Amico 42 Mill Ltd

Town of Halton Hills

TRANSPORTATION IMPACT STUDY

42 Mill Street, Proposed Residential Development

17167/200 November, 2016

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1 INTRODUCTION

LEA Consulting Ltd. (LEA) has been retained by AMICO Properties Inc. to update a Transportation Impact Study (TIS) prepared by Dillion Consulting during April, 2015 for the proposed residential development located at 42 Mill Street in the Town of Halton Hills (herein referred to as "subject site"). The subject site is located north of the Guelph Street & Mill Street intersection, bounded to the north by Dayfoot Drive, to the east by Mill Street, and to the south and west by abutting properties. **Figure 1-1** below illustrates the site location.

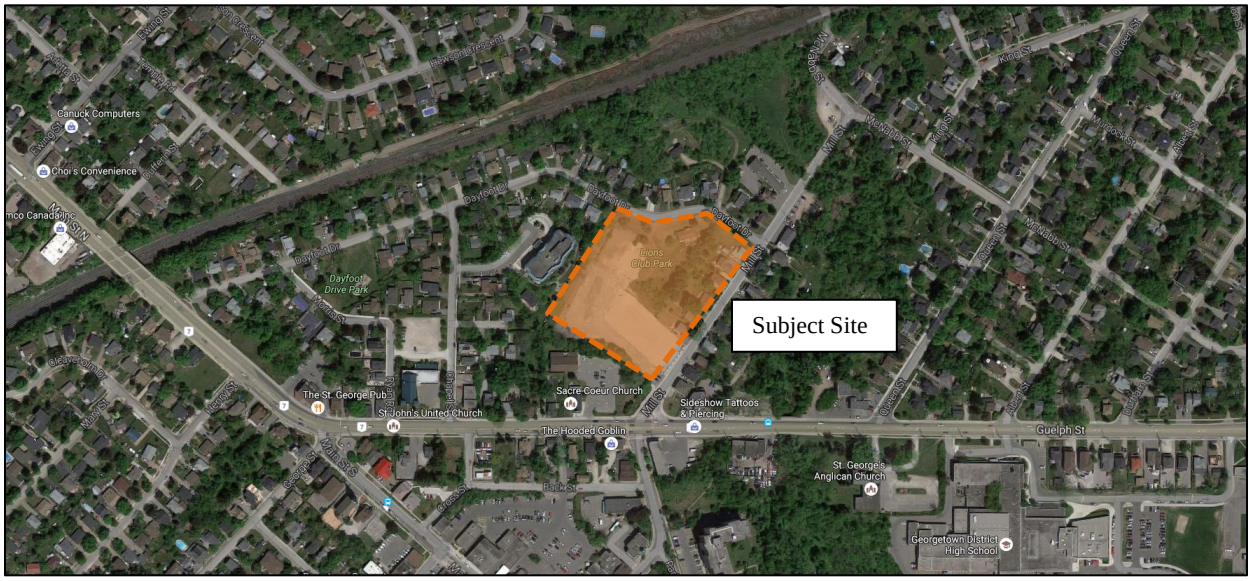


Figure 1-1: Location of Subject Site

The proposed development will consist of two (2) six (6)-storey residential buildings and 1 five (5)-storey residential building for retirement living accompanied by units for dementia patients. The development proposal is broken down into three (3) different development phases. **Table 1-1** illustrates the breakdown of each phase. This study has been completed assuming the full build-out of the site to present an ultimate transportation analysis.

Phase	Proposed Development	Residential Units	Proposed Number of Units	Proposed Development GFA (m^2)
1	Luxury Condo (Residential)	1 Bedroom	23	-
		2 Bedroom	51	-
		3 Bedroom	2	-
	Commercial Use	-	-	200 m^2
2	Luxury Condo (Residential)	1 Bedroom	12	-
		2 Bedroom	42	-
		3 Bedroom	-	-
3	Retirement Home	Retirement Units	120	-
		Dementia Units	24	-

Table 1-1 Summary of Phases and Uses

* Phase 1 Commercial Use of 200m^2reflects the maximum GFA allowed for commercial space

Two (2) site accesses will be provided, one (1) along Mill Street for the residential buildings, and one (1) on Dayfoot Drive for the retirement residences. Parking facilities through the combination of above and underground facilities will also be accessible via the accesses.

Figure 1-2 illustrates the site plan for the proposed development.

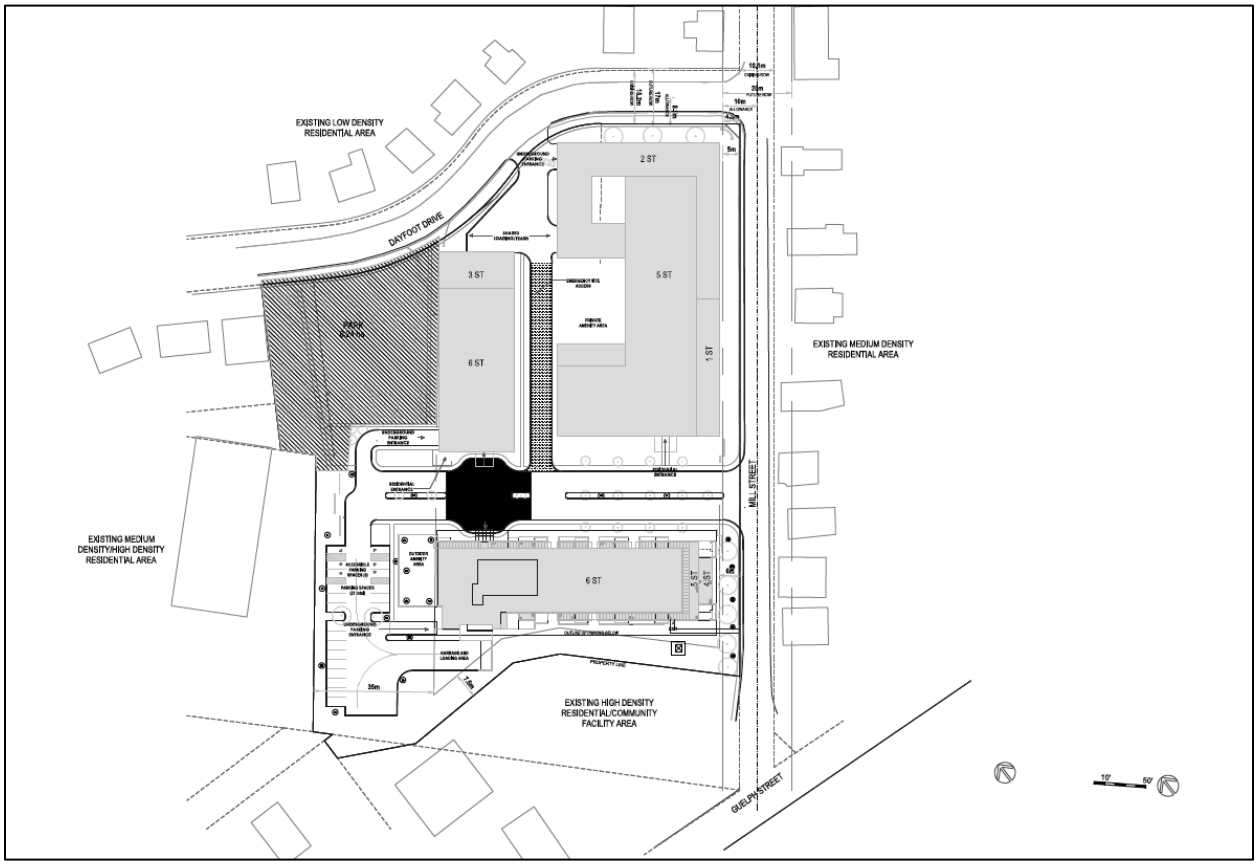


Figure 1-2: Proposed Site Plan

This study evaluates the incremental traffic impacts of the proposed development to the study area transportation network, and was prepared in accordance with the Halton Region's *Transportation Impact Study Guidelines.* Further, the study area was determined based on the previous study TIS completed for this site, as well as new intersections necessitating their evaluation based on the location of the proposed site accesses. The studied intersections include:

- Guelph Street at Main Street (signalized);
- Guelph Street at Mill Street (signalized);
- Guelph Street at Albert Street/Private Access (signalized); and,
- Mill Street at Dayfoot Drive (unsignalized).

2 EXISTING TRANSPORTATION CONDITIONS

The following sections provides descriptions and classifications of each roadway associated with the study area, and a summary of the multi-modal infrastructure within the vicinity of the site.

2.1 ROAD NETWORK

The road network surrounding the subject site is described below, while **Figure 2-1** displays this road network and the respective lane configurations of each link.

Albert Street is a north-south local road with a two-lane cross-section, including on-street parking on both sides of the street. On the east side, on-street parking is only available past McNabb Street. Albert Street operates from Union Street (just south of Georgetown GO Station) to Guelph Street. A 40 km/h speed limit is assumed.

Dayfoot Street is an east-west local road with a two-lane cross-section (one-lane per direction), including on-street parking on both sides of the street. Dayfoot Street runs from Mill Street to Main Street. A 40/km speed limit is assumed.

Guelph Street is an east-west multi-purpose arterial road under the jurisdiction of Halton Region with a two-lane cross-section (one-lane per direction) east of Mill Street, and a three-lane cross-section (two-lanes westbound, one-lane eastbound) west of Mill Street. A two-way left-turn lane is present east of Mill Street as well. Guelph Street runs from Main Street to Louisa Street (east of Winston Churchill Boulevard) where it changes to Bovaird Drive West. The posted speed limit along this section of the roadway is 50km/h.

Main Street is a north-south minor arterial road with a two-lane cross-section (one-lane per direction) south of Guelph Street, and a multi-purpose arterial road with a four-lane cross-section (two-lanes per direction) north of Guelph Street. Main Street operates from 15 Side Road (where it becomes Eighth Line) to Ontario Street (where it becomes Highway 7). At Main Street's intersection with Guelph Street, during 2015, a no left-turn sign during 7 AM - 9 AM from Monday to Friday was implemented for the westbound left-turn movement, and a no right-turn on red sign was implemented for the eastbound right-turn movement. Main Street has a posted speed limit of 50km/h west of Guelph Street, and a 40km/h speed limit south of Guelph Street.

Mill Street is a north-south local road with a two-lane cross-section (one-lane per direction) that operates from McNabb Street to Charles Street. A 40km/h speed limit is assumed.

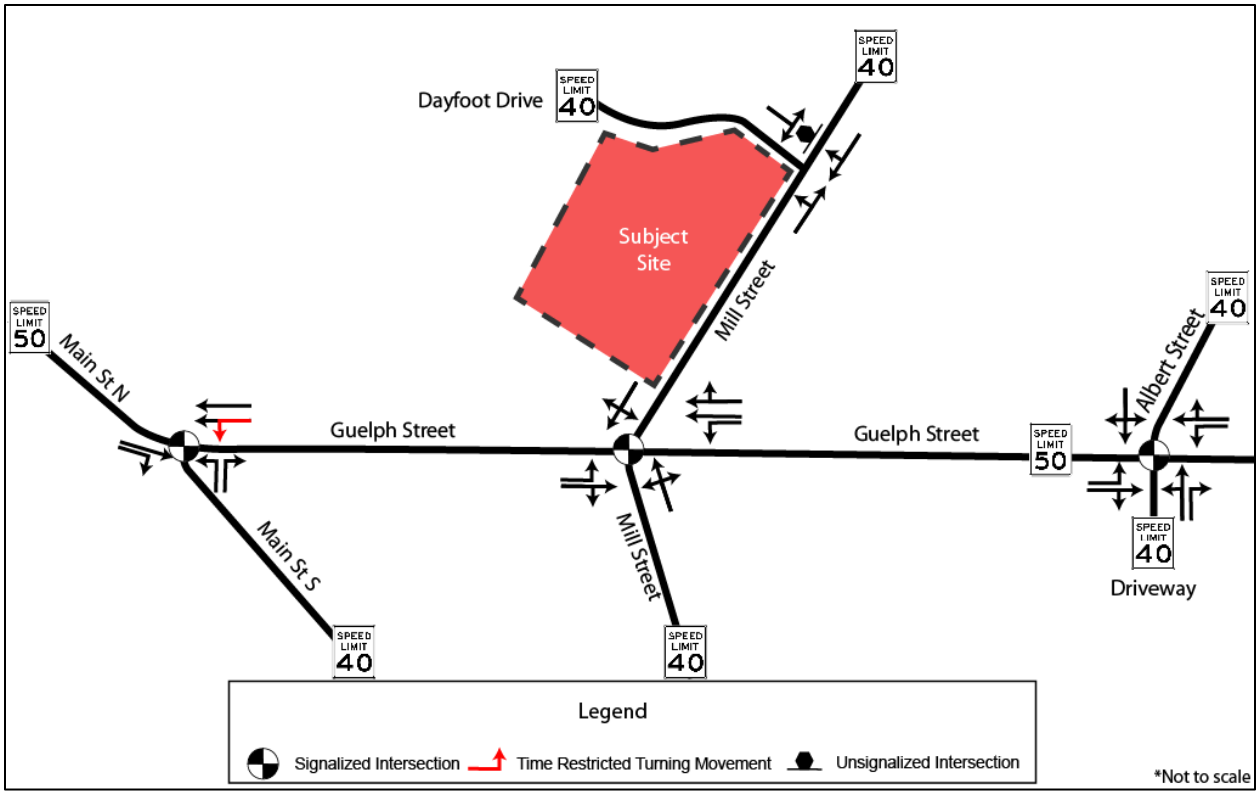


Figure 2-1: Existing Lane Configurations

2.2 PEDESTRIAN NETWORK

In the area immediately surrounding the subject site, the existing pedestrian network and environment is good. Continuous sidewalks are available on all streets in the study, with the exception of Dayfoot Drive, where sidewalks are not present. Crosswalks are also available at all major intersections within the subject area. While continuous, it should be taken into account Albert Street has a sidewalk on the east side only, while Mill Street has a sidewalk on the west only side once past Dayfoot Drive.

To assess the overall walkability of the subject site, the address 42 Mill Street was entered as a testable address on the Walk Score application. **Figure 2-2** below illustrates the findings of the subject site's walkability.

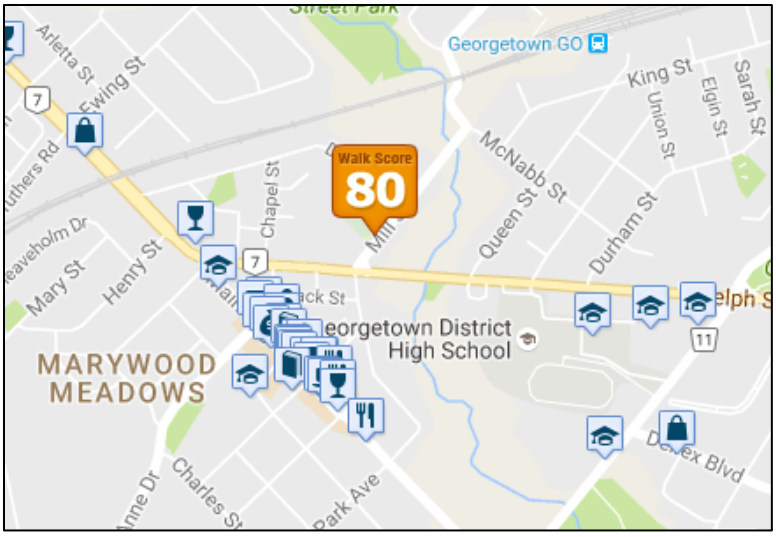


Figure 2-2: Subject Site Walk Score
(Source: Walkscore, 2016)

The subject site received a Walk Score of 80/100, meaning most daily errands can be completed without a car from the subject site. Furthermore, a 10 minute walk from 42 Mill Street would allow an individual to reach the Kitchener GO Line at the Georgetown GO Station.

2.3 CYCLING NETWORK

Currently, the subject area does not offer any dedicated cycling infrastructure. Given the surrounding street network and the built-form and density characteristic of the neighbourhood, cycling can be an attractive mode of transportation and leisure option despite the lack of dedicated infrastructure. All cycling must be performed by sharing drive lanes with automobiles.

2.4 TRANSIT NETWORK

The study area is well served by GO Transit. The primary GO Transit service is offered at the Georgetown GO Station, located at 55 Queen Street, approximately 500m from the subject site. GO Transit offers peak-period service, with the eastbound service only operating during the weekday AM peak hour, and the westbound service only operating during the weekday PM peak hour. The subject area is also complemented by GO Bus service with stops located both at Georgetown GO Station, as well as along Main Street and Guelph Street, just south of the subject site. **Figure 2-3** illustrates the GO Transit network within the study area.

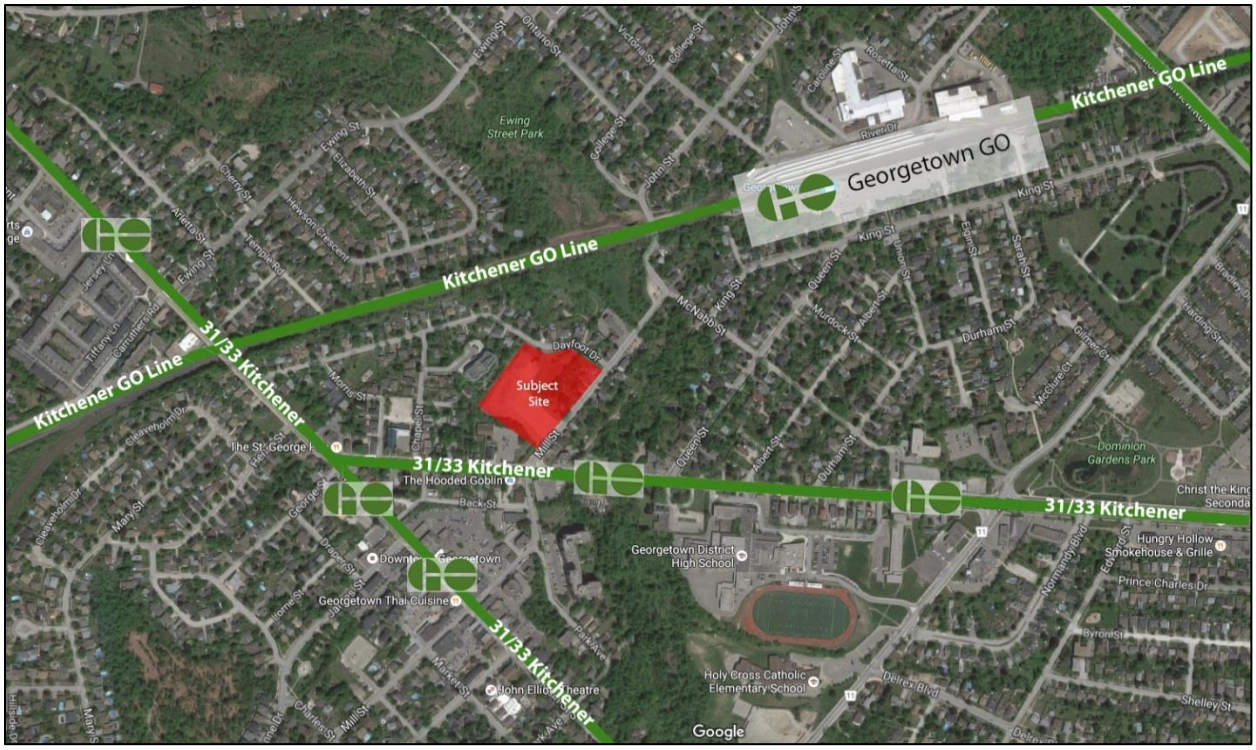


Figure 2-3: Existing Transit Services within Study Area

GO Bus Route 31 Kitchener is a bus route operating as a daily service that travels generally in the east-west direction along Guelph Street as a train-bus replacement for the Kitchener GO Train during off-peak periods. While primarily operating during the off-peak period, the route offers selective trips connecting to train services to Union Station in Toronto from Georgetown GO Station, or Bramalea GO Station during peak hours, with the exception of the last train from Union Station, which connects at Mount Pleasant GO Station. It does not service Kitchener.

GO Bus Route 33 Kitchener is a bus route operating as a weekday service that travels generally in the east-west direction along Guelph Street. It currently provides service between University of Guelph and York Mills GO Terminal. It also serves as the primary Train-Meet bus route for the Kitchener GO train. It does not service Kitchener.

2.5 TRAFFIC DATA COLLECTION

Existing traffic data in the study area were derived from both the Turning Movement Counts (TMCs) collected by LEA Consulting and Dillion Consulting. TMCs were conducted during a typical weekday AM peak period (7:00 AM – 9:00 AM) and weekday PM peak period (3:00 PM – 6:00 PM). **Table 2-1** lists the details of the TMCs used in this report.

Intersection	Date of Survey	Control Type	Survey Type	Peak Hours	Source
Guelph Street at Main Street	Wednesday, November 13th, 2013	Signalized	TMC	Weekday PM	Dillion Consulting
	Tuesday, October 11th, 2016		TMC and Signal Timing Plan	Weekday AM	LEA
Guelph Street at Mill Street	Monday, December 17th, 2012	Signalized	TMC	Weekday PM	Dillion Consulting
	Tuesday, October 11th, 2016		TMC and Signal Timing Plan	Weekday AM	LEA
Guelph Street at Albert Street	December 17th, 2012	Signalized	TMC	Weekday AM and PM	Dillion Consulting
Mill Street at Dayfoot Drive	Tuesday, October 11th, 2016	Unsignalized	TMC	Weekday AM and PM	LEA

Table 2-1: Traffic Survey Details

It should be noted that the survey for the unsignalized intersection of Mill Street and Dayfoot Drive was not studied in the previous TIS report, as the site was not proposed to have access to Dayfoot Drive at the time. For the purpose of the updated traffic analyses, this intersection will be incorporated as part of the overall study area, and has been surveyed in the year of 2016.

2.6 INTERSECTION CAPACITY ANALYSIS

Intersection capacity analysis was conducted using Synchro 8.0 software Build 801, adhering to the methodology outlined in Highway Capacity Manual (HCM) 2000. Peak hour factors (PHF) and heavy vehicle percentages for all intersection were revaluated and reapplied based upon the review of the previous TIS and the surveys conducted by LEA.

Figure 2-4 on the following page displays the existing traffic volumes in the study area. Where driveways or other intersections that lay between the intersections of study, traffic volumes were not balanced.

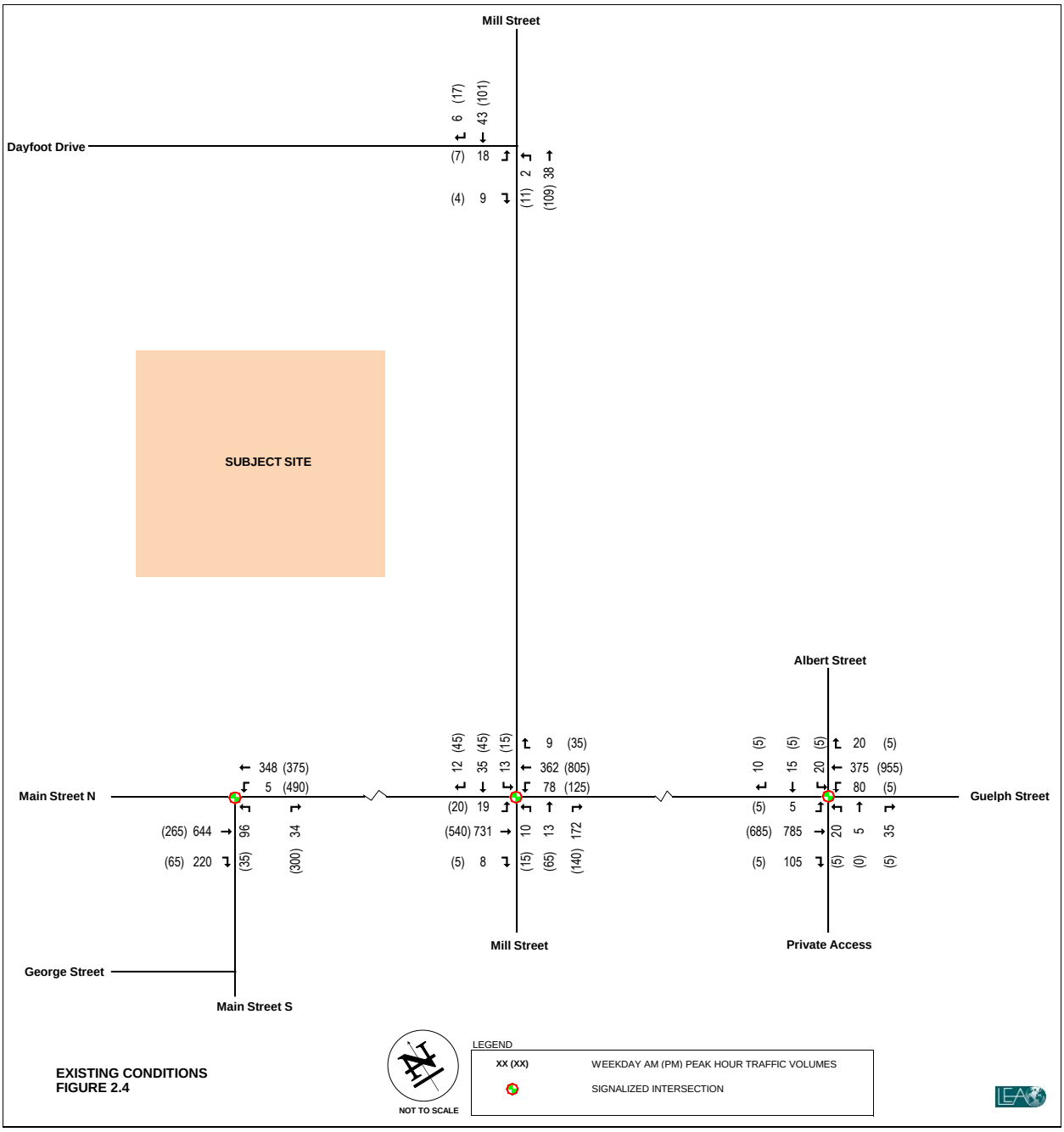


Figure 2-4: Existing Traffic Volumes for Weekday AM and PM Peak Hour

2.6.1 Signalized Intersection Capacity Analysis

Table 2-2 and **Table 2-3** summarize the results of all studied signalized intersections during the weekday AM and PM Peak hours, respectively. Detailed Synchro outputs are available in **Appendix A**, while the previous TIS outputs can be found in **Appendix F**.

Intersection	Weekday AM Peak Hour								
	Overall			Movement of Interest					
	V/C	Delay (s)	LOS	Movement	V/C	Delays (s)	LOS	Queue (m)	
								50th	95th
Driveway/Alberta Street & Guelph Street	0.67	8.4	A	EBL	0.01	2.1	A	0.2	1.0
				EBT	0.70	7.6	A	80.9	128.9
				WBL	0.23	3.6	A	3.7	8.9
				WBT	0.31	2.9	A	19.4	29.9
				NBT	0.33	40.9	D	4.5	12.7
				NBR	0.02	39.3	D	0.0	9.2
				SBT	0.38	41.1	D	6.4	17.4
Mill Street & Guelph Street	0.56	13.6	B	EBL	0.03	5.0	A	1.1	3.4
				EBT	0.66	11.6	B	75.8	113.9
				WBL	0.28	8.3	A	5.5	13.2
				WBT	0.18	5.7	A	12.4	17.8
				NBT	0.20	32.9	C	3.9	23.4
				SBT	0.18	32.7	C	8.3	19.8
Main Street South/Private Access & Main Street N/Guelph Street	0.54	11.2	B	EBT	0.56	9.8	A	70.9	100.1
				EBR	0.24	6.3	A	17.5	27.4
				WBT	0.18	5.6	A	13.9	19.3
				NBL	0.45	42.8	D	22.1	40.5
				NBR	0.04	38.3	D	1.2	10.6

Table 2-2: Signalized Intersections Level of Service – Existing Traffic AM Peak Hour

Intersection	Weekday PM Peak Hour								
	Overall			Movement of Interest					
	V/C	Delay (s)	LOS	Movement	V/C	Delays (s)	LOS	Queue (m)	
								50th	95th
Driveway/Alberta Street & Guelph Street	0.73	5.3	A	EBL	0.01	1.1	A	0.0	0.4
				EBT	0.50	3.3	A	2.4	29.2
				WBL	0.01	1.0	A	0.0	0.9
				WBT	0.72	5.9	A	0.0	159.1
				NBT	0.14	43.8	D	0.8	4.2
				NBR	-	-	-	-	-
				SBT	0.25	44.5	D	1.7	7.6
Mill Street & Guelph Street	0.51	25.5	C	EBL	0.12	15.8	B	2.3	2.7
				EBT	0.76	26.7	C	73.3	76.3
				WBL	0.75	45.5	D	21.1	36.2
				WBT	0.69	25.4	C	70.9	95.5
				NBT	0.27	17.3	B	14.9	43.6
				SBT	0.12	15.6	B	7.1	23.6
Main Street South/Private Access & Main Street N/Guelph Street	0.58	13.0	B	EBT	0.25	4.2	A	13.4	28.8
				EBR	0.08	3.4	A	2.9	8.3
				WBT	0.64	7.4	A	30.0	21.1
				NBL	0.23	36.0	D	6.9	14.8
				NBR	0.24	36.0	D	0.0	19.1

Table 2-3: Signalized Intersections Level of Service - Existing Traffic PM Peak Hour

Analysis results indicate that under existing conditions during the weekday AM and PM peak hours, all signalized intersection are operating at overall acceptable level of services "C" or better. Delay is also acceptable for all individual movements at all intersections. No existing constraints were identified.

2.6.2 Unsignalized Intersection Capacity Analysis

Table 2-4 and **Table 2-5** below summarize the results of the existing traffic analysis for unsignalized intersection during the weekday AM and PM peak hours, respectively.

Intersection	Movement of Interest	Weekday AM Peak Hour					
		Flow Rate (vph)	Capacity (vph)	Control Delay (s)	95th Queue (m)	V/C	LOS
Mill Street & Dayfoot Drive	EBLT	32	913	9.1	0.9	0.04	A
	NBLT	2	1538	0.4	0.0	0.00	A

Table 2-4: Unsignalized Intersections Level of Service - Existing Traffic AM Peak Hour

Intersection	Movement of Interest	Weekday PM Peak Hour					
		Flow Rate (vph)	Capacity (vph)	Control Delay (s)	95th Queue (m)	V/C	LOS
Mill Street & Dayfoot Drive	EBLT	12	779	9.7	0.4	0.02	A
	NBLT	12	1453	0.7	0.2	0.01	A

Table 2-5: Unsignalized Intersections Level of Service - Existing Traffic PM Peak Hour

The analysis indicates that the unsignalized intersection within the study area operate at with acceptable levels of service during the weekday AM and PM peak hours under existing traffic conditions. No constraints have been identified.

3 FUTURE BACKGROUND TRANSPORTATION CONDITIONS

The following section outlines the assumption for the future background traffic conditions. The future background scenario analyzes the traffic conditions for a five-year horizon (2021) without the proposed development constructed. As the area is a well-developed neighbourhood, previously assumed was a corridor growth rate of 2% per annum during both the weekday AM and PM peak hours to account for any developments that may lead to increased traffic around the subject site. This assumption has been carried forward.

3.1 INTERSECTION CAPACITY ANALYSIS

Figure 3-1 illustrates the future background traffic volumes during weekday AM and PM peak hours.

