MEMORANDUM

MORRISON HERSHFIELD

TO:	Andrew Chislett, City of Toronto PM	ACTION BY:	
FROM:	Aamir Munir, MH Traffic	FOR INFO OF:	John Grebenc, MH PM Martin Pierre Blouin, MH Roadway Designer
PLEASE RESPOND BY:		PROJECT No.:	1160517.00
RE:	EA Study for New East-West Street Extension from Rean Drive to Kenaston Gardens: Traffic Impact Study (Draft)	DATE:	October 26, 2016

1.0 Introduction

This memo summarizes the results of the traffic impact assessment for new east-west street extension from Rean Drive to Kenaston Gardens, and investigates the impact of potential site generated traffic.

Level of service analyses and operational reviews were completed for area roads and intersections within the Bayview Village and the findings of the study analyses and suggested modifications at problem locations are detailed below.

The study area is illustrated in **Figure 1**, below.

Figure 1 –Study Area

2.0 Traffic Data

The source, time of the year, location and type of traffic data used in the analysis is summarized in **Table 1**. The traffic data is presented in **Appendix A**.

Table 1 – Traffic Data

Type	Location	Source	Month	Year
TMC[1]	*Sheppard Avenue E at Barberry Place / Bayview Village Mall*	City of Toronto	June	2013
	Sheppard Avenue E at Rean Dr. / Hawksbury Dr.	City of Toronto	June	2013
	Sheppard Avenue E at Kenaston Gardens	5-15 *Kenaston Gardens TIS*[2]	September	2012
Signal Timing Plan	*Sheppard Avenue E at Barberry Place / Bayview Village Mall*	City of Toronto	November	2015
	Sheppard Avenue E at Rean Dr. / Hawksbury Dr.	City of Toronto	June	2012
Proposed Site Generated Traffic	5-15 *Kenaston Gardens TIS* conducted by BA Group	City of Toronto	August	2013
	591-593 Sheppard Avenue East TIS conducted by COLE	City of Toronto	January	2013

Notes: 1- Turning Movement Counts (TMC)
2- Traffic Impact Study (TIS)

3.0 Modeling Approach

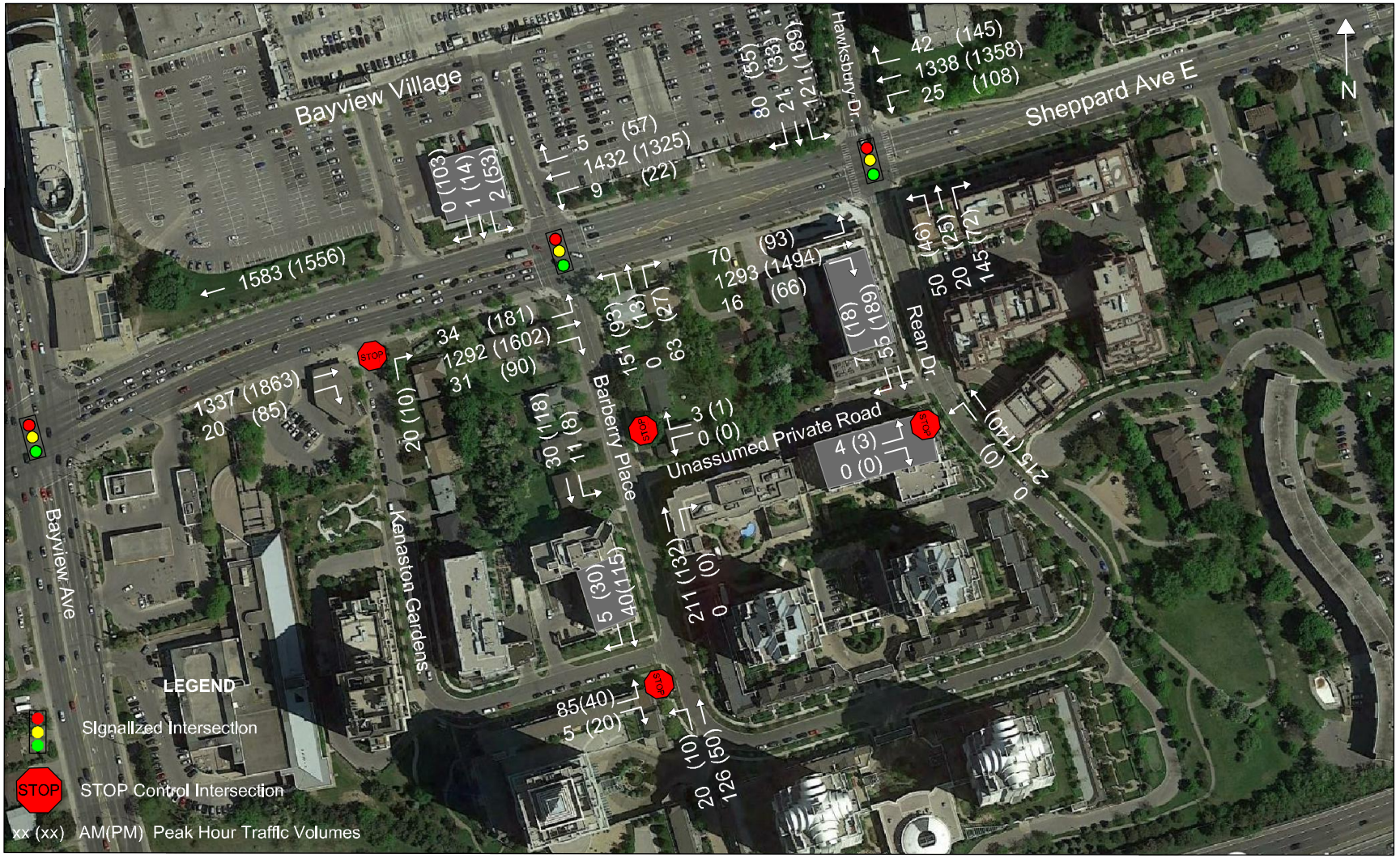
The traffic analysis was undertaken by using Synchro 8 and Sim-Traffic software. MH conformed City's Synchro Guideline **"*Guidelines for Using Synchro 9 (including SimTraffic 9)*"** to develop its transportation network. Level of service analyses and operational reviews were completed for area roads and intersections using:

- Existing traffic levels (2013)
- Future traffic with background traffic growth and proposed site generated traffic for the year 2031.

4.0 Existing Traffic Operations - 2016

A growth factor of 1% was applied to the eastbound and westbound traffic volumes on Sheppard Avenue E to project them to the year 2016.

Figure 2 illustrates existing morning and afternoon peak-hour traffic volumes at intersections within the study area.



New East-West Street Extension from Rean Drive to Kenaston Gardens Traffic Impact Assessment Study	Existing Peak Hour Traffic Volumes (2016)	Figure 2

The major intersections analyzed in the existing conditions include the following:

- Sheppard Avenue E and Barberry Place / Bayview Village Mall Intersection (Signalized);
- Sheppard Avenue E and Rean Dr. / Hawksbury Dr. Intersection (Signalized);
- Sheppard Avenue E and Kenaston Gardens Intersection (Un-signalized - right-in/right-out movement);
- Kenaston Gardens and Barberry Place Intersection (Un-signalized);
- Unassumed Private Road and Rean Dr. Intersection (Un-signalized); and
- Unassumed Private Road and Barberry Place Intersection (Un-signalized).

4.1 AM Peak Hour

The results of the Synchro analysis at signalized intersections during the a.m. peak hour are summarized in **Table 2.**

Table 2 Summary of Existing Signalized Intersection during AM Peak Hour- Synchro

Intersection	Intersection LOS	Movement	LOS	v/c
Sheppard Avenue E and Barberry Place / Bayview Village Mall Intersection	C	EBL	B	0.18
		EBTR	C	0.62
		WBL	A	0.04
		WBTR	C	0.67
		NBL	D	0.47
		NBTR	A	0.13
		SBL	C	0.01
		SBTR	C	0.00
Sheppard Avenue E and Rean Dr. / Hawksbury Dr. Intersection	C	EBL	F	0.87
		EBT	C	0.72
		EBR	A	0.02
		WBL	C	0.28
		WBT	B	0.75
		WBR	A	0.06
		NBL	C	0.16
		NBTR	C	0.37
		SBL	C	0.42
		SBTR	C	0.24

The critical movements identified are any movements at a signalized intersection that exceeds a volume-to-capacity (v/c) ratio of 0.85 or operates at LOS F.

- Sheppard Avenue E and Barberry Place / Bayview Village Mall intersection is currently operating at an overall LOS of C and within permissible v/c values during the AM peak hour.

- Sheppard Avenue E and Rean Dr. / Hawksbury Dr. intersection is currently operating at an overall LOS of C during the AM peak hour. The movement with the highest v/c ratio at this intersection is the eastbound left turn movement from Sheppard Avenue E onto Hawksbury Dr. during weekday AM peak hour.

The existing conditions model was run in Sim-Traffic for ten minutes of seeding time followed by one hour of simulation time. The results of the existing traffic analysis during the a.m. peak hour and based on 5-run average are summarized in **Table 3**.

Table 3 – Summary of Existing Signalized Intersection during AM Peak Hour - Sim-Traffic

Location	Dir	Average Delay (Sec/veh)	Average Queue (m)	95th Percentile Queue (m)	Approximate Available Storage Length (m)
Sheppard Avenue E and Barberry Place / Bayview Village Mall Intersection	EB	31.1	85.0	98.6	230
	WB	22.1	61.4	116.5	130
	NB	28.9	27.6	46.5	165
	SB	19.8	0.2	2.3	70
Sheppard Avenue E and Rean Dr. / Hawksbury Dr. Intersection	EB	31.4	93.9	173.2	130
	WB	19.5	81.2	112.6	200
	NB	26.1	26.9	49.4	85
	SB	24.1	22.9	37.2	200

The analysis indicates that the 95th-percentile eastbound through queue at the Sheppard Avenue E and Rean Dr. / Hawksbury Dr. intersection exceeded the available storage length by approximately 40m.

The results of the existing Synchro analysis at un-signalized intersections during the a.m. peak hour are summarized in **Table 4.**

Table 4 Summary of Existing Un-signalized Intersection during AM Peak Hour- Synchro

Intersection	Intersection LOS	Movement	LOS	Delay (Sec/Veh)	95th Percentile Queue (m)
Sheppard Avenue E and Kenaston Gardens Intersection	A	EBTR	A	0.0	0.0
		NBR	B	12.3	1.0
Kenaston Gardens and Barberry Place Intersection	A	EBLR	B	10.4	3.4
		NBTL	A	1.1	0.3
		SBTR	A	0.0	0.0
Unassumed Private Road and Rean Dr. Intersection	A	EBLR	B	10.2	0.1
		NBTL	A	0.0	0.0
		SBTR	A	0.0	0.0
Unassumed Private Road and Barberry Place Intersection	A	WBLR	A	9.5	0.1
		NBTR	A	0.0	0.0
		SBTL	A	2.1	0.2

The existing conditions analysis indicates that un-signalized intersections are currently operating at LOS A during weekday AM peak hour.

Detailed Synchro and Sim-Traffic analysis sheets are presented in **Appendix B.**

4.1.1 Improved Existing Conditions with Mitigation Measures Applied during AM Peak Hour

Due to the long queue and LOS F on the eastbound movement at the Sheppard Avenue E and Rean Dr. / Hawksbury Dr. intersection, two potential mitigation measures were applied:

1. Introducing a protected/permitted left-turn phase to the eastbound movement.
2. Optimizing / adjusting the cycle length at the Sheppard Avenue E and Rean Dr. / Hawksbury Dr. intersection.

The mitigation measures were analyzed in Synchro / SimTraffic – the results are summarized in **Tables 5** and **6**.

Detailed Synchro and Sim-Traffic analysis sheets are presented in **Appendix C.**

Table 5 Summary of Improved Existing Conditions with Mitigation Measures Applied during AM Peak Hour- Synchro

Intersection	Intersection LOS	Movement	LOS	v/c
Sheppard Avenue E and Rean Dr. / Hawksbury Dr. Intersection	C	EBL	B	0.41
		EBT	B	0.66
		EBR	A	0.02
		WBL	C	0.22
		WBT	C	0.84
		WBR	B	0.06
		NBL	D	0.18
		NBTR	C	0.42
		SBL	D	0.51
		SBTR	B	0.25

The results of Synchro analysis suggests that the failure experienced on the eastbound left turn movement can be remedied with a combination of signal timing adjustment and introduction of a protected/permitted left-turn phase to this movement.

Table 6 – Summary of Improved Existing Conditions with Mitigation Measures Applied during AM Peak Hour - Sim-Traffic

Location	Dir	Average Delay (Sec/veh)	Average Queue (m)	95th Percentile Queue (m)	Approximate Available Storage Length (m)
Sheppard Avenue E and Rean Dr. / Hawksbury Dr. Intersection	EB	18.7	59.4	135.2	130
	WB	28.2	104.4	145.2	200
	NB	32.3	29.6	55.6	85
	SB	31.7	25.2	47.2	200

The results of Sim-Traffic analysis shows that with improvements the required existing storage on the eastbound approach is expected to reduce from 173m to 135m. Although, the queue on the eastbound approach was reduced, but it is still expected to exceed the existing storage.

4.2 PM Peak Hour

The results of the existing Synchro analysis at signalized intersections during the p.m. peak hour are summarized in **Table 7.**

Table 7 Summary of Existing Signalized Intersection during PM Peak Hour- Synchro

Intersection	Intersection LOS	Movement	LOS	v/c
Sheppard Avenue E and Barberry Place / Bayview Village Mall Intersection	C	EBL	D	0.82
		EBTR	C	0.74
		WBL	A	0.11
		WBTR	C	0.60
		NBL	C	0.30
		NBTR	B	0.09
		SBL	C	0.16
		SBTR	A	0.24
Sheppard Avenue E and Rean Dr. / Hawksbury Dr. Intersection	C	EBL	F	0.94
		EBT	C	0.78
		EBR	A	0.09
		WBL	F	1.52
		WBT	B	0.71
		WBR	A	0.18
		NBL	C	0.14
		NBTR	C	0.21
		SBL	D	0.57
		SBTR	B	0.18

- Sheppard Avenue E and Barberry Place / Bayview Village Mall intersection is currently operating at an overall LOS of C and within permissible v/c values during the PM peak hour.

- Sheppard Avenue E and Rean Dr. / Hawksbury Dr. intersection is currently operating at an overall LOS of C with failing eastbound left turn and westbound left turn movements during the afternoon peak hour.

The existing conditions model was run in Sim-Traffic for ten minutes of seeding time followed by one hour of simulation time. The results of the existing traffic analysis during the p.m. peak hour and based on 5-run average are summarized in **Table 8**.

Table 8 – Summary of Existing Signalized Intersection during PM Peak Hour- Sim-Traffic

Location	Dir	Average Delay (Sec/veh)	Average Queue (m)	95th Percentile Queue (m)	Approximate Available Storage Length (m)
Sheppard Avenue E and Barberry Place / Bayview Village Mall Intersection	EB	48.7	90.3	112.5	230
	WB	22.0	52.8	98.0	130
	NB	38.0	18.4	35.6	165
	SB	21.8	17.2	35.1	70
Sheppard Avenue E and Rean Dr. / Hawksbury Dr. Intersection	EB	48.2	117.5	187.0	130
	WB	81.4	179.5	302.5	200
	NB	26.0	17.1	33.1	85
	SB	35.3	30.2	68.4	200

The analysis indicates that the 95th-percentile eastbound through and westbound through queues at the Sheppard Avenue E and Rean Dr. / Hawksbury Dr. intersection exceeded the available storage length by approximately 60 and 100m, respectively.

The results of the existing Synchro analysis at un-signalized intersections during the p.m. peak hour are summarized in **Table 9.**

Table 9 Summary of Existing Un-signalized Intersection during PM Peak Hour- Synchro

Intersection	Intersection LOS	Movement	LOS	Delay (Sec/Veh)	95th Percentile Queue (m)
Sheppard Avenue E and Kenaston Gardens Intersection	A	EBTR	A	0.0	0.0
		NBR	B	14.6	0.6
Kenaston Gardens and Barberry Place Intersection	A	EBLR	A	9.8	1.9
		NBTL	A	1.3	0.2
		SBTR	A	0.0	0.0
Unassumed Private Road and Rean Dr. Intersection	A	EBLR	B	10.6	0.1
		NBTL	A	0.0	0.0
		SBTR	A	0.0	0.0
Unassumed Private Road and Barberry Place Intersection	A	WBLR	A	8.9	0.0
		NBTR	A	0.0	0.0
		SBTL	A	0.5	0.1

The existing conditions analysis indicates that un-signalized intersections are currently operating at LOS A during weekday PM peak hour. Detailed Synchro and Sim-Traffic analysis sheets are presented in **Appendix B.**

4.2.1 Improved Existing Conditions with Mitigation Measures Applied during PM Peak Hour

Due to the long queues and LOS F on the eastbound and westbound movements at the Sheppard Avenue E and Rean Dr. / Hawksbury Dr. intersection, the following improvements were analyzed:

1. Introducing a protected/permitted left-turn phase to the eastbound and westbound movements.
3. Optimizing / adjusting the cycle length at the Sheppard Avenue E and Rean Dr. / Hawksbury Dr. intersection from 100s to 115s.

The Synchro / SimTraffic results are summarized in **Tables 10** and **11**. Detailed Synchro and Sim-Traffic analysis sheets are presented in **Appendix C.**

Table 10 Summary of Improved Existing Conditions with Mitigation Measures Applied during PM Peak Hour- Synchro

Intersection	Intersection LOS	Movement	LOS	v/c
Sheppard Avenue E and Rean Dr. / Hawksbury Dr. Intersection	D	EBL	B	0.47
		EBT	E	0.83
		EBR	A	0.10
		WBL	C	0.62
		WBT	C	0.76
		WBR	A	0.20
		NBL	D	0.17
		NBTR	B	0.23
		SBL	D	0.69
		SBTR	B	0.21

The results of Synchro analysis suggests that the failure experienced on the eastbound and westbound left turn movements can be remedied with a combination of signal timing adjustment and introduction of a protected/permitted left-turn phase to these movements. However the intersection LOS is expected to deteriorate from LOS C to D with these measures.

