1686	821			853	
vC1, stage 1 conf vol	821					
vC2, stage 2 conf vol	865					
vCu, unblocked vol	1061	597			639	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	91	92			94	
cM capacity (veh/h)	313	378			710	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	56	853	46	773
Volume Left	27	0	46	0
Volume Right	29	64	0	0
cSH	344	1700	710	1700
Volume to Capacity	0.16	0.50	0.06	0.45
Queue Length 95th (m)	4.6	0.0	1.7	0.0
Control Delay (s)	17.5	0.0	10.4	0.0
Lane LOS	C		B	
Approach Delay (s)	17.5	0.0	0.6	
Approach LOS	C			

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	8	64	12	47	32	2	3	19	44	3	16	4
Future Volume (vph)	8	64	12	47	32	2	3	19	44	3	16	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	70	13	51	35	2	3	21	48	3	17	4

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	92	88	72	24
Volume Left (vph)	9	51	3	3
Volume Right (vph)	13	2	48	4
Hadj (s)	-0.03	0.14	-0.36	-0.04
Departure Headway (s)	4.2	4.3	4.0	4.3
Degree Utilization, x	0.11	0.11	0.08	0.03
Capacity (veh/h)	838	807	860	790
Control Delay (s)	7.7	7.9	7.3	7.5
Approach Delay (s)	7.7	7.9	7.3	7.5
Approach LOS	A	A	A	A

Intersection Summary				
Delay	7.6			
Level of Service	A			
Intersection Capacity Utilization	22.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	908	0	60	989	0	4
Future Volume (Veh/h)	908	0	60	989	0	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	987	0	65	1075	0	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	178					
pX, platoon unblocked						
vC, conflicting volume			987		2192	987
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			987		2192	987
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			91		100	99
cM capacity (veh/h)			700		45	300

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	987	1140	4
Volume Left	0	65	0
Volume Right	0	0	4
cSH	1700	700	300
Volume to Capacity	0.58	0.09	0.01
Queue Length 95th (m)	0.0	2.4	0.3
Control Delay (s)	0.0	3.1	17.2
Lane LOS		A	C
Approach Delay (s)	0.0	3.1	17.2
Approach LOS			C

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	111.2%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	933	1	114	987	2	73
Future Volume (Veh/h)	933	1	114	987	2	73
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1014	1	124	1073	2	79
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	318					
pX, platoon unblocked						
vC, conflicting volume			1015		2336	1014
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1015		2336	1014
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			82		94	73
cM capacity (veh/h)			683		33	289

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	1015	1197	81
Volume Left	0	124	2
Volume Right	1	0	79
cSH	1700	683	243
Volume to Capacity	0.60	0.18	0.33
Queue Length 95th (m)	0.0	5.3	11.2
Control Delay (s)	0.0	6.2	27.1
Lane LOS		A	D
Approach Delay (s)	0.0	6.2	27.1
Approach LOS			D