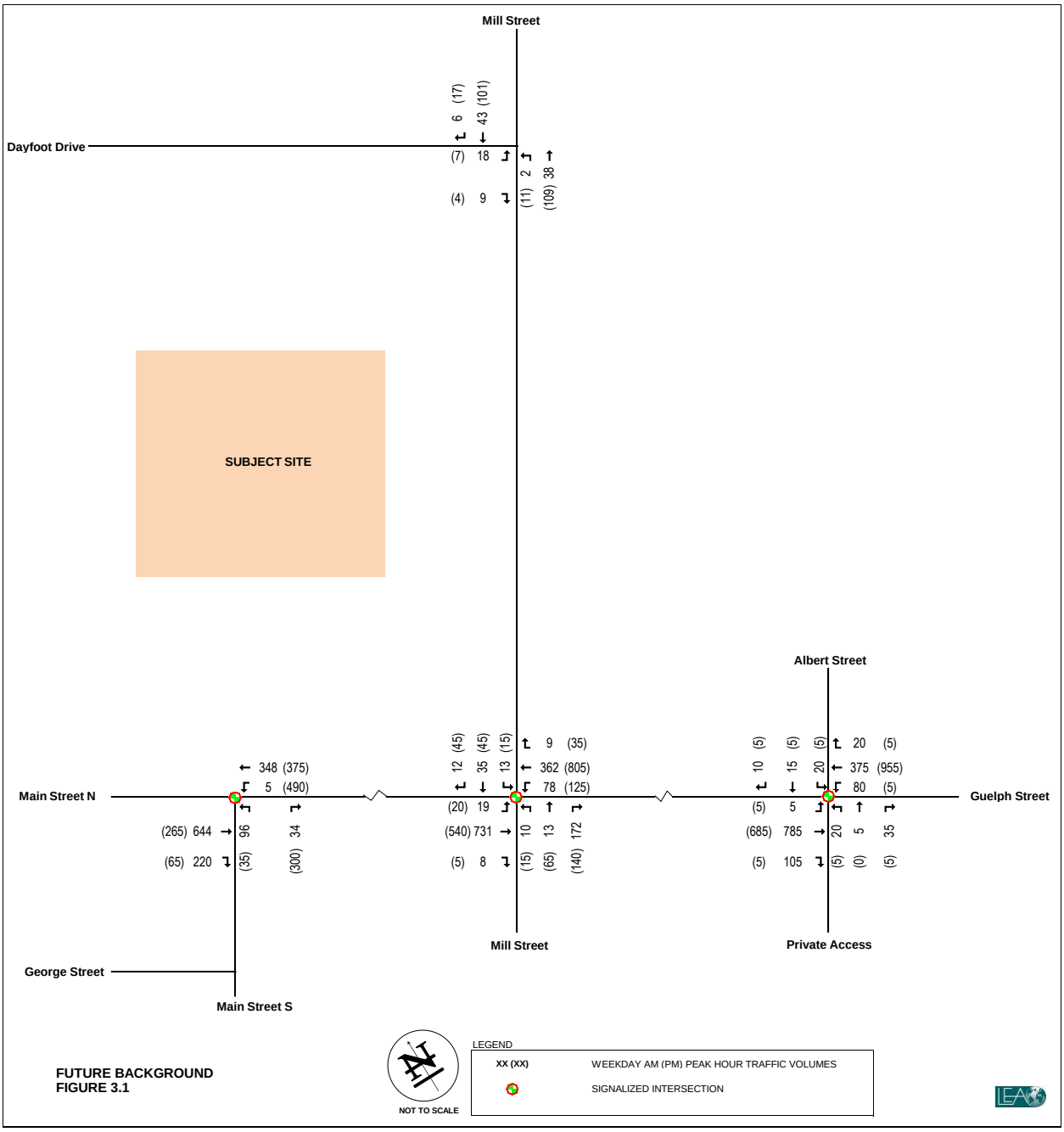


Figure 3-1: Future Background Traffic Volumes for Weekday AM and PM peak hour

3.1.1 Signalized Intersection Capacity Analysis

Table 3-1 and **Table 3-2** on the following pages summarize the signalized intersection capacity analysis observed during the weekday AM and PM peak hours, respectively. Detailed Synchro outputs are available in **Appendix B**, while the previous TIS outputs can be found in **Appendix F**.

Intersection	Weekday AM Peak Hour								
	Overall			Movement of Interest					
	V/C	Delay (s)	LOS	Movement	V/C	Delays (s)	LOS	Queue (m) 50th	Queue (m) 95th
Driveway/Alberta Street & Guelph Street	0.74	10.9	B	EBL	0.01	2.6	A	0.2	1.1
				EBT	0.79	11.3	B	102.3	170.9
				WBL	0.35	6.3	A	4.5	12.2
				WBT	0.36	3.7	A	22.1	34.0
				NBT	0.25	38.6	D	5.1	13.6
				NBR	0.03	37.5	D	0.0	9.5
				SBT	0.32	38.9	D	7.1	18.6
Mill Street & Guelph Street	0.62	14.8	B	EBL	0.03	5.1	A	1.2	3.6
				EBT	0.73	13.4	B	91.2	139.7
				WBL	0.37	10.7	B	6.5	17.0
				WBT	0.20	5.8	A	14.0	19.8
				NBT	0.26	34.0	C	6.8	28.3
				SBT	0.21	33.1	C	9.3	21.5
Main Street South/Private Access & Main Street N/Guelph Street	0.59	11.8	B	EBT	0.62	10.8	B	83.9	118.8
				EBR	0.26	6.5	A	19.7	30.6
				WBT	0.20	5.8	A	15.7	21.5
				NBL	0.50	43.4	D	24.7	44.3
				NBR	0.06	38.4	D	2.0	12.1

Table 3-1: Signalized Intersections Levels of Service – Future Background Traffic AM Peak Hour

Intersection	Weekday PM Peak Hour								
	Overall			Movement of Interest					
	V/C	Delay (s)	LOS	Movement	V/C	Delays (s)	LOS	Queue (m) 50th	Queue (m) 95th
Driveway/Alberta Street & Guelph Street	0.81	7.7	A	EBL	0.02	1.3	A	0.0	m0.4
				EBT	0.57	3.9	A	2.3	38.9
				WBL	0.01	1.4	A	0.0	1.0
				WBT	0.82	9.7	A	0.0	#269.3
				NBT	0.08	41.4	D	1.0	4.7
				NBR	-	-	-	-	-
				SBT	0.17	41.8	D	2.0	8.5
Mill Street & Guelph Street	0.58	24.9	C	EBL	0.13	13.7	B	2.2	m2.6
				EBT	0.76	24.0	C	72.6	75.7
				WBL	0.80	46.3	D	22.1	m31.9
				WBT	0.69	24.4	C	72.1	97.1
				NBT	0.33	20.7	C	20.4	54.3
				SBT	0.16	18.4	B	9.8	28.9
Main Street South/Private Access & Main Street N/Guelph Street	0.65	14.4	B	EBT	0.27	4.4	A	15.2	32.1
				EBR	0.09	3.5	A	3.2	8.9
				WBT	0.87dl	9.9	A	36.0	33.1
				NBL	0.25	36.1	D	7.7	15.9
				NBR	0.26	36.1	D	0.0	19.9

Table 3-2: Signalized Intersections Levels of Service – Future Background Traffic PM Peak Hour

All signalized intersections will continue to operate with the similar level of services during the weekday AM and PM peak hours compared to the existing conditions under future background conditions. Overall, each intersection has retained a level of service of "C" or better during both weekday AM and PM peak hours.

3.1.2 Unsignalized Intersection Capacity Analysis

Table 3-3 and **Table 3-4** summarize the results of the unsignalized intersection analysis for the weekday AM and PM peak hours, respectively.

Intersection	Movement of Interest	Weekday AM Peak Hour					
		Flow Rate (vph)	Capacity (vph)	Control Delay (s)	95th Queue (m)	V/C	LOS
Mill Street & Dayfoot Drive	EBLT	36	903	9.2	1.0	0.04	A
	NBLT	2	1530	0.3	0.0	0.00	A

Table 3-3: Unsignalized Intersections Level of Service - Future Background Traffic AM Peak

Intersection	Movement of Interest	Weekday PM Peak Hour					
		Flow Rate (vph)	Capacity (vph)	Control Delay (s)	95th Queue (m)	V/C	LOS
Mill Street & Dayfoot Drive	EBLT	13	750	9.9	0.4	0.02	A
	NBLT	13	1436	0.8	0.2	0.01	A

Table 3-4: Unsignalized Intersections Level of Service - Future Background Traffic PM Peak

Under future background conditions, the analysis shows that the unsignalized intersection does not receive any notable changes in operations compared to the existing conditions during both the weekday AM and PM peak hour.

4 SITE-GENERATED TRIPS

For the purpose of estimating site traffic, the trip generation forecast was broken down into three (3) different categories based on the Institute of Transportation Engineers (ITE) Trip Generation Manual 9th Edition. Each proposed development was identified based upon the most applicable land use code. Residential Condominium/Townhouse (Land Use Code 230) was selected for the residential land uses use of the subject site, while the retirement was classified as Senior Adult Housing – Attached (Land Use Code 252) and the dementia units as Nursing Home (Land Use Code 620). The detailed breakdown can be found in **Appendix C**. **Table 4-1** summarizes the trip generation for each proposed development.

Proposed Development	Weekday AM Peak Hour			Weekday PM Peak Hour		
	In	Out	Total	In	Out	Total
Building 1 - Residential	8	32	40	40	22	62
Building 2 - Residential	6	25	31	35	19	54
Building 3 - Retirement	19	22	41	21	17	38
Building 3 - Dementia	3	2	5	6	3	9
Total Residential	14	57	71	75	41	116
Total Retirement	22	24	46	27	20	47
Total	36	81	117	102	61	163

Table 4-1: ITE Trip Generation Estimation for the Proposed Development

The above trip generation assumption is based on the assumptions of ITE which estimated that 95% of all trips are conducted by private auto. This assumption, however, is not reflective of the mode split present in Georgetown.

4.1 MODAL SPLIT

The previous TIS completed for the subject site introduced a mode split adjustment to the trip generation estimation. Specifically, the modal split was adjusted to account for the increased levels of GO Transit service expected over the study's planning horizon. This resulted in a GO Transit mode split of 10% during both weekday AM and PM peak hours. Based on the land uses proposed, this transit modal split adjustment in this updated report was only applied to the proposed residential uses, as it is not expected that those residing in the retirement or dementia units will be prominent users of GO Transit service.

After accounting for the modal split adjustment, the number of auto trips generated by the proposed development is shown in **Table 4-2**.

Proposed Development	Weekday AM Peak Hour			Weekday PM Peak Hour		
	In	Out	Total	In	Out	Total
Building 1 – Residential	7	29	36	36	19	55
Building 2 - Residential	5	23	28	31	17	48
Building 3 - Retirement	19	22	41	21	17	38
Building 3 - Dementia	3	2	5	6	3	9
Total Residential	**12**	**52**	**64**	**67**	**36**	**103**
Total Retirement	**22**	**24**	**46**	**27**	**20**	**47**
Total	**34**	**76**	**110**	**94**	**56**	**150**

Table 4-2: Adjusted Auto Trip Generation Estimation for the Proposed Development

The proposed development at 42 Mill Street is forecasted to generate 110 two-way trips (34 inbound and 76 outbound) during the weekday AM peak hour, while 150 two-way trips (94 inbound and 56 outbound) will be generated during the weekday PM peak hour.

4.2 TRIP ASSIGNMENT AND DISTRIBUTION

Trip assignment for the subject site was determined using 2011 TTS home-based travel data for the subject site. A summary of the subject site's trip distribution is provided in **Table 4-3**.

To/From Direction	Percentage Distribution
North	5%
South	25%
East	65%
West	5%
Total	100%

Table 4-3: Subject Site Trip Distribution

It was concluded in the previous TIS for the subject site that that traffic generated by the subject site would largely have the same origins and destinations as existing traffic within the neighbourhood. As shown in the table above, 65% of trips were assigned to travel to/from Guelph Street east of the proposed site during the weekday AM and PM peak hours, as traffic will be oriented towards the primary development of commercial, industrial and employment areas in Georgetown, in addition to the larger population centres of Greater Toronto Area.

Figure 4-1 below displays the forecasted site traffic to be generated by the proposed development.

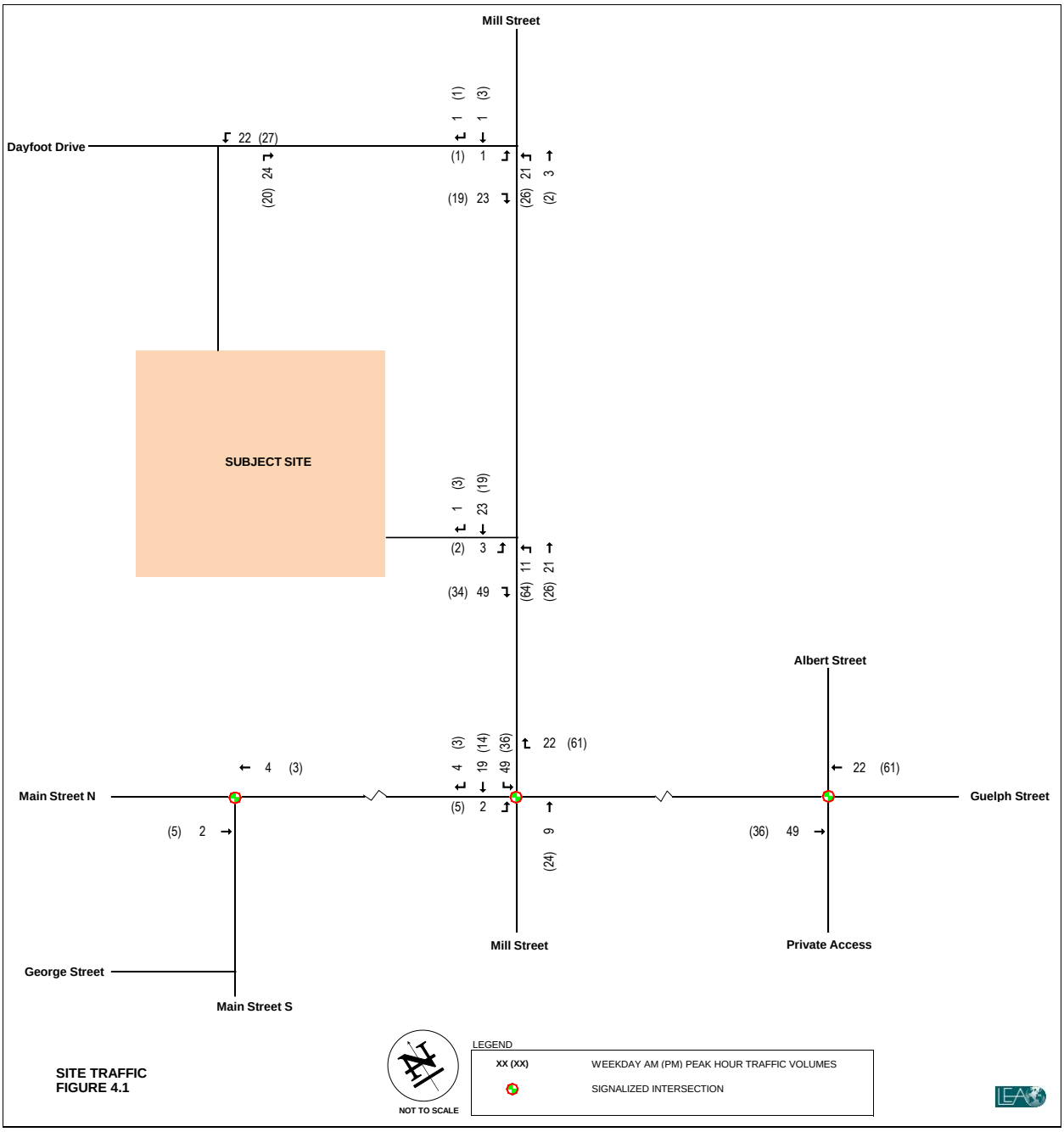


Figure 4-1: Site Traffic Volumes for Weekday AM and PM Peak Hour

5 FUTURE TOTAL TRANSPORTATION CONDITIONS

5.1 INTERSECTION CAPACITY ANALYSIS

Future total traffic volumes have been derived by combining future background volumes with site traffic volumes of the proposed development.

Figure 5-1 on the following page illustrates the projected volumes under future total conditions during the weekday AM and PM peak hours.

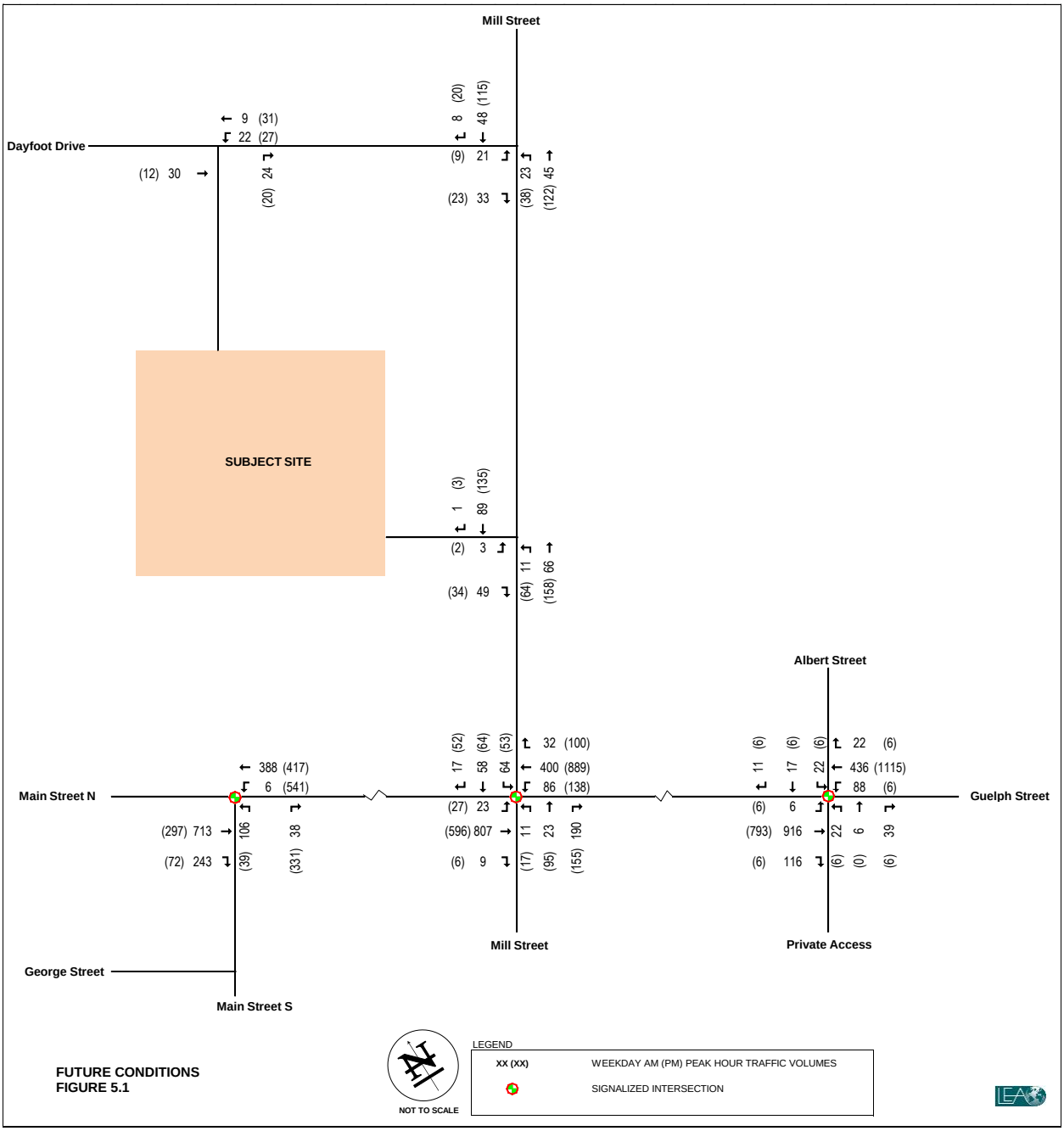


Figure 5-1: Future Traffic Condition Volumes for Weekday AM and PM Peak Hour

5.1.1 Signalized Intersection Capacity Analysis

Intersection capacity analysis was conducted for the future total traffic conditions. **Table 5-1** and **Table 5-2** summarize the movements of interest for the signalized intersections during the weekday AM and PM peak hours, respectively. Detailed Synchro outputs are provided in **Appendix D**, while the previous TIS outputs can be found in **Appendix F**.

Intersection	Weekday AM Peak Hour								
	Overall			Movement of Interest					
	V/C	Delay (s)	LOS	Movement	V/C	Delays (s)	LOS	Queue (m) 50th	Queue (m) 95th
Driveway/Alberta Street & Guelph Street	0.78	12.0	B	EBL	0.01	2.6	A	0.2	1.1
				EBT	0.83	13.1	B	116.2	#210.4
				WBL	0.40	8.0	A	4.8	14.4
				WBT	0.38	3.8	A	23.7	36.5
				NBT	0.25	38.6	D	5.1	13.6
				NBR	0.03	37.5	D	0.0	9.5
				SBT	0.32	38.9	D	7.1	18.6
Mill Street & Guelph Street	0.74	18.3	B	EBL	0.04	5.3	A	1.4	3.9
				EBT	0.73	14.0	B	95.0	138.9
				WBL	0.38	11.3	B	6.8	17.1
				WBT	0.21	6.1	A	14.8	20.3
				NBT	0.28	34.2	C	8.1	30.8
				SBT	0.77	62.1	E	25.7	#61.0
Main Street South/Private Access & Main Street N/Guelph Street	0.58	11.7	B	EBT	0.62	10.9	B	84.4	119.9
				EBR	0.26	6.5	A	19.7	30.6
				WBT	0.20	5.8	A	15.9	21.8
				NBL	0.40	41.8	D	24.2	42.7
				NBR	0.06	38.4	D	2.0	12.1

Table 5-1: Signalized Intersections Level of Service - Future Total Conditions AM Peak Hour

Intersection	Weekday PM Peak Hour								
	Overall			Movement of Interest					
	V/C	Delay (s)	LOS	Movement	V/C	Delays (s)	LOS	Queue (m)	
								50th	95th
Driveway/Alberta Street & Guelph Street	0.85	9.7	A	EBL	0.02	1.7	A	0.0	m0.5
				EBT	0.60	4.9	A	1.7	171.0
				WBL	0.01	1.4	A	0.0	1.0
				WBT	0.87	12.3	B	0.0	#295.9
				NBT	0.08	41.4	D	1.0	4.7
				NBR	-	-	-	-	-
				SBT	0.17	41.8	D	2.0	8.5
Mill Street & Guelph Street	0.60	24.5	C	EBL	0.17	14.4	B	2.7	m3.1
				EBT	0.75	23.1	C	71.3	75.5
				WBL	0.77	40.9	D	21.4	m30.1
				WBT	0.72	24.6	C	76.6	106.0
				NBT	0.40	22.1	C	26.8	#69.9
				SBT	0.29	20.6	C	18.9	46.3
Main Street South/Private Access & Main Street N/Guelph Street	0.65	13.9	B	EBT	0.28	4.4	A	15.4	32.7
				EBR	0.09	3.5	A	3.2	8.9
				WBT	0.88dl	9.1	A	28.1	31.0
				NBL	0.25	36.1	D	7.7	15.9
				NBR	0.26	36.1	D	0.0	19.9

Table 5-2: Signalized Intersections Level of Service - Future Total Conditions PM Peak Hour

Overall, all signalized intersections will continue to operate similarly to future background conditions under future total conditions during both the weekday AM and PM peak hours.

However the southbound through movement at the Mill Street and Guelph Street intersection during the AM peak hour will experience an increase in delay of approximately 30 seconds due to the increase in demand. Even so, delay is acceptable and the movement operates within capacity. It should also be noted, given the 116 metre queue in the 50th percentile for the eastbound through movement at the Albert Street and Guelph Street intersection, there is a probable chance that a blockage will be created at the Queen Street intersection.

The westbound approach at the Main Street and Guelph Street intersection will now also operate near capacity during the weekday PM peak hour. Under future total conditions, the westbound approach will operate with a V/C ratio of 0.88, and as a defacto-left-turn. This means that the majority of vehicles are found to conduct a westbound left-turn within the through lane, and therefore this through lane could effectively operate as a left-turn lane. Despite the demand for this approach, minimal delay is expected.

5.1.2 Unsignalized Intersection Capacity Analysis

The unsignalized intersection levels of service analysis under future total traffic conditions yield similar results to the future background traffic conditions during both weekday AM and PM peak hours. All three (3) unsignalized intersections are analyzed under future total traffic conditions, and are summarized in **Table 5-3** and **Table 5-4**.

Intersection	Movement of Interest	Weekday AM Peak Hour					
		Flow Rate (vph)	Capacity (vph)	Control Delay (s)	95th Queue (m)	V/C	LOS
Mill Street & Dayfoot Drive	EBLR	64	902	9.3	1.8	0.07	A
	NBLT	27	1527	2.6	0.4	0.02	A
Mill Street & Mill Street Site Driveway	EBLR	57	947	9.0	1.5	0.06	A
	NBLT	12	1495	1.1	0.2	0.01	A
Dayfoot Drive Site Driveway & Dayfoot Drive	WBLT	34	1592	5.2	0.4	0.02	A
	NBLR	27	1046	8.5	0.6	0.03	A

Table 5-3: Unsignalized Intersections Level of Service - Future Total Conditions AM Peak Hour

Intersection	Movement of Interest	Weekday AM Peak Hour					
		Flow Rate (vph)	Capacity (vph)	Control Delay (s)	95th Queue (m)	V/C	LOS
Mill Street & Dayfoot Drive	EBLR	41	1430	2.0	0.7	0.03	A
	NBLT	35	802	9.7	1.1	0.04	A
Mill Street & Mill Street Site Driveway	EBLR	39	865	9.4	1.1	0.05	A
	NBLT	70	1431	2.5	1.2	0.05	A
Dayfoot Drive Site Driveway & Dayfoot Drive	WBLT	64	1618	3.5	0.5	0.02	A
	NBLR	22	1073	8.4	0.5	0.02	A

Table 5-4: Unsignalized Intersections Level of Service - Future Total Conditions PM Peak Hour

All unsignalized intersections will operate with acceptable delay for individual movements, and within capacity. No constraints have been identified at the site's accesses with either Mill Street or Dayfoot Drive.

6 SITE ACCESS AND ON-SITE CIRCULATION

As mentioned in **Section 5.1.2**, vehicular access will be separated between Mill Street and Dayfoot Drive.

6.1 MILL STREET ACCESS

The Mill Street access is located approximately 75 metres north of the signalized intersection of Guelph Street and Mill Street. The 95th percentile southbound queue at Guelph Street and Mill Street intersection is projected to extend for 61m and 46m during the weekday AM and PM peak hours under future total conditions, respectively. This driveway will provide access to the above and underground parking spots for the residential units, which is anticipated to bisect the site. As a result, the driveway is located far enough from the Guelph Street and Mill Street intersection to ensure there is no future blockage by any queues forming at the signal.

The Mill Street driveway will be located between the south and north buildings, running east-west providing access to both the 21 surface parking spaces (with 6 accessible spaces), and the ramp to the underground parking. A stop-sign is recommended at the exit from the underground garage, to prevent any potential conflicts with pedestrian and vehicles.

Access to the southern building will be provided via a small lay-by area at the west end of the building's north side, near the loop in the driveway, while the northern building will be provided a similar area at the south end. These areas will also facilitate pick-up and drop-off activity for their respective buildings.

6.2 DAYFOOT DRIVE ACCESS

The Dayfoot Drive access is located approximately 56 metres west of the unsignalized intersection of Mill Street and Dayfoot Drive. This access provides a direct driveway access into the underground parking entrance on the north side of the retirement building.

6.2.1 Sightline Analysis

Due to the geometric arrangement and location of the proposed Dayfoot Drive access, a detailed sightline analysis was undertaken to determine acceptable stopping and decision making distances are present. The detailed drawings of the sightline analysis are available in **Appendix E**.

The sightline analysis was based on the assumption that the design speed of Dayfoot Drive is 40km/h. This was determined by using the minimum radius available at the Dayfoot Drive and Mill Street intersection, which is 40m. As shown in **DWG 001** of **Appendix E**, the available stopping sight distance (SSD) for vehicles traveling westbound is 65.2 m and for a vehicle traveling eastbound is 89.8 m. This exceeds the minimum SSD of 45m specified in the Geometric Design Guide for Canadian Roads by the Transportation Association of Canada (TAC) for a road with a design speed of 40 km/h. The SSD is the distance a moving vehicle travels, from the moment the driver perceives of an obstacle on the road, reacts, and brings the vehicle to a complete stop to avoid a collision. It should be noted that the minimum SSD specified in the TAC Guide conservatively assumes that the driver of the moving vehicle requires 3.0 seconds to perceive an obstacle and react accordingly. Therefore, an incoming westbound vehicle will have more than sufficient distance to bring the

vehicle to a complete stop and avoid a potential collision should an obstacle be present as the incoming vehicle approaches the proposed site access location.

The available decision sight distance is compared with the specified desirable DSD in the TAC Guidelines as shown in **DWG 003** of **Appendix E**. The TAC Geometric Design Guide for Canadian Roads refers to DSD as the "sight distance for a passenger vehicle turning left onto a two-lane roadway and attain 85% of design speed without being overtaken by a vehicle approaching from the right and reducing speed from design speed to 85% of design speed." When looking westward, not only does the sight distance of 89.9 m meet the minimum desired DSD of 75 m but it also exceeds the minimum SSD of 45 m. On the contrary, when looking eastward, the desirable DSD is 90 m, which is greater than the available DSD of 65.2 m. Even though the available DSD in the eastward direction does not meet the desired DSD, the available distance exceeds the minimum SSD which makes the location of the proposed site access acceptable. Though, to achieve the maximum available DSD, it is recommended to dedicate the hatched area as indicated in **DWG 003** as a low planting area. With this restriction, the vehicular traffic will have enhanced visibility and will be able to maneuver the access safely.

Finally, in terms of the vertical profile of Dayfoot Drive and its impact on the sightline analysis, the detailed sightline analysis has found that the crest which the site driveway will be placed on will not affect the sightline distance, and as such the operation of the site driveway will be acceptable with the existing vertical profile.

7 PARKING

7.1 PARKING REVIEW

Town of Halton Hills Zoning By-law 2010-0050 is the applicable policy dictating parking standards for the subject site. However, because the Town's by-law does not provide a definitive category for retirement uses, the minimum parking space requirements for that specific land use have been assumed to be the same as the Nursing Home use.

7.1.1 Parking Requirements

Parking requirements were derived within the context of Halton Hill's Zoning-By Law requirements for residential units and nursing home units.

The Existing Zoning By-Law 2010-005 requires a total of 301 spaces be provided for all three (3) development phases (134 spaces for Phase 1, 95 spaces for Phase 2 and 72 Spaces for Phase 3). **Table 7-1** summarizes the automobile parking requirements and proposed provision for the development.