Table 11 – Summary of Improved Existing Conditions with Mitigation Measures Applied during PM Peak Hour - Sim-Traffic

Location	Dir	Average Delay (Sec/veh)	Average Queue (m)	95th Percentile Queue (m)	Approximate Available Storage Length (m)
Sheppard Avenue E and Rean Dr. / Hawksbury Dr. Intersection	EB	27.6	86.5	161.3	130
	WB	27.4	102.5	144.4	200
	NB	38.8	24.4	47.4	85
	SB	60.6	53.3	111.9	200

The results of Sim-Traffic analysis shows that after the improvements the required existing storage on the eastbound and westbound approaches are expected to reduce by 30m and 160m, respectively. Although, the queue on the eastbound and westbound approaches were reduced, but they are still expected to exceed the existing storage.

5.0 Future traffic conditions with background growth for year 2031

The horizon year used for investigations of future traffic operations was 2031. A growth factor of 1% was applied to the eastbound and westbound traffic volumes on Sheppard Avenue E to project them to the year 2031. **Figure 3** illustrates the projected future background traffic volumes for 2031 which depicts the traffic growth over a *period of 15 years.*

6.0 Site Generated Traffic

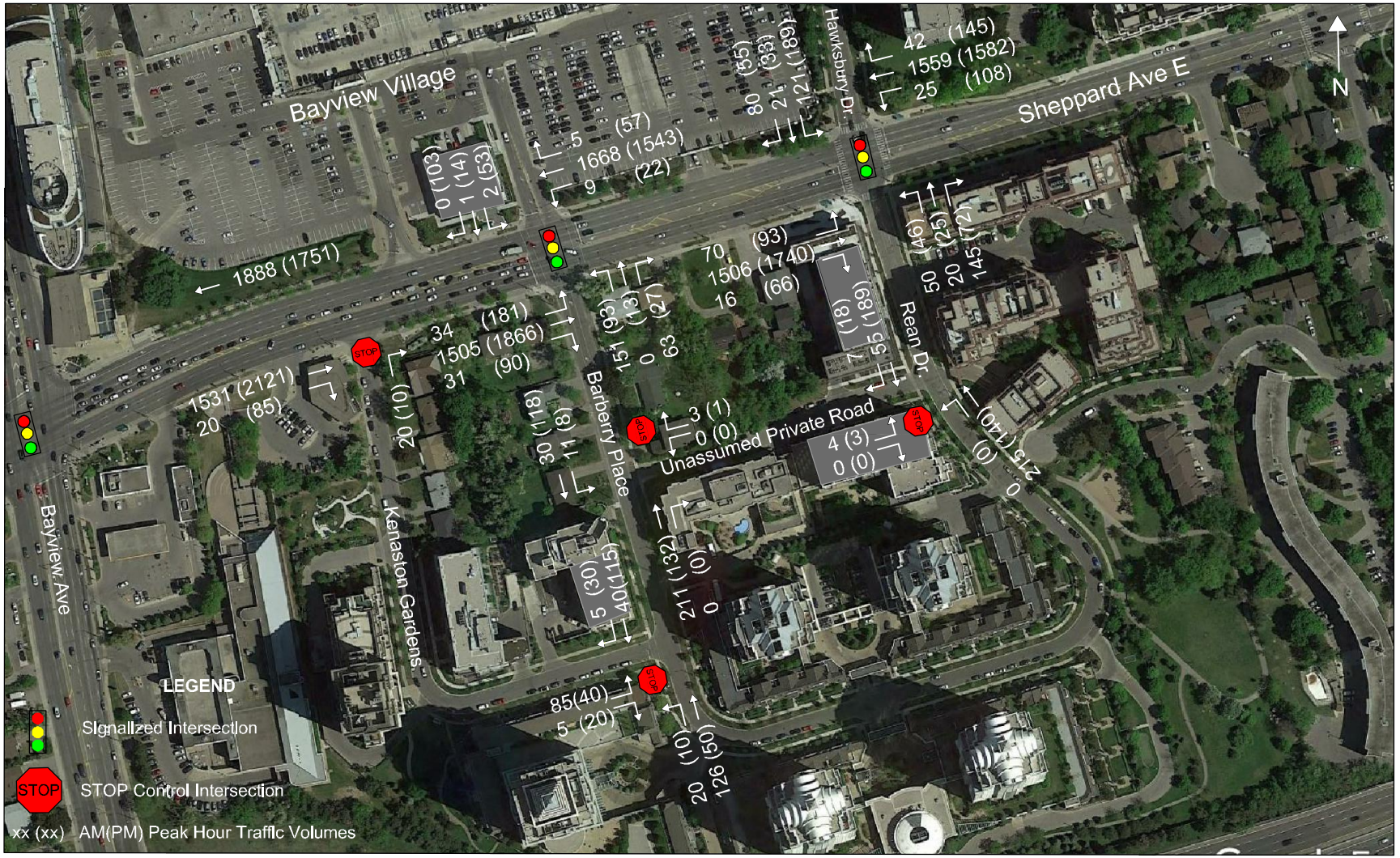
The proposed site generated traffic volumes are based on the two TIS Reports noted in **Table 1**. After discussion with the City staff, the following modifications were applied to the site generated traffic to include all the remaining developable sites within the study area:

- The generated site traffic west of Barberry (579 Sheppard + 27 & 25 Barberry) was increased by 100% to cover the generated site traffic from the same size development as Chestnut Hill (577 Sheppard + 5-15 Kenaston).
- The generated site traffic east of Barberry (589 Sheppard + 7 Barberry) was increased by 30% to cover the generated site traffic from Chestnut Hill, given the set back and parkland dedication requirements.

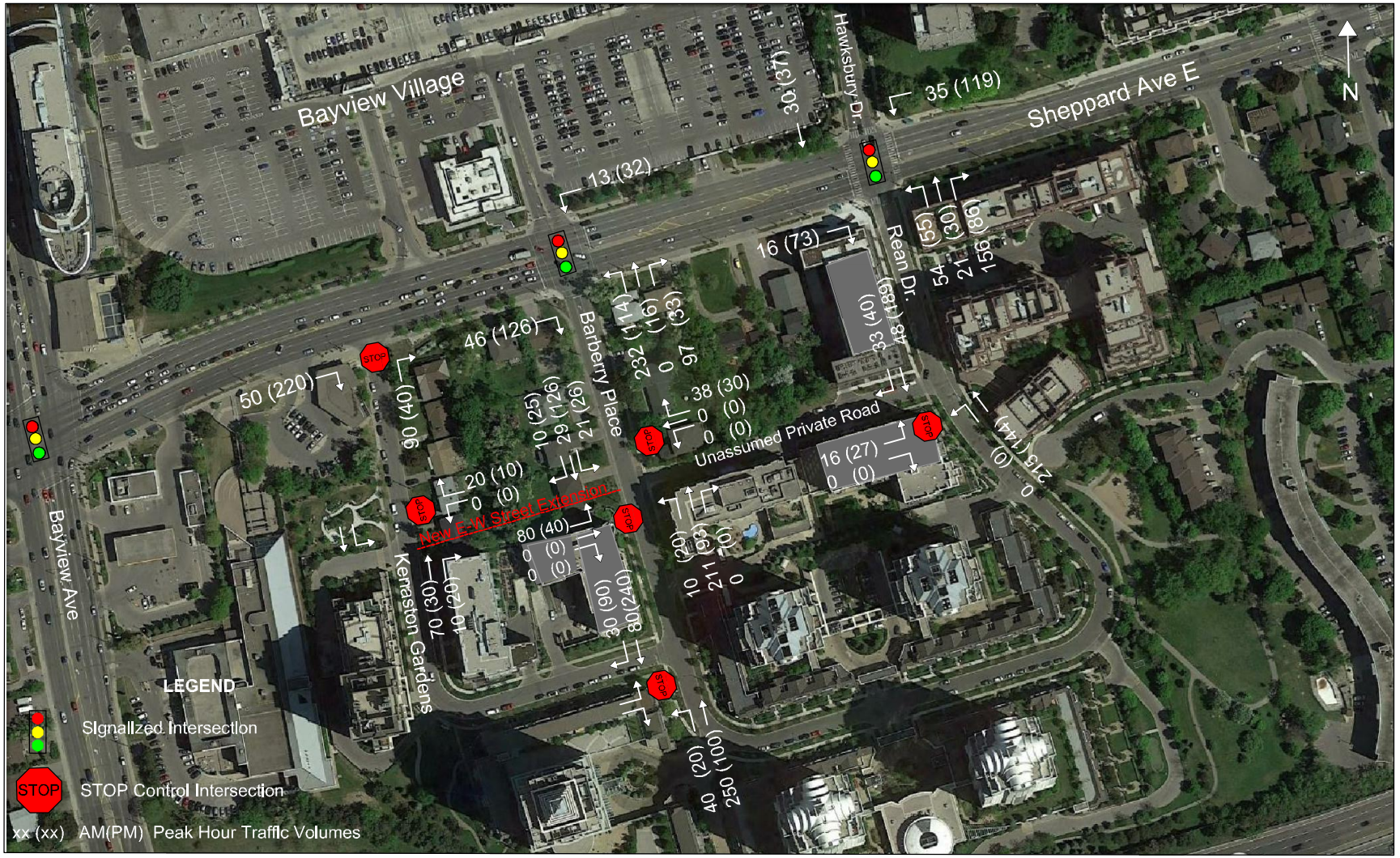
Figure 4 illustrates the 2031 future background traffic volumes during the morning and afternoon peak hours.

7.0 Future Total Traffic Operations – 2031

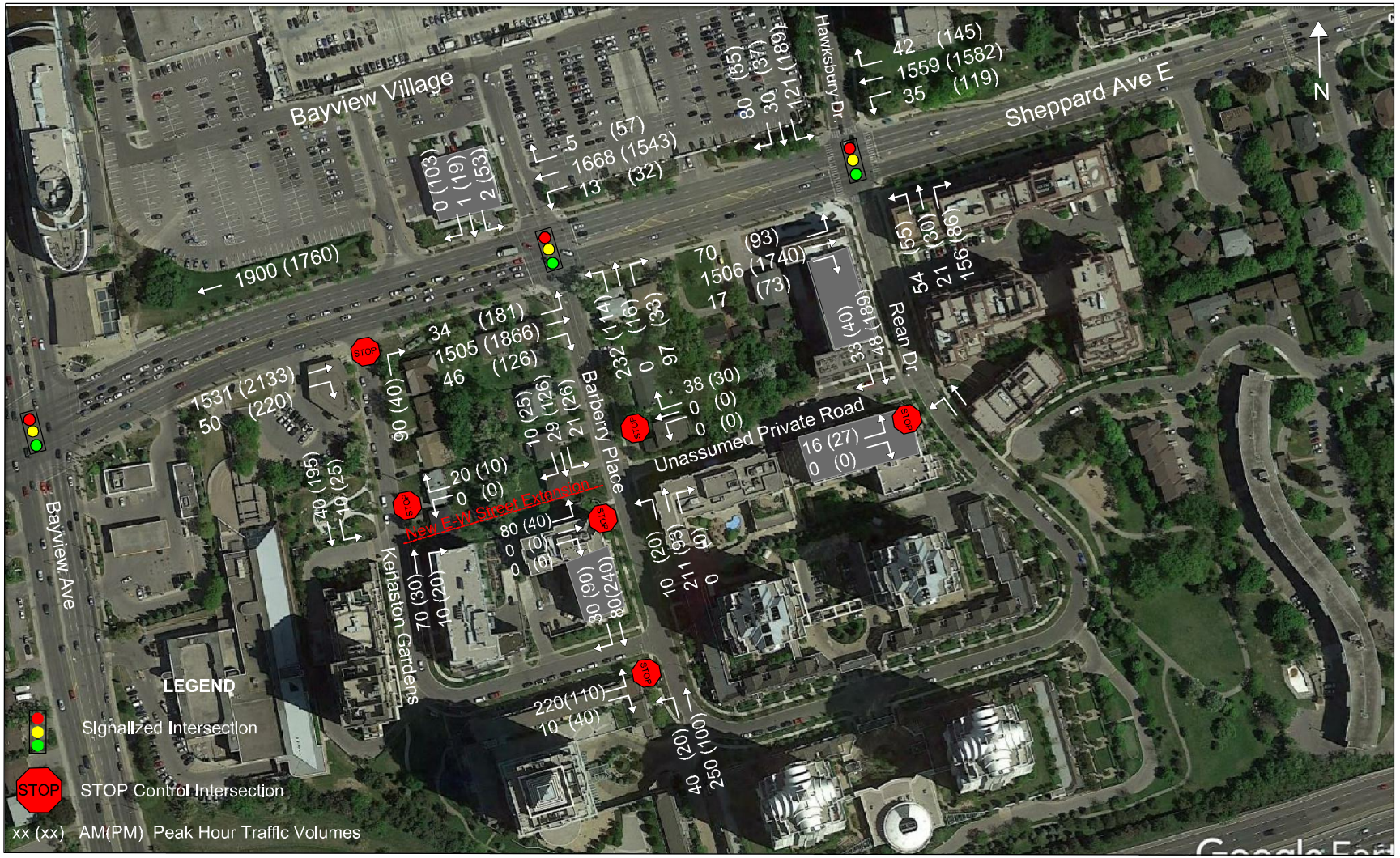
Figure 5 illustrates the 2031 future total traffic volumes during the morning and afternoon peak hours, which include both background growth and site generated traffic volumes.



New East-West Street Extension from Rean Drive to Kenaston Gardens Traffic Impact Assessment Study	Future Peak Hour Traffic Background (2031)	Figure 3



New East-West Street Extension from Rean Drive to Kenaston Gardens Traffic Impact Assessment Study	Future Peak Hour Site Generated Traffic (2031)	Figure 4



New East-West Street Extension from Rean Drive to Kenaston Gardens Traffic Impact Assessment Study	Total Future Peak Hour Traffic (2031)	Figure 5

The major intersections analyzed in the future conditions include the following:

- Sheppard Avenue E and Barberry Place / Bayview Village Mall Intersection (Signalized);
- Sheppard Avenue E and Rean Dr. / Hawksbury Dr. Intersection (Signalized);
- Sheppard Avenue E and Kenaston Gardens Intersection (Un-signalized - right-in/right-out movement);
- Kenaston Gardens and Barberry Place Intersection (Un-signalized);
- Unassumed Private Road and Rean Dr. Intersection (Un-signalized);
- Proposed Barberry Place and New East-West Street Extension Intersection (Un-signalized); and
- Proposed Kenaston Gardens & New East-West Street Extension.

To improve the traffic operations, the signal timing was optimized and adjusted.

7.1 Sensitivity Analysis to Optimize Signal Timing / Phasing during the AM Peak Hour

Similar to the existing conditions, the following two changes were applied at the Sheppard Avenue E and Rean Dr. / Hawksbury Dr. intersection:

1. Introducing a protected/permitted left-turn phase to the eastbound movement.
2. Optimizing / adjusting the cycle length at the Sheppard Avenue E and Rean Dr. / Hawksbury Dr. intersection.

For future traffic conditions, sensitivity analysis was conducted to optimize signal timing/phasing at the Sheppard Avenue E and Rean Dr. / Hawksbury Dr. intersection with eastbound critical movement.

Based on City's Synchro Guideline, in suburban areas where intersections with more than four phases are more common the City restricts the maximum cycle length at major intersections to the 125 – 135 seconds range, based on 1.0 m/s walk speed.

The analysis considered cycle lengths of 115, 120, and 125, seconds. Detailed Synchro analysis sheets are presented in **Appendix D.** The comparison of various cycle lengths found that the optimal cycle length was 115 seconds during the morning peak hour.

7.2 AM Peak Hour

The results of the future Synchro analysis at signalized intersections during the a.m. peak hour are summarized in **Table 12.**

Table 12 Summary of Future Signalized Intersection during AM Peak Hour- Synchro

Intersection	Intersection LOS	Movement	LOS	v/c
Sheppard Avenue E and Barberry Place / Bayview Village Mall Intersection	C	EBL	B	0.19
		EBTR	C	0.72
		WBL	A	0.07
		WBTR	C	0.78
		NBL	D	0.72
		NBTR	A	0.21
		SBL	C	0.01
		SBTR	C	0.00
Sheppard Avenue E and Rean Dr. / Hawksbury Dr. Intersection	D	EBL	B	0.41
		EBT	D	0.76
		EBR	A	0.02
		WBL	D	0.49
		WBT	D	0.97
		WBR	B	0.06
		NBL	D	0.20
		NBTR	C	0.46
		SBL	D	0.53
		SBTR	B	0.27

The results of the synchro analysis are summarized below:

- Sheppard Avenue E and Barberry Place / Bayview Village Mall intersection is expected to operate at an overall LOS of C and within permissible v/c values during the AM peak hour.
- Sheppard Avenue E and Rean Dr. / Hawksbury Dr. intersection is expected to operate at an overall LOS of D during the AM peak hour. The westbound through movement is expected to have a v/c of 0.97.

The future condition model was run in Sim-Traffic for ten minutes of seeding time followed by one hour of simulation time. The results of the traffic analysis during the a.m. peak hour and based on 5-run average are summarized in **Tables 13.**

Table 13 – Summary of Future Signalized Intersection during AM Peak Hour - Sim-Traffic

Location	Dir	Average Delay (Sec/veh)	Average Queue (m)	95th Percentile Queue (m)	Approximate Available Storage Length (m)
Sheppard Avenue E and Barberry Place / Bayview Village Mall Intersection	EB	40.1	89.8	109.9	230
	WB	25.7	72.6	128.7	130
	NB	38.9	39.1	71.3	165
	SB	37.2	0.5	3.7	70
Sheppard Avenue E and Rean Dr. / Hawksbury Dr. Intersection	EB	20.4	70.8	150.5	130
	WB	76.8	209.5	313.6	200
	NB	38.7	32.9	67.1	85
	SB	32.4	25.2	53.3	200

The analysis indicates that the 95th-percentile eastbound through and westbound through queues at the Sheppard Avenue E and Rean Dr. / Hawksbury Dr. intersection are expected to exceed the available storage length by approximately 20m and 115m, respectively.