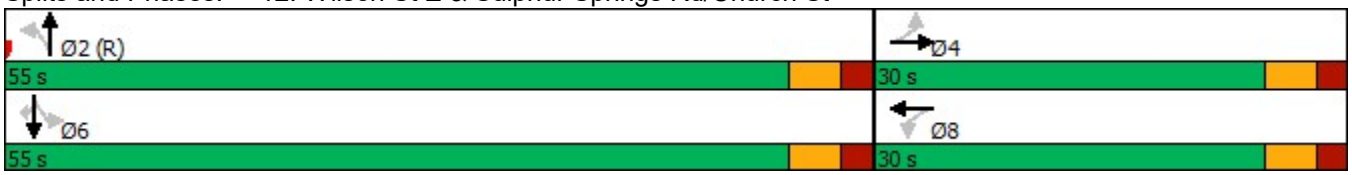
Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	122.0%	ICU Level of Service	H
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	161	18	46	37	38	614	9	621	143
Future Volume (vph)	161	18	46	37	38	614	9	621	143
Lane Group Flow (vph)	0	281	0	99	41	696	10	675	155
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases		4		8		2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	2	2	6	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	30.0	30.0	30.0	30.0	30.0
Minimum Split (s)	23.3	23.3	23.3	23.3	35.4	35.4	35.4	35.4	35.4
Total Split (s)	30.0	30.0	30.0	30.0	55.0	55.0	55.0	55.0	55.0
Total Split (%)	35.3%	35.3%	35.3%	35.3%	64.7%	64.7%	64.7%	64.7%	64.7%
Maximum Green (s)	24.7	24.7	24.7	24.7	49.6	49.6	49.6	49.6	49.6
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.3		5.3	5.4	5.4	5.4	5.4	5.4
Lead/Lag									
Lead-Lag Optimize?									
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	C-Max	C-Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	10.0	10.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0
Act Effct Green (s)		20.5		20.5	53.8	53.8	53.8	53.8	53.8
Actuated g/C Ratio		0.24		0.24	0.63	0.63	0.63	0.63	0.63
v/c Ratio		0.82		0.30	0.12	0.61	0.03	0.59	0.15
Control Delay		46.4		25.7	8.7	13.3	7.8	12.9	3.7
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		46.4		25.7	8.7	13.3	7.8	12.9	3.7
LOS		D		C	A	B	A	B	A
Approach Delay		46.4		25.7		13.0		11.1	
Approach LOS		D		C		B		B	
Queue Length 50th (m)		40.5		12.7	2.6	66.6	0.6	63.7	3.6
Queue Length 95th (m)		#68.5		24.9	7.9	112.6	2.8	107.3	11.9
Internal Link Dist (m)		110.0		170.7		303.3		238.3	
Turn Bay Length (m)					20.0		20.0		25.0
Base Capacity (vph)		409		400	349	1135	334	1140	1004
Starvation Cap Reductn		0		0	0	0	0	0	0
Spillback Cap Reductn		0		0	0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0	0
Reduced v/c Ratio		0.69		0.25	0.12	0.61	0.03	0.59	0.15

Intersection Summary
Cycle Length: 85
Actuated Cycle Length: 85
Offset: 0 (0%), Referenced to phase 2:NBTL, Start of Green
Natural Cycle: 60

Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.82
Intersection Signal Delay: 17.6 Intersection LOS: B
Intersection Capacity Utilization 71.7% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

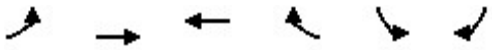
Splits and Phases: 12: Wilson St E & Sulphur Springs Rd/Church St



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	161	18	79	46	37	8	38	614	27	9	621	143
Future Volume (vph)	161	18	79	46	37	8	38	614	27	9	621	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.3			5.3		5.4	5.4		5.4	5.4	5.4
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frt		0.96			0.99		1.00	0.99		1.00	1.00	0.85
Flt Protected		0.97			0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1674			1735		1711	1789		1711	1801	1531
Flt Permitted		0.78			0.77		0.31	1.00		0.29	1.00	1.00
Satd. Flow (perm)		1344			1365		553	1789		530	1801	1531
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)	175	20	86	50	40	9	41	667	29	10	675	155
RTOR Reduction (vph)	0	20	0	0	5	0	0	1	0	0	0	35
Lane Group Flow (vph)	0	261	0	0	94	0	41	695	0	10	675	120
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		20.5			20.5		53.8	53.8		53.8	53.8	53.8
Effective Green, g (s)		20.5			20.5		53.8	53.8		53.8	53.8	53.8
Actuated g/C Ratio		0.24			0.24		0.63	0.63		0.63	0.63	0.63
Clearance Time (s)		5.3			5.3		5.4	5.4		5.4	5.4	5.4
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		324			329		350	1132		335	1139	969
v/s Ratio Prot								c0.39			0.37	
v/s Ratio Perm		c0.19			0.07		0.07			0.02		0.08
v/c Ratio		0.81			0.29		0.12	0.61		0.03	0.59	0.12
Uniform Delay, d1		30.4			26.3		6.2	9.4		5.8	9.2	6.2
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		13.6			0.5		0.7	2.5		0.2	2.3	0.3
Delay (s)		44.0			26.8		6.9	11.9		6.0	11.4	6.5
Level of Service		D			C		A	B		A	B	A
Approach Delay (s)		44.0			26.8			11.6			10.5	
Approach LOS		D			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	10.7
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	55	54	16	24	28	38
Future Volume (Veh/h)	55	54	16	24	28	38
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	60	59	17	26	30	41
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	43				209	30
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	43				209	30
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				96	96
cM capacity (veh/h)	1566				749	1044