Use	Proposed Development	Zoning By- Law 2010		Required Parking
		Ratio	Spaces Required	
Phase 1				
Residential (Apartment)	1B Units - 23	1.5 space per unit	35	134
	2B Units - 51	1.5 space per unit	77	
	3B Units - 2	1.5 space per unit	3	
Visitor (Apartment)	76 Units	0.25 spaces per unit	19	
Phase 2				
Residential (Apartment)	1B Units - 12	1.5 space per unit	18	95
	2B Units - 42	1.5 space per unit	63	
Visitor (Apartment)	54 Units	0.25 spaces per unit	14	
Phase 3				
Nursing Homes (Retirement)	120 Units	0.5 spaces per unit	60	72
Nursing Homes (Dementia)	24 Units	0.5 spaces per unit	12	
Total	**274 Units**		**Total**	301

Table 7-1: Required Parking Spaces for Subject Site

Regarding Phase 1, the parking requirements calculated here assume that the entirety of the Phase 1 building will be for residential use, and will not have retail uses as the commercial GFA is not yet known. If Phase 1 is to contain no residential land use, 134 parking spaces will be required.

8 CONCLUSION

- Proposed for the subject site are residential, retirement home, and dementia care units within three (3) building. The development will be realized in three (3) phases corresponding with the completion of each building. In total, 130 residential units, 120 retirement units, and 24 dementia care units are proposed.

- Under existing traffic conditions, all intersections within the subject area are operating at acceptable levels of service during both the weekday AM and PM peak hours. All movements are operating within acceptable delay times and levels of constraints.

- The proposed development at 42 Mill Street is forecasted to generate 110 two-way trips (34 inbound and 76 outbound) during the weekday AM peak hour, while 150 two-way trips (94 inbound and 56 outbound) will be generated during the weekday PM peak hour.

- Capacity analysis under future total traffic conditions shows that there will be an increase in delay of approximately 30 seconds for the southbound through movement at Mill Street and Guelph Street. However, the intersection will still continue to operate with acceptable levels of service.

- Under future total traffic analysis, an approximately 120m long queue is expected to be generated under the 50th percentile for the eastbound-through movement at the Albert Street and Guelph Street intersection.

- Westbound through movement at the Main Street and Guelph Street intersections will continue to operate near capacity during the weekday PM peak hours during future total traffic conditions.

- There is no foreseeable blockage towards the Mill Street access under the 95th percentile southbound queue at the Guelph Street and Mill Street intersection, which is projected to extend for 61m and 46m during the weekday AM and PM peak hours under future total conditions, respectively.

- Access to the development will be provided via two (2) unsignalized driveways, one (1) from Mill Street and one (1) from Dayfoot Drive.

- Overall, the proposed subject site development at 42 Mill Street has an acceptable effect on the signalized and unsignalized intersections in the study area beyond the conditions observed in the future background analysis.

- A detailed sightline analysis completed of the proposed Dayfoot Drive access finds that the driveway will have sufficient stopping and decision sight distance and its location and arrangement is subsequently acceptable.

- The subject site will be required to provide a minimum of 301 parking spaces (134 spaces for Phase 1, 95 spaces for Phase 2 and 72 Spaces for Phase 3).

APPENDIX A

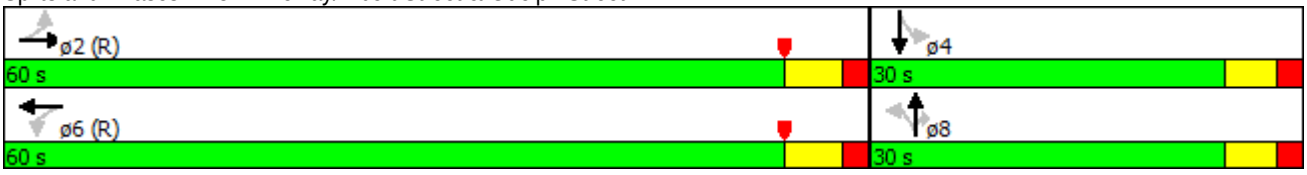
Existing Intersection Capacity Analysis

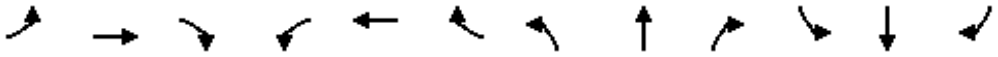
Weekday A.M. Peak Hour

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Volume (vph)	5	785	80	375	20	5	35	20	15
Lane Group Flow (vph)	5	957	86	425	0	27	38	0	49
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases		2		6		8			4
Permitted Phases	2		6		8		8	4	
Detector Phase	2	2	6	6	8	8	8	4	4
Switch Phase									
Minimum Initial (s)	30.0	30.0	30.0	30.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.0	36.0	36.0	36.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	60.0	60.0	60.0	60.0	30.0	30.0	30.0	30.0	30.0
Total Split (%)	66.7%	66.7%	66.7%	66.7%	33.3%	33.3%	33.3%	33.3%	33.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	2.0	2.0	0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)	8.0	8.0	6.0	6.0		5.5	5.5		5.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None
v/c Ratio	0.01	0.65	0.22	0.30		0.20	0.17		0.27
Control Delay	3.2	7.7	4.4	3.1		40.2	14.3		34.5
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0		0.0
Total Delay	3.2	7.7	4.4	3.1		40.2	14.3		34.5
Queue Length 50th (m)	0.2	80.9	3.7	19.4		4.5	0.0		6.4
Queue Length 95th (m)	1.0	128.9	8.9	29.9		12.7	9.2		17.4
Internal Link Dist (m)		317.8		203.4		34.1			174.1
Turn Bay Length (m)	30.0		25.0						
Base Capacity (vph)	816	1479	390	1434		339	486		426
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	0.01	0.65	0.22	0.30		0.08	0.08		0.12

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 42 (47%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 3: Driveway/Albert Street & Guelph Street





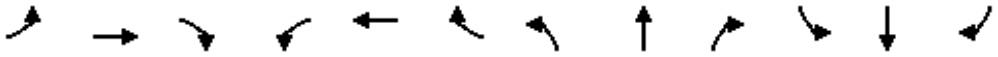
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	785	105	80	375	20	20	5	35	20	15	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.0	4.0	3.7	3.7	3.7
Total Lost time (s)	8.0	8.0		6.0	6.0			5.5	5.5		5.5	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.98		1.00	0.99			1.00	0.85		0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.98	
Satd. Flow (prot)	1785	1752		1716	1674			1637	1687		1782	
Flt Permitted	0.51	1.00		0.25	1.00			0.73	1.00		0.84	
Satd. Flow (perm)	967	1752		456	1674			1247	1687		1536	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	5	844	113	86	403	22	22	5	38	22	16	11
RTOR Reduction (vph)	0	3	0	0	1	0	0	0	35	0	10	0
Lane Group Flow (vph)	5	954	0	86	424	0	0	27	3	0	39	0
Heavy Vehicles (%)	0%	5%	8%	4%	12%	0%	5%	0%	0%	5%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	72.5	72.5		72.5	72.5			6.0	6.0		6.0	
Effective Green, g (s)	70.5	70.5		72.5	72.5			6.0	6.0		6.0	
Actuated g/C Ratio	0.78	0.78		0.81	0.81			0.07	0.07		0.07	
Clearance Time (s)	6.0	6.0		6.0	6.0			5.5	5.5		5.5	
Vehicle Extension (s)	4.0	4.0		4.0	4.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	757	1372		367	1348			83	112		102	
v/s Ratio Prot		c0.54			0.25							
v/s Ratio Perm	0.01			0.19				0.02	0.00		c0.03	
v/c Ratio	0.01	0.70		0.23	0.31			0.33	0.02		0.38	
Uniform Delay, d1	2.1	4.6		2.1	2.3			40.1	39.3		40.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.0	2.9		1.5	0.6			0.8	0.0		0.9	
Delay (s)	2.1	7.6		3.6	2.9			40.9	39.3		41.1	
Level of Service	A	A		A	A			D	D		D	
Approach Delay (s)		7.5			3.0			40.0			41.1	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	8.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	85.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	19	731	78	362	10	13	13	35
Lane Group Flow (vph)	20	787	83	395	0	208	0	64
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	2	2	6	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	63.0	63.0	63.0	63.0	18.0	18.0	18.0	18.0
Minimum Split (s)	69.0	69.0	69.0	69.0	24.0	24.0	24.0	24.0
Total Split (s)	69.0	69.0	69.0	69.0	24.0	24.0	24.0	24.0
Total Split (%)	74.2%	74.2%	74.2%	74.2%	25.8%	25.8%	25.8%	25.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0		6.0		6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Min	C-Min	C-Min	C-Min	Max	Max	Max	Max
v/c Ratio	0.03	0.66	0.28	0.18		0.46		0.21
Control Delay	5.2	12.1	9.0	5.7		10.9		28.7
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	5.2	12.1	9.0	5.7		10.9		28.7
Queue Length 50th (m)	1.1	75.8	5.5	12.4		3.9		8.3
Queue Length 95th (m)	3.4	113.9	13.2	17.8		23.4		19.8
Internal Link Dist (m)		269.8		317.8		79.7		191.3
Turn Bay Length (m)	50.0		75.0					
Base Capacity (vph)	658	1195	296	2177		449		307
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	0.03	0.66	0.28	0.18		0.46		0.21

Intersection Summary
Cycle Length: 93
Actuated Cycle Length: 93
Offset: 14 (15%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 95
Control Type: Actuated-Coordinated

Splits and Phases: 6: Mill Street & Guelph Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	19	731	8	78	362	9	10	13	172	13	35	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.7	3.2	3.2	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Total Lost time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.97			0.99	
Flpb, ped/bikes	1.00	1.00		0.99	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.88			0.97	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1780	1765		1559	3213			1583			1662	
Flt Permitted	0.52	1.00		0.27	1.00			0.98			0.92	
Satd. Flow (perm)	972	1765		438	3213			1562			1538	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	20	778	9	83	385	10	11	14	183	14	37	13
RTOR Reduction (vph)	0	0	0	0	2	0	0	148	0	0	10	0
Lane Group Flow (vph)	20	787	0	83	393	0	0	60	0	0	54	0
Confl. Peds. (#/hr)	7		28	28		7	19		4	4		19
Confl. Bikes (#/hr)			1			1						
Heavy Vehicles (%)	0%	6%	25%	10%	7%	3%	10%	8%	3%	23%	6%	8%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	63.0	63.0		63.0	63.0			18.0			18.0	
Effective Green, g (s)	63.0	63.0		63.0	63.0			18.0			18.0	
Actuated g/C Ratio	0.68	0.68		0.68	0.68			0.19			0.19	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	658	1195		296	2176			302			297	
v/s Ratio Prot		c0.45			0.12							
v/s Ratio Perm	0.02			0.19				c0.04			0.04	
v/c Ratio	0.03	0.66		0.28	0.18			0.20			0.18	
Uniform Delay, d1	4.9	8.7		6.0	5.5			31.5			31.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	2.8		2.4	0.2			1.5			1.4	
Delay (s)	5.0	11.6		8.3	5.7			32.9			32.7	
Level of Service	A	B		A	A			C			C	
Approach Delay (s)		11.4			6.2			32.9			32.7	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	13.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	93.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	89.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	18	9	2	38	43	6
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	21	11	2	45	51	7
Pedestrians	8			1	3	
Lane Width (m)	3.7			3.2	3.2	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	1			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				215		
pX, platoon unblocked						
vC, conflicting volume	116	64	66			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	116	64	66			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	99	100			
cM capacity (veh/h)	876	999	1538			

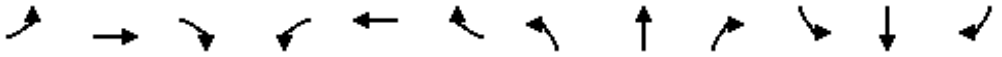
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	32	48	58
Volume Left	21	2	0
Volume Right	11	0	7
cSH	913	1538	1700
Volume to Capacity	0.04	0.00	0.03
Queue Length 95th (m)	0.9	0.0	0.0
Control Delay (s)	9.1	0.4	0.0
Lane LOS	A	A	
Approach Delay (s)	9.1	0.4	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	16.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø4
Lane Configurations							
Volume (vph)	644	220	5	348	96	34	
Lane Group Flow (vph)	708	242	0	387	105	37	
Turn Type	NA	Perm	Perm	NA	Perm	Perm	
Protected Phases	2			6			4
Permitted Phases		2	6		8	8	
Detector Phase	2	2	6	6	8	8	
Switch Phase							
Minimum Initial (s)	81.0	81.0	81.0	81.0	21.0	21.0	21.0
Minimum Split (s)	87.0	87.0	87.0	87.0	27.0	27.0	27.0
Total Split (s)	87.0	87.0	87.0	87.0	27.0	27.0	27.0
Total Split (%)	76.3%	76.3%	76.3%	76.3%	23.7%	23.7%	24%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None
v/c Ratio	0.56	0.24		0.18	0.45	0.12	
Control Delay	10.1	6.4		5.7	48.5	17.1	
Queue Delay	0.0	0.0		0.0	0.0	0.0	
Total Delay	10.1	6.4		5.7	48.5	17.1	
Queue Length 50th (m)	70.9	17.5		13.9	22.1	1.2	
Queue Length 95th (m)	100.1	27.4		19.3	40.5	10.6	
Internal Link Dist (m)	147.8			269.8			
Turn Bay Length (m)						10.0	
Base Capacity (vph)	1259	1024		2183	233	301	
Starvation Cap Reductn	0	0		0	0	0	
Spillback Cap Reductn	0	0		0	0	0	
Storage Cap Reductn	0	0		0	0	0	
Reduced v/c Ratio	0.56	0.24		0.18	0.45	0.12	

Intersection Summary
Cycle Length: 114
Actuated Cycle Length: 114
Offset: 13 (11%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
Natural Cycle: 115
Control Type: Actuated-Coordinated

Splits and Phases: 9: Main Street S/Private Access & Main Street N/Guelph Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	644	220	5	348	0	96	0	34	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.5	3.2	3.5	3.5	3.6	3.5	3.6	3.2	3.6	4.5	3.6
Total Lost time (s)		6.0	6.0		6.0		6.0		6.0			
Lane Util. Factor		1.00	1.00		0.95		1.00		1.00			
Frpb, ped/bikes		1.00	0.97		1.00		1.00		0.97			
Flpb, ped/bikes		1.00	1.00		1.00		1.00		1.00			
Frt		1.00	0.85		1.00		1.00		0.85			
Flt Protected		1.00	1.00		1.00		0.95		1.00			
Satd. Flow (prot)		1773	1442		3239		1594		1500			
Flt Permitted		1.00	1.00		0.95		0.76		1.00			
Satd. Flow (perm)		1773	1442		3073		1270		1500			
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	708	242	5	382	0	105	0	37	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	25	0	0	0
Lane Group Flow (vph)	0	708	242	0	387	0	105	0	12	0	0	0
Confl. Peds. (#/hr)			12	12					3	3		
Heavy Vehicles (%)	0%	6%	4%	20%	10%	0%	12%	0%	0%	0%	0%	0%
Turn Type		NA	Perm	Perm	NA		Perm		Perm			
Protected Phases		2			6						4	
Permitted Phases			2	6			8		8	4		
Actuated Green, G (s)		81.0	81.0		81.0		21.0		21.0			
Effective Green, g (s)		81.0	81.0		81.0		21.0		21.0			
Actuated g/C Ratio		0.71	0.71		0.71		0.18		0.18			
Clearance Time (s)		6.0	6.0		6.0		6.0		6.0			
Vehicle Extension (s)		3.0	3.0		3.0		3.0		3.0			
Lane Grp Cap (vph)		1259	1024		2183		233		276			
v/s Ratio Prot		c0.40										
v/s Ratio Perm			0.17		0.13		c0.08		0.01			
v/c Ratio		0.56	0.24		0.18		0.45		0.04			
Uniform Delay, d1		8.0	5.7		5.5		41.4		38.2			
Progression Factor		1.00	1.00		1.00		1.00		1.00			
Incremental Delay, d2		1.8	0.5		0.2		1.4		0.1			
Delay (s)		9.8	6.3		5.6		42.8		38.3			
Level of Service		A	A		A		D		D			
Approach Delay (s)		8.9			5.6			41.6			0.0	
Approach LOS		A			A			D			A	

Intersection Summary			
HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	114.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	145.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

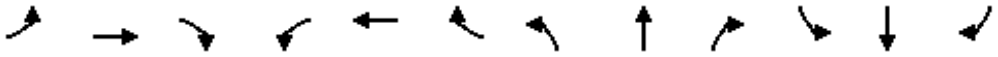
Weekday P.M. Peak Hour

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Volume (vph)	5	685	5	955	5	0	5	5	5
Lane Group Flow (vph)	5	742	5	1032	0	5	5	0	15
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases		2		6		8			4
Permitted Phases	2		6		8		8	4	
Detector Phase	2	2	6	6	8	8	8	4	4
Switch Phase									
Minimum Initial (s)	30.0	30.0	30.0	30.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.0	36.0	36.0	36.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	60.0	60.0	60.0	60.0	30.0	30.0	30.0	30.0	30.0
Total Split (%)	66.7%	66.7%	66.7%	66.7%	33.3%	33.3%	33.3%	33.3%	33.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	2.0	2.0	0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)	8.0	8.0	6.0	6.0		5.5	5.5		5.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None
v/c Ratio	0.01	0.44	0.01	0.65		0.03	0.02		0.07
Control Delay	1.6	2.4	1.6	4.9		36.2	0.2		30.1
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0		0.0
Total Delay	1.6	2.4	1.6	4.9		36.2	0.2		30.1
Queue Length 50th (m)	0.0	2.4	0.0	0.0		0.8	0.0		1.7
Queue Length 95th (m)	m0.4	29.2	0.9	159.1		4.2	0.0		7.6
Internal Link Dist (m)		317.8		203.4		34.1			174.1
Turn Bay Length (m)	30.0		25.0						
Base Capacity (vph)	436	1694	635	1597		459	485		495
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	0.01	0.44	0.01	0.65		0.01	0.01		0.03

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 42 (47%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Driveway/Albert Street & Guelph Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	685	5	5	955	5	5	0	5	5	5	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.0	4.0	3.7	3.7	3.7
Total Lost time (s)	8.0	8.0		6.0	6.0			5.5	5.5		5.5	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00		1.00	1.00			1.00	0.85		0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.98	
Satd. Flow (prot)	1785	1787		1716	1677			1604	1687		1775	
Flt Permitted	0.24	1.00		0.37	1.00			1.00	1.00		1.00	
Satd. Flow (perm)	460	1787		667	1677			1689	1687		1805	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	5	737	5	5	1027	5	5	0	5	5	5	5
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	5	0	5	0
Lane Group Flow (vph)	5	742	0	5	1032	0	0	5	0	0	10	0
Heavy Vehicles (%)	0%	5%	8%	4%	12%	0%	5%	0%	0%	5%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	76.5	76.5		76.5	76.5			2.0	2.0		2.0	
Effective Green, g (s)	74.5	74.5		76.5	76.5			2.0	2.0		2.0	
Actuated g/C Ratio	0.83	0.83		0.85	0.85			0.02	0.02		0.02	
Clearance Time (s)	6.0	6.0		6.0	6.0			5.5	5.5		5.5	
Vehicle Extension (s)	4.0	4.0		4.0	4.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	380	1479		566	1425			37	37		40	
v/s Ratio Prot		0.42			c0.62							
v/s Ratio Perm	0.01			0.01				0.00	0.00		c0.01	
v/c Ratio	0.01	0.50		0.01	0.72			0.14	0.00		0.25	
Uniform Delay, d1	1.3	2.3		1.0	2.6			43.2	43.0		43.3	
Progression Factor	0.80	0.95		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.1	1.1		0.0	3.2			0.6	0.0		1.2	
Delay (s)	1.1	3.3		1.0	5.9			43.8	43.0		44.5	
Level of Service	A	A		A	A			D	D		D	
Approach Delay (s)		3.3			5.8			43.4			44.5	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	5.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	68.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

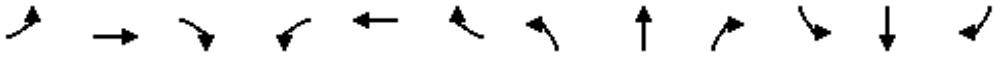
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	20	540	125	805	15	65	15	45
Lane Group Flow (vph)	21	573	132	884	0	231	0	110
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	2	2	6	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	30.0	30.0	30.0	30.0	8.0	8.0	8.0	8.0
Minimum Split (s)	37.0	37.0	37.0	37.0	23.0	23.0	23.0	23.0
Total Split (s)	67.0	67.0	67.0	67.0	23.0	23.0	23.0	23.0
Total Split (%)	74.4%	74.4%	74.4%	74.4%	25.6%	25.6%	25.6%	25.6%
Yellow Time (s)	5.0	5.0	5.0	5.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0		6.0		6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Min	C-Min	C-Min	C-Min	Max	Max	Max	Max
v/c Ratio	0.12	0.76	0.75	0.69		0.32		0.15
Control Delay	12.7	25.8	44.3	24.3		14.1		14.2
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	12.7	25.8	44.3	24.3		14.1		14.2
Queue Length 50th (m)	2.3	73.3	21.1	70.9		14.9		7.1
Queue Length 95th (m)	m2.7	76.3	m36.2	95.5		43.6		23.6
Internal Link Dist (m)		269.8		317.8		162.5		191.3
Turn Bay Length (m)	50.0		75.0					
Base Capacity (vph)	284	1190	277	2018		732		737
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	0.07	0.48	0.48	0.44		0.32		0.15

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 13 (14%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Mill Street & Guelph Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	540	5	125	805	35	15	65	140	15	45	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.7	3.2	3.2	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Total Lost time (s)	7.0	7.0		7.0	7.0			6.0			6.0	
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	0.99			0.91			0.94	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1785	1784		1612	3022			1604			1735	
Flt Permitted	0.23	1.00		0.24	1.00			0.98			0.95	
Satd. Flow (perm)	427	1784		415	3022			1578			1655	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	21	568	5	132	847	37	16	68	147	16	47	47
RTOR Reduction (vph)	0	1	0	0	6	0	0	49	0	0	21	0
Lane Group Flow (vph)	21	572	0	132	878	0	0	182	0	0	89	0
Heavy Vehicles (%)	0%	5%	25%	7%	14%	0%	22%	17%	4%	13%	4%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	38.0	38.0		38.0	38.0			39.0			39.0	
Effective Green, g (s)	38.0	38.0		38.0	38.0			39.0			39.0	
Actuated g/C Ratio	0.42	0.42		0.42	0.42			0.43			0.43	
Clearance Time (s)	7.0	7.0		7.0	7.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	180	753		175	1275			683			717	
v/s Ratio Prot		c0.32			0.29							
v/s Ratio Perm	0.05			0.32				c0.12			0.05	
v/c Ratio	0.12	0.76		0.75	0.69			0.27			0.12	
Uniform Delay, d1	15.8	22.1		22.0	21.2			16.3			15.3	
Progression Factor	0.92	0.91		1.14	1.09			1.00			1.00	
Incremental Delay, d2	1.2	6.5		20.4	2.4			1.0			0.4	
Delay (s)	15.8	26.7		45.5	25.4			17.3			15.6	
Level of Service	B	C		D	C			B			B	
Approach Delay (s)		26.3			28.0			17.3			15.6	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	25.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	85.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	7	4	11	109	101	17
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	4	12	118	110	18
Pedestrians	7					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.2					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				215		
pX, platoon unblocked						
vC, conflicting volume	268	126	135			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	268	126	135			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	100	99			
cM capacity (veh/h)	715	924	1453			

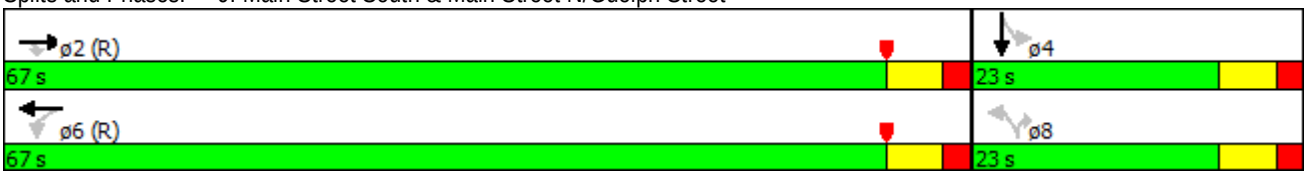
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	12	130	128
Volume Left	8	12	0
Volume Right	4	0	18
cSH	779	1453	1700
Volume to Capacity	0.02	0.01	0.08
Queue Length 95th (m)	0.4	0.2	0.0
Control Delay (s)	9.7	0.7	0.0
Lane LOS	A	A	
Approach Delay (s)	9.7	0.7	0.0
Approach LOS	A		

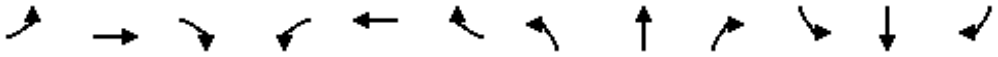
Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	23.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø4
Lane Configurations							
Volume (vph)	265	65	490	375	35	300	
Lane Group Flow (vph)	308	76	0	1006	41	349	
Turn Type	NA	Perm	Perm	NA	Perm	Perm	
Protected Phases	2			6			4
Permitted Phases		2	6		8	8	
Detector Phase	2	2	6	6	8	8	
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	30.0	30.0	25.0	25.0	23.0	23.0	23.0
Total Split (s)	67.0	67.0	67.0	67.0	23.0	23.0	23.0
Total Split (%)	74.4%	74.4%	74.4%	74.4%	25.6%	25.6%	26%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None
v/c Ratio	0.25	0.08		0.64	0.23	0.71	
Control Delay	4.6	4.0		8.2	37.4	12.6	
Queue Delay	0.0	0.0		0.0	0.0	0.0	
Total Delay	4.6	4.0		8.2	37.4	12.6	
Queue Length 50th (m)	13.4	2.9		30.0	6.9	0.0	
Queue Length 95th (m)	28.8	8.3		21.1	14.8	19.1	
Internal Link Dist (m)	147.8			269.8			
Turn Bay Length (m)						10.0	
Base Capacity (vph)	1252	967		1579	268	563	
Starvation Cap Reductn	0	0		0	0	0	
Spillback Cap Reductn	0	0		0	0	0	
Storage Cap Reductn	0	0		0	0	0	
Reduced v/c Ratio	0.25	0.08		0.64	0.15	0.62	

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 13 (14%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 9: Main Street South & Main Street N/Guelph Street





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	265	65	490	375	0	35	0	300	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.5	3.2	3.5	3.5	3.6	3.5	3.6	3.2	3.6	4.5	3.6
Total Lost time (s)		6.0	6.0		6.0		6.0		6.0			
Lane Util. Factor		1.00	1.00		0.95		1.00		1.00			
Frt		1.00	0.85		1.00		1.00		0.85			
Flt Protected		1.00	1.00		0.97		0.95		1.00			
Satd. Flow (prot)		1693	1308		3118		1785		1484			
Flt Permitted		1.00	1.00		0.67		0.76		1.00			
Satd. Flow (perm)		1693	1308		2136		1423		1484			
Peak-hour factor, PHF	0.92	0.86	0.86	0.86	0.86	0.92	0.86	0.92	0.86	0.92	0.92	0.92
Adj. Flow (vph)	0	308	76	570	436	0	41	0	349	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	305	0	0	0
Lane Group Flow (vph)	0	308	76	0	1006	0	41	0	44	0	0	0
Heavy Vehicles (%)	2%	11%	18%	7%	17%	2%	0%	2%	4%	2%	2%	2%
Turn Type		NA	Perm	Perm	NA		Perm		Perm			
Protected Phases		2			6						4	
Permitted Phases			2	6			8		8	4		
Actuated Green, G (s)		66.6	66.6		66.6		11.4		11.4			
Effective Green, g (s)		66.6	66.6		66.6		11.4		11.4			
Actuated g/C Ratio		0.74	0.74		0.74		0.13		0.13			
Clearance Time (s)		6.0	6.0		6.0		6.0		6.0			
Vehicle Extension (s)		3.0	3.0		3.0		3.0		3.0			
Lane Grp Cap (vph)		1252	967		1580		180		187			
v/s Ratio Prot		0.18										
v/s Ratio Perm			0.06		c0.47		0.03		c0.03			
v/c Ratio		0.25	0.08		0.64		0.23		0.24			
Uniform Delay, d1		3.7	3.2		5.8		35.3		35.4			
Progression Factor		1.00	1.00		0.97		1.00		1.00			
Incremental Delay, d2		0.5	0.2		1.9		0.6		0.7			
Delay (s)		4.2	3.4		7.4		36.0		36.0			
Level of Service		A	A		A		D		D			
Approach Delay (s)		4.0			7.4			36.0			0.0	
Approach LOS		A			A			D			A	

Intersection Summary			
HCM 2000 Control Delay	13.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	57.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

APPENDIX B

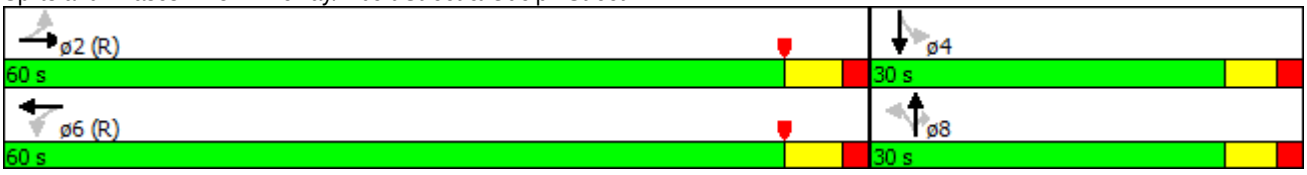
Future Background (2021) Intersection Capacity Analysis

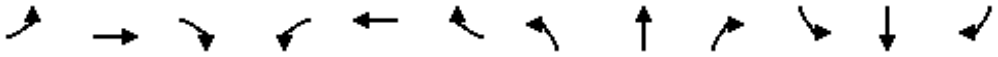
Weekday A.M. Peak Hour

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Volume (vph)	6	867	88	414	22	6	39	22	17
Lane Group Flow (vph)	6	1057	95	469	0	30	42	0	54
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases		2		6		8			4
Permitted Phases	2		6		8		8	4	
Detector Phase	2	2	6	6	8	8	8	4	4
Switch Phase									
Minimum Initial (s)	30.0	30.0	30.0	30.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.0	36.0	36.0	36.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	60.0	60.0	60.0	60.0	30.0	30.0	30.0	30.0	30.0
Total Split (%)	66.7%	66.7%	66.7%	66.7%	33.3%	33.3%	33.3%	33.3%	33.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	2.0	2.0	0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)	8.0	8.0	6.0	6.0		5.5	5.5		5.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None
v/c Ratio	0.01	0.76	0.34	0.35		0.20	0.19		0.30
Control Delay	3.2	11.8	7.2	4.0		40.1	14.2		35.0
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0		0.0
Total Delay	3.2	11.8	7.2	4.0		40.1	14.2		35.0
Queue Length 50th (m)	0.2	102.3	4.5	22.1		5.1	0.0		7.1
Queue Length 95th (m)	1.1	170.9	12.2	34.0		13.6	9.5		18.6
Internal Link Dist (m)		317.8		203.4		34.1			174.1
Turn Bay Length (m)	30.0		25.0						
Base Capacity (vph)	725	1388	283	1354		362	489		427
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	0.01	0.76	0.34	0.35		0.08	0.09		0.13

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 42 (47%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 3: Driveway/Albert Street & Guelph Street