The results of the future Synchro analysis at un-signalized intersections during the a.m. peak hour are summarized in **Table 14.**

Table 14 Summary of Future Un-signalized Intersection during AM Peak Hour- Synchro

Intersection	Intersection LOS	Movement	LOS	Delay (Sec/Veh)	95th Percentile Queue (m)
Sheppard Avenue E and Kenaston Gardens Intersection	A	EBTR	A	0.0	0.0
		NBR	C	15.2	6.3
Kenaston Gardens and Barberry Place Intersection	A	EBLR	C	17.2	18.7
		NBTL	A	1.3	0.7
		SBTR	A	0.0	0.0
Unassumed Private Road and Rean Dr. Intersection	A	EBLR	B	10.4	0.6
		NBTL	A	0.0	0.0
		SBTR	A	0.0	0.0
Barberry Place & New East-West Street Extension	A	EBLTR	B	13.0	4.5
		WBLTR	A	9.7	1.3
		NBLTR	A	0.4	0.2
		SBLTR	A	2.8	0.4
Kenaston Gardens & New East-West Street Extension	A	WBLR	A	8.8	0.5
		NBTR	A	0.0	0.0
		SBTL	A	1.5	1.5

The future conditions analysis indicates that un-signalized intersections are expected to operate at LOS A during weekday AM peak hour.

Detailed Synchro and Sim-Traffic analysis sheets are presented in **Appendix E.**

7.3 Sensitivity Analysis to Optimize Signal Timing / Phasing during the PM Peak Hour

In order to improve operations during the PM peak hour the following improvements were made at the Sheppard Avenue E and Rean Dr. / Hawksbury Dr. intersection:

1. Introducing a protected/permitted left-turn phase to the eastbound and westbound movements.
2. Optimizing / adjusting the cycle length at the Sheppard Avenue E and Rean Dr. / Hawksbury Dr. intersection from 100s to 115s.

A sensitivity analysis was conducted to optimize signal timing/phasing at the Sheppard Avenue E and Rean Dr. / Hawksbury Dr. intersection. The analysis considered cycle lengths of 120, 125, 130, and 135 seconds. Detailed Synchro analysis sheets are presented in **Appendix D.** The comparison of various cycle lengths found that the optimal cycle length was 130 seconds.

7.4 PM Peak Hour

The results of the future Synchro analysis at signalized intersections during the p.m. peak hour are summarized in **Table 15.**

Table 15 Summary of Future Signalized Intersection during PM Peak Hour- Synchro

Intersection	Intersection LOS	Movement	LOS	v/c
Sheppard Avenue E and Barberry Place / Bayview Village Mall Intersection	C	EBL	E	0.95
		EBTR	C	0.88
		WBL	B	0.17
		WBTR	C	0.70
		NBL	D	0.37
		NBTR	B	0.11
		SBL	C	0.17
		SBTR	A	0.25
Sheppard Avenue E and Rean Dr. / Hawksbury Dr. Intersection	D	EBL	C	0.57
		EBT	E	0.91
		EBR	A	0.11
		WBL	D	0.73
		WBT	C	0.83
		WBR	A	0.19
		NBL	D	0.22
		NBTR	B	0.28
		SBL	E	0.77
		SBTR	C	0.23

- Sheppard Avenue E and Barberry Place / Bayview Village Mall intersection is expected to operate at an overall LOS of C during the PM peak hour. The eastbound movement is expected to experience high v/c ratios.

- Sheppard Avenue E and Rean Dr. / Hawksbury Dr. intersection is expected to operate at an overall LOS of D. The eastbound movement is expected to experience high v/c ratios.

The future condition model was run in Sim-Traffic for ten minutes of seeding time followed by one hour of simulation time. The results of the traffic analysis during the p.m. peak hour and based on 5-run average are summarized in **Tables 16.**

Table 16 – Summary of Future Signalized Intersection during PM Peak Hour - Sim-Traffic

Location	Dir	Average Delay (Sec/veh)	Average Queue (m)	95th Percentile Queue (m)	Approximate Available Storage Length (m)
Sheppard Avenue E and Barberry Place / Bayview Village Mall Intersection	EB	45.6	87.8	112.1	230
	WB	27.8	72.7	135.0	130
	NB	38.8	15.6	31.6	165
	SB	93.2	38.7	93.0	70
Sheppard Avenue E and Rean Dr. / Hawksbury Dr. Intersection	EB	27.8	87.8	164.9	130
	WB	43.9	163.1	248.2	200
	NB	47.3	20.5	52.8	85
	SB	84.7	67.2	126.8	200

The analysis indicates that the 95th-percentile eastbound through and westbound through queues at the Sheppard Avenue E and Rean Dr. / Hawksbury Dr. intersection are expected to exceed the available storage length by approximately 35 and 50m, respectively.

The results of the future Synchro analysis at un-signalized intersections during the p.m. peak hour are summarized in **Table 17.**

Table 17 Summary of Future Un-signalized Intersection during PM Peak Hour- Synchro

Intersection	Intersection LOS	Movement	LOS	Delay (Sec/Veh)	95th Percentile Queue (m)
Sheppard Avenue E and Kenaston Gardens Intersection	B	EBTR	A	0.0	0.0
		NBR	C	18.9	3.6
Kenaston Gardens and Barberry Place Intersection	A	EBLR	B	13.1	8.0
		NBTL	A	1.5	0.4
		SBTR	A	0.0	0.0
Unassumed Private Road and Rean Dr. Intersection	A	EBLR	B	10.9	1.1
		NBTL	A	0.0	0.0
		SBTR	A	0.0	0.0
Barberry Place & New East-West Street Extension	A	EBLTR	B	12.0	1.9
		WBLTR	A	8.9	0.8
		NBLTR	A	1.4	0.3
		SBLTR	A	1.2	0.4
Kenaston Gardens & New East-West Street Extension	A	WBLR	A	8.5	0.2
		NBTR	A	0.0	0.0
		SBTL	A	1.0	0.4

The future conditions analysis indicates that un-signalized intersections are expected to operate at LOS B or better during weekday PM peak hour.

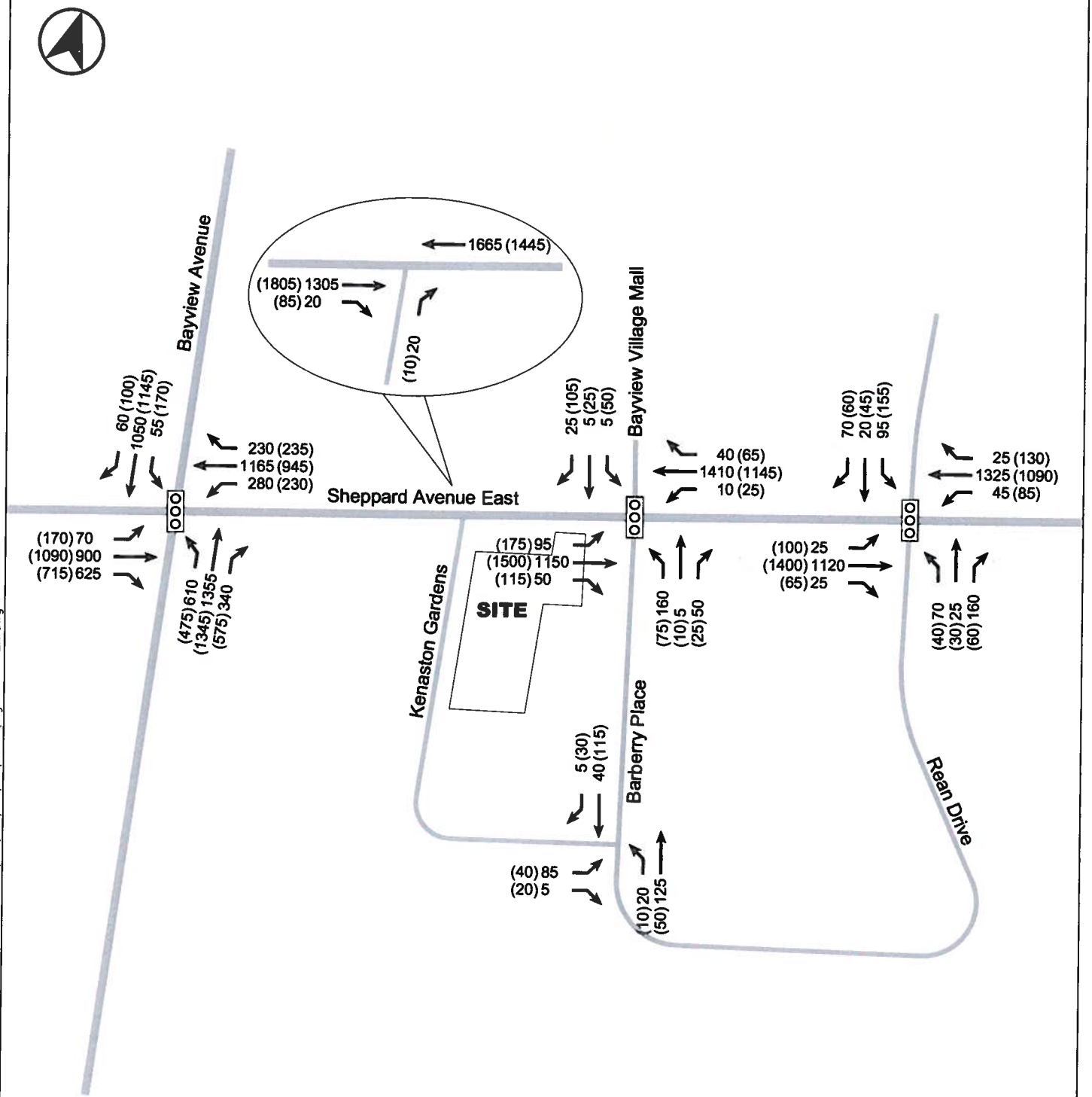
Detailed Synchro and Sim-Traffic analysis sheets are presented in **Appendix E.**

8.0 Conclusion

This study concludes that the addition of the new east-west extension is feasible and will have a minimal traffic impact on the level of service and volume to capacity ratios in the adjacent road network.

APPENDIX "A"

Traffic Data



EXISTING TRAFFIC VOLUMES

00 AM Peak Hour

(00) PM Peak Hour

Existing Traffic Signal

DRAWING FILENAME: P:\73\85\04\Graphics\Fig06-01-EX.dwg

DATE PLOTTED: August 19, 2013

City of Toronto - Traffic Safety Unit

Turning Movement Count Summary Report

HAWKSBURY DR AT REAN DR & SHEPPARD AVE (PX 742)

Survey Date: 2013-Jun-25 (Tuesday)

Survey Type: Routine Hours

Time Period	Vehicle Type	NORTHBOUND Exits	Left	Thru	Right	Total	EASTBOUND Exits	Left	Thru	Right	Total	SOUTHBOUND Exits	Left	Thru	Right	Total	WESTBOUND Exits	Left	Thru	Right	Total		Peds	Bike	Other
08:15-09:15	CAR	130	50	20	144	214	1,496	68	1,232	15	1,315	58	120	19	75	214	1,381	24	1,256	42	1,322	N	25	0	0
	TRK	2	0	0	1	1	13	2	12	1	15	3	0	1	3	4	36	1	33	0	34	S	39	1	0
AM PEAK	BUS	0	0	0	0	0	12	0	11	0	11	1	1	1	2	4	12	0	10	0	10	E	28	2	0
																						W	10	0	0
	TOTAL:	**132**	**50**	**20**	**145**	**215**	**1,521**	**70**	**1,255**	**16**	**1,341**	**62**	**121**	**21**	**80**	**222**	**1,429**	**25**	**1,299**	**42**	**1,366**				
17:00-18:00	CAR	262	46	25	72	143	1,574	92	1,313	66	1,471	206	189	33	55	277	1,410	107	1,309	145	1,561	N	52	0	0
	TRK	1	0	0	0	0	6	1	6	0	7	1	0	0	0	0	5	1	5	0	6	S	56	0	0
PM PEAK	BUS	0	0	0	0	0	5	0	5	0	5	0	0	0	0	0	4	0	4	0	4	E	50	5	0
																						W	21	6	0
	TOTAL:	**263**	**46**	**25**	**72**	**143**	**1,585**	**93**	**1,324**	**66**	**1,483**	**207**	**189**	**33**	**55**	**277**	**1,419**	**108**	**1,318**	**145**	**1,571**				
OFF HR AVG	CAR	220	46	18	64	128	1,158	63	925	47	1,035	121	169	28	80	277	1,031	46	905	139	1,090	N	42	1	0
	TRK	5	1	0	1	2	26	3	21	2	26	3	4	0	2	6	18	1	15	2	18	S	49	0	0
	BUS	2	0	0	1	1	7	1	5	0	6	0	1	0	1	2	7	0	6	1	7	E	37	1	0
																						W	22	3	0
	TOTAL:	**227**	**47**	**18**	**66**	**131**	**1,191**	**67**	**951**	**49**	**1,067**	**124**	**174**	**28**	**83**	**285**	**1,056**	**47**	**926**	**142**	**1,115**				
07:30-09:30	CAR	217	115	42	251	408	2,615	113	2,123	35	2,271	116	241	28	135	404	2,586	53	2,336	62	2,451	N	44	0	0
	TRK	6	0	1	2	3	29	4	26	3	33	5	1	1	4	6	56	1	52	1	54	S	81	1	0
2 HR AM	BUS	2	0	0	1	1	26	2	22	0	24	2	3	1	3	7	28	1	25	0	26	E	39	5	0
																						W	16	0	0
	TOTAL:	**225**	**115**	**43**	**254**	**412**	**2,670**	**119**	**2,171**	**38**	**2,328**	**123**	**245**	**30**	**142**	**417**	**2,670**	**55**	**2,413**	**63**	**2,531**				
16:00-18:00	CAR	512	83	43	136	262	3,042	167	2,522	125	2,814	362	384	64	133	581	2,636	173	2,420	302	2,895	N	83	1	0
	TRK	1	0	0	0	0	17	1	17	0	18	1	0	0	1	1	14	1	13	0	14	S	99	0	0
2 HR PM	BUS	2	0	0	1	1	18	0	16	0	16	0	1	0	0	1	12	0	12	2	14	E	75	8	0
																						W	39	11	0
	TOTAL:	**515**	**83**	**43**	**137**	**263**	**3,077**	**168**	**2,555**	**125**	**2,848**	**363**	**385**	**64**	**134**	**583**	**2,662**	**174**	**2,445**	**304**	**2,923**				
07:30-18:00	CAR	1,606	380	156	642	1,178	10,289	531	8,346	347	9,224	961	1,301	204	588	2,093	9,345	410	8,377	919	9,706	N	295	4	0
	TRK	25	5	1	7	13	149	15	127	11	153	17	15	1	14	30	142	5	123	9	137	S	377	2	0
8 HR SUM	BUS	12	0	0	4	4	69	7	59	0	66	3	6	2	6	14	66	1	60	5	66	E	260	16	0
																						W	141	22	0
	TOTAL:	**1,643**	**385**	**157**	**653**	**1,195**	**10,507**	**553**	**8,532**	**358**	**9,443**	**981**	**1,322**	**207**	**608**	**2,137**	**9,553**	**416**	**8,560**	**933**	**9,909**				

Total 8 Hour Vehicle Volume: 22,684

Total 8 Hour Bicycle Volume: 44

Total 8 Hour Intersection Volume: 22,728

Comment:

Printed On: 26 Jan, 2016 11:01:35AM

City of Toronto - Traffic Safety Unit

Turning Movement Count Summary Report

BARBERRY PL AT SHEPPARD AVE E (PX 1913)

Survey Date: 2013-Jun-18 (Tuesday)

Survey Type: Routine Hours

Time Period	Vehicle Type	NORTHBOUND Exits	Left	Thru	Right	Total	EASTBOUND Exits	Left	Thru	Right	Total	SOUTHBOUND Exits	Left	Thru	Right	Total	WESTBOUND Exits	Left	Thru	Right	Total		Peds	Bike	Other
08:00-09:00	CAR	38	148	0	60	208	1,281	33	1,219	29	1,281	39	2	1	0	3	1,433	9	1,285	5	1,299	N	39	1	0
	TRK	1	1	0	1	2	25	1	24	0	25	0	0	0	0	0	33	0	32	0	32	S	32	0	0
AM PEAK	BUS	0	2	0	2	4	13	0	11	2	13	2	0	0	0	0	15	0	13	0	13	E	31	8	0
																						W	78	7	0
	TOTAL:	**39**	**151**	**0**	**63**	**214**	**1,319**	**34**	**1,254**	**31**	**1,319**	**41**	**2**	**1**	**0**	**3**	**1,481**	**9**	**1,330**	**5**	**1,344**				
16:15-17:15	CAR	248	93	13	27	133	1,608	179	1,529	90	1,798	126	52	14	103	169	1,426	22	1,230	56	1,308	N	42	2	0
	TRK	3	0	0	0	0	18	2	17	0	19	0	1	0	0	1	11	0	11	1	12	S	52	0	0
PM PEAK	BUS	0	0	0	0	0	9	0	9	0	9	0	0	0	0	0	4	0	4	0	4	E	44	6	0
																						W	81	9	0
	TOTAL:	**251**	**93**	**13**	**27**	**133**	**1,635**	**181**	**1,555**	**90**	**1,826**	**126**	**53**	**14**	**103**	**170**	**1,441**	**22**	**1,245**	**57**	**1,324**				
OFF HR AVG	CAR	296	98	9	25	132	1,090	228	1,015	48	1,291	72	50	9	84	143	1,155	15	973	59	1,047	N	31	1	0
	TRK	3	0	0	1	1	29	3	27	1	31	1	1	0	3	4	24	0	21	0	21	S	34	0	0
	BUS	0	1	0	0	1	7	0	7	1	8	1	0	0	0	0	7	0	6	0	6	E	42	4	0
																						W	58	5	0
	TOTAL:	**299**	**99**	**9**	**26**	**134**	**1,126**	**231**	**1,049**	**50**	**1,330**	**74**	**51**	**9**	**87**	**147**	**1,186**	**15**	**1,000**	**59**	**1,074**				
07:30-09:30	CAR	143	264	2	92	358	2,265	120	2,169	70	2,359	91	4	4	12	20	2,702	17	2,426	21	2,464	N	65	1	0
	TRK	4	2	0	3	5	52	3	49	0	52	1	0	0	1	1	57	1	54	1	56	S	70	0	0
2 HR AM	BUS	0	3	0	2	5	25	0	23	3	26	3	0	0	0	0	26	0	23	0	23	E	53	10	0
																						W	125	10	0
	TOTAL:	**147**	**269**	**2**	**97**	**368**	**2,342**	**123**	**2,241**	**73**	**2,437**	**95**	**4**	**4**	**13**	**21**	**2,785**	**18**	**2,503**	**22**	**2,543**				
16:00-18:00	CAR	518	173	24	49	246	3,108	356	2,965	182	3,503	256	94	27	201	322	2,770	47	2,396	138	2,581	N	90	3	0
	TRK	3	1	0	0	1	27	2	26	0	28	0	1	0	0	1	22	0	21	1	22	S	86	1	0
2 HR PM	BUS	0	0	0	0	0	15	0	15	0	15	0	0	0	0	0	8	0	8	0	8	E	101	11	0
																						W	167	13	0
	TOTAL:	**521**	**174**	**24**	**49**	**247**	**3,150**	**358**	**3,006**	**182**	**3,546**	**256**	**95**	**27**	**201**	**323**	**2,800**	**47**	**2,425**	**139**	**2,611**				
07:30-18:00	CAR	1,843	827	62	242	1,131	9,736	1,386	9,195	444	11,025	635	299	66	550	915	10,091	125	8,714	395	9,234	N	278	7	0
	TRK	17	4	0	7	11	192	15	182	2	199	4	3	0	13	16	175	2	158	2	162	S	292	2	0
8 HR SUM	BUS	0	6	0	2	8	66	0	64	5	69	5	0	0	0	0	61	0	55	0	55	E	323	37	0
																						W	525	41	0
	TOTAL:	**1,860**	**837**	**62**	**251**	**1,150**	**9,994**	**1,401**	**9,441**	**451**	**11,293**	**644**	**302**	**66**	**563**	**931**	**10,327**	**127**	**8,927**	**397**	**9,451**				