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	119	43	71
Volume Left	60	0	30
Volume Right	0	26	41
cSH	1566	1700	896
Volume to Capacity	0.04	0.03	0.08
Queue Length 95th (m)	1.0	0.0	2.1
Control Delay (s)	3.9	0.0	9.4
Lane LOS	A		A
Approach Delay (s)	3.9	0.0	9.4
Approach LOS			A

Intersection Summary			
Average Delay	4.8		
Intersection Capacity Utilization	23.1%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix G - SIGNAL WARRANT

Signal Warrant Calculation

Major Street: Rousseaux St

Minor Street: Lodor St

Comment FT (2036) Traffic Condition

Number of Approaches: 1 [ ] 2 [x]

Tee Intersection Configuration: Yes [x] No [ ]

Flow Condition: Free Fw (Rural) [ ]
Restricted Flow (Urban) [X]

VOLUME	AM	PM	FACTOR *	
1A - All	1,866	1,983	n/a	963
1B - Minor	163	4	25%	42
2A - Major	1,703	1,979	25%	921
2B - Crossir	83	-	25%	21

* This factor relates average of the "peak eight hours" to the average of the "am and pm peak hours"

OVERALL WARRANT

150% Satisfied:	Yes [ ]	No [X]	Warrant for new intersection with forecast traffic
120% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with forecast traffic
100% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with existing traffic *
COMBO 80% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with existing traffic
80% Satisfied:	Yes [ ]	No [X]	

* Consider full underground provisions if 100% for forecast traffic

WARRANT 1 - MINIMUM VEHICULAR VOLUME

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW X	
ALL APPROACHES	480	720	600	900	963
	% FULFILLED				107%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW X	
MINOR STREET APPROACHES	180	255	180	255	42
	% FULFILLED				16%

150% Satisfied:	Yes [ ]	No [X]
120% Satisfied:	Yes [ ]	No [X]
100% Satisfied:	Yes [ ]	No [X]
80% Satisfied:	Yes [ ]	No [X]

WARRANT 2 - DELAY TO CROSS TRAFFIC

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW X	
MAJOR STREET APPROACHES	480	720	600	900	921
	% FULFILLED				102%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW X	
TRAFFIC CROSSING MAJOR STREET	50	75	50	75	21
	% FULFILLED				28%

150% Satisfied:	Yes [ ]	No [X]
120% Satisfied:	Yes [ ]	No [X]
100% Satisfied:	Yes [ ]	No [X]
80% Satisfied:	Yes [ ]	No [X]

1A - MINIMUM VEHICULAR VOLUME: Total vehicle volume on all approaches for average day

1B - MINIMUM VEHICULAR VOLUME: Total vehicle volume on minor streets

2A - DELAY TO CROSS TRAFFIC: Total vehicle volume on major street for average day

2B - DELAY TO CROSS TRAFFIC: Total vehicle and pedestrian volume crossing major street; comprising: (1) lefts from both minor streets, (2) heaviest through from minor street, (3) 50% of heavier left turn from major street when following criteria met: (a) left turn volume >120 and (b) left turn volume plus opposing volume > 720, (4) pedestrians crossing the major street.