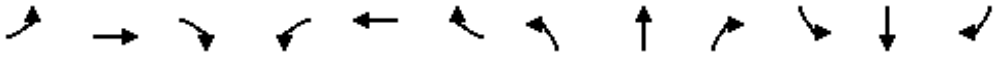
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	867	116	88	414	22	22	6	39	22	17	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.0	4.0	3.7	3.7	3.7
Total Lost time (s)	8.0	8.0		6.0	6.0			5.5	5.5		5.5	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.98		1.00	0.99			1.00	0.85		0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.98	
Satd. Flow (prot)	1785	1752		1716	1674			1640	1687		1783	
Flt Permitted	0.49	1.00		0.19	1.00			0.78	1.00		0.84	
Satd. Flow (perm)	917	1752		350	1674			1331	1687		1536	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	6	932	125	95	445	24	24	6	42	24	18	12
RTOR Reduction (vph)	0	3	0	0	1	0	0	0	38	0	11	0
Lane Group Flow (vph)	6	1054	0	95	468	0	0	30	4	0	43	0
Heavy Vehicles (%)	0%	5%	8%	4%	12%	0%	5%	0%	0%	5%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	70.5	70.5		70.5	70.5			8.0	8.0		8.0	
Effective Green, g (s)	68.5	68.5		70.5	70.5			8.0	8.0		8.0	
Actuated g/C Ratio	0.76	0.76		0.78	0.78			0.09	0.09		0.09	
Clearance Time (s)	6.0	6.0		6.0	6.0			5.5	5.5		5.5	
Vehicle Extension (s)	4.0	4.0		4.0	4.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	697	1333		274	1311			118	149		136	
v/s Ratio Prot		c0.60			0.28							
v/s Ratio Perm	0.01			0.27				0.02	0.00		c0.03	
v/c Ratio	0.01	0.79		0.35	0.36			0.25	0.03		0.32	
Uniform Delay, d1	2.6	6.4		2.9	2.9			38.2	37.4		38.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.0	4.8		3.4	0.8			0.4	0.0		0.5	
Delay (s)	2.6	11.3		6.3	3.7			38.6	37.5		38.9	
Level of Service	A	B		A	A			D	D		D	
Approach Delay (s)		11.2			4.1			38.0			38.9	
Approach LOS		B			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	10.9	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)	13.5
Intersection Capacity Utilization	92.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	21	807	86	400	11	14	14	39
Lane Group Flow (vph)	22	869	91	437	0	229	0	70
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	2	2	6	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	63.0	63.0	63.0	63.0	18.0	18.0	18.0	18.0
Minimum Split (s)	69.0	69.0	69.0	69.0	24.0	24.0	24.0	24.0
Total Split (s)	69.0	69.0	69.0	69.0	24.0	24.0	24.0	24.0
Total Split (%)	74.2%	74.2%	74.2%	74.2%	25.8%	25.8%	25.8%	25.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0		6.0		6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Min	C-Min	C-Min	C-Min	Max	Max	Max	Max
v/c Ratio	0.03	0.73	0.37	0.20		0.51		0.23
Control Delay	5.2	14.1	11.6	5.8		12.7		29.3
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	5.2	14.1	11.6	5.8		12.7		29.3
Queue Length 50th (m)	1.2	91.2	6.5	14.0		6.8		9.3
Queue Length 95th (m)	3.6	139.7	17.0	19.8		28.3		21.5
Internal Link Dist (m)		269.8		317.8		79.7		191.3
Turn Bay Length (m)	50.0		75.0					
Base Capacity (vph)	632	1195	247	2177		451		300
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	0.03	0.73	0.37	0.20		0.51		0.23

Intersection Summary
Cycle Length: 93
Actuated Cycle Length: 93
Offset: 14 (15%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 95
Control Type: Actuated-Coordinated

Splits and Phases: 6: Mill Street & Guelph Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	21	807	9	86	400	10	11	14	190	14	39	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.7	3.2	3.2	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Total Lost time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.97			0.99	
Flpb, ped/bikes	1.00	1.00		0.99	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.88			0.97	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1780	1765		1560	3213			1582			1665	
Flt Permitted	0.50	1.00		0.22	1.00			0.98			0.89	
Satd. Flow (perm)	933	1765		364	3213			1560			1505	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	22	859	10	91	426	11	12	15	202	15	41	14
RTOR Reduction (vph)	0	0	0	0	2	0	0	150	0	0	10	0
Lane Group Flow (vph)	22	869	0	91	435	0	0	79	0	0	60	0
Confl. Peds. (#/hr)	7		28	28		7	19		4	4		19
Confl. Bikes (#/hr)			1			1						
Heavy Vehicles (%)	0%	6%	25%	10%	7%	3%	10%	8%	3%	23%	6%	8%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	63.0	63.0		63.0	63.0			18.0			18.0	
Effective Green, g (s)	63.0	63.0		63.0	63.0			18.0			18.0	
Actuated g/C Ratio	0.68	0.68		0.68	0.68			0.19			0.19	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	632	1195		246	2176			301			291	
v/s Ratio Prot		c0.49			0.14							
v/s Ratio Perm	0.02			0.25				c0.05			0.04	
v/c Ratio	0.03	0.73		0.37	0.20			0.26			0.21	
Uniform Delay, d1	5.0	9.5		6.5	5.6			31.9			31.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	3.9		4.2	0.2			2.1			1.6	
Delay (s)	5.1	13.4		10.7	5.8			34.0			33.1	
Level of Service	A	B		B	A			C			C	
Approach Delay (s)		13.2			6.6			34.0			33.1	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	14.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	93.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	96.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	20	10	2	42	47	7
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	24	12	2	50	56	8
Pedestrians	8			1	3	
Lane Width (m)	3.7			3.2	3.2	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	1			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				215		
pX, platoon unblocked						
vC, conflicting volume	126	69	72			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	126	69	72			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	99	100			
cM capacity (veh/h)	864	992	1530			

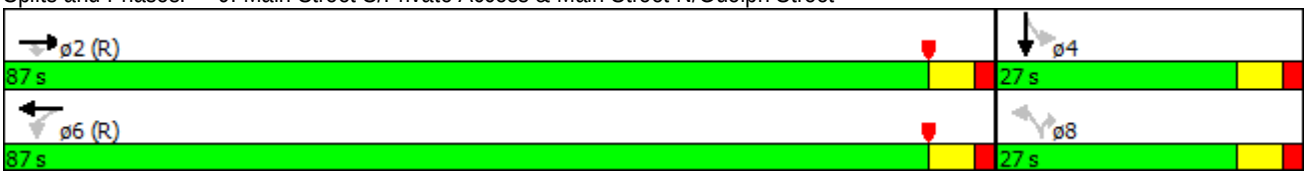
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	36	52	64
Volume Left	24	2	0
Volume Right	12	0	8
cSH	903	1530	1700
Volume to Capacity	0.04	0.00	0.04
Queue Length 95th (m)	1.0	0.0	0.0
Control Delay (s)	9.2	0.3	0.0
Lane LOS	A	A	
Approach Delay (s)	9.2	0.3	0.0
Approach LOS	A		

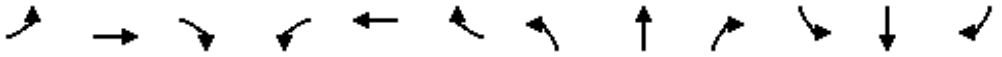
Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	16.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø4
Lane Configurations							
Volume (vph)	711	243	6	384	106	38	
Lane Group Flow (vph)	781	267	0	429	116	42	
Turn Type	NA	Perm	Perm	NA	Perm	Perm	
Protected Phases	2			6			4
Permitted Phases		2	6		8	8	
Detector Phase	2	2	6	6	8	8	
Switch Phase							
Minimum Initial (s)	81.0	81.0	81.0	81.0	21.0	21.0	21.0
Minimum Split (s)	87.0	87.0	87.0	87.0	27.0	27.0	27.0
Total Split (s)	87.0	87.0	87.0	87.0	27.0	27.0	27.0
Total Split (%)	76.3%	76.3%	76.3%	76.3%	23.7%	23.7%	24%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None
v/c Ratio	0.62	0.26		0.20	0.50	0.14	
Control Delay	11.2	6.6		5.8	50.1	18.4	
Queue Delay	0.0	0.0		0.0	0.0	0.0	
Total Delay	11.2	6.6		5.8	50.1	18.4	
Queue Length 50th (m)	83.9	19.7		15.7	24.7	2.0	
Queue Length 95th (m)	118.8	30.6		21.5	44.3	12.1	
Internal Link Dist (m)	147.8			269.8			
Turn Bay Length (m)						10.0	
Base Capacity (vph)	1259	1024		2173	233	302	
Starvation Cap Reductn	0	0		0	0	0	
Spillback Cap Reductn	0	0		0	0	0	
Storage Cap Reductn	0	0		0	0	0	
Reduced v/c Ratio	0.62	0.26		0.20	0.50	0.14	

Intersection Summary
Cycle Length: 114
Actuated Cycle Length: 114
Offset: 13 (11%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
Natural Cycle: 115
Control Type: Actuated-Coordinated

Splits and Phases: 9: Main Street S/Private Access & Main Street N/Guelph Street





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	711	243	6	384	0	106	0	38	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.5	3.2	3.5	3.5	3.6	3.5	3.6	3.2	3.6	4.5	3.6
Total Lost time (s)		6.0	6.0		6.0		6.0		6.0			
Lane Util. Factor		1.00	1.00		0.95		1.00		1.00			
Frpb, ped/bikes		1.00	0.97		1.00		1.00		0.97			
Flpb, ped/bikes		1.00	1.00		1.00		1.00		1.00			
Frt		1.00	0.85		1.00		1.00		0.85			
Flt Protected		1.00	1.00		1.00		0.95		1.00			
Satd. Flow (prot)		1773	1442		3238		1594		1500			
Flt Permitted		1.00	1.00		0.94		0.76		1.00			
Satd. Flow (perm)		1773	1442		3058		1270		1500			
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	781	267	7	422	0	116	0	42	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	26	0	0	0
Lane Group Flow (vph)	0	781	267	0	429	0	116	0	16	0	0	0
Confl. Peds. (#/hr)			12	12					3	3		
Heavy Vehicles (%)	0%	6%	4%	20%	10%	0%	12%	0%	0%	0%	0%	0%
Turn Type		NA	Perm	Perm	NA		Perm		Perm			
Protected Phases		2			6						4	
Permitted Phases			2	6			8		8	4		
Actuated Green, G (s)		81.0	81.0		81.0		21.0		21.0			
Effective Green, g (s)		81.0	81.0		81.0		21.0		21.0			
Actuated g/C Ratio		0.71	0.71		0.71		0.18		0.18			
Clearance Time (s)		6.0	6.0		6.0		6.0		6.0			
Vehicle Extension (s)		3.0	3.0		3.0		3.0		3.0			
Lane Grp Cap (vph)		1259	1024		2172		233		276			
v/s Ratio Prot		c0.44										
v/s Ratio Perm			0.19		0.14		c0.09		0.01			
v/c Ratio		0.62	0.26		0.20		0.50		0.06			
Uniform Delay, d1		8.5	5.9		5.6		41.8		38.3			
Progression Factor		1.00	1.00		1.00		1.00		1.00			
Incremental Delay, d2		2.3	0.6		0.2		1.7		0.1			
Delay (s)		10.8	6.5		5.8		43.4		38.4			
Level of Service		B	A		A		D		D			
Approach Delay (s)		9.7			5.8			42.1			0.0	
Approach LOS		A			A			D			A	

Intersection Summary			
HCM 2000 Control Delay	11.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	114.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	145.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

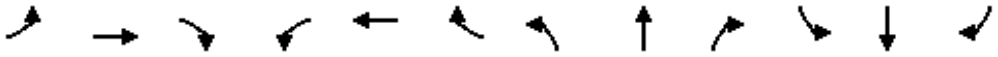
Weekday P.M. Peak Hour

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Volume (vph)	6	756	6	1054	6	0	6	6	6
Lane Group Flow (vph)	6	819	6	1139	0	6	6	0	18
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases		2		6		8			4
Permitted Phases	2		6		8		8	4	
Detector Phase	2	2	6	6	8	8	8	4	4
Switch Phase									
Minimum Initial (s)	30.0	30.0	30.0	30.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.0	36.0	36.0	36.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	60.0	60.0	60.0	60.0	30.0	30.0	30.0	30.0	30.0
Total Split (%)	66.7%	66.7%	66.7%	66.7%	33.3%	33.3%	33.3%	33.3%	33.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	2.0	2.0	0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)	8.0	8.0	6.0	6.0		5.5	5.5		5.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None
v/c Ratio	0.02	0.51	0.01	0.75		0.03	0.03		0.10
Control Delay	2.0	3.6	2.3	9.5		36.3	0.2		29.9
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0		0.0
Total Delay	2.0	3.6	2.3	9.5		36.3	0.2		29.9
Queue Length 50th (m)	0.0	2.3	0.0	0.0		1.0	0.0		2.0
Queue Length 95th (m)	m0.4	38.9	1.0	#269.3		4.7	0.0		8.5
Internal Link Dist (m)		317.8		203.4		34.1			174.1
Turn Bay Length (m)	30.0		25.0						
Base Capacity (vph)	318	1600	531	1517		459	485		440
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	0.02	0.51	0.01	0.75		0.01	0.01		0.04

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 42 (47%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Driveway/Albert Street & Guelph Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	756	6	6	1054	6	6	0	6	6	6	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.0	4.0	3.7	3.7	3.7
Total Lost time (s)	8.0	8.0		6.0	6.0			5.5	5.5		5.5	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00		1.00	1.00			1.00	0.85		0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.98	
Satd. Flow (prot)	1785	1787		1716	1677			1604	1687		1775	
Flt Permitted	0.19	1.00		0.33	1.00			1.00	1.00		0.89	
Satd. Flow (perm)	354	1787		588	1677			1689	1687		1600	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	6	813	6	6	1133	6	6	0	6	6	6	6
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	6	0	6	0
Lane Group Flow (vph)	6	819	0	6	1139	0	0	6	0	0	12	0
Heavy Vehicles (%)	0%	5%	8%	4%	12%	0%	5%	0%	0%	5%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	74.5	74.5		74.5	74.5			4.0	4.0		4.0	
Effective Green, g (s)	72.5	72.5		74.5	74.5			4.0	4.0		4.0	
Actuated g/C Ratio	0.81	0.81		0.83	0.83			0.04	0.04		0.04	
Clearance Time (s)	6.0	6.0		6.0	6.0			5.5	5.5		5.5	
Vehicle Extension (s)	4.0	4.0		4.0	4.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	285	1439		486	1388			75	74		71	
v/s Ratio Prot		0.46			c0.68							
v/s Ratio Perm	0.02			0.01				0.00	0.00		c0.01	
v/c Ratio	0.02	0.57		0.01	0.82			0.08	0.00		0.17	
Uniform Delay, d1	1.7	3.1		1.3	4.2			41.2	41.1		41.4	
Progression Factor	0.69	0.77		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.1	1.5		0.0	5.5			0.2	0.0		0.4	
Delay (s)	1.3	3.9		1.4	9.7			41.4	41.1		41.8	
Level of Service	A	A		A	A			D	D		D	
Approach Delay (s)		3.9			9.7			41.3			41.8	
Approach LOS		A			A			D			D	

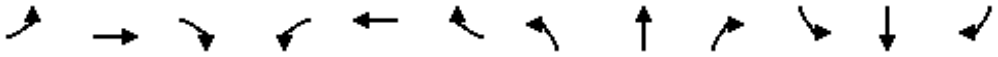
Intersection Summary			
HCM 2000 Control Delay	7.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	73.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	22	596	138	889	17	72	17	50
Lane Group Flow (vph)	23	633	145	977	0	257	0	124
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	2	2	6	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	30.0	30.0	30.0	30.0	8.0	8.0	8.0	8.0
Minimum Split (s)	37.0	37.0	37.0	37.0	23.0	23.0	23.0	23.0
Total Split (s)	67.0	67.0	67.0	67.0	23.0	23.0	23.0	23.0
Total Split (%)	74.4%	74.4%	74.4%	74.4%	25.6%	25.6%	25.6%	25.6%
Yellow Time (s)	5.0	5.0	5.0	5.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0		6.0		6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Min	C-Min	C-Min	C-Min	Max	Max	Max	Max
v/c Ratio	0.13	0.76	0.80	0.69		0.39		0.19
Control Delay	10.4	23.0	44.7	23.2		18.0		17.3
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	10.4	23.0	44.7	23.2		18.0		17.3
Queue Length 50th (m)	2.2	72.6	22.1	72.1		20.4		9.8
Queue Length 95th (m)	m2.6	75.7	m31.9	97.1		54.3		28.9
Internal Link Dist (m)		269.8		317.8		162.5		191.3
Turn Bay Length (m)	50.0		75.0					
Base Capacity (vph)	260	1189	261	2018		666		662
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	0.09	0.53	0.56	0.48		0.39		0.19

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 13 (14%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Mill Street & Guelph Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	596	6	138	889	39	17	72	155	17	50	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.7	3.2	3.2	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Total Lost time (s)	7.0	7.0		7.0	7.0			6.0			6.0	
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	0.99			0.91			0.94	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1785	1784		1612	3022			1604			1735	
Flt Permitted	0.21	1.00		0.23	1.00			0.98			0.94	
Satd. Flow (perm)	390	1784		392	3022			1574			1642	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	23	627	6	145	936	41	18	76	163	18	53	53
RTOR Reduction (vph)	0	1	0	0	5	0	0	52	0	0	23	0
Lane Group Flow (vph)	23	632	0	145	972	0	0	205	0	0	101	0
Heavy Vehicles (%)	0%	5%	25%	7%	14%	0%	22%	17%	4%	13%	4%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	41.9	41.9		41.9	41.9			35.1			35.1	
Effective Green, g (s)	41.9	41.9		41.9	41.9			35.1			35.1	
Actuated g/C Ratio	0.47	0.47		0.47	0.47			0.39			0.39	
Clearance Time (s)	7.0	7.0		7.0	7.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	181	830		182	1406			613			640	
v/s Ratio Prot		0.35			0.32							
v/s Ratio Perm	0.06			c0.37				c0.13			0.06	
v/c Ratio	0.13	0.76		0.80	0.69			0.33			0.16	
Uniform Delay, d1	13.7	19.9		20.4	19.0			19.2			17.8	
Progression Factor	0.91	0.91		1.26	1.19			1.00			1.00	
Incremental Delay, d2	1.3	5.9		20.6	1.8			1.5			0.5	
Delay (s)	13.7	24.0		46.3	24.4			20.7			18.4	
Level of Service	B	C		D	C			C			B	
Approach Delay (s)		23.6			27.2			20.7			18.4	
Approach LOS		C			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	24.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	89.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	8	4	12	120	112	19
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)	9	4	13	130	122	21
Pedestrians	7					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.2					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				215		
pX, platoon unblocked						
vC, conflicting volume	296	139	149			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	296	139	149			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	100	99			
cM capacity (veh/h)	689	909	1436			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	13	143	142
Volume Left	9	13	0
Volume Right	4	0	21
cSH	750	1436	1700
Volume to Capacity	0.02	0.01	0.08
Queue Length 95th (m)	0.4	0.2	0.0
Control Delay (s)	9.9	0.8	0.0
Lane LOS	A	A	
Approach Delay (s)	9.9	0.8	0.0
Approach LOS	A		

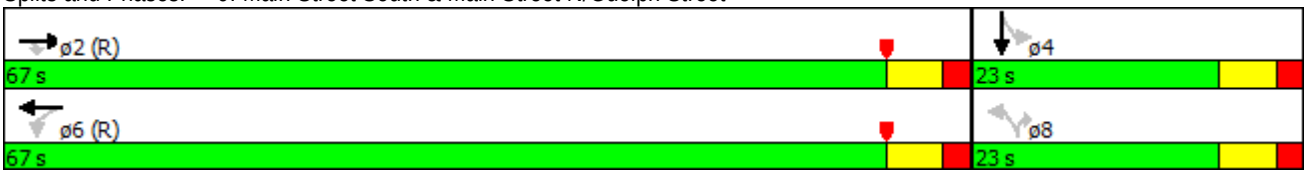
Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	26.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø4
Lane Configurations							
Volume (vph)	293	72	541	414	39	331	
Lane Group Flow (vph)	341	84	0	1110	45	385	
Turn Type	NA	Perm	Perm	NA	Perm	Perm	
Protected Phases	2			6			4
Permitted Phases		2	6		8	8	
Detector Phase	2	2	6	6	8	8	
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	30.0	30.0	25.0	25.0	23.0	23.0	23.0
Total Split (s)	67.0	67.0	67.0	67.0	23.0	23.0	23.0
Total Split (%)	74.4%	74.4%	74.4%	74.4%	25.6%	25.6%	26%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None
v/c Ratio	0.27	0.09		0.87dl	0.25	0.73	
Control Delay	4.8	4.0		11.2	37.8	12.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0	
Total Delay	4.8	4.0		11.2	37.8	12.9	
Queue Length 50th (m)	15.2	3.2		36.0	7.7	0.0	
Queue Length 95th (m)	32.1	8.9		33.1	15.9	19.9	
Internal Link Dist (m)	147.8			269.8			
Turn Bay Length (m)						10.0	
Base Capacity (vph)	1250	966		1551	268	592	
Starvation Cap Reductn	0	0		0	0	0	
Spillback Cap Reductn	0	0		0	0	0	
Storage Cap Reductn	0	0		0	0	0	
Reduced v/c Ratio	0.27	0.09		0.72	0.17	0.65	

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 13 (14%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
Natural Cycle: 65
Control Type: Actuated-Coordinated

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Splits and Phases: 9: Main Street South & Main Street N/Guelph Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	293	72	541	414	0	39	0	331	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.5	3.2	3.5	3.5	3.6	3.5	3.6	3.2	3.6	4.5	3.6
Total Lost time (s)		6.0	6.0		6.0		6.0		6.0			
Lane Util. Factor		1.00	1.00		0.95		1.00		1.00			
Frt		1.00	0.85		1.00		1.00		0.85			
Flt Protected		1.00	1.00		0.97		0.95		1.00			
Satd. Flow (prot)		1693	1308		3118		1785		1484			
Flt Permitted		1.00	1.00		0.66		0.76		1.00			
Satd. Flow (perm)		1693	1308		2102		1423		1484			
Peak-hour factor, PHF	0.92	0.86	0.86	0.86	0.86	0.92	0.86	0.92	0.86	0.92	0.92	0.92
Adj. Flow (vph)	0	341	84	629	481	0	45	0	385	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	336	0	0	0
Lane Group Flow (vph)	0	341	84	0	1110	0	45	0	49	0	0	0
Heavy Vehicles (%)	2%	11%	18%	7%	17%	2%	0%	2%	4%	2%	2%	2%
Turn Type		NA	Perm	Perm	NA		Perm		Perm			
Protected Phases		2			6						4	
Permitted Phases			2	6			8		8	4		
Actuated Green, G (s)		66.5	66.5		66.5		11.5		11.5			
Effective Green, g (s)		66.5	66.5		66.5		11.5		11.5			
Actuated g/C Ratio		0.74	0.74		0.74		0.13		0.13			
Clearance Time (s)		6.0	6.0		6.0		6.0		6.0			
Vehicle Extension (s)		3.0	3.0		3.0		3.0		3.0			
Lane Grp Cap (vph)		1250	966		1553		181		189			
v/s Ratio Prot		0.20										
v/s Ratio Perm			0.06		c0.53		0.03		c0.03			
v/c Ratio		0.27	0.09		0.87dl		0.25		0.26			
Uniform Delay, d1		3.8	3.3		6.5		35.4		35.4			
Progression Factor		1.00	1.00		1.13		1.00		1.00			
Incremental Delay, d2		0.5	0.2		2.6		0.7		0.7			
Delay (s)		4.4	3.5		9.9		36.1		36.1			
Level of Service		A	A		A		D		D			
Approach Delay (s)		4.2			9.9			36.1			0.0	
Approach LOS		A			A			D			A	

Intersection Summary			
HCM 2000 Control Delay	14.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

APPENDIX C

Detailed Trip Generation

TRIP GENERATION CALCULATIONS

Building 1	
1Bed	17
2Bed	59
3Bed	0
TOTAL	76

Building 2	
1Bed	12
2Bed	42
3Bed	0
TOTAL	54

Building 3	
Retirement	120
Dementia	24
TOTAL	144

ITE - 230 Residential Condominium/Townhouse
Weekday AM Peak Hour
Ln (T) = 0.82 Ln(X) + 0.15
In 19%
Out 81%

Weekday PM Peak Hour
T = 0.34 (X) + 35.87
In 64%
Out 36%

ITE - 252 Senior Adult Housing - Attached
Weekday AM Peak Hour
Ln (T) = 0.84 Ln(X) - 0.30
In 46%
Out 54%

Weekday PM Peak Hour
Ln (T) = 0.99 Ln(X) - 1.11
In 55%
Out 45%

ITE - 620 Nursing Home
Weekday AM Peak Hour
T = 0.29 (X) - 15.57 (Avg Rate = 0.20)
In 69%
Out 31%

Weekday PM Peak Hour
T = 0.56 (X) - 22.53 (Avg Rate = 0.37)
In 40%
Out 60%

ITE (95% Auto)	Weekday AM Peak Hour			Weekday PM Peak Hour		
	In	Out	Total	In	Out	Total
Building 1	8	32	40	40	22	62
Building 2	6	25	31	35	19	54
Building 3 - Retirement	19	22	41	21	17	38
Building 3 - Dementia	3	2	5	6	3	9
TOTAL	36	81	117	102	61	163
Residential TOTAL	14	57	71	75	41	116
Retirement TOTAL	22	24	46	27	20	47

ITE Adjusted (10% Transit)	Weekday AM Peak Hour			Weekday PM Peak Hour		
	In	Out	Total	In	Out	Total
Building 1	7	29	36	36	19	55
Building 2	5	23	28	31	17	48
Building 3 - Retirement	19	22	41	21	17	38
Building 3 - Dementia	3	2	5	6	3	9
TOTAL	34	76	110	94	56	150
Residential TOTAL	12	52	64	67	36	103
Retirement TOTAL	22	24	46	27	20	47
Residential Transit Reduction	2	5	7	8	5	13
Retirement Transit Reduction	0	0	0	0	0	0

APPENDIX D

Future Total (2021) Intersection Capacity Analysis

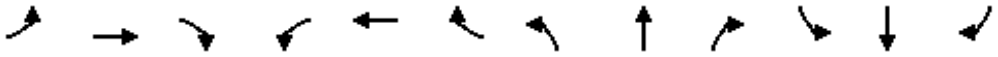
Weekday A.M. Peak Hour

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Volume (vph)	6	916	88	436	22	6	39	22	17
Lane Group Flow (vph)	6	1110	95	493	0	30	42	0	54
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases		2		6		8			4
Permitted Phases	2		6		8		8	4	
Detector Phase	2	2	6	6	8	8	8	4	4
Switch Phase									
Minimum Initial (s)	30.0	30.0	30.0	30.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.0	36.0	36.0	36.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	60.0	60.0	60.0	60.0	30.0	30.0	30.0	30.0	30.0
Total Split (%)	66.7%	66.7%	66.7%	66.7%	33.3%	33.3%	33.3%	33.3%	33.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	2.0	2.0	0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)	8.0	8.0	6.0	6.0		5.5	5.5		5.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None
v/c Ratio	0.01	0.80	0.38	0.36		0.20	0.19		0.30
Control Delay	3.2	13.6	9.0	4.1		40.1	14.2		35.0
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0		0.0
Total Delay	3.2	13.6	9.0	4.1		40.1	14.2		35.0
Queue Length 50th (m)	0.2	116.2	4.8	23.7		5.1	0.0		7.1
Queue Length 95th (m)	1.1	#210.4	14.4	36.5		13.6	9.5		18.6
Internal Link Dist (m)		317.8		203.4		34.1			174.1
Turn Bay Length (m)	30.0		25.0						
Base Capacity (vph)	705	1389	247	1356		362	489		427
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	0.01	0.80	0.38	0.36		0.08	0.09		0.13

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 42 (47%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Driveway/Albert Street & Guelph Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	916	116	88	436	22	22	6	39	22	17	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.0	4.0	3.7	3.7	3.7
Total Lost time (s)	8.0	8.0		6.0	6.0			5.5	5.5		5.5	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.98		1.00	0.99			1.00	0.85		0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.98	
Satd. Flow (prot)	1785	1754		1716	1674			1640	1687		1783	
Flt Permitted	0.47	1.00		0.17	1.00			0.78	1.00		0.84	
Satd. Flow (perm)	890	1754		305	1674			1331	1687		1536	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	6	985	125	95	469	24	24	6	42	24	18	12
RTOR Reduction (vph)	0	3	0	0	1	0	0	0	38	0	11	0
Lane Group Flow (vph)	6	1107	0	95	492	0	0	30	4	0	43	0
Heavy Vehicles (%)	0%	5%	8%	4%	12%	0%	5%	0%	0%	5%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	70.5	70.5		70.5	70.5			8.0	8.0		8.0	
Effective Green, g (s)	68.5	68.5		70.5	70.5			8.0	8.0		8.0	
Actuated g/C Ratio	0.76	0.76		0.78	0.78			0.09	0.09		0.09	
Clearance Time (s)	6.0	6.0		6.0	6.0			5.5	5.5		5.5	
Vehicle Extension (s)	4.0	4.0		4.0	4.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	677	1334		238	1311			118	149		136	
v/s Ratio Prot		c0.63			0.29							
v/s Ratio Perm	0.01			0.31				0.02	0.00		c0.03	
v/c Ratio	0.01	0.83		0.40	0.38			0.25	0.03		0.32	
Uniform Delay, d1	2.6	7.0		3.1	3.0			38.2	37.4		38.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.0	6.1		4.9	0.8			0.4	0.0		0.5	
Delay (s)	2.6	13.1		8.0	3.8			38.6	37.5		38.9	
Level of Service	A	B		A	A			D	D		D	
Approach Delay (s)		13.0			4.5			38.0			38.9	
Approach LOS		B			A			D			D	

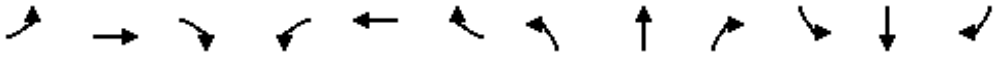
Intersection Summary			
HCM 2000 Control Delay	12.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	92.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	23	807	86	400	11	23	64	58
Lane Group Flow (vph)	24	869	91	460	0	238	0	148
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	2	2	6	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	62.0	62.0	63.0	63.0	18.0	18.0	18.0	18.0
Minimum Split (s)	69.0	69.0	70.0	70.0	24.0	24.0	24.0	24.0
Total Split (s)	70.0	70.0	70.0	70.0	24.0	24.0	24.0	24.0
Total Split (%)	74.5%	74.5%	74.5%	74.5%	25.5%	25.5%	25.5%	25.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0		6.0		6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Min	C-Min	C-Min	C-Min	Max	Max	Max	Max
v/c Ratio	0.04	0.73	0.38	0.21		0.52		0.78
Control Delay	5.3	14.5	12.2	5.9		13.3		63.2
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	5.3	14.5	12.2	5.9		13.3		63.2
Queue Length 50th (m)	1.4	95.0	6.8	14.8		8.1		25.7
Queue Length 95th (m)	3.9	138.9	17.1	20.3		30.8		#61.0
Internal Link Dist (m)		269.8		317.8		162.5		28.5
Turn Bay Length (m)	50.0		75.0					
Base Capacity (vph)	620	1202	243	2178		461		189
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	0.04	0.72	0.37	0.21		0.52		0.78