Total 8 Hour Vehicle Volume: 22,825

Total 8 Hour Bicycle Volume: 87

Total 8 Hour Intersection Volume: 22,912

Comment:

Printed On: 26 Jan, 2016 11:04:06AM

LOCATION	**Sheppard Av. E. & Hawksbury Dr./Rean Dr.**	*DISTRICT*	**North York**
MODE/COMMENT	**SA2-VMG with Walk Rest Modifier**	*COMPUTER SYSTEM*	**UTC / SCOOT**
PX/SCN	**742 / 11381**	*CONTROLLER/CABINET*	**Novax - 18cct**
CODER	**JM**	*CONFLICT*	**Red & Red**
PREP.DATE/VERSION	**June 6, 2012**	*DESIGN WALK SPEED*	**1.0 m/s(FDW based on full crossing @1.2m/s)**

STREET			Sheppard Av. E.						Hawksbury Dr./Rean Dr.							*REMARKS*
COMPUTER INT.			1	2	3	4	5	6	7	8	9	10	11	12		
ASPECT			EWG	>	>	>	>	>	>	>	>		>	>	No Calls /	Pedestrian Minima:
			EWWK	>	>	>	>	>	>	>	>		>	>	EW WRM	NSWK = 7 sec; NSFD = 23 sec
																EWWK = 7 sec; EWFD = 12 sec
																Controller background cycle is
			EWG	>	>	>	EWY	ALLR	NSG	>	>	>	NSY	ALLR	Vehicle Call	disabled. Signal holds in Int. #3
			EWWK	>	>	EWFD	EWDW	>	NSDW	>	>	>	>	>	Only	EWFD reverts to EWWK if there
																is no side-street demand at the
																end of Interval #4
									NSG	>	>	>	NSY	ALLR	Pedestrian	
									NSWK	>	>	NSFD	NSDW	>	Call	
CONTROLLER INT.			1	2	3	4	5	6	7	8	9	10	11	12		*SCHEDULES*
IMP. DATE	*CL*	*C/S*														
June 11, 2012	90	C1S1	2	20	13	12	4	2	2	4	1	23	4	3		NORMAL
												1+3				
	100	C2S1	2	20	23	12	4	2	2	4	1	23	4	3		06:30 - 10:00, M-F
												1+3				
	100	C3S1	2	20	23	12	4	2	2	4	1	23	4	3		15:15 - 19:00, M-F
												1+3				
HOLD INTERVAL					*						*					
UTC	Plan 1		B	B	B	ABC	ABC	ABC	C	C	C		B	B		
STAGE	Plan 2								A	A	A	!	B	B		
	Plan 3								A	A	A	!	B	B		
	Plan 4															

NOTES: Stage C is a dummy stage when EWFD reverts to EWWK in the absence of side street demand at the end of Interval #4.
Vehicle Extensions are inhibited during Stage C to improve response time to side street pedestrians and/or vehicle demand.

LOCATION	**Sheppard Av. E. & Barberry Pl./Bayview Village Mall**	*DISTRICT*	**North York**
MODE/COMMENT	**SA2-VMG with Walk Rest Modifier & Polara 2-Wire APS**	*COMPUTER SYSTEM*	**UTC / SCOOT**
PX/SCN	**1913 / 11371**	*CONTROLLER/CABINET*	**Novax L7N2 / M**
PREPARED/CHECKED BY	**LLC**	*CONFLICT FLASH*	**Red & Red**
PREPARATION DATE	**November 25, 2015**	*DESIGN WALK SPEED*	**1.0 m/s (FDW based on full crossing at 1.2 m/s)**

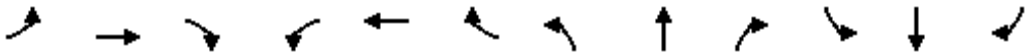
STREET		Sheppard Av. E.								Barberry Pl./Bayview Village Mall							*REMARKS*
COMPUTER INTERVAL		11	12	13	1	2	3	4	5	6	7	8	9	10			
ASPECT	PLAN 1:				EWG	>	>	>	>	>	>		>	>	No Calls /		Pedestrian Minima:
	No Left				EWWK	>	>	>	>	>	>		>	>	EW WRM		EWWK = 7 sec.; EWFD = 14 sec.
	Turn Called	APS															NSWK = 7 sec.; NSFD = 23 sec.
																	EWFD reverts to EWWK if there is no side street demand at the end
	PLAN 2:	EBLA	EBYA		EWG	>	>	EWY	ALLR	NSG	>	>	NSY	ALLR	Vehicle Call		Interval #3.
	EBLA	EBG	>	>	EWWK	>	EWFD	EWDW	>	NSDW	>	>	>	>	Only		SF#1 disables EBLA 00:00-10:00 daily (backed up by external clock)
	Only	EWWK	>	>													SF#2 disables WBLA all times
	Called	South Side Only															EBLA & WBLA callable by setback loops
																	Extended push activation = 3 secs.
	PLAN 3:	WBLA	WBYA							NSG	>	>	NSY	ALLR	Pedestrian		Under system control APS only provided during local interval
	WBLA	WBG	>	>						NSWK	>	NSFD	NSDW	>	Call		# 11, 12, & 13 when no arrows are displayed.
	Only	EWWK	>	>						APS							
	Called	North Side Only															
	PLAN 4:	EWLA	EWYA	ALLR													
	Both EBLA	EWDW	>	>													
	and WBLA																
	Called																

CONTROLLER INTERVAL			11	12	13	1	2	3	4	5	6	7	8	9	10				*SCHEDULES*
IMP. DATE	*CL*	*C/S*																	
Nov 25, 2015	100	C1S1	6	2	2	21	11	14	4	2	7	1	23	4	3				All Other Times.
													1+3						
	110	C2S1	6	2	2	21	21	14	4	2	7	1	23	4	3				06:30 - 10:00, M-F.
													1+3						
	110	C3S1	9	2	2	21	18	14	4	2	7	1	23	4	3				15:00 - 19:00, M-F.
													1+3						
HOLD INTERVAL			*				*					*							
UTC	Plan 1					B	B	DE	DE	DE	E	E		B	B				
STAGE	Plan 2		A	B	B						D	D	!	ACBF	ACBF				
	Plan 3		C	B	B						D	D	!	ACBF	ACBF				
	Plan 4		F	B	B														

NOTES:
Stage E is a dummy stage when EWFD reverts to EWWK in the absence of side street demand at the end of Interval #3.
Vehicle Extensions are inhibited during Stage E to improve response time to side street pedestrians and/or vehicle demand.
During local control, intervals 11-13 are only timed if EWLA called.

APPENDIX "B"

Existing Conditions (AM and PM Peak Hours) –
Synchro Report
Sim-Traffic Report

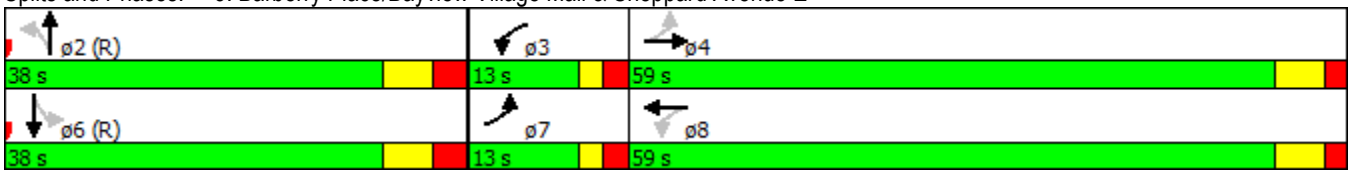


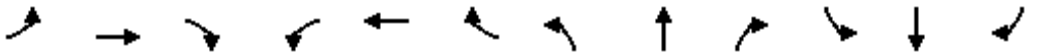
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	34	1254	31	9	1390	5	151	0	63	2	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.5
Storage Length (m)	35.0		0.0	35.0		0.0	50.0		0.0	25.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		0.99	1.00		0.96	0.95				
Frt		0.997			0.999			0.850				
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1636	4950	0	1685	4971	0	1652	1438	0	1685	1879	0
Flt Permitted	0.087			0.110			0.757			0.711		
Satd. Flow (perm)	150	4950	0	194	4971	0	1270	1438	0	1261	1879	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			1			172				
Link Speed (k/h)		60			60			40			25	
Link Distance (m)		97.7			154.9			105.2			105.9	
Travel Time (s)		5.9			9.3			9.5			15.2	
Confl. Peds. (#/hr)	78		31	31		78	32		39			32
Confl. Bikes (#/hr)			8			7			1			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	103%	100%	100%	103%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	6%	0%	3%	0%	2%	0%	5%	0%	0%	0%
Adj. Flow (vph)	38	1435	34	10	1591	6	168	0	70	2	1	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	1469	0	10	1597	0	168	70	0	2	1	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.0			3.0			3.0			3.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane					Yes							
Headway Factor	1.09	1.01	1.01	1.09	1.01	1.01	1.09	1.01	1.01	1.09	1.01	1.01
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	13.0	59.0		13.0	59.0		38.0	38.0		38.0	38.0	
Total Split (s)	13.0	59.0		13.0	59.0		38.0	38.0		38.0	38.0	
Total Split (%)	11.8%	53.6%		11.8%	53.6%		34.5%	34.5%		34.5%	34.5%	
Maximum Green (s)	9.0	53.0		9.0	53.0		31.0	31.0		31.0	31.0	
Yellow Time (s)	2.0	4.0		2.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.0		4.0	6.0		7.0	7.0		7.0	7.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		14.0			14.0		23.0	23.0		23.0	23.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Pedestrian Calls (#/hr)		0			0		0	0		0	0	
Act Effct Green (s)	64.0	53.0		64.0	53.0		31.0	31.0		31.0	31.0	
Actuated g/C Ratio	0.58	0.48		0.58	0.48		0.28	0.28		0.28	0.28	
v/c Ratio	0.18	0.62		0.04	0.67		0.47	0.13		0.01	0.00	
Control Delay	10.4	22.3		8.6	23.5		37.9	0.5		28.5	28.0	
Queue Delay	0.0	0.0		0.0	0.9		0.0	0.0		0.0	0.0	
Total Delay	10.4	22.3		8.6	24.4		37.9	0.5		28.5	28.0	
LOS	B	C		A	C		D	A		C	C	
Approach Delay		22.0			24.3			26.9			28.3	
Approach LOS		C			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 110			
Control Type: Pretimed			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 23.5		Intersection LOS: C	
Intersection Capacity Utilization 80.8%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Barberry Place/Bayview Village Mall & Sheppard Avenue E



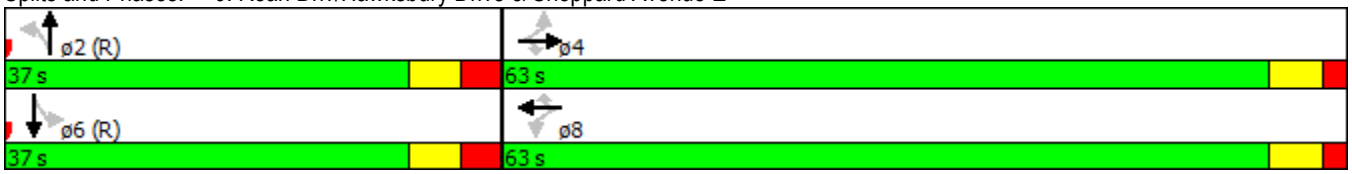


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	1255	16	25	1299	42	50	20	145	121	21	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.5
Storage Length (m)	35.0		0.0	35.0		35.0	10.0		0.0	35.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.91			0.95	0.97	0.97		0.98	0.96	
Frt			0.850			0.850		0.868			0.881	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1636	3500	1422	1620	3466	1507	1685	1565	0	1668	1487	0
Flt Permitted	0.092			0.103			0.685			0.622		
Satd. Flow (perm)	158	3500	1289	176	3466	1438	1174	1565	0	1071	1487	0
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			44					32			30	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		154.9			247.1			102.7			123.9	
Travel Time (s)		9.3			14.8			9.2			11.2	
Confl. Peds. (#/hr)	10		28	28		10	39		25	25		39
Confl. Bikes (#/hr)			2									1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	103%	100%	100%	103%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	2%	6%	4%	3%	0%	0%	0%	1%	1%	10%	6%
Adj. Flow (vph)	78	1436	18	28	1487	47	56	22	161	134	23	89
Shared Lane Traffic (%)												
Lane Group Flow (vph)	78	1436	18	28	1487	47	56	183	0	134	112	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.0			3.0			3.0			3.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane		Yes										
Headway Factor	1.09	1.01	1.09	1.09	1.01	1.09	1.09	1.01	1.01	1.09	1.01	1.01
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Minimum Split (s)	63.0	63.0	63.0	63.0	63.0	63.0	37.0	37.0		37.0	37.0	
Total Split (s)	63.0	63.0	63.0	63.0	63.0	63.0	37.0	37.0		37.0	37.0	
Total Split (%)	63.0%	63.0%	63.0%	63.0%	63.0%	63.0%	37.0%	37.0%		37.0%	37.0%	
Maximum Green (s)	57.0	57.0	57.0	57.0	57.0	57.0	30.0	30.0		30.0	30.0	
Yellow Time (s)	4.0	4.0	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	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	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	7.0	7.0		7.0	7.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	12.0	12.0	12.0	12.0	12.0	12.0	23.0	23.0		23.0	23.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0		0	0	
Act Effct Green (s)	57.0	57.0	57.0	57.0	57.0	57.0	30.0	30.0		30.0	30.0	
Actuated g/C Ratio	0.57	0.57	0.57	0.57	0.57	0.57	0.30	0.30		0.30	0.30	
v/c Ratio	0.87	0.72	0.02	0.28	0.75	0.06	0.16	0.37		0.42	0.24	
Control Delay	89.9	18.3	0.7	20.1	19.3	9.9	27.4	25.2		32.9	20.8	
Queue Delay	0.0	2.9	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	89.9	21.2	0.7	20.1	19.3	9.9	27.4	25.2		32.9	20.8	
LOS	F	C	A	C	B	A	C	C		C	C	
Approach Delay		24.5			19.0			25.7			27.4	
Approach LOS		C			B			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 100			
Control Type: Pretimed			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 22.4		Intersection LOS: C	
Intersection Capacity Utilization 135.8%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 6: Rean Driv/Hawksbury Drive & Sheppard Avenue E



Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded mScheduledIntervals	1	1	1	1	1	1
Vehs Entered	3835	3855	3904	3860	3908	3876
Vehs Exited	3812	3808	3849	3853	3852	3836
Starting Vehs	99	76	78	72	63	75
Ending Vehs	122	123	133	79	119	112
Travel Distance (km)	2334	2344	2395	2387	2392	2370
Travel Time (hr)	98.0	106.4	117.4	97.3	101.1	104.0
Total Delay (hr)	55.7	63.9	73.9	53.9	57.8	61.0
Total Stops	4452	5067	5561	4514	4600	4840
Fuel Used (l)	256.1	265.7	279.5	258.5	261.4	264.2

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10

Volumes adjusted by PHF, Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by PHF, Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	3835	3855	3904	3860	3908	3876
Vehs Exited	3812	3808	3849	3853	3852	3836
Starting Vehs	99	76	78	72	63	75
Ending Vehs	122	123	133	79	119	112
Travel Distance (km)	2334	2344	2395	2387	2392	2370
Travel Time (hr)	98.0	106.4	117.4	97.3	101.1	104.0
Total Delay (hr)	55.7	63.9	73.9	53.9	57.8	61.0
Total Stops	4452	5067	5561	4514	4600	4840
Fuel Used (l)	256.1	265.7	279.5	258.5	261.4	264.2

3: Barberry Place/Bayview Village Mall & Sheppard Avenue E Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.2	0.0	0.0	0.0	0.2
Denied Del/Veh (s)	0.5	0.0	0.0	2.6	0.2
Total Delay (hr)	13.6	10.2	1.9	0.0	25.8
Total Del/Veh (s)	31.1	22.1	28.9	19.8	26.7
Stop Delay (hr)	10.2	6.7	1.8	0.0	18.7
Stop Del/Veh (s)	23.4	14.5	27.0	19.4	19.4

6: Rean Driv/Hawksbury Drive & Sheppard Avenue E Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.1	0.2	0.0	0.2	0.4
Denied Del/Veh (s)	0.2	0.4	0.0	2.3	0.4
Total Delay (hr)	13.6	8.6	1.8	1.7	25.6
Total Del/Veh (s)	31.4	19.5	26.1	24.1	25.4
Stop Delay (hr)	9.1	4.7	1.7	1.5	17.1
Stop Del/Veh (s)	21.1	10.8	24.8	21.9	16.9