Intersection Summary

Cycle Length: 94
Actuated Cycle Length: 94
Offset: 14 (15%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 95
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Mill Street & Guelph Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	23	807	9	86	400	32	11	23	190	64	58	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.7	3.2	3.2	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Total Lost time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.97			0.99	
Flpb, ped/bikes	1.00	1.00		0.99	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.99			0.89			0.98	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.98	
Satd. Flow (prot)	1780	1765		1560	3191			1590			1607	
Flt Permitted	0.49	1.00		0.22	1.00			0.98			0.56	
Satd. Flow (perm)	913	1765		358	3191			1563			920	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	24	859	10	91	426	34	12	24	202	68	62	18
RTOR Reduction (vph)	0	0	0	0	7	0	0	150	0	0	6	0
Lane Group Flow (vph)	24	869	0	91	453	0	0	88	0	0	142	0
Confl. Peds. (#/hr)	7		28	28		7	19		4	4		19
Confl. Bikes (#/hr)			1			1						
Heavy Vehicles (%)	0%	6%	25%	10%	7%	3%	10%	8%	3%	23%	6%	8%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	63.2	63.2		63.2	63.2			18.8			18.8	
Effective Green, g (s)	63.2	63.2		63.2	63.2			18.8			18.8	
Actuated g/C Ratio	0.67	0.67		0.67	0.67			0.20			0.20	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	613	1186		240	2145			312			184	
v/s Ratio Prot		c0.49			0.14							
v/s Ratio Perm	0.03			0.25				0.06			c0.15	
v/c Ratio	0.04	0.73		0.38	0.21			0.28			0.77	
Uniform Delay, d1	5.2	9.9		6.8	5.9			31.9			35.6	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	4.0		4.5	0.2			2.3			26.6	
Delay (s)	5.3	14.0		11.3	6.1			34.2			62.1	
Level of Service	A	B		B	A			C			E	
Approach Delay (s)		13.7			7.0			34.2			62.1	
Approach LOS		B			A			C			E	

Intersection Summary			
HCM 2000 Control Delay	18.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	94.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	114.7%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	21	33	23	45	48	8
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	25	39	27	54	57	10
Pedestrians	8			1	3	
Lane Width (m)	3.7			3.2	3.2	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	1			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				215		
pX, platoon unblocked						
vC, conflicting volume	181	71	75			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	181	71	75			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	96	98			
cM capacity (veh/h)	791	990	1527			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	64	81	67
Volume Left	25	27	0
Volume Right	39	0	10
cSH	902	1527	1700
Volume to Capacity	0.07	0.02	0.04
Queue Length 95th (m)	1.8	0.4	0.0
Control Delay (s)	9.3	2.6	0.0
Lane LOS	A	A	
Approach Delay (s)	9.3	2.6	0.0
Approach LOS	A		

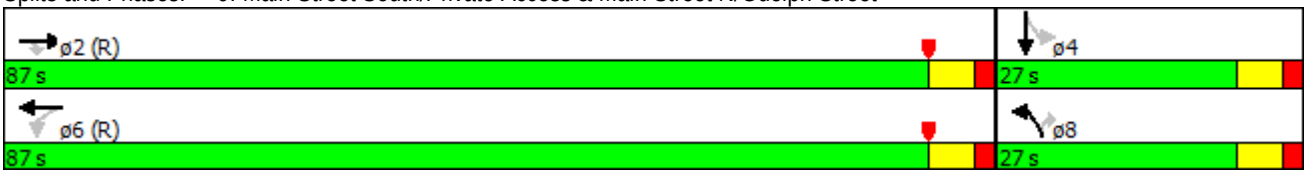
Intersection Summary			
Average Delay	3.8		
Intersection Capacity Utilization	20.6%	ICU Level of Service	A
Analysis Period (min)	15		

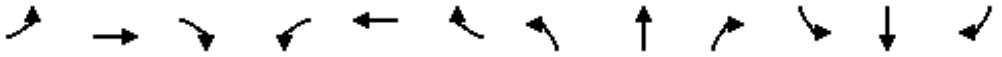
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø4
Lane Configurations							
Volume (vph)	713	243	6	388	106	38	
Lane Group Flow (vph)	784	267	0	433	116	42	
Turn Type	NA	Perm	Perm	NA	Prot	Perm	
Protected Phases	2			6	8!		4
Permitted Phases		2	6			8	
Detector Phase	2	2	6	6	8	8	
Switch Phase							
Minimum Initial (s)	81.0	81.0	81.0	81.0	21.0	21.0	21.0
Minimum Split (s)	87.0	87.0	87.0	87.0	27.0	27.0	27.0
Total Split (s)	87.0	87.0	87.0	87.0	27.0	27.0	27.0
Total Split (%)	76.3%	76.3%	76.3%	76.3%	23.7%	23.7%	24%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None
v/c Ratio	0.62	0.26		0.20	0.40	0.14	
Control Delay	11.3	6.6		5.8	45.6	18.4	
Queue Delay	0.0	0.0		0.0	0.0	0.0	
Total Delay	11.3	6.6		5.8	45.6	18.4	
Queue Length 50th (m)	84.4	19.7		15.9	24.2	2.0	
Queue Length 95th (m)	119.9	30.6		21.8	42.7	12.1	
Internal Link Dist (m)	147.8			269.8			
Turn Bay Length (m)						10.0	
Base Capacity (vph)	1259	1023		2173	293	299	
Starvation Cap Reductn	0	0		0	0	0	
Spillback Cap Reductn	0	0		0	0	0	
Storage Cap Reductn	0	0		0	0	0	
Reduced v/c Ratio	0.62	0.26		0.20	0.40	0.14	

Intersection Summary
Cycle Length: 114
Actuated Cycle Length: 114
Offset: 13 (11%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
Natural Cycle: 115
Control Type: Actuated-Coordinated

! Phase conflict between lane groups.

Splits and Phases: 9: Main Street South/Private Access & Main Street N/Guelph Street





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	713	243	6	388	0	106	0	38	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.5	3.2	3.5	3.5	3.6	3.5	3.6	3.2	3.6	3.6	3.6
Total Lost time (s)		6.0	6.0		6.0		6.0		6.0			
Lane Util. Factor		1.00	1.00		0.95		1.00		1.00			
Frpb, ped/bikes		1.00	0.97		1.00		1.00		1.00			
Flpb, ped/bikes		1.00	1.00		1.00		1.00		1.00			
Frt		1.00	0.85		1.00		1.00		0.85			
Flt Protected		1.00	1.00		1.00		0.95		1.00			
Satd. Flow (prot)		1773	1440		3238		1594		1484			
Flt Permitted		1.00	1.00		0.94		0.95		1.00			
Satd. Flow (perm)		1773	1440		3058		1594		1484			
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	784	267	7	426	0	116	0	42	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	26	0	0	0
Lane Group Flow (vph)	0	784	267	0	433	0	116	0	16	0	0	0
Confl. Peds. (#/hr)			12	12		3	3			3		
Heavy Vehicles (%)	0%	6%	4%	20%	10%	0%	12%	2%	4%	0%	0%	0%
Turn Type		NA	Perm	Perm	NA		Prot		Perm			
Protected Phases		2			6		8!				4!	
Permitted Phases			2	6					8	4		
Actuated Green, G (s)		81.0	81.0		81.0		21.0		21.0			
Effective Green, g (s)		81.0	81.0		81.0		21.0		21.0			
Actuated g/C Ratio		0.71	0.71		0.71		0.18		0.18			
Clearance Time (s)		6.0	6.0		6.0		6.0		6.0			
Vehicle Extension (s)		3.0	3.0		3.0		3.0		3.0			
Lane Grp Cap (vph)		1259	1023		2172		293		273			
v/s Ratio Prot		c0.44					c0.07					
v/s Ratio Perm			0.19		0.14				0.01			
v/c Ratio		0.62	0.26		0.20		0.40		0.06			
Uniform Delay, d1		8.6	5.9		5.6		40.9		38.3			
Progression Factor		1.00	1.00		1.00		1.00		1.00			
Incremental Delay, d2		2.3	0.6		0.2		0.9		0.1			
Delay (s)		10.9	6.5		5.8		41.8		38.4			
Level of Service		B	A		A		D		D			
Approach Delay (s)		9.8			5.8			40.9			0.0	
Approach LOS		A			A			D			A	

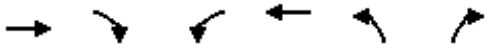
Intersection Summary			
HCM 2000 Control Delay	11.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	114.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	145.0%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	3	49	11	66	89	1
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)	3	53	12	72	97	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				52		
pX, platoon unblocked						
vC, conflicting volume	193	97	98			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	193	97	98			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	94	99			
cM capacity (veh/h)	790	959	1495			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	57	84	98
Volume Left	3	12	0
Volume Right	53	0	1
cSH	947	1495	1700
Volume to Capacity	0.06	0.01	0.06
Queue Length 95th (m)	1.5	0.2	0.0
Control Delay (s)	9.0	1.1	0.0
Lane LOS	A	A	
Approach Delay (s)	9.0	1.1	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	20.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	30	0	22	9	0	24
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	33	0	24	10	0	27
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			33		92	33
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			33		92	33
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		100	97
cM capacity (veh/h)			1592		899	1046

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	33	34	27
Volume Left	0	24	0
Volume Right	0	0	27
cSH	1700	1592	1046
Volume to Capacity	0.02	0.02	0.03
Queue Length 95th (m)	0.0	0.4	0.6
Control Delay (s)	0.0	5.2	8.5
Lane LOS		A	A
Approach Delay (s)	0.0	5.2	8.5
Approach LOS			A

Intersection Summary			
Average Delay	4.3		
Intersection Capacity Utilization	18.4%	ICU Level of Service	A
Analysis Period (min)	15		

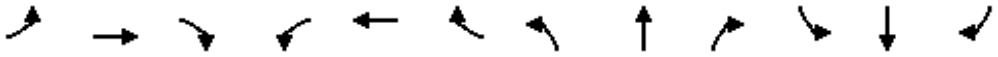
Weekday P.M. Peak Hour

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Volume (vph)	6	793	6	1115	6	0	6	6	6
Lane Group Flow (vph)	6	859	6	1205	0	6	6	0	18
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases		2		6		8			4
Permitted Phases	2		6		8		8	4	
Detector Phase	2	2	6	6	8	8	8	4	4
Switch Phase									
Minimum Initial (s)	30.0	30.0	30.0	30.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.0	36.0	36.0	36.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	60.0	60.0	60.0	60.0	30.0	30.0	30.0	30.0	30.0
Total Split (%)	66.7%	66.7%	66.7%	66.7%	33.3%	33.3%	33.3%	33.3%	33.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	2.0	2.0	0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)	8.0	8.0	6.0	6.0		5.5	5.5		5.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None
v/c Ratio	0.02	0.54	0.01	0.79		0.03	0.03		0.10
Control Delay	2.7	4.7	2.3	11.5		36.3	0.2		29.9
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0		0.0
Total Delay	2.7	4.7	2.3	11.5		36.3	0.2		29.9
Queue Length 50th (m)	0.0	1.7	0.0	0.0		1.0	0.0		2.0
Queue Length 95th (m)	m0.5	171.0	1.0	#295.9		4.7	0.0		8.5
Internal Link Dist (m)		317.8		203.4		34.1			174.1
Turn Bay Length (m)	30.0		25.0						
Base Capacity (vph)	271	1600	502	1517		459	485		440
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	0.02	0.54	0.01	0.79		0.01	0.01		0.04

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 42 (47%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 100
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Driveway/Albert Street & Guelph Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	793	6	6	1115	6	6	0	6	6	6	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.0	4.0	3.7	3.7	3.7
Total Lost time (s)	8.0	8.0		6.0	6.0			5.5	5.5		5.5	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00		1.00	1.00			1.00	0.85		0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.98	
Satd. Flow (prot)	1785	1787		1716	1677			1604	1687		1775	
Flt Permitted	0.16	1.00		0.31	1.00			1.00	1.00		0.89	
Satd. Flow (perm)	303	1787		555	1677			1689	1687		1600	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	6	853	6	6	1199	6	6	0	6	6	6	6
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	6	0	6	0
Lane Group Flow (vph)	6	859	0	6	1205	0	0	6	0	0	12	0
Heavy Vehicles (%)	0%	5%	8%	4%	12%	0%	5%	0%	0%	5%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	74.5	74.5		74.5	74.5			4.0	4.0		4.0	
Effective Green, g (s)	72.5	72.5		74.5	74.5			4.0	4.0		4.0	
Actuated g/C Ratio	0.81	0.81		0.83	0.83			0.04	0.04		0.04	
Clearance Time (s)	6.0	6.0		6.0	6.0			5.5	5.5		5.5	
Vehicle Extension (s)	4.0	4.0		4.0	4.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	244	1439		459	1388			75	74		71	
v/s Ratio Prot		0.48			c0.72							
v/s Ratio Perm	0.02			0.01				0.00	0.00		c0.01	
v/c Ratio	0.02	0.60		0.01	0.87			0.08	0.00		0.17	
Uniform Delay, d1	1.7	3.3		1.3	4.7			41.2	41.1		41.4	
Progression Factor	0.86	1.01		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.2	1.6		0.1	7.6			0.2	0.0		0.4	
Delay (s)	1.7	4.9		1.4	12.3			41.4	41.1		41.8	
Level of Service	A	A		A	B			D	D		D	
Approach Delay (s)		4.9			12.3			41.3			41.8	
Approach LOS		A			B			D			D	

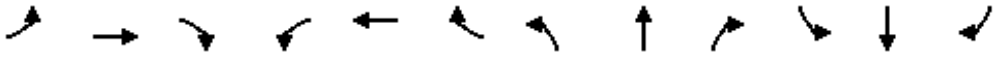
Intersection Summary			
HCM 2000 Control Delay	9.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	77.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	27	596	138	889	17	95	53	64
Lane Group Flow (vph)	28	633	145	1041	0	281	0	178
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	2	2	6	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	30.0	30.0	30.0	30.0	8.0	8.0	8.0	8.0
Minimum Split (s)	37.0	37.0	37.0	37.0	23.0	23.0	23.0	23.0
Total Split (s)	67.0	67.0	67.0	67.0	23.0	23.0	23.0	23.0
Total Split (%)	74.4%	74.4%	74.4%	74.4%	25.6%	25.6%	25.6%	25.6%
Yellow Time (s)	5.0	5.0	5.0	5.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0		6.0		6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Min	C-Min	C-Min	C-Min	Max	Max	Max	Max
v/c Ratio	0.17	0.75	0.76	0.72		0.44		0.31
Control Delay	11.4	22.0	39.0	23.0		21.2		22.4
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	11.4	22.0	39.0	23.0		21.2		22.4
Queue Length 50th (m)	2.7	71.3	21.4	76.6		26.8		18.9
Queue Length 95th (m)	m3.1	75.5	m30.1	106.0		#69.9		46.3
Internal Link Dist (m)		269.8		317.8		162.5		27.3
Turn Bay Length (m)	50.0		75.0					
Base Capacity (vph)	232	1189	268	2021		644		572
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	0.12	0.53	0.54	0.52		0.44		0.31

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 13 (14%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Mill Street & Guelph Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	27	596	6	138	889	100	17	95	155	53	64	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.7	3.2	3.2	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Total Lost time (s)	7.0	7.0		7.0	7.0			6.0			6.0	
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	0.98			0.92			0.96	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.98	
Satd. Flow (prot)	1785	1784		1612	3018			1608			1716	
Flt Permitted	0.19	1.00		0.24	1.00			0.98			0.84	
Satd. Flow (perm)	349	1784		402	3018			1575			1461	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	28	627	6	145	936	105	18	100	163	56	67	55
RTOR Reduction (vph)	0	1	0	0	15	0	0	42	0	0	14	0
Lane Group Flow (vph)	28	632	0	145	1026	0	0	239	0	0	164	0
Heavy Vehicles (%)	0%	5%	25%	7%	14%	0%	22%	17%	4%	13%	4%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	42.5	42.5		42.5	42.5			34.5			34.5	
Effective Green, g (s)	42.5	42.5		42.5	42.5			34.5			34.5	
Actuated g/C Ratio	0.47	0.47		0.47	0.47			0.38			0.38	
Clearance Time (s)	7.0	7.0		7.0	7.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	164	842		189	1425			603			560	
v/s Ratio Prot		0.35			0.34							
v/s Ratio Perm	0.08			c0.36				c0.15			0.11	
v/c Ratio	0.17	0.75		0.77	0.72			0.40			0.29	
Uniform Delay, d1	13.6	19.4		19.7	19.0			20.2			19.3	
Progression Factor	0.91	0.90		1.26	1.19			1.00			1.00	
Incremental Delay, d2	2.0	5.5		16.1	1.9			1.9			1.3	
Delay (s)	14.4	23.1		40.9	24.6			22.1			20.6	
Level of Service	B	C		D	C			C			C	
Approach Delay (s)		22.7			26.6			22.1			20.6	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	24.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	99.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Volume (veh/h)	38	122	115	20	9	23
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)	41	133	125	22	10	25
Pedestrians					7	
Lane Width (m)					3.7	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		215				
pX, platoon unblocked						
vC, conflicting volume	154				358	143
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	154				358	143
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				98	97
cM capacity (veh/h)	1430				622	905

Direction, Lane #	NB 1	SB 1	SE 1
Volume Total	174	147	35
Volume Left	41	0	10
Volume Right	0	22	25
cSH	1430	1700	802
Volume to Capacity	0.03	0.09	0.04
Queue Length 95th (m)	0.7	0.0	1.1
Control Delay (s)	2.0	0.0	9.7
Lane LOS	A		A
Approach Delay (s)	2.0	0.0	9.7
Approach LOS			A

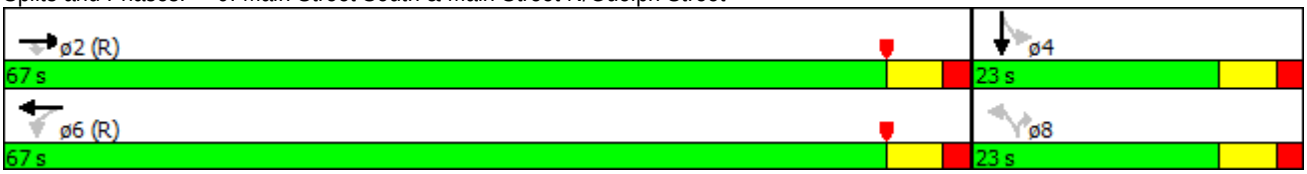
Intersection Summary			
Average Delay		1.9	
Intersection Capacity Utilization		30.5%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø4
Lane Configurations							
Volume (vph)	297	72	541	417	39	331	
Lane Group Flow (vph)	345	84	0	1114	45	385	
Turn Type	NA	Perm	Perm	NA	Perm	Perm	
Protected Phases	2			6			4
Permitted Phases		2	6		8	8	
Detector Phase	2	2	6	6	8	8	
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	30.0	30.0	25.0	25.0	23.0	23.0	23.0
Total Split (s)	67.0	67.0	67.0	67.0	23.0	23.0	23.0
Total Split (%)	74.4%	74.4%	74.4%	74.4%	25.6%	25.6%	26%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None
v/c Ratio	0.28	0.09		0.88dl	0.25	0.73	
Control Delay	4.9	4.0		10.2	37.8	12.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0	
Total Delay	4.9	4.0		10.2	37.8	12.9	
Queue Length 50th (m)	15.4	3.2		28.1	7.7	0.0	
Queue Length 95th (m)	32.7	8.9		31.0	15.9	19.9	
Internal Link Dist (m)	147.8			269.8			
Turn Bay Length (m)						10.0	
Base Capacity (vph)	1250	966		1551	268	592	
Starvation Cap Reductn	0	0		0	0	0	
Spillback Cap Reductn	0	0		0	0	0	
Storage Cap Reductn	0	0		0	0	0	
Reduced v/c Ratio	0.28	0.09		0.72	0.17	0.65	

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 13 (14%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
Natural Cycle: 70
Control Type: Actuated-Coordinated
dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Splits and Phases: 9: Main Street South & Main Street N/Guelph Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	297	72	541	417	0	39	0	331	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.5	3.2	3.5	3.5	3.6	3.5	3.6	3.2	3.6	4.5	3.6
Total Lost time (s)		6.0	6.0		6.0		6.0		6.0			
Lane Util. Factor		1.00	1.00		0.95		1.00		1.00			
Frt		1.00	0.85		1.00		1.00		0.85			
Flt Protected		1.00	1.00		0.97		0.95		1.00			
Satd. Flow (prot)		1693	1308		3118		1785		1484			
Flt Permitted		1.00	1.00		0.65		0.76		1.00			
Satd. Flow (perm)		1693	1308		2099		1423		1484			
Peak-hour factor, PHF	0.92	0.86	0.86	0.86	0.86	0.92	0.86	0.92	0.86	0.92	0.92	0.92
Adj. Flow (vph)	0	345	84	629	485	0	45	0	385	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	336	0	0	0
Lane Group Flow (vph)	0	345	84	0	1114	0	45	0	49	0	0	0
Heavy Vehicles (%)	2%	11%	18%	7%	17%	2%	0%	2%	4%	2%	2%	2%
Turn Type		NA	Perm	Perm	NA		Perm		Perm			
Protected Phases		2			6						4	
Permitted Phases			2	6			8		8	4		
Actuated Green, G (s)		66.5	66.5		66.5		11.5		11.5			
Effective Green, g (s)		66.5	66.5		66.5		11.5		11.5			
Actuated g/C Ratio		0.74	0.74		0.74		0.13		0.13			
Clearance Time (s)		6.0	6.0		6.0		6.0		6.0			
Vehicle Extension (s)		3.0	3.0		3.0		3.0		3.0			
Lane Grp Cap (vph)		1250	966		1550		181		189			
v/s Ratio Prot		0.20										
v/s Ratio Perm			0.06		c0.53		0.03		c0.03			
v/c Ratio		0.28	0.09		0.88dl		0.25		0.26			
Uniform Delay, d1		3.9	3.3		6.5		35.4		35.4			
Progression Factor		1.00	1.00		0.99		1.00		1.00			
Incremental Delay, d2		0.5	0.2		2.6		0.7		0.7			
Delay (s)		4.4	3.5		9.1		36.1		36.1			
Level of Service		A	A		A		D		D			
Approach Delay (s)		4.2			9.1			36.1			0.0	
Approach LOS		A			A			D			A	

Intersection Summary			
HCM 2000 Control Delay	13.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.3%	ICU Level of Service	B
Analysis Period (min)	15		

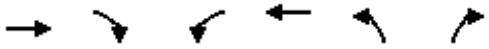
dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	2	34	64	158	135	3
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	37	70	172	147	3
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				51		
pX, platoon unblocked						
vC, conflicting volume	459	148	150			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	459	148	150			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	96	95			
cM capacity (veh/h)	533	898	1431			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	39	241	150
Volume Left	2	70	0
Volume Right	37	0	3
cSH	865	1431	1700
Volume to Capacity	0.05	0.05	0.09
Queue Length 95th (m)	1.1	1.2	0.0
Control Delay (s)	9.4	2.5	0.0
Lane LOS	A	A	
Approach Delay (s)	9.4	2.5	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	32.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	12	0	27	31	0	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	13	0	30	34	0	22
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			13		108	13
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			13		108	13
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		100	98
cM capacity (veh/h)			1618		878	1073

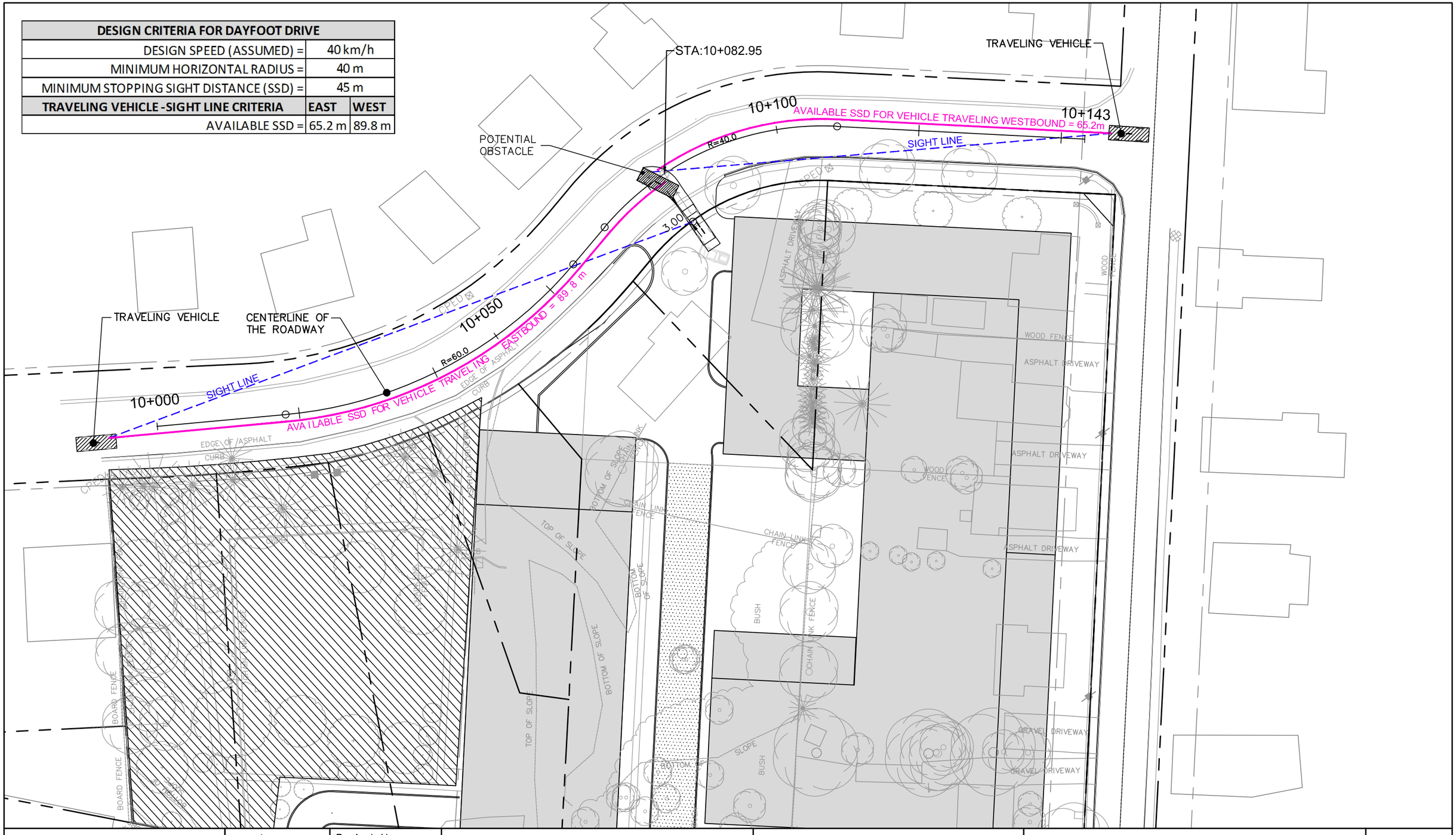
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	13	64	22
Volume Left	0	30	0
Volume Right	0	0	22
cSH	1700	1618	1073
Volume to Capacity	0.01	0.02	0.02
Queue Length 95th (m)	0.0	0.5	0.5
Control Delay (s)	0.0	3.5	8.4
Lane LOS		A	A
Approach Delay (s)	0.0	3.5	8.4
Approach LOS			A

Intersection Summary			
Average Delay	4.1		
Intersection Capacity Utilization	19.8%	ICU Level of Service	A
Analysis Period (min)	15		

APPENDIX E

Dayfoot Site Driveway Sightline Analysis

DESIGN CRITERIA FOR DAYFOOT DRIVE		
DESIGN SPEED (ASSUMED) =	40 km/h	
MINIMUM HORIZONTAL RADIUS =	40 m	
MINIMUM STOPPING SIGHT DISTANCE (SSD) =	45 m	
TRAVELING VEHICLE -SIGHT LINE CRITERIA	**EAST**	**WEST**
AVAILABLE SSD =	65.2 m	89.8 m



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17167–200

Date
NOV. 11, 2016

42 MILL STREET
GEORGETOWN ONTARIO

5 0 5 10 15
1:500

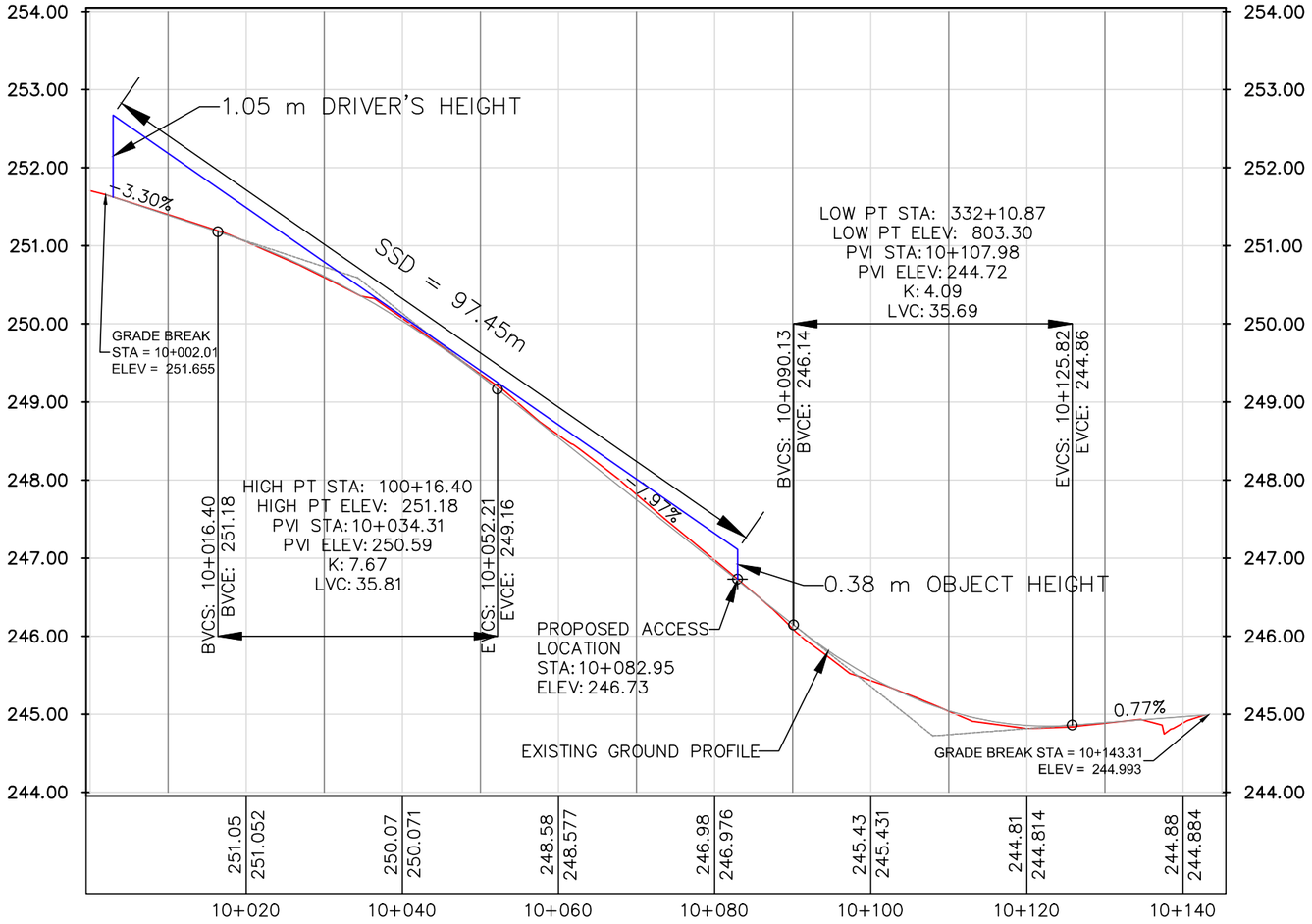
STOPPING SIGHT DISTANCE REVIEW

Drawing No.
001

DRAWING NAME: F:\17167\Drafting\17167WF001.dwg

DESIGN CRITERIA FOR DAYFOOT DRIVE	
DESIGN SPEED (ASSUMED) =	50 km/h
MINIMUM RADIUS =	40 m
MINIMUM STOPPING SIGHT DISTANCE =	45 m
SIGHT LINE CRITERIA	
MINIMUM STOPPING SIGHT DISTANCE ON CREST VERTICLE CURVE =	44.4m
AVAILABLE STOPPING SIGHT DISTANCE =	97.45 m

PROFILE VIEW OF DAYFOOT DRIVE



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42 MILL STREET
GEORGETOWN ONTARIO

5 0 5 10 15
HORIZONTAL 1: 400

STOPPING SIGHT DISTANCE REVIEW

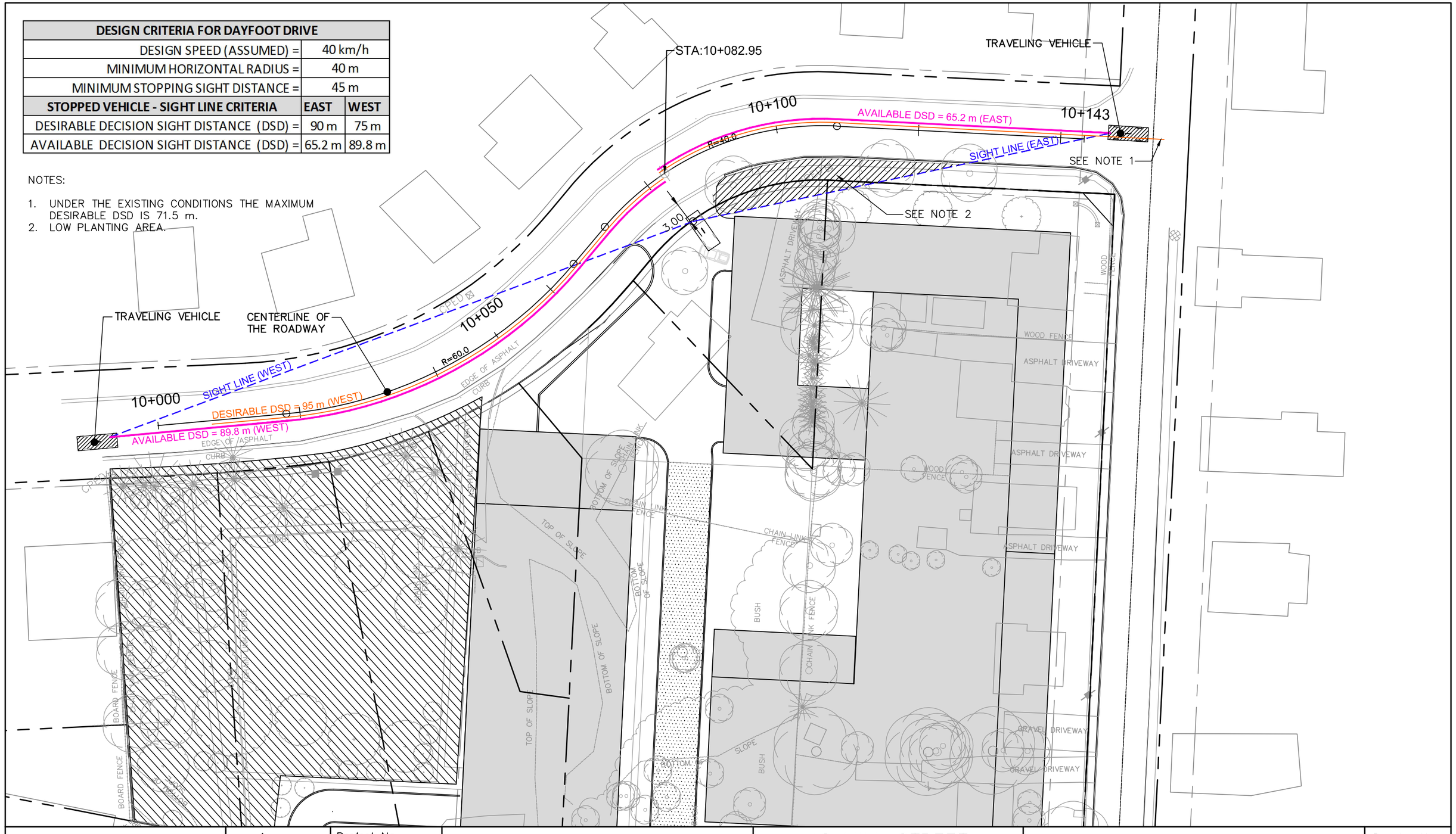
Drawing No.
002

DRAWING NAME: F:\17167\Drafting\17167WF001.dwg

DESIGN CRITERIA FOR DAYFOOT DRIVE		
DESIGN SPEED (ASSUMED) =	40 km/h	
MINIMUM HORIZONTAL RADIUS =	40 m	
MINIMUM STOPPING SIGHT DISTANCE =	45 m	
STOPPED VEHICLE - SIGHT LINE CRITERIA	**EAST**	**WEST**
DESIRABLE DECISION SIGHT DISTANCE (DSD) =	90 m	75 m
AVAILABLE DECISION SIGHT DISTANCE (DSD) =	65.2 m	89.8 m

NOTES:

1. UNDER THE EXISTING CONDITIONS THE MAXIMUM DESIRABLE DSD IS 71.5 m.
2. LOW PLANTING AREA.



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Date
NOV. 11, 2016

42 MILL STREET
GEORGETOWN ONTARIO

5 0 5 10 15
1:500

DECISION SIGHT DISTANCE REVIEW

Drawing No.
003

DRAWING NAME: F:\17167\Drafting\17167WF001.dwg

APPENDIX F

Dillion Consulting's Detailed Intersection Capacity Analysis

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.2	3.5	3.5	3.5	3.2
Storage Length (m)		0.0	0.0		0.0	10.0
Storage Lanes		1	0		1	1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (m)	15.2	15.2	15.2	15.2	15.2	15.2
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Turning Speed (k/h)		14	24		24	14
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt		0.850				0.850
Flt Protected				0.974	0.950	
Satd. Flow (prot)	1693	1308	0	3116	1785	1484
Flt Permitted				0.687	0.950	
Satd. Flow (perm)	1693	1308	0	2198	1785	1484
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		23				552
Headway Factor	1.01	1.06	1.01	1.01	1.01	1.06
Link Speed (k/h)	50			50	50	
Link Distance (m)	375.2			314.3	501.3	
Travel Time (s)	27.0			22.6	36.1	
Volume (vph)	220	20	190	160	60	475
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	11%	18%	7%	17%	0%	4%
Adj. Flow (vph)	256	23	221	186	70	552
Lane Group Flow (vph)	256	23	0	407	70	552
Turn Type		Perm	Perm			custom
Protected Phases	2			6		
Permitted Phases		2	6		4	4
Detector Phases	2	2	6	6	4	4
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	30.0	30.0	25.0	25.0	23.0	23.0
Total Split (s)	67.0	67.0	67.0	67.0	23.0	23.0
Total Split (%)	74.4%	74.4%	74.4%	74.4%	25.6%	25.6%
Maximum Green (s)	61.0	61.0	61.0	61.0	17.0	17.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None
Walk Time (s)	8.0	8.0	8.0	8.0	6.0	6.0
Flash Dont Walk (s)	16.0	16.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	67.9	67.9		67.9	14.1	14.1
Actuated g/C Ratio	0.75	0.75		0.75	0.16	0.16
v/c Ratio	0.20	0.02		0.25	0.25	0.79
Control Delay	4.0	1.6		4.5	34.7	12.3
Queue Delay	0.0	0.0		0.0	0.0	0.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Delay	4.0	1.6		4.5	34.7	12.3
LOS	A	A		A	C	B
Approach Delay	3.8			4.5	14.8	
Approach LOS	A			A	B	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 13 (14%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
Natural Cycle: 55
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.79
Intersection Signal Delay: 9.3 Intersection LOS: A
Intersection Capacity Utilization 47.7% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 2: Main Street & Guelph Street

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.2	3.5	3.5	3.5	3.2
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		0.95	1.00	1.00
Frt	1.00	0.85		1.00	1.00	0.85
Flt Protected	1.00	1.00		0.97	0.95	1.00
Satd. Flow (prot)	1693	1308		3115	1785	1484
Flt Permitted	1.00	1.00		0.69	0.95	1.00
Satd. Flow (perm)	1693	1308		2205	1785	1484
Volume (vph)	220	20	190	160	60	475
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	256	23	221	186	70	552
RTOR Reduction (vph)	0	6	0	0	0	466
Lane Group Flow (vph)	256	17	0	407	70	86
Heavy Vehicles (%)	11%	18%	7%	17%	0%	4%
Turn Type		Perm	Perm			custom
Protected Phases	2			6		
Permitted Phases		2	6		4	4
Actuated Green, G (s)	65.9	65.9		65.9	12.1	12.1
Effective Green, g (s)	67.9	67.9		67.9	14.1	14.1
Actuated g/C Ratio	0.75	0.75		0.75	0.16	0.16
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	1277	987		1664	280	232
v/s Ratio Prot	0.15					
v/s Ratio Perm		0.01		c0.18	0.04	c0.06
v/c Ratio	0.20	0.02		0.24	0.25	0.37
Uniform Delay, d1	3.2	2.7		3.3	33.3	34.0
Progression Factor	1.00	1.00		1.12	1.00	1.00
Incremental Delay, d2	0.4	0.0		0.3	0.5	1.0
Delay (s)	3.5	2.8		4.1	33.8	35.0
Level of Service	A	A		A	C	D
Approach Delay (s)	3.5			4.1	34.9	
Approach LOS	A			A	C	

Intersection Summary			
HCM Average Control Delay	18.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

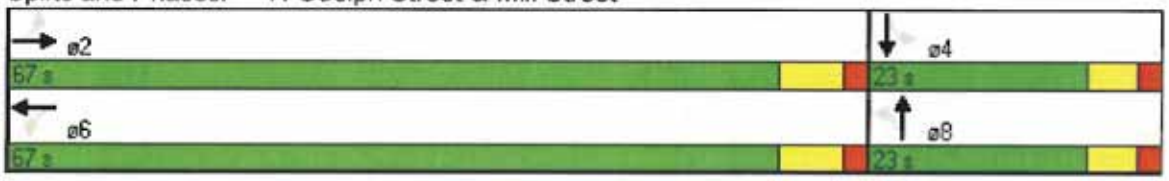
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.7	3.2	3.2	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Storage Length (m)	50.0		0.0	75.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (m)	15.2	15.2		15.2	15.2		15.2	15.2		15.2	15.2	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.995			0.884			0.977	
Flt Protected	0.950			0.950				0.998			0.987	
Satd. Flow (prot)	1785	1781	0	1612	3022	0	0	1598	0	0	1751	0
Flt Permitted	0.540			0.312				0.987			0.787	
Satd. Flow (perm)	1015	1781	0	529	3022	0	0	1580	0	0	1396	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			8			221			10	
Headway Factor	1.01	1.01	0.99	1.06	1.06	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Link Speed (k/h)		50			50			40			40	
Link Distance (m)		314.3			376.5			83.4			95.2	
Travel Time (s)		22.6			27.1			7.5			8.6	
Volume (vph)	25	660	10	70	325	10	10	25	210	25	50	15
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	5%	25%	7%	14%	0%	22%	17%	4%	13%	4%	0%
Adj. Flow (vph)	26	695	11	74	342	11	11	26	221	26	53	16
Lane Group Flow (vph)	26	706	0	74	353	0	0	258	0	0	95	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phases	2	2		6	6		8	8		4	4	
Minimum Initial (s)	30.0	30.0		30.0	30.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	37.0	37.0		37.0	37.0		23.0	23.0		23.0	23.0	
Total Split (s)	67.0	67.0	0.0	67.0	67.0	0.0	23.0	23.0	0.0	23.0	23.0	0.0
Total Split (%)	74.4%	74.4%	0.0%	74.4%	74.4%	0.0%	25.6%	25.6%	0.0%	25.6%	25.6%	0.0%
Maximum Green (s)	60.0	60.0		60.0	60.0		17.0	17.0		17.0	17.0	
Yellow Time (s)	5.0	5.0		5.0	5.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	10.0	10.0		10.0	10.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	8.0	8.0		8.0	8.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	68.8	68.8		68.8	68.8			13.2			13.2	
Actuated g/C Ratio	0.76	0.76		0.76	0.76			0.15			0.15	
v/c Ratio	0.03	0.52		0.18	0.15			0.61			0.45	
Control Delay	2.9	5.5		4.4	3.0			14.2			37.3	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	2.9	5.5		4.4	3.0			14.2			37.3	
LOS	A	A		A	A			B			D	
Approach Delay		5.4			3.2			14.2			37.3	
Approach LOS		A			A			B			D	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 13 (14%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.61
Intersection Signal Delay: 8.3 Intersection LOS: A
Intersection Capacity Utilization 80.1% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 7: Guelph Street & Mill Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.7	3.2	3.2	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.88			0.98	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1785	1780		1612	3023			1598			1751	
Flt Permitted	0.54	1.00		0.34	1.00			0.99			0.54	
Satd. Flow (perm)	1015	1780		578	3023			1579			960	
Volume (vph)	25	660	10	70	325	10	10	25	210	25	50	15
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	695	11	74	342	11	11	26	221	26	53	16
RTOR Reduction (vph)	0	0	0	0	2	0	0	189	0	0	9	0
Lane Group Flow (vph)	26	706	0	74	351	0	0	69	0	0	86	0
Heavy Vehicles (%)	0%	5%	25%	7%	14%	0%	22%	17%	4%	13%	4%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	65.8	65.8		65.8	65.8			11.2			11.2	
Effective Green, g (s)	68.8	68.8		68.8	68.8			13.2			13.2	
Actuated g/C Ratio	0.76	0.76		0.76	0.76			0.15			0.15	
Clearance Time (s)	7.0	7.0		7.0	7.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	776	1361		442	2311			232			141	
v/s Ratio Prot		c0.40			0.12							
v/s Ratio Perm	0.03			0.13				0.04			c0.09	
v/c Ratio	0.03	0.52		0.17	0.15			0.30			0.61	
Uniform Delay, d1	2.6	4.1		2.9	2.8			34.3			36.0	
Progression Factor	0.87	0.92		0.91	0.92			1.00			1.00	
Incremental Delay, d2	0.1	1.1		0.8	0.1			0.7			7.7	
Delay (s)	2.3	4.9		3.4	2.7			35.0			43.7	
Level of Service	A	A		A	A			C			D	
Approach Delay (s)		4.8			2.9			35.0			43.7	
Approach LOS		A			A			C			D	

Intersection Summary			
HCM Average Control Delay	11.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	80.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.0	4.0	3.7	3.7	3.7
Storage Length (m)	30.0		0.0	25.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		1	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (m)	15.2	15.2		15.2	15.2		15.2	15.2	15.2	15.2	15.2	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.982			0.992				0.850		0.970	
Flt Protected	0.950			0.950				0.961			0.978	
Satd. Flow (prot)	1785	1751	0	1716	1673	0	0	1637	1687	0	1782	0
Flt Permitted	0.455			0.120				0.831			0.901	
Satd. Flow (perm)	855	1751	0	217	1673	0	0	1416	1687	0	1642	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14			6				38		11	
Headway Factor	1.01	1.01	0.99	1.01	1.01	0.99	0.99	1.09	0.94	0.99	0.99	0.99
Link Speed (k/h)		50			50			40			40	
Link Distance (m)		376.5			224.3			76.8			323.3	
Travel Time (s)		27.1			16.1			6.9			29.1	
Volume (vph)	5	785	105	80	375	20	20	5	35	20	15	10
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	5%	8%	4%	12%	0%	5%	0%	0%	5%	0%	0%
Adj. Flow (vph)	5	844	113	86	403	22	22	5	38	22	16	11
Lane Group Flow (vph)	5	957	0	86	425	0	0	27	38	0	49	0
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phases	2	2		6	6		8	8	8	4	4	
Minimum Initial (s)	30.0	30.0		30.0	30.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	36.0	36.0		36.0	36.0		24.0	24.0	24.0	24.0	24.0	
Total Split (s)	60.0	60.0	0.0	60.0	60.0	0.0	30.0	30.0	30.0	30.0	30.0	0.0
Total Split (%)	66.7%	66.7%	0.0%	66.7%	66.7%	0.0%	33.3%	33.3%	33.3%	33.3%	33.3%	0.0%
Maximum Green (s)	54.0	54.0		54.0	54.0		24.5	24.5	24.5	24.5	24.5	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	4.0	4.0		4.0	4.0		2.0	2.0	2.0	2.0	2.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Walk Time (s)	10.0	10.0		10.0	10.0		9.0	9.0	9.0	9.0	9.0	
Flash Dont Walk (s)	9.0	9.0		9.0	9.0		7.0	7.0	7.0	7.0	7.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	
Act Effct Green (s)	78.3	78.3		78.3	78.3			11.5	11.5		11.5	
Actuated g/C Ratio	0.87	0.87		0.87	0.87			0.13	0.13		0.13	
v/c Ratio	0.01	0.63		0.46	0.29			0.15	0.15		0.22	
Control Delay	1.6	5.0		12.7	2.6			37.2	13.5		31.9	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	1.6	5.0		12.7	2.6			37.2	13.5		31.9	
LOS	A	A		B	A			D	B		C	
Approach Delay		5.0			4.3			23.3			31.9	
Approach LOS		A			A			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 42 (47%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay: 6.4		Intersection LOS: A	
Intersection Capacity Utilization 82.3%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 9: Guelph Street & Albert Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.0	4.0	3.7	3.7	3.7
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.98		1.00	0.99			1.00	0.85		0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.98	
Satd. Flow (prot)	1785	1752		1716	1674			1637	1687		1782	
Flt Permitted	0.51	1.00		0.26	1.00			0.83	1.00		0.84	
Satd. Flow (perm)	956	1752		463	1674			1418	1687		1536	
Volume (vph)	5	785	105	80	375	20	20	5	35	20	15	10
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	5	844	113	86	403	22	22	5	38	22	16	11
RTOR Reduction (vph)	0	2	0	0	1	0	0	0	35	0	10	0
Lane Group Flow (vph)	5	955	0	86	424	0	0	27	3	0	39	0
Heavy Vehicles (%)	0%	5%	8%	4%	12%	0%	5%	0%	0%	5%	0%	0%
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	72.5	72.5		72.5	72.5			6.0	6.0		6.0	
Effective Green, g (s)	74.5	74.5		74.5	74.5			7.5	7.5		7.5	
Actuated g/C Ratio	0.83	0.83		0.83	0.83			0.08	0.08		0.08	
Clearance Time (s)	6.0	6.0		6.0	6.0			5.5	5.5		5.5	
Vehicle Extension (s)	4.0	4.0		4.0	4.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	791	1450		383	1386			118	141		128	
v/s Ratio Prot		c0.54			0.25							
v/s Ratio Perm	0.01			0.19				0.02	0.00		c0.03	
v/c Ratio	0.01	0.66		0.22	0.31			0.23	0.02		0.30	
Uniform Delay, d1	1.3	2.9		1.6	1.8			38.5	37.9		38.8	
Progression Factor	0.72	0.88		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.0	2.0		1.4	0.6			0.4	0.0		0.5	
Delay (s)	1.0	4.6		3.0	2.4			38.9	37.9		39.3	
Level of Service	A	A		A	A			D	D		D	
Approach Delay (s)		4.6			2.5			38.3			39.3	
Approach LOS		A			A			D			D	

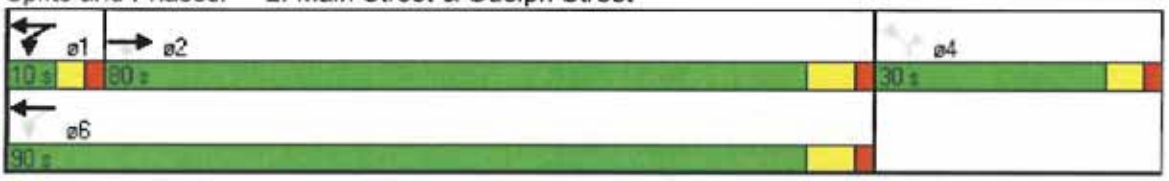
Intersection Summary			
HCM Average Control Delay	6.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	82.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø6
Lane Configurations							
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (m)	3.5	3.2	3.5	3.5	3.5	3.2	
Storage Length (m)		0.0	0.0		0.0	10.0	
Storage Lanes		1	0		1	1	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	
Leading Detector (m)	15.2	15.2	15.2	15.2	15.2	15.2	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	
Turning Speed (k/h)		14	24		24	14	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00	
Frt		0.850				0.850	
Flt Protected				0.972	0.950		
Satd. Flow (prot)	1789	1429	0	3345	1700	1498	
Flt Permitted				0.647	0.950		
Satd. Flow (perm)	1789	1429	0	2227	1700	1498	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		68				312	
Headway Factor	1.01	1.06	1.01	1.01	1.01	1.06	
Link Speed (k/h)	50			50	50		
Link Distance (m)	375.2			314.3	501.3		
Travel Time (s)	27.0			22.6	36.1		
Volume (vph)	265	65	490	375	35	300	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	
Heavy Vehicles (%)	5%	8%	2%	6%	5%	3%	
Adj. Flow (vph)	276	68	510	391	36	312	
Lane Group Flow (vph)	276	68	0	901	36	312	
Turn Type		Perm	custom			custom	
Protected Phases	2		1	1 6			6
Permitted Phases		2	6		4	4	
Detector Phases	2	2	1	1 6	4	4	
Minimum Initial (s)	30.0	30.0	5.0		8.0	8.0	30.0
Minimum Split (s)	37.0	37.0	10.0		26.0	26.0	37.0
Total Split (s)	80.0	80.0	10.0	100.0	30.0	30.0	90.0
Total Split (%)	66.7%	66.7%	8.3%	83.3%	25.0%	25.0%	75%
Maximum Green (s)	73.0	73.0	5.0		24.0	24.0	83.0
Yellow Time (s)	5.0	5.0	3.0		4.0	4.0	5.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0	2.0
Lead/Lag	Lag	Lag	Lead				
Lead-Lag Optimize?	Yes	Yes	Yes				
Vehicle Extension (s)	4.5	4.5	3.0		3.0	3.0	4.5
Recall Mode	C-Max	C-Max	Min		None	None	C-Max
Walk Time (s)	8.0	8.0			9.0	9.0	8.0
Flash Dont Walk (s)	16.0	16.0			11.0	11.0	16.0
Pedestrian Calls (#/hr)	0	0			0	0	0
Act Effct Green (s)	89.7	89.7		99.7	12.3	12.3	
Actuated g/C Ratio	0.75	0.75		0.83	0.10	0.10	
v/c Ratio	0.21	0.06		0.47	0.21	0.72	
Control Delay	5.4	1.4		4.0	50.6	15.2	
Queue Delay	0.0	0.0		0.0	0.0	0.0	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø6
Total Delay	5.4	1.4		4.0	50.6	15.2	
LOS	A	A		A	D	B	
Approach Delay	4.6			4.0	18.9		
Approach LOS	A			A	B		

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 30 (25%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 7.4		Intersection LOS: A	
Intersection Capacity Utilization 68.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Main Street & Guelph Street



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.2	3.5	3.5	3.5	3.2
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		0.95	1.00	1.00
Frt	1.00	0.85		1.00	1.00	0.85
Flt Protected	1.00	1.00		0.97	0.95	1.00
Satd. Flow (prot)	1789	1429		3347	1700	1498
Flt Permitted	1.00	1.00		0.66	0.95	1.00
Satd. Flow (perm)	1789	1429		2264	1700	1498
Volume (vph)	265	65	490	375	35	300
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	276	68	510	391	36	312
RTOR Reduction (vph)	0	17	0	0	0	280
Lane Group Flow (vph)	276	51	0	901	36	32
Heavy Vehicles (%)	5%	8%	2%	6%	5%	3%
Turn Type		Perm	custom			custom
Protected Phases	2		1	1 6		
Permitted Phases		2	6		4	4
Actuated Green, G (s)	86.7	86.7		96.7	10.3	10.3
Effective Green, g (s)	89.7	89.7		99.7	12.3	12.3
Actuated g/C Ratio	0.75	0.75		0.83	0.10	0.10
Clearance Time (s)	7.0	7.0			6.0	6.0
Vehicle Extension (s)	4.5	4.5			3.0	3.0
Lane Grp Cap (vph)	1337	1068		1935	174	154
v/s Ratio Prot	0.15			c0.02		
v/s Ratio Perm		0.04		c0.36	0.02	c0.02
v/c Ratio	0.21	0.05		0.47	0.21	0.21
Uniform Delay, d1	4.5	4.0		2.8	49.4	49.4
Progression Factor	1.00	1.00		1.15	1.00	1.00
Incremental Delay, d2	0.3	0.1		0.2	0.6	0.7
Delay (s)	4.9	4.1		3.4	50.0	50.1
Level of Service	A	A		A	D	D
Approach Delay (s)	4.7			3.4	50.0	
Approach LOS	A			A	D	

Intersection Summary			
HCM Average Control Delay	13.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	68.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.7	3.2	3.2	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Storage Length (m)	50.0		0.0	75.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (m)	15.2	15.2		15.2	15.2		15.2	15.2		15.2	15.2	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999			0.994			0.914			0.942	
Flt Protected	0.950			0.950				0.997			0.993	
Satd. Flow (prot)	1785	1788	0	1691	3333	0	0	1725	0	0	1797	0
Flt Permitted	0.319			0.330				0.977			0.927	
Satd. Flow (perm)	599	1788	0	587	3333	0	0	1691	0	0	1678	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			9			67			29	
Headway Factor	1.01	1.01	0.99	1.06	1.06	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Link Speed (k/h)		50			50			40			40	
Link Distance (m)		314.3			376.5			83.4			95.2	
Travel Time (s)		22.6			27.1			7.5			8.6	
Volume (vph)	20	540	5	125	805	35	15	65	140	15	45	45
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	5%	0%	2%	3%	0%	12%	0%	1%	0%	0%	0%
Adj. Flow (vph)	21	574	5	133	856	37	16	69	149	16	48	48
Lane Group Flow (vph)	21	579	0	133	893	0	0	234	0	0	112	0
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phases	2	2		1	6		8	8		4	4	
Minimum Initial (s)	30.0	30.0		5.0	30.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	37.0	37.0		10.0	37.0		24.0	24.0		24.0	24.0	
Total Split (s)	80.0	80.0	0.0	10.0	90.0	0.0	30.0	30.0	0.0	30.0	30.0	0.0
Total Split (%)	66.7%	66.7%	0.0%	8.3%	75.0%	0.0%	25.0%	25.0%	0.0%	25.0%	25.0%	0.0%
Maximum Green (s)	73.0	73.0		5.0	83.0		24.0	24.0		24.0	24.0	
Yellow Time (s)	5.0	5.0		3.0	5.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)	10.0	10.0			10.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	8.0	8.0			8.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0			0		0	0		0	0	
Act Effct Green (s)	83.0	83.0		93.0	93.0			19.0			19.0	
Actuated g/C Ratio	0.69	0.69		0.78	0.78			0.16			0.16	
v/c Ratio	0.05	0.47		0.26	0.35			0.72			0.39	
Control Delay	7.3	9.8		4.2	4.6			46.2			35.7	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	7.3	9.8		4.2	4.6			46.2			35.7	
LOS	A	A		A	A			D			D	
Approach Delay		9.7			4.5			46.2			35.7	
Approach LOS		A			A			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 30 (25%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 12.8		Intersection LOS: B	
Intersection Capacity Utilization 74.7%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 7: Guelph Street & Mill Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.7	3.2	3.2	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	0.99			0.91			0.94	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1785	1788		1691	3332			1725			1797	
Flt Permitted	0.32	1.00		0.36	1.00			0.98			0.81	
Satd. Flow (perm)	599	1788		634	3332			1693			1461	
Volume (vph)	20	540	5	125	805	35	15	65	140	15	45	45
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	21	574	5	133	856	37	16	69	149	16	48	48
RTOR Reduction (vph)	0	0	0	0	2	0	0	56	0	0	24	0
Lane Group Flow (vph)	21	579	0	133	891	0	0	178	0	0	88	0
Heavy Vehicles (%)	0%	5%	0%	2%	3%	0%	12%	0%	1%	0%	0%	0%
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	80.0	80.0		90.0	90.0			17.0			17.0	
Effective Green, g (s)	83.0	83.0		93.0	93.0			19.0			19.0	
Actuated g/C Ratio	0.69	0.69		0.78	0.78			0.16			0.16	
Clearance Time (s)	7.0	7.0		5.0	7.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	414	1237		544	2582			268			231	
v/s Ratio Prot		c0.32		0.01	c0.27							
v/s Ratio Perm	0.04			0.18				c0.10			0.06	
v/c Ratio	0.05	0.47		0.24	0.35			0.66			0.38	
Uniform Delay, d1	5.9	8.4		4.8	4.1			47.5			45.2	
Progression Factor	0.95	0.91		0.81	0.92			1.00			1.00	
Incremental Delay, d2	0.2	1.1		0.2	0.3			6.0			1.0	
Delay (s)	5.8	8.8		4.1	4.1			53.5			46.3	
Level of Service	A	A		A	A			D			D	
Approach Delay (s)		8.7			4.1			53.5			46.3	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM Average Control Delay	13.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