Total Zone Performance

Denied Delay (hr)	0.6
Denied Del/Veh (s)	1.2
Total Delay (hr)	51.4
Total Del/Veh (s)	1114.3
Stop Delay (hr)	35.8
Stop Del/Veh (s)	775.9

Intersection: 3: Barberry Place/Bayview Village Mall & Sheppard Avenue E

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	TR	L	TR
Maximum Queue (m)	34.1	96.5	94.5	90.2	31.3	116.8	117.6	108.6	50.2	44.1	3.4	3.6
Average Queue (m)	10.1	85.0	81.7	54.4	3.2	61.4	59.5	54.1	27.6	11.2	0.2	0.2
95th Queue (m)	26.4	95.5	97.9	98.6	15.3	116.5	110.1	101.6	46.5	26.6	2.2	2.3
Link Distance (m)		84.2	84.2	84.2		138.5	138.5	138.5		84.1		90.7
Upstream Blk Time (%)		19	13	1								
Queuing Penalty (veh)		98	65	3								
Storage Bay Dist (m)	35.0				35.0				50.0		25.0	
Storage Blk Time (%)	0	47			0	22			1	0		
Queuing Penalty (veh)	0	18			0	2			0	0		

Intersection: 6: Rean Driv/Hawksbury Drive & Sheppard Avenue E

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	R	L	TR	L	TR
Maximum Queue (m)	37.3	142.5	148.8	37.3	37.3	125.7	114.4	37.5	12.3	57.1	36.6	51.0
Average Queue (m)	24.0	91.2	93.9	4.5	9.1	81.2	71.5	9.8	9.8	26.9	22.9	16.5
95th Queue (m)	43.6	168.5	173.2	32.1	27.7	112.6	105.3	31.8	15.9	49.4	37.1	37.2
Link Distance (m)		138.5	138.5	138.5		238.3	238.3			79.8		108.9
Upstream Blk Time (%)		2	3									
Queuing Penalty (veh)		8	13									
Storage Bay Dist (m)	35.0				35.0			35.0	10.0		35.0	
Storage Blk Time (%)	22	21			0	28	19	0	11	32	3	1
Queuing Penalty (veh)	158	16			0	8	9	1	20	18	3	1

Zone Summary

Zone wide Queuing Penalty: 443

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	3	211	0	11	30
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	3	234	0	12	33
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						105
pX, platoon unblocked						
vC, conflicting volume	292	234			234	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	292	234			234	
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	100			99	
cM capacity (veh/h)	696	810			1345	

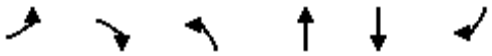
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	3	234	46
Volume Left	0	0	12
Volume Right	3	0	0
cSH	810	1700	1345
Volume to Capacity	0.00	0.14	0.01
Queue Length 95th (m)	0.1	0.0	0.2
Control Delay (s)	9.5	0.0	2.1
Lane LOS	A		A
Approach Delay (s)	9.5	0.0	2.1
Approach LOS	A		

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	21.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1337	20	0	1583	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)	1486	22	0	1759	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)				98		
pX, platoon unblocked					0.76	
vC, conflicting volume			1508		2083	506
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1508		1303	506
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	96
cM capacity (veh/h)			450		117	517

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1
Volume Total	594	594	319	586	586	586	22
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	22	0	0	0	22
cSH	1700	1700	1700	1700	1700	1700	517
Volume to Capacity	0.35	0.35	0.19	0.34	0.34	0.34	0.04
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	1.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	12.3
Lane LOS							B
Approach Delay (s)	0.0			0.0			12.3
Approach LOS							B

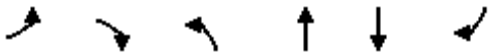
Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	36.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	85	5	20	126	40	5
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	94	6	22	140	44	6
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)					193	
pX, platoon unblocked						
vC, conflicting volume	232	47	50			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	232	47	50			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	87	99	99			
cM capacity (veh/h)	750	1028	1570			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	100	162	50
Volume Left	94	22	0
Volume Right	6	0	6
cSH	762	1570	1700
Volume to Capacity	0.13	0.01	0.03
Queue Length 95th (m)	3.4	0.3	0.0
Control Delay (s)	10.4	1.1	0.0
Lane LOS	B	A	
Approach Delay (s)	10.4	1.1	0.0
Approach LOS	B		

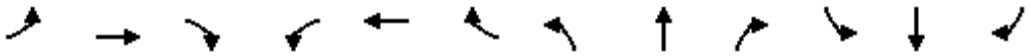
Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	26.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	4	0	0	211	55	7
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	0	0	234	61	8
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)					103	
pX, platoon unblocked						
vC, conflicting volume	299	65	69			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	299	65	69			
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	100			
cM capacity (veh/h)	696	1005	1545			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	4	234	69
Volume Left	4	0	0
Volume Right	0	0	8
cSH	696	1545	1700
Volume to Capacity	0.01	0.00	0.04
Queue Length 95th (m)	0.1	0.0	0.0
Control Delay (s)	10.2	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.2	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	21.1%	ICU Level of Service	A
Analysis Period (min)	15		

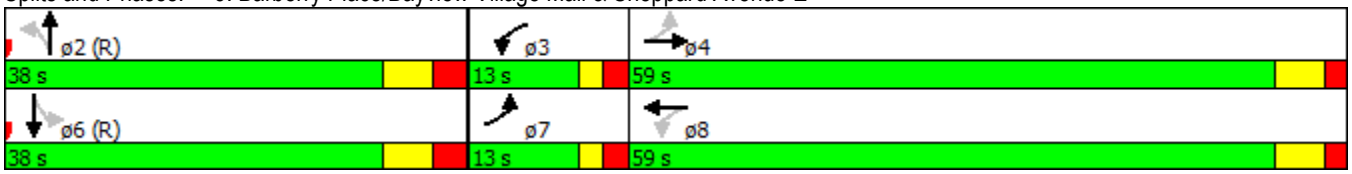


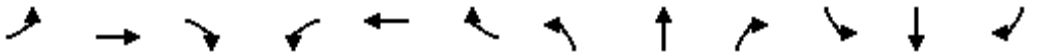
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	181	1555	90	22	1286	57	93	13	27	53	14	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.5
Storage Length (m)	35.0		0.0	35.0		0.0	50.0		0.0	25.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.98	0.99			0.99		0.95	0.96		0.96	0.94	
Frt		0.992			0.994			0.900			0.868	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	4957	0	1685	4997	0	1685	1625	0	1652	1533	0
Flt Permitted	0.113			0.075			0.678			0.730		
Satd. Flow (perm)	195	4957	0	133	4997	0	1144	1625	0	1214	1533	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			8			28			108	
Link Speed (k/h)		60			60			40			25	
Link Distance (m)		97.7			154.9			105.2			105.9	
Travel Time (s)		5.9			9.3			9.5			15.2	
Confl. Peds. (#/hr)	81		44	44		81	52		42	42		52
Confl. Bikes (#/hr)			6			9			2			
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
Growth Factor	100%	103%	100%	100%	103%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	2%	0%	0%	1%	2%	0%	0%	0%	2%	0%	0%
Adj. Flow (vph)	191	1686	95	23	1394	60	98	14	28	56	15	108
Shared Lane Traffic (%)												
Lane Group Flow (vph)	191	1781	0	23	1454	0	98	42	0	56	123	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.0			3.0			3.0			3.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane					Yes							
Headway Factor	1.09	1.01	1.01	1.09	1.01	1.01	1.09	1.01	1.01	1.09	1.01	1.01
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	13.0	59.0		13.0	59.0		38.0	38.0		38.0	38.0	
Total Split (s)	13.0	59.0		13.0	59.0		38.0	38.0		38.0	38.0	
Total Split (%)	11.8%	53.6%		11.8%	53.6%		34.5%	34.5%		34.5%	34.5%	
Maximum Green (s)	9.0	53.0		9.0	53.0		31.0	31.0		31.0	31.0	
Yellow Time (s)	2.0	4.0		2.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.0		4.0	6.0		7.0	7.0		7.0	7.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		14.0			14.0		23.0	23.0		23.0	23.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Pedestrian Calls (#/hr)		0			0		0	0		0	0	
Act Effct Green (s)	64.0	53.0		64.0	53.0		31.0	31.0		31.0	31.0	
Actuated g/C Ratio	0.58	0.48		0.58	0.48		0.28	0.28		0.28	0.28	
v/c Ratio	0.82	0.74		0.11	0.60		0.30	0.09		0.16	0.24	
Control Delay	44.4	25.3		9.5	22.0		34.3	15.1		31.4	8.9	
Queue Delay	0.0	0.0		0.0	0.6		0.0	0.0		0.0	0.0	
Total Delay	44.4	25.3		9.5	22.6		34.3	15.1		31.4	8.9	
LOS	D	C		A	C		C	B		C	A	
Approach Delay		27.1			22.4			28.5			15.9	
Approach LOS		C			C			C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 110			
Control Type: Pretimed			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 24.8		Intersection LOS: C	
Intersection Capacity Utilization 94.2%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 3: Barberry Place/Bayview Village Mall & Sheppard Avenue E





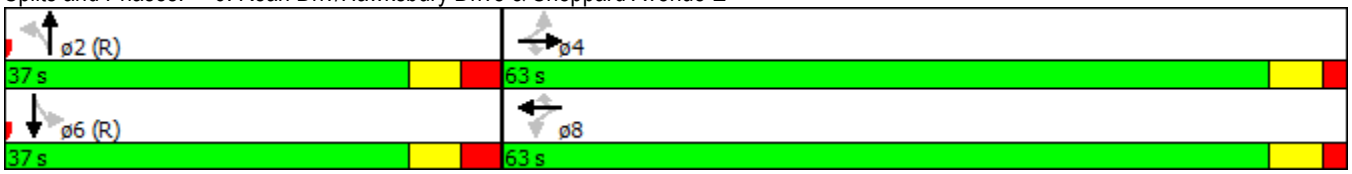
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	93	1450	66	108	1318	145	46	25	72	189	33	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.5
Storage Length (m)	35.0		0.0	35.0		35.0	10.0		0.0	35.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.85			0.92	0.95	0.95		0.95	0.96	
Frt			0.850			0.850		0.888			0.906	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	3535	1507	1668	3535	1507	1685	1590	0	1685	1631	0
Flt Permitted	0.105			0.075			0.697			0.691		
Satd. Flow (perm)	184	3535	1279	132	3535	1390	1175	1590	0	1170	1631	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			69			95		20			33	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		154.9			249.2			102.7			123.9	
Travel Time (s)		9.3			15.0			9.2			11.2	
Confl. Peds. (#/hr)	21		50	50		21	56		52	52		56
Confl. Bikes (#/hr)			5			6						
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
Growth Factor	100%	103%	100%	100%	103%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	98	1572	69	114	1429	153	48	26	76	199	35	58
Shared Lane Traffic (%)												
Lane Group Flow (vph)	98	1572	69	114	1429	153	48	102	0	199	93	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.0			3.0			3.0			3.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane		Yes										
Headway Factor	1.09	1.01	1.09	1.09	1.01	1.09	1.09	1.01	1.01	1.09	1.01	1.01
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Minimum Split (s)	63.0	63.0	63.0	63.0	63.0	63.0	37.0	37.0		37.0	37.0	
Total Split (s)	63.0	63.0	63.0	63.0	63.0	63.0	37.0	37.0		37.0	37.0	
Total Split (%)	63.0%	63.0%	63.0%	63.0%	63.0%	63.0%	37.0%	37.0%		37.0%	37.0%	
Maximum Green (s)	57.0	57.0	57.0	57.0	57.0	57.0	30.0	30.0		30.0	30.0	
Yellow Time (s)	4.0	4.0	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	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	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	7.0	7.0		7.0	7.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	12.0	12.0	12.0	12.0	12.0	12.0	23.0	23.0		23.0	23.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0		0	0	
Act Effct Green (s)	57.0	57.0	57.0	57.0	57.0	57.0	30.0	30.0		30.0	30.0	
Actuated g/C Ratio	0.57	0.57	0.57	0.57	0.57	0.57	0.30	0.30		0.30	0.30	
v/c Ratio	0.94	0.78	0.09	1.52	0.71	0.18	0.14	0.21		0.57	0.18	
Control Delay	100.7	20.2	2.8	314.8	18.0	4.8	26.9	22.2		37.0	18.4	
Queue Delay	0.0	8.2	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	100.7	28.3	2.8	314.8	18.0	4.8	26.9	22.2		37.0	18.4	
LOS	F	C	A	F	B	A	C	C		D	B	
Approach Delay		31.4			36.8			23.7			31.1	
Approach LOS		C			D			C			C	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 120
Control Type: Pretimed
Maximum v/c Ratio: 1.52
Intersection Signal Delay: 33.4 Intersection LOS: C
Intersection Capacity Utilization 135.8% ICU Level of Service H
Analysis Period (min) 15

Splits and Phases: 6: Rean Driv/Hawksbury Drive & Sheppard Avenue E



Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	3:50	3:50	3:50	3:50	3:50	3:50
End Time	5:00	5:00	5:00	5:00	5:00	5:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded mScheduledIntervals	1	1	1	1	1	1
Vehs Entered	3904	3828	4174	4151	4025	4015
Vehs Exited	3849	3740	4083	4067	3948	3938
Starting Vehs	159	155	143	145	162	153
Ending Vehs	214	243	234	229	239	230
Travel Distance (km)	2356	2311	2533	2508	2434	2429
Travel Time (hr)	344.2	410.1	191.2	393.6	389.2	345.7
Total Delay (hr)	299.2	366.1	143.0	346.0	342.8	299.4
Total Stops	7610	7642	7074	7950	7747	7604
Fuel Used (l)	478.3	531.1	357.7	534.6	526.4	485.6

Interval #0 Information Seeding

Start Time	3:50
End Time	4:00
Total Time (min)	10

Volumes adjusted by PHF, Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by PHF, Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	3904	3828	4174	4151	4025	4015
Vehs Exited	3849	3740	4083	4067	3948	3938
Starting Vehs	159	155	143	145	162	153
Ending Vehs	214	243	234	229	239	230
Travel Distance (km)	2356	2311	2533	2508	2434	2429
Travel Time (hr)	344.2	410.1	191.2	393.6	389.2	345.7
Total Delay (hr)	299.2	366.1	143.0	346.0	342.8	299.4
Total Stops	7610	7642	7074	7950	7747	7604
Fuel Used (l)	478.3	531.1	357.7	534.6	526.4	485.6

3: Barberry Place/Bayview Village Mall & Sheppard Avenue E Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	2.9	0.0	0.0	0.1	3.0
Denied Del/Veh (s)	6.2	0.0	0.0	1.5	3.1
Total Delay (hr)	23.1	8.8	1.4	1.0	34.5
Total Del/Veh (s)	48.7	22.0	38.0	21.8	35.8
Stop Delay (hr)	18.7	6.1	1.4	1.0	27.2
Stop Del/Veh (s)	39.4	15.2	36.2	21.6	28.3

6: Rean Driv/Hawksbury Drive & Sheppard Avenue E Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	33.7	0.0	0.2	33.9
Denied Del/Veh (s)	0.0	71.9	0.0	2.8	33.9
Total Delay (hr)	20.1	36.7	1.1	2.9	60.8
Total Del/Veh (s)	48.2	81.4	26.0	35.3	61.3
Stop Delay (hr)	15.6	30.8	1.0	2.7	50.1
Stop Del/Veh (s)	37.4	68.4	24.9	32.2	50.5

Total Zone Performance

Denied Delay (hr)	36.9
Denied Del/Veh (s)	60.8
Total Delay (hr)	95.3
Total Del/Veh (s)	1361.5
Stop Delay (hr)	77.3
Stop Del/Veh (s)	1104.8

Intersection: 3: Barberry Place/Bayview Village Mall & Sheppard Avenue E

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	TR	L	TR
Maximum Queue (m)	37.4	100.5	100.6	100.8	32.3	107.3	105.7	105.4	40.6	32.3	26.8	44.1
Average Queue (m)	32.5	90.3	90.2	82.3	7.0	49.6	52.8	51.7	18.4	8.1	12.1	17.2
95th Queue (m)	47.3	98.1	96.5	112.5	20.1	97.4	98.0	95.3	35.6	21.7	25.8	35.1
Link Distance (m)		84.2	84.2	84.2		138.5	138.5	138.5		84.1		90.7
Upstream Blk Time (%)		48	54	24								
Queuing Penalty (veh)		316	355	161								
Storage Bay Dist (m)	35.0				35.0				50.0		25.0	
Storage Blk Time (%)	8	55			0	17			1	0	1	2
Queuing Penalty (veh)	45	105			0	4			0	0	1	1

Intersection: 6: Rean Driv/Hawksbury Drive & Sheppard Avenue E

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	R	L	TR	L	TR
Maximum Queue (m)	37.4	147.1	155.4	106.8	37.4	248.8	251.0	37.5	12.3	38.9	37.3	84.0
Average Queue (m)	32.8	114.7	117.5	10.5	33.3	179.5	175.0	21.1	7.9	17.1	30.2	27.4
95th Queue (m)	46.4	182.3	187.0	49.7	47.2	302.0	302.5	46.1	16.1	33.1	43.0	68.4
Link Distance (m)		138.5	138.5	138.5		240.4	240.4			79.8		108.9
Upstream Blk Time (%)		4	6			36	34					0
Queuing Penalty (veh)		25	36			0	0					0
Storage Bay Dist (m)	35.0				35.0			35.0	10.0		35.0	
Storage Blk Time (%)	61	18			54	24	30	0	8	18	16	0
Queuing Penalty (veh)	482	18			387	27	46	3	8	9	15	1

Zone Summary

Zone wide Queuing Penalty: 2046

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	1	132	0	8	118
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	1	139	0	8	124
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						105
pX, platoon unblocked						
vC, conflicting volume	280	139			139	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	280	139			139	
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	100			99	
cM capacity (veh/h)	710	915			1457	

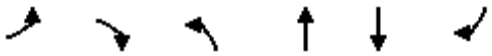
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	1	139	133
Volume Left	0	0	8
Volume Right	1	0	0
cSH	915	1700	1457
Volume to Capacity	0.00	0.08	0.01
Queue Length 95th (m)	0.0	0.0	0.1
Control Delay (s)	8.9	0.0	0.5
Lane LOS	A		A
Approach Delay (s)	8.9	0.0	0.5
Approach LOS	A		