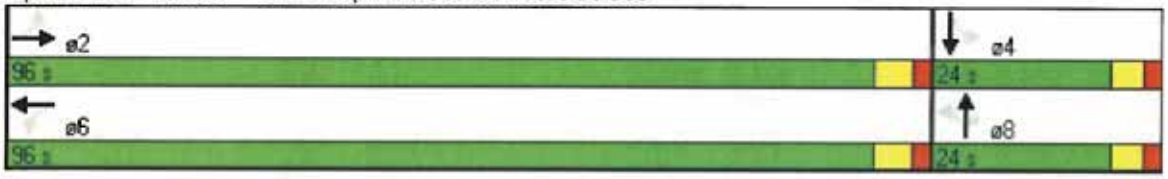
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.0	4.0	3.7	3.7	3.7
Storage Length (m)	30.0		0.0	25.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		1	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (m)	15.2	15.2		15.2	15.2		15.2	15.2	15.2	15.2	15.2	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999			0.999				0.850		0.955	
Flt Protected	0.950			0.950				0.950			0.984	
Satd. Flow (prot)	1785	1788	0	1785	1840	0	0	1685	1687	0	1547	0
Flt Permitted	0.181			0.315				0.748			0.943	
Satd. Flow (perm)	340	1788	0	592	1840	0	0	1326	1687	0	1483	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			1				5		5	
Headway Factor	1.01	1.01	0.99	1.01	1.01	0.99	0.99	1.09	0.94	0.99	0.99	0.99
Link Speed (k/h)		50			50			40			40	
Link Distance (m)		376.5			224.3			76.8			323.3	
Travel Time (s)		27.1			16.1			6.9			29.1	
Volume (vph)	5	685	5	5	955	5	5	0	5	5	5	5
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
Heavy Vehicles (%)	0%	5%	0%	0%	2%	0%	0%	0%	0%	17%	0%	33%
Adj. Flow (vph)	5	745	5	5	1038	5	5	0	5	5	5	5
Lane Group Flow (vph)	5	750	0	5	1043	0	0	5	5	0	15	0
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phases	2	2		6	6		8	8	8	4	4	
Minimum Initial (s)	30.0	30.0		30.0	30.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	36.0	36.0		36.0	36.0		24.0	24.0	24.0	24.0	24.0	
Total Split (s)	96.0	96.0	0.0	96.0	96.0	0.0	24.0	24.0	24.0	24.0	24.0	0.0
Total Split (%)	80.0%	80.0%	0.0%	80.0%	80.0%	0.0%	20.0%	20.0%	20.0%	20.0%	20.0%	0.0%
Maximum Green (s)	90.0	90.0		90.0	90.0		18.5	18.5	18.5	18.5	18.5	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	4.0	4.0		4.0	4.0		2.0	2.0	2.0	2.0	2.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Walk Time (s)	10.0	10.0		10.0	10.0		9.0	9.0	9.0	9.0	9.0	
Flash Dont Walk (s)	9.0	9.0		9.0	9.0		7.0	7.0	7.0	7.0	7.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	
Act Effct Green (s)	112.2	112.2		112.2	112.2			11.5	11.5		11.5	
Actuated g/C Ratio	0.94	0.94		0.94	0.94			0.10	0.10		0.10	
v/c Ratio	0.02	0.45		0.01	0.61			0.04	0.03		0.10	
Control Delay	2.8	4.1		1.4	3.7			50.2	29.8		40.4	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	2.8	4.1		1.4	3.7			50.2	29.8		40.4	
LOS	A	A		A	A			D	C		D	
Approach Delay		4.1			3.7			40.0			40.4	
Approach LOS		A			A			D			D	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 115 (96%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.61
Intersection Signal Delay: 4.4 Intersection LOS: A
Intersection Capacity Utilization 65.6% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 9: Guelph Street & Albert Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.0	4.0	3.7	3.7	3.7
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00		1.00	1.00			1.00	0.85		0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.98	
Satd. Flow (prot)	1785	1788		1785	1841			1685	1687		1547	
Flt Permitted	0.25	1.00		0.36	1.00			0.75	1.00		0.89	
Satd. Flow (perm)	469	1788		678	1841			1326	1687		1395	
Volume (vph)	5	685	5	5	955	5	5	0	5	5	5	5
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	745	5	5	1038	5	5	0	5	5	5	5
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	5	0	5	0
Lane Group Flow (vph)	5	750	0	5	1043	0	0	5	0	0	10	0
Heavy Vehicles (%)	0%	5%	0%	0%	2%	0%	0%	0%	0%	17%	0%	33%
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	104.5	104.5		104.5	104.5			4.0	4.0		4.0	
Effective Green, g (s)	106.5	106.5		106.5	106.5			5.5	5.5		5.5	
Actuated g/C Ratio	0.89	0.89		0.89	0.89			0.05	0.05		0.05	
Clearance Time (s)	6.0	6.0		6.0	6.0			5.5	5.5		5.5	
Vehicle Extension (s)	4.0	4.0		4.0	4.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	416	1587		602	1634			61	77		64	
v/s Ratio Prot		0.42			c0.57							
v/s Ratio Perm	0.01			0.01				0.00	0.00		c0.01	
v/c Ratio	0.01	0.47		0.01	0.64			0.08	0.00		0.16	
Uniform Delay, d1	0.8	1.3		0.8	1.8			54.8	54.6		55.0	
Progression Factor	1.91	2.23		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.0	0.9		0.0	1.9			0.2	0.0		0.4	
Delay (s)	1.5	3.8		0.8	3.7			55.0	54.6		55.5	
Level of Service	A	A		A	A			E	D		E	
Approach Delay (s)		3.8			3.7			54.8			55.5	
Approach LOS		A			A			D			E	

Intersection Summary			
HCM Average Control Delay	4.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.2	3.5	3.5	3.5	3.2
Storage Length (m)		0.0	0.0		0.0	10.0
Storage Lanes		1	0		1	1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (m)	15.2	15.2	15.2	15.2	15.2	15.2
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Turning Speed (k/h)		14	24		24	14
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt		0.850				0.850
Flt Protected				0.974	0.950	
Satd. Flow (prot)	1693	1308	0	3116	1785	1484
Flt Permitted				0.674	0.950	
Satd. Flow (perm)	1693	1308	0	2156	1785	1484
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		23				610
Headway Factor	1.01	1.06	1.01	1.01	1.01	1.06
Link Speed (k/h)	50			50	50	
Link Distance (m)	375.2			314.3	501.3	
Travel Time (s)	27.0			22.6	36.1	
Volume (vph)	246	20	210	177	65	525
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	11%	18%	7%	17%	0%	4%
Adj. Flow (vph)	286	23	244	206	76	610
Lane Group Flow (vph)	286	23	0	450	76	610
Turn Type		Perm	Perm			custom
Protected Phases	2			6		
Permitted Phases		2	6		4	4
Detector Phases	2	2	6	6	4	4
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	30.0	30.0	25.0	25.0	23.0	23.0
Total Split (s)	67.0	67.0	67.0	67.0	23.0	23.0
Total Split (%)	74.4%	74.4%	74.4%	74.4%	25.6%	25.6%
Maximum Green (s)	61.0	61.0	61.0	61.0	17.0	17.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None
Walk Time (s)	8.0	8.0	8.0	8.0	6.0	6.0
Flash Dont Walk (s)	16.0	16.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	67.7	67.7		67.7	14.3	14.3
Actuated g/C Ratio	0.75	0.75		0.75	0.16	0.16
v/c Ratio	0.22	0.02		0.28	0.27	0.81
Control Delay	4.2	1.7		4.8	34.6	12.8
Queue Delay	0.0	0.0		0.0	0.0	0.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Delay	4.2	1.7		4.8	34.6	12.8
LOS	A	A		A	C	B
Approach Delay	4.0			4.8	15.2	
Approach LOS	A			A	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 13 (14%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 9.6		Intersection LOS: A	
Intersection Capacity Utilization 52.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 2: Main Street & Guelph Street

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.2	3.5	3.5	3.5	3.2
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		0.95	1.00	1.00
Frt	1.00	0.85		1.00	1.00	0.85
Flt Protected	1.00	1.00		0.97	0.95	1.00
Satd. Flow (prot)	1693	1308		3115	1785	1484
Flt Permitted	1.00	1.00		0.68	0.95	1.00
Satd. Flow (perm)	1693	1308		2169	1785	1484
Volume (vph)	246	20	210	177	65	525
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	286	23	244	206	76	610
RTOR Reduction (vph)	0	6	0	0	0	513
Lane Group Flow (vph)	286	17	0	450	76	97
Heavy Vehicles (%)	11%	18%	7%	17%	0%	4%
Turn Type		Perm	Perm			custom
Protected Phases	2			6		
Permitted Phases		2	6		4	4
Actuated Green, G (s)	65.7	65.7		65.7	12.3	12.3
Effective Green, g (s)	67.7	67.7		67.7	14.3	14.3
Actuated g/C Ratio	0.75	0.75		0.75	0.16	0.16
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	1274	984		1632	284	236
v/s Ratio Prot	0.17					
v/s Ratio Perm		0.01		c0.21	0.04	c0.07
v/c Ratio	0.22	0.02		0.28	0.27	0.41
Uniform Delay, d1	3.3	2.8		3.5	33.2	34.1
Progression Factor	1.00	1.00		1.10	1.00	1.00
Incremental Delay, d2	0.4	0.0		0.4	0.5	1.2
Delay (s)	3.7	2.8		4.3	33.8	35.2
Level of Service	A	A		A	C	D
Approach Delay (s)	3.7			4.3	35.1	
Approach LOS	A			A	D	

Intersection Summary			
HCM Average Control Delay	18.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

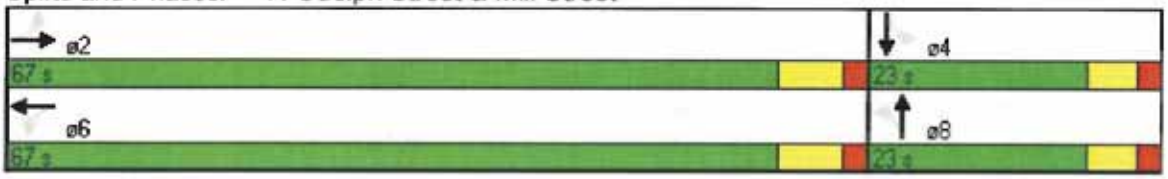
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.7	3.2	3.2	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Storage Length (m)	50.0		0.0	75.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (m)	15.2	15.2		15.2	15.2		15.2	15.2		15.2	15.2	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.993			0.887			0.983	
Flt Protected	0.950			0.950				0.998			0.980	
Satd. Flow (prot)	1785	1781	0	1612	3022	0	0	1600	0	0	1728	0
Flt Permitted	0.517			0.273				0.987			0.538	
Satd. Flow (perm)	971	1781	0	463	3022	0	0	1583	0	0	948	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			13			242			7	
Headway Factor	1.01	1.01	0.99	1.06	1.06	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Link Speed (k/h)		50			50			40			40	
Link Distance (m)		314.3			376.5			83.4			95.2	
Travel Time (s)		22.6			27.1			7.5			8.6	
Volume (vph)	31	730	10	75	360	18	10	33	230	55	65	17
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	5%	25%	7%	14%	0%	22%	17%	4%	13%	4%	0%
Adj. Flow (vph)	33	768	11	79	379	19	11	35	242	58	68	18
Lane Group Flow (vph)	33	779	0	79	398	0	0	288	0	0	144	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phases	2	2		6	6		8	8		4	4	
Minimum Initial (s)	30.0	30.0		30.0	30.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	37.0	37.0		37.0	37.0		23.0	23.0		23.0	23.0	
Total Split (s)	67.0	67.0	0.0	67.0	67.0	0.0	23.0	23.0	0.0	23.0	23.0	0.0
Total Split (%)	74.4%	74.4%	0.0%	74.4%	74.4%	0.0%	25.6%	25.6%	0.0%	25.6%	25.6%	0.0%
Maximum Green (s)	60.0	60.0		60.0	60.0		17.0	17.0		17.0	17.0	
Yellow Time (s)	5.0	5.0		5.0	5.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	10.0	10.0		10.0	10.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	8.0	8.0		8.0	8.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	64.8	64.8		64.8	64.8			17.2			17.2	
Actuated g/C Ratio	0.72	0.72		0.72	0.72			0.19			0.19	
v/c Ratio	0.05	0.61		0.24	0.18			0.58			0.77	
Control Delay	3.9	8.1		6.4	4.1			12.0			59.7	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	3.9	8.1		6.4	4.1			12.0			59.7	
LOS	A	A		A	A			B			E	
Approach Delay		7.9			4.5			12.0			59.7	
Approach LOS		A			A			B			E	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 13 (14%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.77
Intersection Signal Delay: 12.0 Intersection LOS: B
Intersection Capacity Utilization 96.3% ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 7: Guelph Street & Mill Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.7	3.2	3.2	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	0.99			0.89			0.98	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.98	
Satd. Flow (prot)	1785	1781		1612	3022			1600			1728	
Flt Permitted	0.52	1.00		0.28	1.00			0.99			0.47	
Satd. Flow (perm)	972	1781		481	3022			1581			824	
Volume (vph)	31	730	10	75	360	18	10	33	230	55	65	17
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	33	768	11	79	379	19	11	35	242	58	68	18
RTOR Reduction (vph)	0	1	0	0	4	0	0	196	0	0	6	0
Lane Group Flow (vph)	33	778	0	79	394	0	0	92	0	0	138	0
Heavy Vehicles (%)	0%	5%	25%	7%	14%	0%	22%	17%	4%	13%	4%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	61.8	61.8		61.8	61.8			15.2			15.2	
Effective Green, g (s)	64.8	64.8		64.8	64.8			17.2			17.2	
Actuated g/C Ratio	0.72	0.72		0.72	0.72			0.19			0.19	
Clearance Time (s)	7.0	7.0		7.0	7.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	700	1282		346	2176			302			157	
v/s Ratio Prot		c0.44			0.13							
v/s Ratio Perm	0.03			0.16				0.06			c0.17	
v/c Ratio	0.05	0.61		0.23	0.18			0.31			0.88	
Uniform Delay, d1	3.7	6.3		4.2	4.1			31.3			35.4	
Progression Factor	0.89	0.91		0.92	0.93			1.00			1.00	
Incremental Delay, d2	0.1	1.7		1.5	0.2			0.6			39.5	
Delay (s)	3.3	7.4		5.3	4.0			31.8			74.9	
Level of Service	A	A		A	A			C			E	
Approach Delay (s)		7.2			4.2			31.8			74.9	
Approach LOS		A			A			C			E	

Intersection Summary			
HCM Average Control Delay	16.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	96.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.0	4.0	3.7	3.7	3.7
Storage Length (m)	30.0		0.0	25.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		1	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (m)	15.2	15.2		15.2	15.2		15.2	15.2	15.2	15.2	15.2	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.983			0.993				0.850		0.970	
Flt Protected	0.950			0.950				0.961			0.978	
Satd. Flow (prot)	1785	1753	0	1716	1674	0	0	1637	1687	0	1782	0
Flt Permitted	0.418			0.071				0.831			0.901	
Satd. Flow (perm)	785	1753	0	128	1674	0	0	1416	1687	0	1642	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14			5				43		11	
Headway Factor	1.01	1.01	0.99	1.01	1.01	0.99	0.99	1.09	0.94	0.99	0.99	0.99
Link Speed (k/h)		50			50			40			40	
Link Distance (m)		376.5			224.3			76.8			323.3	
Travel Time (s)		27.1			16.1			6.9			29.1	
Volume (vph)	5	890	115	90	423	20	20	5	40	20	15	10
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	5%	8%	4%	12%	0%	5%	0%	0%	5%	0%	0%
Adj. Flow (vph)	5	957	124	97	455	22	22	5	43	22	16	11
Lane Group Flow (vph)	5	1081	0	97	477	0	0	27	43	0	49	0
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phases	2	2		6	6		8	8	8	4	4	
Minimum Initial (s)	30.0	30.0		30.0	30.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	36.0	36.0		36.0	36.0		24.0	24.0	24.0	24.0	24.0	
Total Split (s)	60.0	60.0	0.0	60.0	60.0	0.0	30.0	30.0	30.0	30.0	30.0	0.0
Total Split (%)	66.7%	66.7%	0.0%	66.7%	66.7%	0.0%	33.3%	33.3%	33.3%	33.3%	33.3%	0.0%
Maximum Green (s)	54.0	54.0		54.0	54.0		24.5	24.5	24.5	24.5	24.5	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	4.0	4.0		4.0	4.0		2.0	2.0	2.0	2.0	2.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Walk Time (s)	10.0	10.0		10.0	10.0		9.0	9.0	9.0	9.0	9.0	
Flash Dont Walk (s)	9.0	9.0		9.0	9.0		7.0	7.0	7.0	7.0	7.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	
Act Effct Green (s)	78.3	78.3		78.3	78.3			11.5	11.5		11.5	
Actuated g/C Ratio	0.87	0.87		0.87	0.87			0.13	0.13		0.13	
v/c Ratio	0.01	0.71		0.87	0.33			0.15	0.17		0.22	
Control Delay	1.6	6.3		75.0	2.8			37.2	13.2		31.9	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	1.6	6.3		75.0	2.8			37.2	13.2		31.9	
LOS	A	A		E	A			D	B		C	
Approach Delay		6.3			15.0			22.5			31.9	
Approach LOS		A			B			C			C	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 42 (47%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.87
Intersection Signal Delay: 10.4 Intersection LOS: B
Intersection Capacity Utilization 90.6% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 9: Guelph Street & Albert Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.0	4.0	3.7	3.7	3.7
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.98		1.00	0.99			1.00	0.85		0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.98	
Satd. Flow (prot)	1785	1753		1716	1674			1637	1687		1782	
Flt Permitted	0.48	1.00		0.21	1.00			0.83	1.00		0.84	
Satd. Flow (perm)	902	1753		373	1674			1418	1687		1536	
Volume (vph)	5	890	115	90	423	20	20	5	40	20	15	10
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	5	957	124	97	455	22	22	5	43	22	16	11
RTOR Reduction (vph)	0	2	0	0	1	0	0	0	39	0	10	0
Lane Group Flow (vph)	5	1079	0	97	476	0	0	27	4	0	39	0
Heavy Vehicles (%)	0%	5%	8%	4%	12%	0%	5%	0%	0%	5%	0%	0%
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	72.5	72.5		72.5	72.5			6.0	6.0		6.0	
Effective Green, g (s)	74.5	74.5		74.5	74.5			7.5	7.5		7.5	
Actuated g/C Ratio	0.83	0.83		0.83	0.83			0.08	0.08		0.08	
Clearance Time (s)	6.0	6.0		6.0	6.0			5.5	5.5		5.5	
Vehicle Extension (s)	4.0	4.0		4.0	4.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	747	1451		309	1386			118	141		128	
v/s Ratio Prot		c0.62			0.28							
v/s Ratio Perm	0.01			0.26				0.02	0.00		c0.03	
v/c Ratio	0.01	0.74		0.31	0.34			0.23	0.03		0.30	
Uniform Delay, d1	1.3	3.5		1.8	1.9			38.5	37.9		38.8	
Progression Factor	0.72	0.85		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.0	2.8		2.6	0.7			0.4	0.0		0.5	
Delay (s)	1.0	5.8		4.4	2.5			38.9	37.9		39.3	
Level of Service	A	A		A	A			D	D		D	
Approach Delay (s)		5.7			2.9			38.3			39.3	
Approach LOS		A			A			D			D	

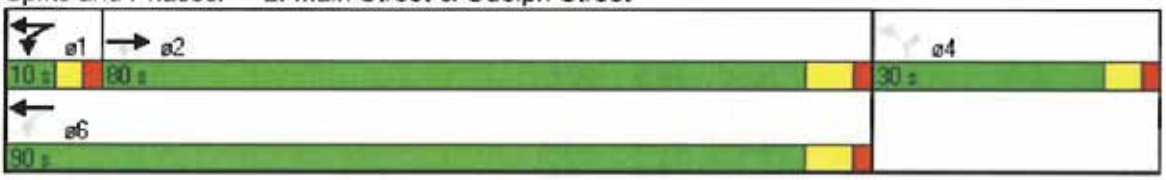
Intersection Summary			
HCM Average Control Delay	7.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	90.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø6
Lane Configurations							
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (m)	3.5	3.2	3.5	3.5	3.5	3.2	
Storage Length (m)		0.0	0.0		0.0	10.0	
Storage Lanes		1	0		1	1	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	
Leading Detector (m)	15.2	15.2	15.2	15.2	15.2	15.2	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	
Turning Speed (k/h)		14	24		24	14	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00	
Frt		0.850				0.850	
Flt Protected				0.973	0.950		
Satd. Flow (prot)	1789	1429	0	3348	1700	1498	
Flt Permitted				0.634	0.950		
Satd. Flow (perm)	1789	1429	0	2182	1700	1498	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		73				344	
Headway Factor	1.01	1.06	1.01	1.01	1.01	1.06	
Link Speed (k/h)	50			50	50		
Link Distance (m)	375.2			314.3	501.3		
Travel Time (s)	27.0			22.6	36.1		
Volume (vph)	295	70	540	415	40	330	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	
Heavy Vehicles (%)	5%	8%	2%	6%	5%	3%	
Adj. Flow (vph)	307	73	562	432	42	344	
Lane Group Flow (vph)	307	73	0	994	42	344	
Turn Type		Perm	custom			custom	
Protected Phases	2		1	1 6			6
Permitted Phases		2	6		4	4	
Detector Phases	2	2	1	1 6	4	4	
Minimum Initial (s)	30.0	30.0	5.0		8.0	8.0	30.0
Minimum Split (s)	37.0	37.0	10.0		26.0	26.0	37.0
Total Split (s)	80.0	80.0	10.0	100.0	30.0	30.0	90.0
Total Split (%)	66.7%	66.7%	8.3%	83.3%	25.0%	25.0%	75%
Maximum Green (s)	73.0	73.0	5.0		24.0	24.0	83.0
Yellow Time (s)	5.0	5.0	3.0		4.0	4.0	5.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0	2.0
Lead/Lag	Lag	Lag	Lead				
Lead-Lag Optimize?	Yes	Yes	Yes				
Vehicle Extension (s)	4.5	4.5	3.0		3.0	3.0	4.5
Recall Mode	C-Max	C-Max	Min		None	None	C-Max
Walk Time (s)	8.0	8.0			9.0	9.0	8.0
Flash Dont Walk (s)	16.0	16.0			11.0	11.0	16.0
Pedestrian Calls (#/hr)	0	0			0	0	0
Act Effct Green (s)	89.4	89.4		99.4	12.6	12.6	
Actuated g/C Ratio	0.74	0.74		0.83	0.10	0.10	
v/c Ratio	0.23	0.07		0.53	0.24	0.74	
Control Delay	5.7	1.4		4.8	50.9	15.2	
Queue Delay	0.0	0.0		0.0	0.0	0.0	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø6
Total Delay	5.7	1.4		4.8	50.9	15.2	
LOS	A	A		A	D	B	
Approach Delay	4.8			4.8	19.1		
Approach LOS	A			A	B		

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 30 (25%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 7.9		Intersection LOS: A	
Intersection Capacity Utilization 71.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Main Street & Guelph Street



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.2	3.5	3.5	3.5	3.2
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		0.95	1.00	1.00
Frt	1.00	0.85		1.00	1.00	0.85
Flt Protected	1.00	1.00		0.97	0.95	1.00
Satd. Flow (prot)	1789	1429		3347	1700	1498
Flt Permitted	1.00	1.00		0.65	0.95	1.00
Satd. Flow (perm)	1789	1429		2221	1700	1498
Volume (vph)	295	70	540	415	40	330
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	307	73	562	432	42	344
RTOR Reduction (vph)	0	19	0	0	0	308
Lane Group Flow (vph)	307	54	0	994	42	36
Heavy Vehicles (%)	5%	8%	2%	6%	5%	3%
Turn Type		Perm	custom			custom
Protected Phases	2		1	1 6		
Permitted Phases		2	6		4	4
Actuated Green, G (s)	86.4	86.4		96.4	10.6	10.6
Effective Green, g (s)	89.4	89.4		99.4	12.6	12.6
Actuated g/C Ratio	0.75	0.75		0.83	0.10	0.10
Clearance Time (s)	7.0	7.0			6.0	6.0
Vehicle Extension (s)	4.5	4.5			3.0	3.0
Lane Grp Cap (vph)	1333	1065		1896	179	157
v/s Ratio Prot	0.17			c0.03		
v/s Ratio Perm		0.04		c0.41	c0.02	0.02
v/c Ratio	0.23	0.05		0.52	0.23	0.23
Uniform Delay, d1	4.7	4.1		3.1	49.3	49.3
Progression Factor	1.00	1.00		1.21	1.00	1.00
Incremental Delay, d2	0.4	0.1		0.2	0.7	0.8
Delay (s)	5.1	4.1		4.0	50.0	50.0
Level of Service	A	A		A	D	D
Approach Delay (s)	4.9			4.0	50.0	
Approach LOS	A			A	D	

Intersection Summary			
HCM Average Control Delay	14.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.7	3.2	3.2	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Storage Length (m)	50.0		0.0	75.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (m)	15.2	15.2		15.2	15.2		15.2	15.2		15.2	15.2	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999			0.993			0.913			0.941	
Flt Protected	0.950			0.950				0.997			0.993	
Satd. Flow (prot)	1785	1788	0	1691	3330	0	0	1725	0	0	1795	0
Flt Permitted	0.289			0.295				0.978			0.917	
Satd. Flow (perm)	543	1788	0	525	3330	0	0	1692	0	0	1658	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			10			70			29	
Headway Factor	1.01	1.01	0.99	1.06	1.06	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Link Speed (k/h)		50			50			40			40	
Link Distance (m)		314.3			376.5			83.4			95.2	
Travel Time (s)		22.6			27.1			7.5			8.6	
Volume (vph)	20	595	5	140	890	40	15	70	155	15	50	50
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	5%	0%	2%	3%	0%	12%	0%	1%	0%	0%	0%
Adj. Flow (vph)	21	633	5	149	947	43	16	74	165	16	53	53
Lane Group Flow (vph)	21	638	0	149	990	0	0	255	0	0	122	0
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phases	2	2		1	6		8	8		4	4	
Minimum Initial (s)	30.0	30.0		5.0	30.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	37.0	37.0		10.0	37.0		24.0	24.0		24.0	24.0	
Total Split (s)	80.0	80.0	0.0	10.0	90.0	0.0	30.0	30.0	0.0	30.0	30.0	0.0
Total Split (%)	66.7%	66.7%	0.0%	8.3%	75.0%	0.0%	25.0%	25.0%	0.0%	25.0%	25.0%	0.0%
Maximum Green (s)	73.0	73.0		5.0	83.0		24.0	24.0		24.0	24.0	
Yellow Time (s)	5.0	5.0		3.0	5.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)	10.0	10.0			10.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	8.0	8.0			8.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0			0		0	0		0	0	
Act Effct Green (s)	82.0	82.0		92.0	92.0			20.0			20.0	
Actuated g/C Ratio	0.68	0.68		0.77	0.77			0.17			0.17	
v/c Ratio	0.06	0.52		0.32	0.39			0.75			0.41	
Control Delay	7.7	10.8		5.1	5.3			47.7			36.6	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	7.7	10.8		5.1	5.3			47.7			36.6	
LOS	A	B		A	A			D			D	
Approach Delay		10.7			5.2			47.7			36.6	
Approach LOS		B			A			D			D	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 30 (25%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.75
Intersection Signal Delay: 13.6 Intersection LOS: B
Intersection Capacity Utilization 76.9% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 7: Guelph Street & Mill Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.7	3.2	3.2	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	0.99			0.91			0.94	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1785	1788		1691	3331			1724			1797	
Flt Permitted	0.29	1.00		0.32	1.00			0.98			0.81	
Satd. Flow (perm)	544	1788		570	3331			1694			1466	
Volume (vph)	20	595	5	140	890	40	15	70	155	15	50	50
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	21	633	5	149	947	43	16	74	165	16	53	53
RTOR Reduction (vph)	0	0	0	0	2	0	0	58	0	0	24	0
Lane Group Flow (vph)	21	638	0	149	988	0	0	197	0	0	98	0
Heavy Vehicles (%)	0%	5%	0%	2%	3%	0%	12%	0%	1%	0%	0%	0%
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	79.0	79.0		89.0	89.0			18.0			18.0	
Effective Green, g (s)	82.0	82.0		92.0	92.0			20.0			20.0	
Actuated g/C Ratio	0.68	0.68		0.77	0.77			0.17			0.17	
Clearance Time (s)	7.0	7.0		5.0	7.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	372	1222		493	2554			282			244	
v/s Ratio Prot		c0.36		0.02	c0.30							
v/s Ratio Perm	0.04			0.22				c0.12			0.07	
v/c Ratio	0.06	0.52		0.30	0.39			0.70			0.40	
Uniform Delay, d1	6.3	9.4		5.8	4.6			47.1			44.7	
Progression Factor	0.94	0.90		0.84	0.96			1.00			1.00	
Incremental Delay, d2	0.3	1.4		0.3	0.4			7.3			1.1	
Delay (s)	6.1	9.8		5.2	4.8			54.5			45.7	
Level of Service	A	A		A	A			D			D	
Approach Delay (s)		9.7			4.9			54.5			45.7	
Approach LOS		A			A			D			D	

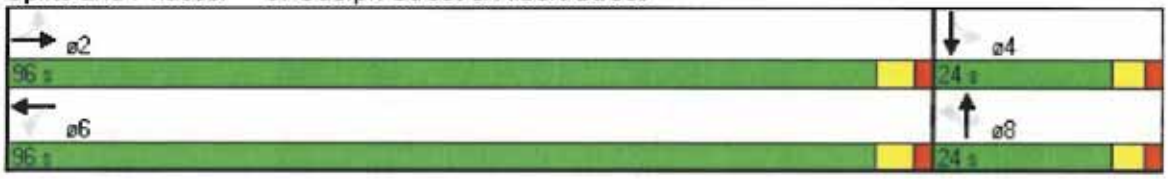
Intersection Summary			
HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.0	4.0	3.7	3.7	3.7
Storage Length (m)	30.0		0.0	25.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		1	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (m)	15.2	15.2		15.2	15.2		15.2	15.2	15.2	15.2	15.2	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999			0.999				0.850		0.955	
Flt Protected	0.950			0.950				0.950			0.984	
Satd. Flow (prot)	1785	1788	0	1785	1840	0	0	1685	1687	0	1547	0
Flt Permitted	0.181			0.315				0.748			0.943	
Satd. Flow (perm)	340	1788	0	592	1840	0	0	1326	1687	0	1483	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			1				5		5	
Headway Factor	1.01	1.01	0.99	1.01	1.01	0.99	0.99	1.09	0.94	0.99	0.99	0.99
Link Speed (k/h)		50			50			40			40	
Link Distance (m)		376.5			224.3			76.8			323.3	
Travel Time (s)		27.1			16.1			6.9			29.1	
Volume (vph)	5	685	5	5	955	5	5	0	5	5	5	5
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
Heavy Vehicles (%)	0%	5%	0%	0%	2%	0%	0%	0%	0%	17%	0%	33%
Adj. Flow (vph)	5	745	5	5	1038	5	5	0	5	5	5	5
Lane Group Flow (vph)	5	750	0	5	1043	0	0	5	5	0	15	0
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phases	2	2		6	6		8	8	8	4	4	
Minimum Initial (s)	30.0	30.0		30.0	30.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	36.0	36.0		36.0	36.0		24.0	24.0	24.0	24.0	24.0	
Total Split (s)	96.0	96.0	0.0	96.0	96.0	0.0	24.0	24.0	24.0	24.0	24.0	0.0
Total Split (%)	80.0%	80.0%	0.0%	80.0%	80.0%	0.0%	20.0%	20.0%	20.0%	20.0%	20.0%	0.0%
Maximum Green (s)	90.0	90.0		90.0	90.0		18.5	18.5	18.5	18.5	18.5	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	4.0	4.0		4.0	4.0		2.0	2.0	2.0	2.0	2.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Walk Time (s)	10.0	10.0		10.0	10.0		9.0	9.0	9.0	9.0	9.0	
Flash Dont Walk (s)	9.0	9.0		9.0	9.0		7.0	7.0	7.0	7.0	7.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	
Act Effct Green (s)	112.2	112.2		112.2	112.2			11.5	11.5		11.5	
Actuated g/C Ratio	0.94	0.94		0.94	0.94			0.10	0.10		0.10	
v/c Ratio	0.02	0.45		0.01	0.61			0.04	0.03		0.10	
Control Delay	2.8	4.4		1.4	3.7			50.2	29.8		40.4	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	2.8	4.4		1.4	3.7			50.2	29.8		40.4	
LOS	A	A		A	A			D	C		D	
Approach Delay		4.4			3.7			40.0			40.4	
Approach LOS		A			A			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 115 (96%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.61			
Intersection Signal Delay: 4.5		Intersection LOS: A	
Intersection Capacity Utilization 65.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 9: Guelph Street & Albert Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.0	4.0	3.7	3.7	3.7
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00		1.00	1.00			1.00	0.85		0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.98	
Satd. Flow (prot)	1785	1788		1785	1841			1685	1687		1547	
Flt Permitted	0.25	1.00		0.36	1.00			0.75	1.00		0.89	
Satd. Flow (perm)	469	1788		678	1841			1326	1687		1395	
Volume (vph)	5	685	5	5	955	5	5	0	5	5	5	5
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	745	5	5	1038	5	5	0	5	5	5	5
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	5	0	5	0
Lane Group Flow (vph)	5	750	0	5	1043	0	0	5	0	0	10	0
Heavy Vehicles (%)	0%	5%	0%	0%	2%	0%	0%	0%	0%	17%	0%	33%
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	104.5	104.5		104.5	104.5			4.0	4.0		4.0	
Effective Green, g (s)	106.5	106.5		106.5	106.5			5.5	5.5		5.5	
Actuated g/C Ratio	0.89	0.89		0.89	0.89			0.05	0.05		0.05	
Clearance Time (s)	6.0	6.0		6.0	6.0			5.5	5.5		5.5	
Vehicle Extension (s)	4.0	4.0		4.0	4.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	416	1587		602	1634			61	77		64	
v/s Ratio Prot		0.42			c0.57							
v/s Ratio Perm	0.01			0.01				0.00	0.00		c0.01	
v/c Ratio	0.01	0.47		0.01	0.64			0.08	0.00		0.16	
Uniform Delay, d1	0.8	1.3		0.8	1.8			54.8	54.6		55.0	
Progression Factor	1.94	2.45		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.0	0.8		0.0	1.9			0.2	0.0		0.4	
Delay (s)	1.5	4.0		0.8	3.7			55.0	54.6		55.5	
Level of Service	A	A		A	A			E	D		E	
Approach Delay (s)		4.0			3.7			54.8			55.5	
Approach LOS		A			A			D			E	

Intersection Summary			
HCM Average Control Delay	4.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.2	3.5	3.5	3.5	3.2
Storage Length (m)		0.0	0.0		0.0	10.0
Storage Lanes		1	0		1	1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (m)	15.2	15.2	15.2	15.2	15.2	15.2
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Turning Speed (k/h)		14	24		24	14
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt		0.850				0.850
Flt Protected				0.974	0.950	
Satd. Flow (prot)	1693	1308	0	3116	1785	1484
Flt Permitted				0.674	0.950	
Satd. Flow (perm)	1693	1308	0	2156	1785	1484
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		23				610
Headway Factor	1.01	1.06	1.01	1.01	1.01	1.06
Link Speed (k/h)	50			50	50	
Link Distance (m)	375.2			314.3	501.3	
Travel Time (s)	27.0			22.6	36.1	
Volume (vph)	246	20	210	177	65	525
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	11%	18%	7%	17%	0%	4%
Adj. Flow (vph)	286	23	244	206	76	610
Lane Group Flow (vph)	286	23	0	450	76	610
Turn Type		Perm	Perm			custom
Protected Phases	2			6		
Permitted Phases		2	6		4	4
Detector Phases	2	2	6	6	4	4
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	30.0	30.0	25.0	25.0	23.0	23.0
Total Split (s)	67.0	67.0	67.0	67.0	23.0	23.0
Total Split (%)	74.4%	74.4%	74.4%	74.4%	25.6%	25.6%
Maximum Green (s)	61.0	61.0	61.0	61.0	17.0	17.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None
Walk Time (s)	8.0	8.0	8.0	8.0	6.0	6.0
Flash Dont Walk (s)	16.0	16.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	67.7	67.7		67.7	14.3	14.3
Actuated g/C Ratio	0.75	0.75		0.75	0.16	0.16
v/c Ratio	0.22	0.02		0.28	0.27	0.81
Control Delay	4.2	1.7		4.8	34.6	12.8
Queue Delay	0.0	0.0		0.0	0.0	0.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Delay	4.2	1.7		4.8	34.6	12.8
LOS	A	A		A	C	B
Approach Delay	4.0			4.8	15.2	
Approach LOS	A			A	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 13 (14%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 9.6		Intersection LOS: A	
Intersection Capacity Utilization 52.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 2: Main Street & Guelph Street

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.2	3.5	3.5	3.5	3.2
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		0.95	1.00	1.00
Frt	1.00	0.85		1.00	1.00	0.85
Flt Protected	1.00	1.00		0.97	0.95	1.00
Satd. Flow (prot)	1693	1308		3115	1785	1484
Flt Permitted	1.00	1.00		0.68	0.95	1.00
Satd. Flow (perm)	1693	1308		2169	1785	1484
Volume (vph)	246	20	210	177	65	525
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	286	23	244	206	76	610
RTOR Reduction (vph)	0	6	0	0	0	513
Lane Group Flow (vph)	286	17	0	450	76	97
Heavy Vehicles (%)	11%	18%	7%	17%	0%	4%
Turn Type		Perm	Perm			custom
Protected Phases	2			6		
Permitted Phases		2	6		4	4
Actuated Green, G (s)	65.7	65.7		65.7	12.3	12.3
Effective Green, g (s)	67.7	67.7		67.7	14.3	14.3
Actuated g/C Ratio	0.75	0.75		0.75	0.16	0.16
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	1274	984		1632	284	236
v/s Ratio Prot	0.17					
v/s Ratio Perm		0.01		c0.21	0.04	c0.07
v/c Ratio	0.22	0.02		0.28	0.27	0.41
Uniform Delay, d1	3.3	2.8		3.5	33.2	34.1
Progression Factor	1.00	1.00		1.10	1.00	1.00
Incremental Delay, d2	0.4	0.0		0.4	0.5	1.2
Delay (s)	3.7	2.8		4.3	33.8	35.2
Level of Service	A	A		A	C	D
Approach Delay (s)	3.7			4.3	35.1	
Approach LOS	A			A	D	

Intersection Summary			
HCM Average Control Delay	18.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

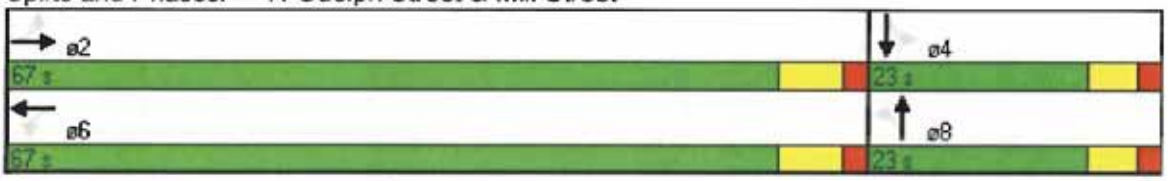
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.7	3.2	3.2	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Storage Length (m)	50.0		0.0	75.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (m)	15.2	15.2		15.2	15.2		15.2	15.2		15.2	15.2	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.993			0.887			0.983	
Flt Protected	0.950			0.950				0.998			0.980	
Satd. Flow (prot)	1785	1781	0	1612	3022	0	0	1600	0	0	1728	0
Flt Permitted	0.517			0.273				0.987			0.538	
Satd. Flow (perm)	971	1781	0	463	3022	0	0	1583	0	0	948	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			13			242			7	
Headway Factor	1.01	1.01	0.99	1.06	1.06	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Link Speed (k/h)		50			50			40			40	
Link Distance (m)		314.3			376.5			83.4			95.2	
Travel Time (s)		22.6			27.1			7.5			8.6	
Volume (vph)	31	730	10	75	360	18	10	33	230	55	65	17
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	5%	25%	7%	14%	0%	22%	17%	4%	13%	4%	0%
Adj. Flow (vph)	33	768	11	79	379	19	11	35	242	58	68	18
Lane Group Flow (vph)	33	779	0	79	398	0	0	288	0	0	144	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phases	2	2		6	6		8	8		4	4	
Minimum Initial (s)	30.0	30.0		30.0	30.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	37.0	37.0		37.0	37.0		23.0	23.0		23.0	23.0	
Total Split (s)	67.0	67.0	0.0	67.0	67.0	0.0	23.0	23.0	0.0	23.0	23.0	0.0
Total Split (%)	74.4%	74.4%	0.0%	74.4%	74.4%	0.0%	25.6%	25.6%	0.0%	25.6%	25.6%	0.0%
Maximum Green (s)	60.0	60.0		60.0	60.0		17.0	17.0		17.0	17.0	
Yellow Time (s)	5.0	5.0		5.0	5.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	10.0	10.0		10.0	10.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	8.0	8.0		8.0	8.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	64.8	64.8		64.8	64.8			17.2			17.2	
Actuated g/C Ratio	0.72	0.72		0.72	0.72			0.19			0.19	
v/c Ratio	0.05	0.61		0.24	0.18			0.58			0.77	
Control Delay	3.9	8.1		6.4	4.1			12.0			59.7	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	3.9	8.1		6.4	4.1			12.0			59.7	
LOS	A	A		A	A			B			E	
Approach Delay		7.9			4.5			12.0			59.7	
Approach LOS		A			A			B			E	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 13 (14%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.77
Intersection Signal Delay: 12.0 Intersection LOS: B
Intersection Capacity Utilization 96.3% ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 7: Guelph Street & Mill Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.7	3.2	3.2	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	0.99			0.89			0.98	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.98	
Satd. Flow (prot)	1785	1781		1612	3022			1600			1728	
Flt Permitted	0.52	1.00		0.28	1.00			0.99			0.47	
Satd. Flow (perm)	972	1781		481	3022			1581			824	
Volume (vph)	31	730	10	75	360	18	10	33	230	55	65	17
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	33	768	11	79	379	19	11	35	242	58	68	18
RTOR Reduction (vph)	0	1	0	0	4	0	0	196	0	0	6	0
Lane Group Flow (vph)	33	778	0	79	394	0	0	92	0	0	138	0
Heavy Vehicles (%)	0%	5%	25%	7%	14%	0%	22%	17%	4%	13%	4%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	61.8	61.8		61.8	61.8			15.2			15.2	
Effective Green, g (s)	64.8	64.8		64.8	64.8			17.2			17.2	
Actuated g/C Ratio	0.72	0.72		0.72	0.72			0.19			0.19	
Clearance Time (s)	7.0	7.0		7.0	7.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	700	1282		346	2176			302			157	
v/s Ratio Prot		c0.44			0.13							
v/s Ratio Perm	0.03			0.16				0.06			c0.17	
v/c Ratio	0.05	0.61		0.23	0.18			0.31			0.88	
Uniform Delay, d1	3.7	6.3		4.2	4.1			31.3			35.4	
Progression Factor	0.89	0.91		0.92	0.93			1.00			1.00	
Incremental Delay, d2	0.1	1.7		1.5	0.2			0.6			39.5	
Delay (s)	3.3	7.4		5.3	4.0			31.8			74.9	
Level of Service	A	A		A	A			C			E	
Approach Delay (s)		7.2			4.2			31.8			74.9	
Approach LOS		A			A			C			E	

Intersection Summary			
HCM Average Control Delay	16.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	96.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

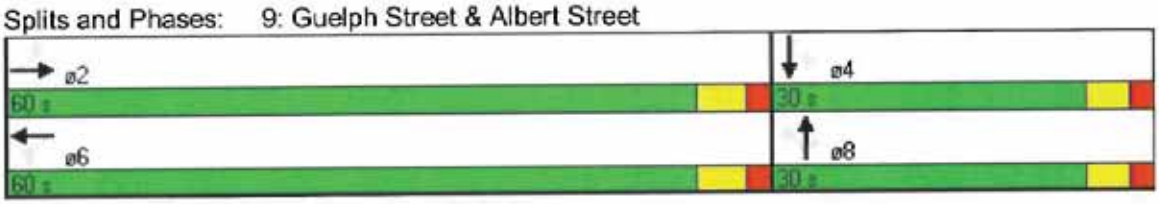
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.0	4.0	3.7	3.7	3.7
Storage Length (m)	30.0		0.0	25.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		1	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (m)	15.2	15.2		15.2	15.2		15.2	15.2	15.2	15.2	15.2	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.983			0.993				0.850		0.970	
Flt Protected	0.950			0.950				0.961			0.978	
Satd. Flow (prot)	1785	1753	0	1716	1674	0	0	1637	1687	0	1782	0
Flt Permitted	0.418			0.071				0.831			0.901	
Satd. Flow (perm)	785	1753	0	128	1674	0	0	1416	1687	0	1642	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14			5				43		11	
Headway Factor	1.01	1.01	0.99	1.01	1.01	0.99	0.99	1.09	0.94	0.99	0.99	0.99
Link Speed (k/h)		50			50			40			40	
Link Distance (m)		376.5			224.3			76.8			323.3	
Travel Time (s)		27.1			16.1			6.9			29.1	
Volume (vph)	5	890	115	90	423	20	20	5	40	20	15	10
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	5%	8%	4%	12%	0%	5%	0%	0%	5%	0%	0%
Adj. Flow (vph)	5	957	124	97	455	22	22	5	43	22	16	11
Lane Group Flow (vph)	5	1081	0	97	477	0	0	27	43	0	49	0
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phases	2	2		6	6		8	8	8	4	4	
Minimum Initial (s)	30.0	30.0		30.0	30.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	36.0	36.0		36.0	36.0		24.0	24.0	24.0	24.0	24.0	
Total Split (s)	60.0	60.0	0.0	60.0	60.0	0.0	30.0	30.0	30.0	30.0	30.0	0.0
Total Split (%)	66.7%	66.7%	0.0%	66.7%	66.7%	0.0%	33.3%	33.3%	33.3%	33.3%	33.3%	0.0%
Maximum Green (s)	54.0	54.0		54.0	54.0		24.5	24.5	24.5	24.5	24.5	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	4.0	4.0		4.0	4.0		2.0	2.0	2.0	2.0	2.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Walk Time (s)	10.0	10.0		10.0	10.0		9.0	9.0	9.0	9.0	9.0	
Flash Dont Walk (s)	9.0	9.0		9.0	9.0		7.0	7.0	7.0	7.0	7.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	
Act Effct Green (s)	78.3	78.3		78.3	78.3			11.5	11.5		11.5	
Actuated g/C Ratio	0.87	0.87		0.87	0.87			0.13	0.13		0.13	
v/c Ratio	0.01	0.71		0.87	0.33			0.15	0.17		0.22	
Control Delay	1.6	6.3		75.0	2.8			37.2	13.2		31.9	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	1.6	6.3		75.0	2.8			37.2	13.2		31.9	
LOS	A	A		E	A			D	B		C	
Approach Delay		6.3			15.0			22.5			31.9	
Approach LOS		A			B			C			C	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 42 (47%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.87
Intersection Signal Delay: 10.4 Intersection LOS: B
Intersection Capacity Utilization 90.6% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 9: Guelph Street & Albert Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.0	4.0	3.7	3.7	3.7
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.98		1.00	0.99			1.00	0.85		0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.98	
Satd. Flow (prot)	1785	1753		1716	1674			1637	1687		1782	
Flt Permitted	0.48	1.00		0.21	1.00			0.83	1.00		0.84	
Satd. Flow (perm)	902	1753		373	1674			1418	1687		1536	
Volume (vph)	5	890	115	90	423	20	20	5	40	20	15	10
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	5	957	124	97	455	22	22	5	43	22	16	11
RTOR Reduction (vph)	0	2	0	0	1	0	0	0	39	0	10	0
Lane Group Flow (vph)	5	1079	0	97	476	0	0	27	4	0	39	0
Heavy Vehicles (%)	0%	5%	8%	4%	12%	0%	5%	0%	0%	5%	0%	0%
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	72.5	72.5		72.5	72.5			6.0	6.0		6.0	
Effective Green, g (s)	74.5	74.5		74.5	74.5			7.5	7.5		7.5	
Actuated g/C Ratio	0.83	0.83		0.83	0.83			0.08	0.08		0.08	
Clearance Time (s)	6.0	6.0		6.0	6.0			5.5	5.5		5.5	
Vehicle Extension (s)	4.0	4.0		4.0	4.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	747	1451		309	1386			118	141		128	
v/s Ratio Prot		c0.62			0.28							
v/s Ratio Perm	0.01			0.26				0.02	0.00		c0.03	
v/c Ratio	0.01	0.74		0.31	0.34			0.23	0.03		0.30	
Uniform Delay, d1	1.3	3.5		1.8	1.9			38.5	37.9		38.8	
Progression Factor	0.72	0.85		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.0	2.8		2.6	0.7			0.4	0.0		0.5	
Delay (s)	1.0	5.8		4.4	2.5			38.9	37.9		39.3	
Level of Service	A	A		A	A			D	D		D	
Approach Delay (s)		5.7			2.9			38.3			39.3	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM Average Control Delay	7.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	90.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	2	37	12	65	100	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	40	13	71	109	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (m)				95		
pX, platoon unblocked						
vC, conflicting volume	206	109	110			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	206	109	110			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	96	99			
cM capacity (veh/h)	776	944	1480			

Direction, Lane #	SE 1	NE 1	SW 1
Volume Total	42	84	110
Volume Left	2	13	0
Volume Right	40	0	1
cSH	934	1480	1700
Volume to Capacity	0.05	0.01	0.06
Queue Length 95th (m)	1.1	0.2	0.0
Control Delay (s)	9.0	1.2	0.0
Lane LOS	A	A	
Approach Delay (s)	9.0	1.2	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	20.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø6
Lane Configurations							
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (m)	3.5	3.2	3.5	3.5	3.5	3.2	
Storage Length (m)		0.0	0.0		0.0	10.0	
Storage Lanes		1	0		1	1	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	
Leading Detector (m)	15.2	15.2	15.2	15.2	15.2	15.2	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	
Turning Speed (k/h)		14	24		24	14	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00	
Frt		0.850				0.850	
Flt Protected				0.973	0.950		
Satd. Flow (prot)	1789	1429	0	3348	1700	1498	
Flt Permitted				0.633	0.950		
Satd. Flow (perm)	1789	1429	0	2178	1700	1498	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		73				344	
Headway Factor	1.01	1.06	1.01	1.01	1.01	1.06	
Link Speed (k/h)	50			50	50		
Link Distance (m)	375.2			314.3	501.3		
Travel Time (s)	27.0			22.6	36.1		
Volume (vph)	297	70	540	417	40	330	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	
Heavy Vehicles (%)	5%	8%	2%	6%	5%	3%	
Adj. Flow (vph)	309	73	562	434	42	344	
Lane Group Flow (vph)	309	73	0	996	42	344	
Turn Type		Perm	custom			custom	
Protected Phases	2		1	1 6			6
Permitted Phases		2	6		4	4	
Detector Phases	2	2	1	1 6	4	4	
Minimum Initial (s)	30.0	30.0	5.0		8.0	8.0	30.0
Minimum Split (s)	37.0	37.0	10.0		26.0	26.0	37.0
Total Split (s)	80.0	80.0	10.0	100.0	30.0	30.0	90.0
Total Split (%)	66.7%	66.7%	8.3%	83.3%	25.0%	25.0%	75%
Maximum Green (s)	73.0	73.0	5.0		24.0	24.0	83.0
Yellow Time (s)	5.0	5.0	3.0		4.0	4.0	5.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0	2.0
Lead/Lag	Lag	Lag	Lead				
Lead-Lag Optimize?	Yes	Yes	Yes				
Vehicle Extension (s)	4.5	4.5	3.0		3.0	3.0	4.5
Recall Mode	C-Max	C-Max	Min		None	None	C-Max
Walk Time (s)	8.0	8.0			9.0	9.0	8.0
Flash Dont Walk (s)	16.0	16.0			11.0	11.0	16.0
Pedestrian Calls (#/hr)	0	0			0	0	0
Act Effct Green (s)	89.4	89.4		99.4	12.6	12.6	
Actuated g/C Ratio	0.74	0.74		0.83	0.10	0.10	
v/c Ratio	0.23	0.07		0.53	0.24	0.74	
Control Delay	5.7	1.4		4.6	50.9	15.2	
Queue Delay	0.0	0.0		0.0	0.0	0.0	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø6
Total Delay	5.7	1.4		4.6	50.9	15.2	
LOS	A	A		A	D	B	
Approach Delay	4.8			4.6	19.1		
Approach LOS	A			A	B		

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 30 (25%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 7.8		Intersection LOS: A	
Intersection Capacity Utilization 71.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Main Street & Guelph Street

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.2	3.5	3.5	3.5	3.2
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		0.95	1.00	1.00
Frt	1.00	0.85		1.00	1.00	0.85
Flt Protected	1.00	1.00		0.97	0.95	1.00
Satd. Flow (prot)	1789	1429		3347	1700	1498
Flt Permitted	1.00	1.00		0.64	0.95	1.00
Satd. Flow (perm)	1789	1429		2219	1700	1498
Volume (vph)	297	70	540	417	40	330
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	309	73	562	434	42	344
RTOR Reduction (vph)	0	19	0	0	0	308
Lane Group Flow (vph)	309	54	0	996	42	36
Heavy Vehicles (%)	5%	8%	2%	6%	5%	3%
Turn Type		Perm	custom			custom
Protected Phases	2		1	1 6		
Permitted Phases		2	6		4	4
Actuated Green, G (s)	86.4	86.4		96.4	10.6	10.6
Effective Green, g (s)	89.4	89.4		99.4	12.6	12.6
Actuated g/C Ratio	0.75	0.75		0.83	0.10	0.10
Clearance Time (s)	7.0	7.0			6.0	6.0
Vehicle Extension (s)	4.5	4.5			3.0	3.0
Lane Grp Cap (vph)	1333	1065		1894	179	157
v/s Ratio Prot	0.17			c0.03		
v/s Ratio Perm		0.04		c0.41	c0.02	0.02
v/c Ratio	0.23	0.05		0.53	0.23	0.23
Uniform Delay, d1	4.7	4.1		3.1	49.3	49.3
Progression Factor	1.00	1.00		1.15	1.00	1.00
Incremental Delay, d2	0.4	0.1		0.2	0.7	0.8
Delay (s)	5.1	4.1		3.9	50.0	50.0
Level of Service	A	A		A	D	D
Approach Delay (s)	4.9			3.9	50.0	
Approach LOS	A			A	D	

Intersection Summary			
HCM Average Control Delay	14.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.7	3.2	3.2	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Storage Length (m)	50.0		0.0	75.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (m)	15.2	15.2		15.2	15.2		15.2	15.2		15.2	15.2	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999			0.989			0.917			0.952	
Flt Protected	0.950			0.950				0.997			0.988	
Satd. Flow (prot)	1785	1788	0	1691	3319	0	0	1733	0	0	1807	0
Flt Permitted	0.279			0.295				0.977			0.721	
Satd. Flow (perm)	524	1788	0	525	3319	0	0	1699	0	0	1319	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			17			61			21	
Headway Factor	1.01	1.01	0.99	1.06	1.06	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Link Speed (k/h)		50			50			40			40	
Link Distance (m)		314.3			376.5			83.4			95.2	
Travel Time (s)		22.6			27.1			7.5			8.6	
Volume (vph)	22	595	5	140	890	70	15	82	155	36	58	52
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	5%	0%	2%	3%	0%	12%	0%	1%	0%	0%	0%
Adj. Flow (vph)	23	633	5	149	947	74	16	87	165	38	62	55
Lane Group Flow (vph)	23	638	0	149	1021	0	0	268	0	0	155	0
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phases	2	2		1	6		8	8		4	4	
Minimum Initial (s)	30.0	30.0		5.0	30.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	37.0	37.0		10.0	37.0		24.0	24.0		24.0	24.0	
Total Split (s)	80.0	80.0	0.0	10.0	90.0	0.0	30.0	30.0	0.0	30.0	30.0	0.0
Total Split (%)	66.7%	66.7%	0.0%	8.3%	75.0%	0.0%	25.0%	25.0%	0.0%	25.0%	25.0%	0.0%
Maximum Green (s)	73.0	73.0		5.0	83.0		24.0	24.0		24.0	24.0	
Yellow Time (s)	5.0	5.0		3.0	5.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)	10.0	10.0			10.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	8.0	8.0			8.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0			0		0	0		0	0	
Act Effct Green (s)	80.9	80.9		90.9	90.9			21.1			21.1	
Actuated g/C Ratio	0.67	0.67		0.76	0.76			0.18			0.18	
v/c Ratio	0.07	0.53		0.33	0.41			0.77			0.62	
Control Delay	8.0	11.4		4.9	5.1			50.3			49.7	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	8.0	11.4		4.9	5.1			50.3			49.7	
LOS	A	B		A	A			D			D	
Approach Delay		11.3			5.1			50.3			49.7	
Approach LOS		B			A			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 30 (25%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 15.4		Intersection LOS: B	
Intersection Capacity Utilization 81.6%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 7: Guelph Street & Mill Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.7	3.2	3.2	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	0.99			0.92			0.95	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1785	1788		1691	3320			1733			1807	
Flt Permitted	0.28	1.00		0.32	1.00			0.98			0.60	
Satd. Flow (perm)	527	1788		562	3320			1697			1093	
Volume (vph)	22	595	5	140	890	70	15	82	155	36	58	52
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	23	633	5	149	947	74	16	87	165	38	62	55
RTOR Reduction (vph)	0	0	0	0	4	0	0	50	0	0	17	0
Lane Group Flow (vph)	23	638	0	149	1017	0	0	218	0	0	138	0
Heavy Vehicles (%)	0%	5%	0%	2%	3%	0%	12%	0%	1%	0%	0%	0%
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	77.9	77.9		87.9	87.9			19.1			19.1	
Effective Green, g (s)	80.9	80.9		90.9	90.9			21.1			21.1	
Actuated g/C Ratio	0.67	0.67		0.76	0.76			0.18			0.18	
Clearance Time (s)	7.0	7.0		5.0	7.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	355	1205		482	2515			298			192	
v/s Ratio Prot		c0.36		0.02	c0.31							
v/s Ratio Perm	0.04			0.22				c0.13			0.13	
v/c Ratio	0.06	0.53		0.31	0.40			0.73			0.72	
Uniform Delay, d1	6.7	9.9		6.3	5.1			46.8			46.6	
Progression Factor	0.93	0.90		0.78	0.87			1.00			1.00	
Incremental Delay, d2	0.3	1.5		0.3	0.3			8.9			12.0	
Delay (s)	6.5	10.4		5.1	4.8			55.6			58.7	
Level of Service	A	B		A	A			E			E	
Approach Delay (s)		10.3			4.8			55.6			58.7	
Approach LOS		B			A			E			E	

Intersection Summary			
HCM Average Control Delay	16.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	81.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.0	4.0	3.7	3.7	3.7
Storage Length (m)	30.0		0.0	25.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		1	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (m)	15.2	15.2		15.2	15.2		15.2	15.2	15.2	15.2	15.2	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999			0.999				0.850		0.955	
Flt Protected	0.950			0.950				0.950			0.984	
Satd. Flow (prot)	1785	1788	0	1785	1840	0	0	1685	1687	0	1547	0
Flt Permitted	0.116			0.268				0.748			0.943	
Satd. Flow (perm)	218	1788	0	504	1840	0	0	1326	1687	0	1483	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			1				5		5	
Headway Factor	1.01	1.01	0.99	1.01	1.01	0.99	0.99	1.09	0.94	0.99	0.99	0.99
Link Speed (k/h)		50			50			40			40	
Link Distance (m)		376.5			224.3			76.8			323.3	
Travel Time (s)		27.1			16.1			6.9			29.1	
Volume (vph)	5	776	5	5	1085	5	5	0	5	5	5	5
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
Heavy Vehicles (%)	0%	5%	0%	0%	2%	0%	0%	0%	0%	17%	0%	33%
Adj. Flow (vph)	5	843	5	5	1179	5	5	0	5	5	5	5
Lane Group Flow (vph)	5	848	0	5	1184	0	0	5	5	0	15	0
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phases	2	2		6	6		8	8	8	4	4	
Minimum Initial (s)	30.0	30.0		30.0	30.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	36.0	36.0		36.0	36.0		24.0	24.0	24.0	24.0	24.0	
Total Split (s)	96.0	96.0	0.0	96.0	96.0	0.0	24.0	24.0	24.0	24.0	24.0	0.0
Total Split (%)	80.0%	80.0%	0.0%	80.0%	80.0%	0.0%	20.0%	20.0%	20.0%	20.0%	20.0%	0.0%
Maximum Green (s)	90.0	90.0		90.0	90.0		18.5	18.5	18.5	18.5	18.5	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	4.0	4.0		4.0	4.0		2.0	2.0	2.0	2.0	2.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Walk Time (s)	10.0	10.0		10.0	10.0		9.0	9.0	9.0	9.0	9.0	
Flash Dont Walk (s)	9.0	9.0		9.0	9.0		7.0	7.0	7.0	7.0	7.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	
Act Effct Green (s)	112.2	112.2		112.2	112.2			11.5	11.5		11.5	
Actuated g/C Ratio	0.94	0.94		0.94	0.94			0.10	0.10		0.10	
v/c Ratio	0.02	0.51		0.01	0.69			0.04	0.03		0.10	
Control Delay	3.0	4.9		1.4	5.1			50.2	29.8		40.4	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	3.0	4.9		1.4	5.1			50.2	29.8		40.4	
LOS	A	A		A	A			D	C		D	
Approach Delay		4.9			5.1			40.0			40.4	
Approach LOS		A			A			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 115 (96%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 5.4		Intersection LOS: A	
Intersection Capacity Utilization 72.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 9: Guelph Street & Albert Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.5	3.7	3.5	3.5	3.7	3.7	3.0	4.0	3.7	3.7	3.7
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00		1.00	1.00			1.00	0.85		0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.98	
Satd. Flow (prot)	1785	1788		1785	1841			1685	1687		1547	
Flt Permitted	0.20	1.00		0.32	1.00			0.75	1.00		0.89	
Satd. Flow (perm)	377	1788		604	1841			1326	1687		1395	
Volume (vph)	5	776	5	5	1085	5	5	0	5	5	5	5
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	843	5	5	1179	5	5	0	5	5	5	5
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	5	0	5	0
Lane Group Flow (vph)	5	848	0	5	1184	0	0	5	0	0	10	0
Heavy Vehicles (%)	0%	5%	0%	0%	2%	0%	0%	0%	0%	17%	0%	33%
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	104.5	104.5		104.5	104.5			4.0	4.0		4.0	
Effective Green, g (s)	106.5	106.5		106.5	106.5			5.5	5.5		5.5	
Actuated g/C Ratio	0.89	0.89		0.89	0.89			0.05	0.05		0.05	
Clearance Time (s)	6.0	6.0		6.0	6.0			5.5	5.5		5.5	
Vehicle Extension (s)	4.0	4.0		4.0	4.0			2.0	2.0		2.0	
Lane Grp Cap (vph)	335	1587		536	1634			61	77		64	
v/s Ratio Prot		0.47			c0.64							
v/s Ratio Perm	0.01			0.01				0.00	0.00		c0.01	
v/c Ratio	0.01	0.53		0.01	0.72			0.08	0.00		0.16	
Uniform Delay, d1	0.8	1.4		0.8	2.1			54.8	54.6		55.0	
Progression Factor	1.85	2.39		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.1	1.1		0.0	2.8			0.2	0.0		0.4	
Delay (s)	1.5	4.5		0.8	5.0			55.0	54.6		55.5	
Level of Service	A	A		A	A			E	D		E	
Approach Delay (s)		4.5			4.9			54.8			55.5	
Approach LOS		A			A			D			E	

Intersection Summary			
HCM Average Control Delay	5.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	72.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	2	30	44	130	115	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	33	48	141	125	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (m)				95		
pX, platoon unblocked						
vC, conflicting volume	362	126	126			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	362	126	126			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	96	97			
cM capacity (veh/h)	616	925	1460			

Direction, Lane #	SE 1	NE 1	SW 1
Volume Total	35	189	126
Volume Left	2	48	0
Volume Right	33	0	1
cSH	897	1460	1700
Volume to Capacity	0.04	0.03	0.07
Queue Length 95th (m)	0.9	0.8	0.0
Control Delay (s)	9.2	2.1	0.0
Lane LOS	A	A	
Approach Delay (s)	9.2	2.1	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	25.9%	ICU Level of Service	A
Analysis Period (min)	15		