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	22.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1863	85	0	1556	0	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1961	89	0	1638	0	11
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				98		
pX, platoon unblocked					0.79	
vC, conflicting volume			2051		2552	698
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			2051		2042	698
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	97
cM capacity (veh/h)			278		40	387

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1
Volume Total	784	784	482	546	546	546	11
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	89	0	0	0	11
cSH	1700	1700	1700	1700	1700	1700	387
Volume to Capacity	0.46	0.46	0.28	0.32	0.32	0.32	0.03
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.6
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	14.6
Lane LOS							B
Approach Delay (s)	0.0			0.0			14.6
Approach LOS							B

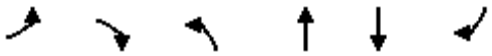
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	47.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	40	20	10	50	115	30
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	42	21	11	53	121	32
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)					193	
pX, platoon unblocked						
vC, conflicting volume	211	137	153			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	211	137	153			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	98	99			
cM capacity (veh/h)	777	917	1440			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	63	63	153
Volume Left	42	11	0
Volume Right	21	0	32
cSH	818	1440	1700
Volume to Capacity	0.08	0.01	0.09
Queue Length 95th (m)	1.9	0.2	0.0
Control Delay (s)	9.8	1.3	0.0
Lane LOS	A	A	
Approach Delay (s)	9.8	1.3	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	21.3%	ICU Level of Service	A
Analysis Period (min)	15		



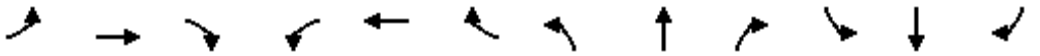
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	3	0	0	140	189	18
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	3	0	0	147	199	19
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)					103	
pX, platoon unblocked						
vC, conflicting volume	356	208	218			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	356	208	218			
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	100	100			
cM capacity (veh/h)	646	837	1364			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	3	147	218
Volume Left	3	0	0
Volume Right	0	0	19
cSH	646	1364	1700
Volume to Capacity	0.00	0.00	0.13
Queue Length 95th (m)	0.1	0.0	0.0
Control Delay (s)	10.6	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.6	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	21.0%	ICU Level of Service	A
Analysis Period (min)	15		

APPENDIX "C"

Existing Conditions (AM and PM Peak Hours)
with Mitigation Measures Applied –
Synchro Report
Sim-Traffic Report

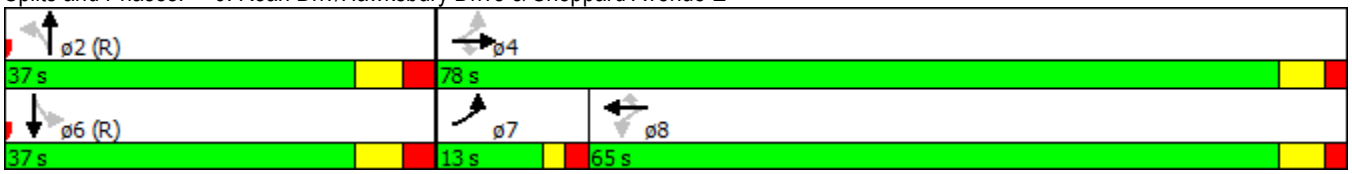


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	1255	16	25	1299	42	50	20	145	121	21	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.5
Storage Length (m)	35.0		0.0	35.0		35.0	10.0		0.0	35.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.90	0.99		0.95	0.96	0.96		0.98	0.95	
Frt			0.850			0.850		0.868			0.881	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1636	3500	1422	1620	3466	1507	1685	1560	0	1668	1480	0
Flt Permitted	0.063			0.147			0.685			0.586		
Satd. Flow (perm)	108	3500	1274	249	3466	1432	1168	1560	0	1007	1480	0
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			38					44			89	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		154.9			247.1			102.7			123.9	
Travel Time (s)		9.3			14.8			9.2			11.2	
Confl. Peds. (#/hr)	10		28	28		10	39		25	25		39
Confl. Bikes (#/hr)			2									1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	103%	100%	100%	103%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	2%	6%	4%	3%	0%	0%	0%	1%	1%	10%	6%
Adj. Flow (vph)	78	1436	18	28	1487	47	56	22	161	134	23	89
Shared Lane Traffic (%)												
Lane Group Flow (vph)	78	1436	18	28	1487	47	56	183	0	134	112	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.0			3.0			3.0			3.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane		Yes										
Headway Factor	1.09	1.01	1.09	1.09	1.01	1.09	1.09	1.01	1.01	1.09	1.01	1.01
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Minimum Split (s)	13.0	63.0	63.0	63.0	63.0	63.0	37.0	37.0		37.0	37.0	
Total Split (s)	13.0	78.0	78.0	65.0	65.0	65.0	37.0	37.0		37.0	37.0	
Total Split (%)	11.3%	67.8%	67.8%	56.5%	56.5%	56.5%	32.2%	32.2%		32.2%	32.2%	
Maximum Green (s)	9.0	72.0	72.0	59.0	59.0	59.0	30.0	30.0		30.0	30.0	
Yellow Time (s)	2.0	4.0	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	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Walk Time (s)		7.0	7.0	7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		12.0	12.0	12.0	12.0	12.0	23.0	23.0		23.0	23.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Pedestrian Calls (#/hr)		0	0	0	0	0	0	0		0	0	
Act Effct Green (s)	74.0	72.0	72.0	59.0	59.0	59.0	30.0	30.0		30.0	30.0	
Actuated g/C Ratio	0.64	0.63	0.63	0.51	0.51	0.51	0.26	0.26		0.26	0.26	
v/c Ratio	0.41	0.66	0.02	0.22	0.84	0.06	0.18	0.42		0.51	0.25	
Control Delay	18.1	15.4	0.9	21.0	29.2	14.5	35.1	29.8		44.3	11.8	
Queue Delay	0.0	3.3	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	18.1	18.7	0.9	21.0	29.2	14.5	35.1	29.8		44.3	11.8	
LOS	B	B	A	C	C	B	D	C		D	B	
Approach Delay		18.5			28.6			31.0			29.5	
Approach LOS		B			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 115			
Actuated Cycle Length: 115			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 115			
Control Type: Pretimed			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 24.5		Intersection LOS: C	
Intersection Capacity Utilization 135.8%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 6: Rean Driv/Hawksbury Drive & Sheppard Avenue E



Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded mScheduledIntervals	1	1	1	1	1	1
Vehs Entered	3808	3790	3818	3812	3779	3803
Vehs Exited	3741	3789	3776	3766	3756	3766
Starting Vehs	43	98	66	64	82	70
Ending Vehs	110	99	108	110	105	102
Travel Distance (km)	2314	2333	2327	2333	2329	2327
Travel Time (hr)	95.0	97.3	98.6	96.8	97.3	97.0
Total Delay (hr)	53.1	54.8	56.2	54.4	55.0	54.7
Total Stops	4264	4362	4397	4305	4322	4330
Fuel Used (l)	249.7	255.4	254.2	253.9	254.0	253.5

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10

Volumes adjusted by PHF, Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by PHF, Growth Factors.

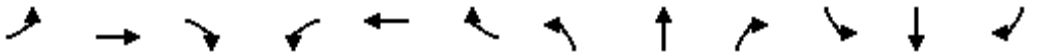
Run Number	1	2	3	4	5	Avg
Vehs Entered	3808	3790	3818	3812	3779	3803
Vehs Exited	3741	3789	3776	3766	3756	3766
Starting Vehs	43	98	66	64	82	70
Ending Vehs	110	99	108	110	105	102
Travel Distance (km)	2314	2333	2327	2333	2329	2327
Travel Time (hr)	95.0	97.3	98.6	96.8	97.3	97.0
Total Delay (hr)	53.1	54.8	56.2	54.4	55.0	54.7
Total Stops	4264	4362	4397	4305	4322	4330
Fuel Used (l)	249.7	255.4	254.2	253.9	254.0	253.5

6: Rean Driv/Hawksbury Drive & Sheppard Avenue E Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.2	0.0	0.2	0.4
Denied Del/Veh (s)	0.1	0.5	0.0	2.3	0.4
Total Delay (hr)	8.0	12.2	2.0	2.2	24.4
Total Del/Veh (s)	18.7	28.2	32.3	31.7	24.6
Stop Delay (hr)	4.2	7.7	1.9	2.0	15.9
Stop Del/Veh (s)	9.9	17.7	31.2	29.2	16.0

Intersection: 6: Rean Driv/Hawksbury Drive & Sheppard Avenue E

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	R	L	TR	L	TR
Maximum Queue (m)	37.1	141.1	140.2	33.8	37.2	156.3	153.0	37.5	12.3	67.7	37.0	71.7
Average Queue (m)	15.7	57.5	59.4	2.3	9.6	104.4	93.7	10.3	8.6	29.6	25.2	20.2
95th Queue (m)	31.2	132.0	135.2	18.8	28.6	145.2	135.5	32.6	16.7	55.6	40.5	47.2
Link Distance (m)		138.5	138.5	138.5		238.3	238.3			79.8		108.9
Upstream Blk Time (%)		0	1							0		
Queuing Penalty (veh)		2	3							0		
Storage Bay Dist (m)	35.0				35.0			35.0	10.0		35.0	
Storage Blk Time (%)	1	14			0	37	28	0	10	37	8	1
Queuing Penalty (veh)	6	11			0	10	13	1	18	21	9	1



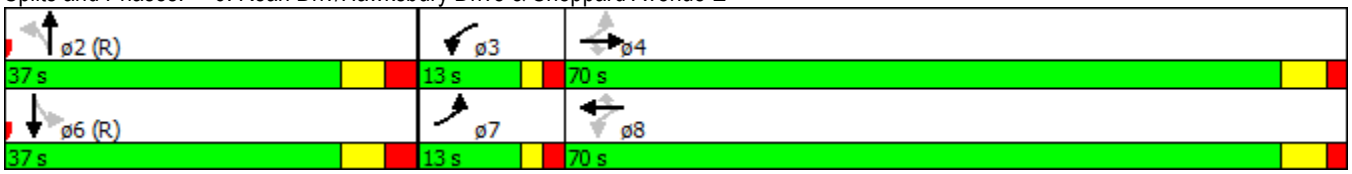
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	93	1450	66	108	1318	145	46	25	72	189	33	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.5
Storage Length (m)	35.0		0.0	35.0		35.0	10.0		0.0	35.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.82			0.91	0.94	0.95		0.95	0.95	
Frt			0.850			0.850		0.888			0.906	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	3535	1507	1668	3535	1507	1685	1578	0	1685	1620	0
Flt Permitted	0.087			0.062			0.697			0.691		
Satd. Flow (perm)	153	3535	1240	109	3535	1373	1163	1578	0	1159	1620	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			73			73		76			58	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		154.9			249.2			102.7			123.9	
Travel Time (s)		9.3			15.0			9.2			11.2	
Confl. Peds. (#/hr)	21		50	50		21	56		52	52		56
Confl. Bikes (#/hr)			5			6						
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
Growth Factor	100%	103%	100%	100%	103%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	98	1572	69	114	1429	153	48	26	76	199	35	58
Shared Lane Traffic (%)												
Lane Group Flow (vph)	98	1572	69	114	1429	153	48	102	0	199	93	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.0			3.0			3.0			3.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane		Yes										
Headway Factor	1.09	1.01	1.09	1.09	1.01	1.09	1.09	1.01	1.01	1.09	1.01	1.01
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4		4	8		8	2			6		
Minimum Split (s)	13.0	63.0	63.0	13.0	63.0	63.0	37.0	37.0		37.0	37.0	
Total Split (s)	13.0	70.0	70.0	13.0	70.0	70.0	37.0	37.0		37.0	37.0	
Total Split (%)	10.8%	58.3%	58.3%	10.8%	58.3%	58.3%	30.8%	30.8%		30.8%	30.8%	
Maximum Green (s)	9.0	64.0	64.0	9.0	64.0	64.0	30.0	30.0		30.0	30.0	
Yellow Time (s)	2.0	4.0	4.0	2.0	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	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	7.0	7.0		7.0	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Walk Time (s)		7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		12.0	12.0		12.0	12.0	23.0	23.0		23.0	23.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Pedestrian Calls (#/hr)		0	0		0	0	0	0		0	0	
Act Effct Green (s)	75.0	64.0	64.0	75.0	64.0	64.0	30.0	30.0		30.0	30.0	
Actuated g/C Ratio	0.62	0.53	0.53	0.62	0.53	0.53	0.25	0.25		0.25	0.25	
v/c Ratio	0.47	0.83	0.10	0.62	0.76	0.20	0.17	0.23		0.69	0.21	
Control Delay	17.7	28.5	3.2	34.5	25.2	8.3	37.2	13.5		54.6	16.9	
Queue Delay	0.0	47.4	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	17.7	76.0	3.2	34.5	25.2	8.3	37.2	13.5		54.6	16.9	
LOS	B	E	A	C	C	A	D	B		D	B	
Approach Delay		69.8			24.3			21.1			42.6	
Approach LOS		E			C			C			D	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 115
Control Type: Pretimed
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 46.0 Intersection LOS: D
Intersection Capacity Utilization 94.2% ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 6: Rean Driv/Hawksbury Drive & Sheppard Avenue E



Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	3:50	3:50	3:50	3:50	3:50	3:50
End Time	5:00	5:00	5:00	5:00	5:00	5:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded mScheduledIntervals	1	1	1	1	1	1
Vehs Entered	4329	4281	4259	4244	4237	4270
Vehs Exited	4345	4269	4233	4269	4229	4271
Starting Vehs	183	187	143	189	170	173
Ending Vehs	167	199	169	164	178	172
Travel Distance (km)	2666	2632	2590	2610	2596	2619
Travel Time (hr)	248.0	250.1	206.2	242.3	167.4	222.8
Total Delay (hr)	197.2	200.2	157.2	192.7	118.2	173.1
Total Stops	7188	7210	6868	7099	6928	7060
Fuel Used (l)	416.9	416.1	373.8	405.8	339.3	390.4

Interval #0 Information Seeding

Start Time	3:50
End Time	4:00
Total Time (min)	10

Volumes adjusted by PHF, Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by PHF, Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	4329	4281	4259	4244	4237	4270
Vehs Exited	4345	4269	4233	4269	4229	4271
Starting Vehs	183	187	143	189	170	173
Ending Vehs	167	199	169	164	178	172
Travel Distance (km)	2666	2632	2590	2610	2596	2619
Travel Time (hr)	248.0	250.1	206.2	242.3	167.4	222.8
Total Delay (hr)	197.2	200.2	157.2	192.7	118.2	173.1
Total Stops	7188	7210	6868	7099	6928	7060
Fuel Used (l)	416.9	416.1	373.8	405.8	339.3	390.4

6: Rean Driv/Hawksbury Drive & Sheppard Avenue E Performance by approach

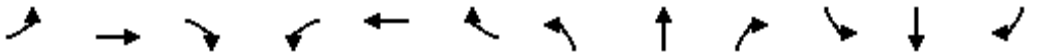
Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.4	0.0	0.4	0.7
Denied Del/Veh (s)	0.0	0.8	0.0	4.2	0.7
Total Delay (hr)	12.8	12.7	1.6	5.4	32.4
Total Del/Veh (s)	27.6	27.4	38.8	60.6	30.7
Stop Delay (hr)	8.2	8.0	1.5	5.0	22.8
Stop Del/Veh (s)	17.7	17.3	37.3	56.6	21.5

Intersection: 6: Rean Driv/Hawksbury Drive & Sheppard Avenue E

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	R	L	TR	L	TR
Maximum Queue (m)	37.4	142.6	143.6	82.5	37.3	157.7	149.6	37.5	12.3	56.2	37.4	113.4
Average Queue (m)	22.0	83.9	86.5	8.8	24.5	102.5	93.4	18.0	8.6	24.4	34.9	53.3
95th Queue (m)	40.3	158.9	161.3	37.8	42.7	144.4	135.2	42.4	16.0	47.4	41.4	111.9
Link Distance (m)		138.5	138.5	138.5		240.4	240.4			79.8		108.9
Upstream Blk Time (%)		1	2	0						0		5
Queuing Penalty (veh)		8	13	0						0		0
Storage Bay Dist (m)	35.0				35.0			35.0	10.0		35.0	
Storage Blk Time (%)	1	24			3	33	27	0	11	25	38	2
Queuing Penalty (veh)	10	24			19	38	41	2	11	12	35	5

APPENDIX "D"

Sensitivity Analysis to Optimize Signal Timing / Phasing during Future Conditions (AM and PM Peak Hours) – Synchro Reports

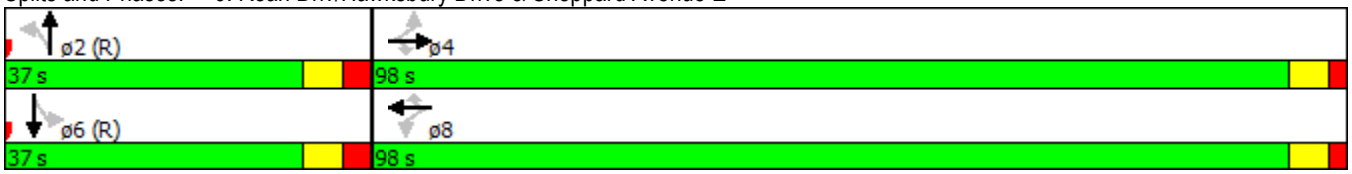


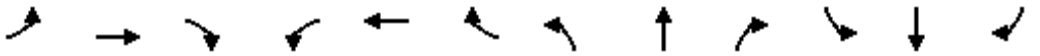
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	1255	17	35	1299	42	54	21	156	121	30	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.5
Storage Length (m)	35.0		0.0	35.0		35.0	10.0		0.0	35.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.88			0.95	0.96	0.96		0.98	0.95	
Frt			0.850			0.850		0.868			0.891	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1636	3500	1422	1620	3466	1507	1685	1552	0	1668	1490	0
Flt Permitted	0.080			0.090			0.664			0.511		
Satd. Flow (perm)	138	3500	1254	153	3466	1425	1126	1552	0	876	1490	0
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			32					36			34	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		154.9			265.0			102.7			123.9	
Travel Time (s)		9.3			15.9			9.2			11.2	
Confl. Peds. (#/hr)	10		28	28		10	39		25	25		39
Confl. Bikes (#/hr)			2									1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	120%	100%	100%	120%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	2%	6%	4%	3%	0%	0%	0%	1%	1%	10%	6%
Adj. Flow (vph)	78	1673	19	39	1732	47	60	23	173	134	33	89
Shared Lane Traffic (%)												
Lane Group Flow (vph)	78	1673	19	39	1732	47	60	196	0	134	122	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.0			3.0			3.0			3.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane		Yes										
Headway Factor	1.09	1.01	1.09	1.09	1.01	1.09	1.09	1.01	1.01	1.09	1.01	1.01
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Minimum Split (s)	63.0	63.0	63.0	63.0	63.0	63.0	37.0	37.0		37.0	37.0	
Total Split (s)	98.0	98.0	98.0	98.0	98.0	98.0	37.0	37.0		37.0	37.0	
Total Split (%)	72.6%	72.6%	72.6%	72.6%	72.6%	72.6%	27.4%	27.4%		27.4%	27.4%	
Maximum Green (s)	92.0	92.0	92.0	92.0	92.0	92.0	30.0	30.0		30.0	30.0	
Yellow Time (s)	4.0	4.0	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	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	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	7.0	7.0		7.0	7.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	12.0	12.0	12.0	12.0	12.0	12.0	23.0	23.0		23.0	23.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0		0	0	
Act Effct Green (s)	92.0	92.0	92.0	92.0	92.0	92.0	30.0	30.0		30.0	30.0	
Actuated g/C Ratio	0.68	0.68	0.68	0.68	0.68	0.68	0.22	0.22		0.22	0.22	
v/c Ratio	0.83	0.70	0.02	0.38	0.73	0.05	0.24	0.53		0.69	0.34	
Control Delay	77.7	15.2	1.1	21.6	16.1	7.3	46.2	43.3		67.9	34.6	
Queue Delay	0.0	14.9	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	77.7	30.0	1.1	21.6	16.1	7.3	46.2	43.3		67.9	34.6	
LOS	E	C	A	C	B	A	D	D		E	C	
Approach Delay		31.8			16.0			44.0			52.0	
Approach LOS		C			B			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 135			
Actuated Cycle Length: 135			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 120			
Control Type: Pretimed			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 26.8		Intersection LOS: C	
Intersection Capacity Utilization 135.8%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 6: Rean Driv/Hawksbury Drive & Sheppard Avenue E



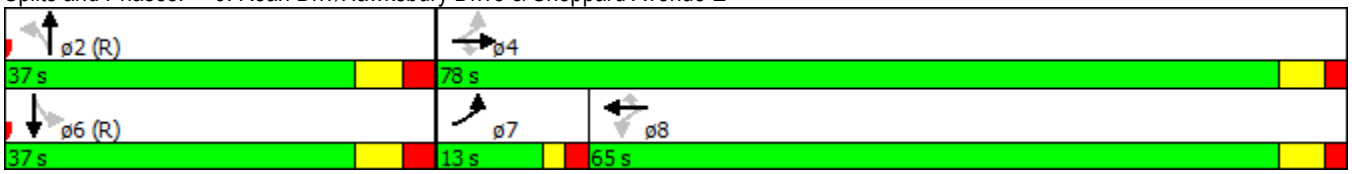


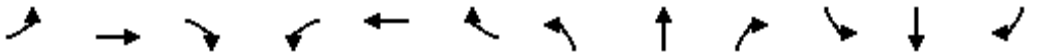
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	1255	17	35	1299	42	54	21	156	121	30	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.5
Storage Length (m)	35.0		0.0	35.0		35.0	10.0		0.0	35.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.90			0.95	0.96	0.96		0.98	0.96	
Frt			0.850			0.850		0.868			0.891	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1636	3500	1422	1620	3466	1507	1685	1559	0	1668	1499	0
Flt Permitted	0.063			0.091			0.679			0.563		
Satd. Flow (perm)	108	3500	1274	155	3466	1432	1159	1559	0	968	1499	0
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			38					26			89	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		154.9			265.0			102.7			123.9	
Travel Time (s)		9.3			15.9			9.2			11.2	
Confl. Peds. (#/hr)	10		28	28		10	39		25	25		39
Confl. Bikes (#/hr)			2									1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	120%	100%	100%	120%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	2%	6%	4%	3%	0%	0%	0%	1%	1%	10%	6%
Adj. Flow (vph)	78	1673	19	39	1732	47	60	23	173	134	33	89
Shared Lane Traffic (%)												
Lane Group Flow (vph)	78	1673	19	39	1732	47	60	196	0	134	122	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.0			3.0			3.0			3.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane		Yes										
Headway Factor	1.09	1.01	1.09	1.09	1.01	1.09	1.09	1.01	1.01	1.09	1.01	1.01
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Minimum Split (s)	13.0	63.0	63.0	63.0	63.0	63.0	37.0	37.0		37.0	37.0	
Total Split (s)	13.0	78.0	78.0	65.0	65.0	65.0	37.0	37.0		37.0	37.0	
Total Split (%)	11.3%	67.8%	67.8%	56.5%	56.5%	56.5%	32.2%	32.2%		32.2%	32.2%	
Maximum Green (s)	9.0	72.0	72.0	59.0	59.0	59.0	30.0	30.0		30.0	30.0	
Yellow Time (s)	2.0	4.0	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	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Walk Time (s)		7.0	7.0	7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		12.0	12.0	12.0	12.0	12.0	23.0	23.0		23.0	23.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Pedestrian Calls (#/hr)		0	0	0	0	0	0	0		0	0	
Act Effct Green (s)	74.0	72.0	72.0	59.0	59.0	59.0	30.0	30.0		30.0	30.0	
Actuated g/C Ratio	0.64	0.63	0.63	0.51	0.51	0.51	0.26	0.26		0.26	0.26	
v/c Ratio	0.41	0.76	0.02	0.49	0.97	0.06	0.20	0.46		0.53	0.27	
Control Delay	18.1	18.4	0.9	44.1	43.8	14.5	35.4	34.9		45.5	13.0	
Queue Delay	0.0	17.8	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	18.1	36.2	0.9	44.1	43.8	14.5	35.4	34.9		45.5	13.0	
LOS	B	D	A	D	D	B	D	C		D	B	
Approach Delay		35.0			43.1			35.0			30.0	
Approach LOS		D			D			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 115			
Actuated Cycle Length: 115			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 115			
Control Type: Pretimed			
Maximum v/c Ratio: 0.97			
Intersection Signal Delay: 38.3		Intersection LOS: D	
Intersection Capacity Utilization 135.8%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 6: Rean Driv/Hawksbury Drive & Sheppard Avenue E



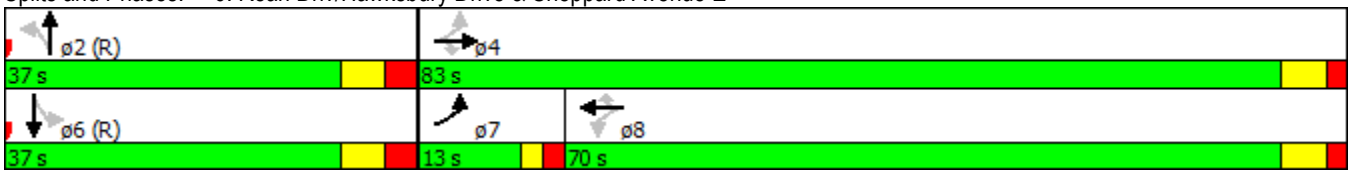


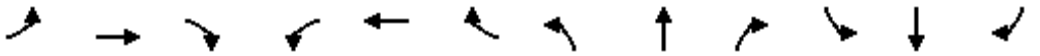
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	1255	17	35	1299	42	54	21	156	121	30	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.5
Storage Length (m)	35.0		0.0	35.0		35.0	10.0		0.0	35.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.89			0.95	0.96	0.96		0.98	0.96	
Frt			0.850			0.850		0.868			0.891	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1636	3500	1422	1620	3466	1507	1685	1558	0	1668	1496	0
Flt Permitted	0.059			0.095			0.679			0.550		
Satd. Flow (perm)	102	3500	1269	162	3466	1431	1157	1558	0	945	1496	0
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			36					28			89	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		154.9			265.0			102.7			123.9	
Travel Time (s)		9.3			15.9			9.2			11.2	
Confl. Peds. (#/hr)	10		28	28		10	39		25	25		39
Confl. Bikes (#/hr)			2									1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	120%	100%	100%	120%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	2%	6%	4%	3%	0%	0%	0%	1%	1%	10%	6%
Adj. Flow (vph)	78	1673	19	39	1732	47	60	23	173	134	33	89
Shared Lane Traffic (%)												
Lane Group Flow (vph)	78	1673	19	39	1732	47	60	196	0	134	122	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.0			3.0			3.0			3.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane		Yes										
Headway Factor	1.09	1.01	1.09	1.09	1.01	1.09	1.09	1.01	1.01	1.09	1.01	1.01
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Minimum Split (s)	13.0	63.0	63.0	63.0	63.0	63.0	37.0	37.0		37.0	37.0	
Total Split (s)	13.0	83.0	83.0	70.0	70.0	70.0	37.0	37.0		37.0	37.0	
Total Split (%)	10.8%	69.2%	69.2%	58.3%	58.3%	58.3%	30.8%	30.8%		30.8%	30.8%	
Maximum Green (s)	9.0	77.0	77.0	64.0	64.0	64.0	30.0	30.0		30.0	30.0	
Yellow Time (s)	2.0	4.0	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	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Walk Time (s)		7.0	7.0	7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		12.0	12.0	12.0	12.0	12.0	23.0	23.0		23.0	23.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Pedestrian Calls (#/hr)		0	0	0	0	0	0	0		0	0	
Act Effct Green (s)	79.0	77.0	77.0	64.0	64.0	64.0	30.0	30.0		30.0	30.0	
Actuated g/C Ratio	0.66	0.64	0.64	0.53	0.53	0.53	0.25	0.25		0.25	0.25	
v/c Ratio	0.43	0.75	0.02	0.45	0.94	0.06	0.21	0.48		0.57	0.28	
Control Delay	19.4	17.4	1.1	38.1	37.2	13.9	38.0	37.2		50.2	13.9	
Queue Delay	0.0	17.1	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	19.4	34.5	1.1	38.1	37.2	13.9	38.0	37.2		50.2	13.9	
LOS	B	C	A	D	D	B	D	D		D	B	
Approach Delay		33.5			36.7			37.4			32.9	
Approach LOS		C			D			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 115			
Control Type: Pretimed			
Maximum v/c Ratio: 0.94			
Intersection Signal Delay: 35.1		Intersection LOS: D	
Intersection Capacity Utilization 135.8%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 6: Rean Driv/Hawksbury Drive & Sheppard Avenue E



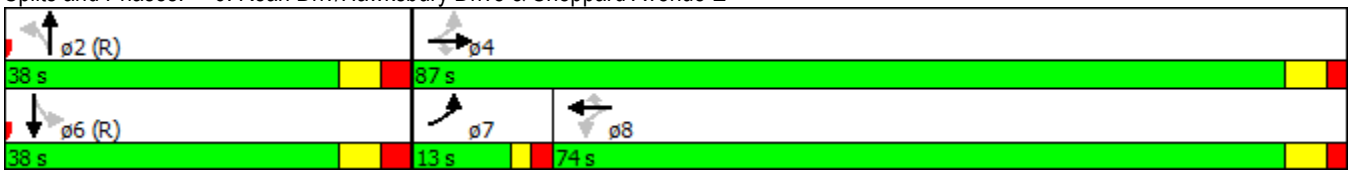


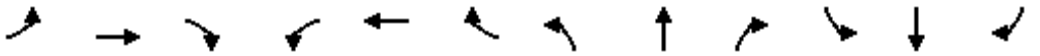
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	1255	17	35	1299	42	54	21	156	121	30	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.5
Storage Length (m)	35.0		0.0	35.0		35.0	10.0		0.0	35.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.89			0.95	0.96	0.96		0.98	0.96	
Frt			0.850			0.850		0.868			0.891	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1636	3500	1422	1620	3466	1507	1685	1556	0	1668	1494	0
Flt Permitted	0.056			0.096			0.679			0.543		
Satd. Flow (perm)	96	3500	1264	164	3466	1429	1155	1556	0	932	1494	0
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			35					30			89	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		154.9			265.0			102.7			123.9	
Travel Time (s)		9.3			15.9			9.2			11.2	
Confl. Peds. (#/hr)	10		28	28		10	39		25	25		39
Confl. Bikes (#/hr)			2									1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	120%	100%	100%	120%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	2%	6%	4%	3%	0%	0%	0%	1%	1%	10%	6%
Adj. Flow (vph)	78	1673	19	39	1732	47	60	23	173	134	33	89
Shared Lane Traffic (%)												
Lane Group Flow (vph)	78	1673	19	39	1732	47	60	196	0	134	122	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.0			3.0			3.0			3.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane		Yes										
Headway Factor	1.09	1.01	1.09	1.09	1.01	1.09	1.09	1.01	1.01	1.09	1.01	1.01
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Minimum Split (s)	13.0	63.0	63.0	63.0	63.0	63.0	37.0	37.0		37.0	37.0	
Total Split (s)	13.0	87.0	87.0	74.0	74.0	74.0	38.0	38.0		38.0	38.0	
Total Split (%)	10.4%	69.6%	69.6%	59.2%	59.2%	59.2%	30.4%	30.4%		30.4%	30.4%	
Maximum Green (s)	9.0	81.0	81.0	68.0	68.0	68.0	31.0	31.0		31.0	31.0	
Yellow Time (s)	2.0	4.0	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	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Walk Time (s)		7.0	7.0	7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		12.0	12.0	12.0	12.0	12.0	23.0	23.0		23.0	23.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Pedestrian Calls (#/hr)		0	0	0	0	0	0	0		0	0	
Act Effct Green (s)	83.0	81.0	81.0	68.0	68.0	68.0	31.0	31.0		31.0	31.0	
Actuated g/C Ratio	0.66	0.65	0.65	0.54	0.54	0.54	0.25	0.25		0.25	0.25	
v/c Ratio	0.45	0.74	0.02	0.44	0.92	0.06	0.21	0.48		0.58	0.28	
Control Delay	22.0	17.4	1.1	36.2	35.2	13.8	39.7	38.3		52.8	14.4	
Queue Delay	0.0	19.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	22.0	36.4	1.1	36.2	35.2	13.8	39.7	38.3		52.8	14.4	
LOS	C	D	A	D	D	B	D	D		D	B	
Approach Delay		35.3			34.7			38.6			34.5	
Approach LOS		D			C			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 125			
Actuated Cycle Length: 125			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 115			
Control Type: Pretimed			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 35.2		Intersection LOS: D	
Intersection Capacity Utilization 135.8%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 6: Rean Driv/Hawksbury Drive & Sheppard Avenue E



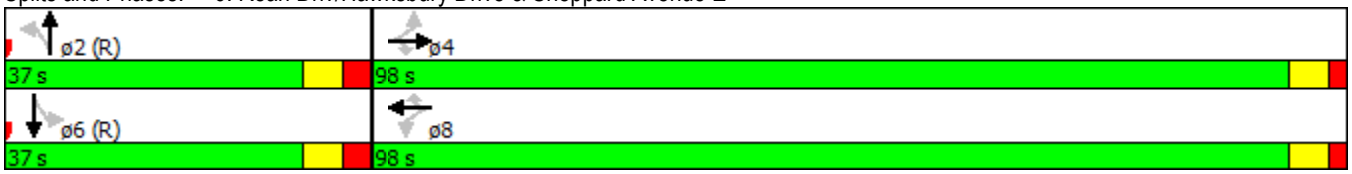


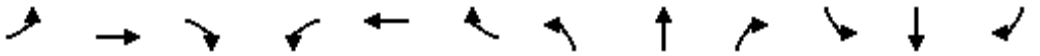
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	93	1450	73	119	1318	145	55	30	86	189	37	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.5
Storage Length (m)	35.0		0.0	35.0		35.0	10.0		0.0	35.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.80			0.90	0.93	0.94		0.94	0.95	
Frt			0.850			0.850		0.889			0.910	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	3535	1507	1668	3535	1507	1685	1570	0	1685	1622	0
Flt Permitted	0.091			0.065			0.694			0.662		
Satd. Flow (perm)	160	3535	1211	114	3535	1362	1149	1570	0	1105	1622	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			74			82		23			37	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		154.9			238.7			102.7			123.9	
Travel Time (s)		9.3			14.3			9.2			11.2	
Confl. Peds. (#/hr)	21		50	50		21	56		52	52		56
Confl. Bikes (#/hr)			5			6						
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
Growth Factor	100%	120%	100%	100%	120%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	98	1832	77	125	1665	153	58	32	91	199	39	58
Shared Lane Traffic (%)												
Lane Group Flow (vph)	98	1832	77	125	1665	153	58	123	0	199	97	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.0			3.0			3.0			3.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane		Yes										
Headway Factor	1.09	1.01	1.09	1.09	1.01	1.09	1.09	1.01	1.01	1.09	1.01	1.01
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Minimum Split (s)	63.0	63.0	63.0	63.0	63.0	63.0	37.0	37.0		37.0	37.0	
Total Split (s)	98.0	98.0	98.0	98.0	98.0	98.0	37.0	37.0		37.0	37.0	
Total Split (%)	72.6%	72.6%	72.6%	72.6%	72.6%	72.6%	27.4%	27.4%		27.4%	27.4%	
Maximum Green (s)	92.0	92.0	92.0	92.0	92.0	92.0	30.0	30.0		30.0	30.0	
Yellow Time (s)	4.0	4.0	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	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	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	7.0	7.0		7.0	7.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	12.0	12.0	12.0	12.0	12.0	12.0	23.0	23.0		23.0	23.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0		0	0	
Act Effct Green (s)	92.0	92.0	92.0	92.0	92.0	92.0	30.0	30.0		30.0	30.0	
Actuated g/C Ratio	0.68	0.68	0.68	0.68	0.68	0.68	0.22	0.22		0.22	0.22	
v/c Ratio	0.90	0.76	0.09	1.62	0.69	0.16	0.23	0.34		0.81	0.25	
Control Delay	86.3	16.9	1.9	354.7	14.9	4.0	45.9	38.6		75.2	28.8	
Queue Delay	0.0	31.8	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	86.3	48.7	1.9	354.7	14.9	4.0	45.9	38.6		75.2	28.8	
LOS	F	D	A	F	B	A	D	D		E	C	
Approach Delay		48.7			35.9			40.9			60.0	
Approach LOS		D			D			D			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 135			
Actuated Cycle Length: 135			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 150			
Control Type: Pretimed			
Maximum v/c Ratio: 1.62			
Intersection Signal Delay: 43.5		Intersection LOS: D	
Intersection Capacity Utilization 135.8%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 6: Rean Driv/Hawksbury Drive & Sheppard Avenue E



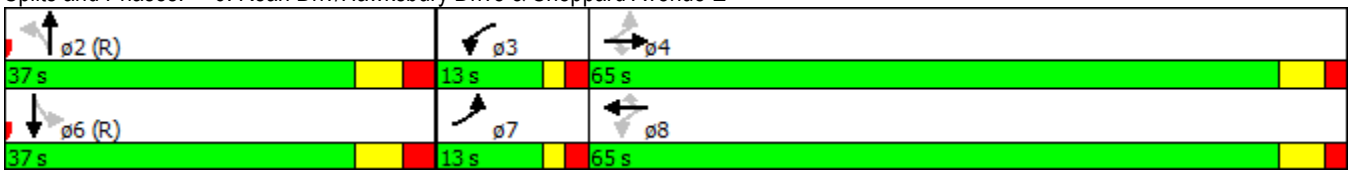


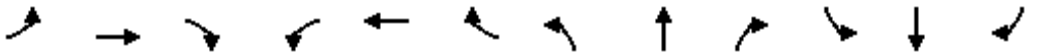
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	93	1450	73	119	1318	145	55	30	86	189	37	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.5
Storage Length (m)	35.0		0.0	35.0		35.0	10.0		0.0	35.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.83			0.91	0.94	0.95		0.95	0.96	
Frt			0.850			0.850		0.889			0.910	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	3535	1507	1668	3535	1507	1685	1583	0	1685	1633	0
Flt Permitted	0.068			0.068			0.694			0.678		
Satd. Flow (perm)	119	3535	1249	119	3535	1377	1161	1583	0	1142	1633	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			76			76		91			58	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		154.9			238.7			102.7			123.9	
Travel Time (s)		9.3			14.3			9.2			11.2	
Confl. Peds. (#/hr)	21		50	50		21	56		52	52		56
Confl. Bikes (#/hr)			5			6						
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
Growth Factor	100%	120%	100%	100%	120%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	98	1832	77	125	1665	153	58	32	91	199	39	58
Shared Lane Traffic (%)												
Lane Group Flow (vph)	98	1832	77	125	1665	153	58	123	0	199	97	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.0			3.0			3.0			3.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane		Yes										
Headway Factor	1.09	1.01	1.09	1.09	1.01	1.09	1.09	1.01	1.01	1.09	1.01	1.01
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4		4	8		8	2			6		
Minimum Split (s)	13.0	63.0	63.0	13.0	63.0	63.0	37.0	37.0		37.0	37.0	
Total Split (s)	13.0	65.0	65.0	13.0	65.0	65.0	37.0	37.0		37.0	37.0	
Total Split (%)	11.3%	56.5%	56.5%	11.3%	56.5%	56.5%	32.2%	32.2%		32.2%	32.2%	
Maximum Green (s)	9.0	59.0	59.0	9.0	59.0	59.0	30.0	30.0		30.0	30.0	
Yellow Time (s)	2.0	4.0	4.0	2.0	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	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	7.0	7.0		7.0	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Walk Time (s)		7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		12.0	12.0		12.0	12.0	23.0	23.0		23.0	23.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Pedestrian Calls (#/hr)		0	0		0	0	0	0		0	0	
Act Effct Green (s)	70.0	59.0	59.0	70.0	59.0	59.0	30.0	30.0		30.0	30.0	
Actuated g/C Ratio	0.61	0.51	0.51	0.61	0.51	0.51	0.26	0.26		0.26	0.26	
v/c Ratio	0.51	1.01	0.11	0.65	0.92	0.21	0.19	0.26		0.67	0.21	
Control Delay	24.4	52.2	3.8	35.4	35.3	8.4	35.2	12.6		50.6	16.5	
Queue Delay	0.0	34.5	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	24.4	86.6	3.8	35.4	35.3	8.4	35.2	12.6		50.6	16.5	
LOS	C	F	A	D	D	A	D	B		D	B	
Approach Delay		80.4			33.2			19.9			39.5	
Approach LOS		F			C			B			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 115			
Actuated Cycle Length: 115			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 115			
Control Type: Pretimed			
Maximum v/c Ratio: 1.01			
Intersection Signal Delay: 54.5		Intersection LOS: D	
Intersection Capacity Utilization 94.8%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 6: Rean Driv/Hawksbury Drive & Sheppard Avenue E





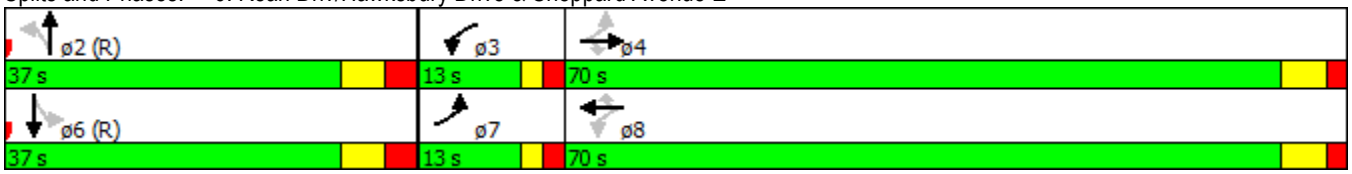
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	93	1450	73	119	1318	145	55	30	86	189	37	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.5
Storage Length (m)	35.0		0.0	35.0		35.0	10.0		0.0	35.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.82			0.91	0.94	0.95		0.95	0.95	
Frt			0.850			0.850		0.889			0.910	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	3535	1507	1668	3535	1507	1685	1580	0	1685	1630	0
Flt Permitted	0.062			0.062			0.694			0.678		
Satd. Flow (perm)	109	3535	1240	109	3535	1373	1158	1580	0	1139	1630	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			73			73		91			58	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		154.9			238.7			102.7			123.9	
Travel Time (s)		9.3			14.3			9.2			11.2	
Confl. Peds. (#/hr)	21		50	50		21	56		52	52		56
Confl. Bikes (#/hr)			5			6						
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
Growth Factor	100%	120%	100%	100%	120%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	98	1832	77	125	1665	153	58	32	91	199	39	58
Shared Lane Traffic (%)												
Lane Group Flow (vph)	98	1832	77	125	1665	153	58	123	0	199	97	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.0			3.0			3.0			3.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane		Yes										
Headway Factor	1.09	1.01	1.09	1.09	1.01	1.09	1.09	1.01	1.01	1.09	1.01	1.01
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4		4	8		8	2			6		
Minimum Split (s)	13.0	63.0	63.0	13.0	63.0	63.0	37.0	37.0		37.0	37.0	
Total Split (s)	13.0	70.0	70.0	13.0	70.0	70.0	37.0	37.0		37.0	37.0	
Total Split (%)	10.8%	58.3%	58.3%	10.8%	58.3%	58.3%	30.8%	30.8%		30.8%	30.8%	
Maximum Green (s)	9.0	64.0	64.0	9.0	64.0	64.0	30.0	30.0		30.0	30.0	
Yellow Time (s)	2.0	4.0	4.0	2.0	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	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	7.0	7.0		7.0	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Walk Time (s)		7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		12.0	12.0		12.0	12.0	23.0	23.0		23.0	23.0	

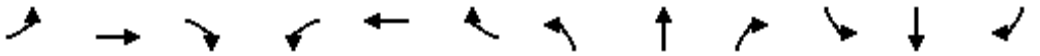
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Pedestrian Calls (#/hr)		0	0		0	0	0	0		0	0	
Act Effct Green (s)	75.0	64.0	64.0	75.0	64.0	64.0	30.0	30.0		30.0	30.0	
Actuated g/C Ratio	0.62	0.53	0.53	0.62	0.53	0.53	0.25	0.25		0.25	0.25	
v/c Ratio	0.53	0.97	0.11	0.68	0.88	0.20	0.20	0.27		0.70	0.22	
Control Delay	27.2	42.7	3.8	40.1	31.7	8.3	37.8	13.4		55.6	17.6	
Queue Delay	0.0	42.1	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	27.2	84.8	3.8	40.1	31.7	8.3	37.8	13.4		55.6	17.6	
LOS	C	F	A	D	C	A	D	B		E	B	
Approach Delay		78.9			30.4			21.2			43.1	
Approach LOS		E			C			C			D	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 115
Control Type: Pretimed
Maximum v/c Ratio: 0.97
Intersection Signal Delay: 52.9 Intersection LOS: D
Intersection Capacity Utilization 94.8% ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 6: Rean Driv/Hawksbury Drive & Sheppard Avenue E



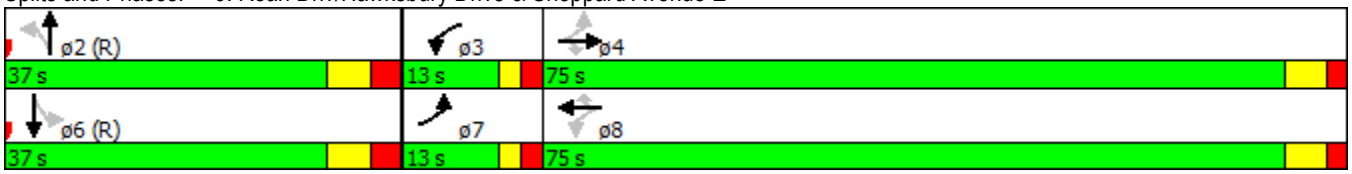


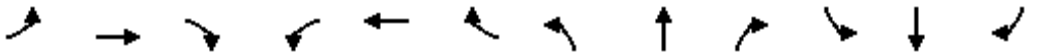
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	93	1450	73	119	1318	145	55	30	86	189	37	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.5
Storage Length (m)	35.0		0.0	35.0		35.0	10.0		0.0	35.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.82			0.91	0.94	0.94		0.95	0.95	
Frt			0.850			0.850		0.889			0.910	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	3535	1507	1668	3535	1507	1685	1577	0	1685	1627	0
Flt Permitted	0.058			0.058			0.694			0.678		
Satd. Flow (perm)	102	3535	1230	102	3535	1369	1155	1577	0	1136	1627	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			70			70		91			56	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		154.9			238.7			102.7			123.9	
Travel Time (s)		9.3			14.3			9.2			11.2	
Confl. Peds. (#/hr)	21		50	50		21	56		52	52		56
Confl. Bikes (#/hr)			5			6						
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
Growth Factor	100%	120%	100%	100%	120%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	98	1832	77	125	1665	153	58	32	91	199	39	58
Shared Lane Traffic (%)												
Lane Group Flow (vph)	98	1832	77	125	1665	153	58	123	0	199	97	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.0			3.0			3.0			3.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane		Yes										
Headway Factor	1.09	1.01	1.09	1.09	1.01	1.09	1.09	1.01	1.01	1.09	1.01	1.01
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4		4	8		8	2			6		
Minimum Split (s)	13.0	63.0	63.0	13.0	63.0	63.0	37.0	37.0		37.0	37.0	
Total Split (s)	13.0	75.0	75.0	13.0	75.0	75.0	37.0	37.0		37.0	37.0	
Total Split (%)	10.4%	60.0%	60.0%	10.4%	60.0%	60.0%	29.6%	29.6%		29.6%	29.6%	
Maximum Green (s)	9.0	69.0	69.0	9.0	69.0	69.0	30.0	30.0		30.0	30.0	
Yellow Time (s)	2.0	4.0	4.0	2.0	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	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	7.0	7.0		7.0	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Walk Time (s)		7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		12.0	12.0		12.0	12.0	23.0	23.0		23.0	23.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Pedestrian Calls (#/hr)		0	0		0	0	0	0		0	0	
Act Effct Green (s)	80.0	69.0	69.0	80.0	69.0	69.0	30.0	30.0		30.0	30.0	
Actuated g/C Ratio	0.64	0.55	0.55	0.64	0.55	0.55	0.24	0.24		0.24	0.24	
v/c Ratio	0.55	0.94	0.11	0.70	0.85	0.19	0.21	0.28		0.73	0.22	
Control Delay	30.0	36.9	3.9	44.4	29.2	8.1	40.5	14.2		60.9	19.4	
Queue Delay	0.0	44.9	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	30.0	81.8	3.9	44.4	29.2	8.1	40.5	14.2		60.9	19.4	
LOS	C	F	A	D	C	A	D	B		E	B	
Approach Delay		76.2			28.5			22.6			47.3	
Approach LOS		E			C			C			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 125			
Actuated Cycle Length: 125			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 115			
Control Type: Pretimed			
Maximum v/c Ratio: 0.94			
Intersection Signal Delay: 51.2		Intersection LOS: D	
Intersection Capacity Utilization 94.8%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 6: Rean Driv/Hawksbury Drive & Sheppard Avenue E



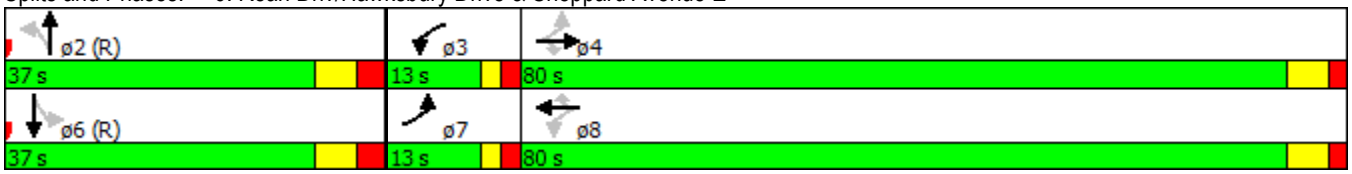


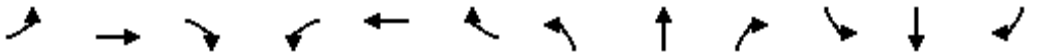
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	93	1450	73	119	1318	145	55	30	86	189	37	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.5
Storage Length (m)	35.0		0.0	35.0		35.0	10.0		0.0	35.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.81			0.91	0.94	0.94		0.94	0.95	
Frt			0.850			0.850		0.889			0.910	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	3535	1507	1668	3535	1507	1685	1574	0	1685	1625	0
Flt Permitted	0.054			0.054			0.694			0.670		
Satd. Flow (perm)	95	3535	1220	95	3535	1366	1152	1574	0	1121	1625	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			67			67		91			54	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		154.9			238.7			102.7			123.9	
Travel Time (s)		9.3			14.3			9.2			11.2	
Confl. Peds. (#/hr)	21		50	50		21	56		52	52		56
Confl. Bikes (#/hr)			5			6						
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
Growth Factor	100%	120%	100%	100%	120%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	98	1832	77	125	1665	153	58	32	91	199	39	58
Shared Lane Traffic (%)												
Lane Group Flow (vph)	98	1832	77	125	1665	153	58	123	0	199	97	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.0			3.0			3.0			3.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane		Yes										
Headway Factor	1.09	1.01	1.09	1.09	1.01	1.09	1.09	1.01	1.01	1.09	1.01	1.01
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4		4	8		8	2			6		
Minimum Split (s)	13.0	63.0	63.0	13.0	63.0	63.0	37.0	37.0		37.0	37.0	
Total Split (s)	13.0	80.0	80.0	13.0	80.0	80.0	37.0	37.0		37.0	37.0	
Total Split (%)	10.0%	61.5%	61.5%	10.0%	61.5%	61.5%	28.5%	28.5%		28.5%	28.5%	
Maximum Green (s)	9.0	74.0	74.0	9.0	74.0	74.0	30.0	30.0		30.0	30.0	
Yellow Time (s)	2.0	4.0	4.0	2.0	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	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	7.0	7.0		7.0	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Walk Time (s)		7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		12.0	12.0		12.0	12.0	23.0	23.0		23.0	23.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Pedestrian Calls (#/hr)		0	0		0	0	0	0		0	0	
Act Effct Green (s)	85.0	74.0	74.0	85.0	74.0	74.0	30.0	30.0		30.0	30.0	
Actuated g/C Ratio	0.65	0.57	0.57	0.65	0.57	0.57	0.23	0.23		0.23	0.23	
v/c Ratio	0.57	0.91	0.11	0.73	0.83	0.19	0.22	0.28		0.77	0.23	
Control Delay	33.6	33.2	4.0	49.9	27.4	8.0	43.2	15.1		67.5	21.2	
Queue Delay	0.0	46.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	33.6	79.3	4.0	49.9	27.4	8.0	43.2	15.1		67.5	21.2	
LOS	C	E	A	D	C	A	D	B		E	C	
Approach Delay		74.1			27.3			24.1			52.3	
Approach LOS		E			C			C			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 115			
Control Type: Pretimed			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay: 50.1		Intersection LOS: D	
Intersection Capacity Utilization 94.8%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 6: Rean Driv/Hawksbury Drive & Sheppard Avenue E



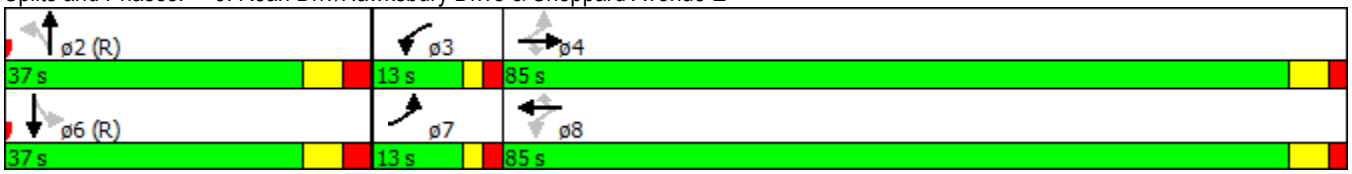


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	93	1450	73	119	1318	145	55	30	86	189	37	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.5
Storage Length (m)	35.0		0.0	35.0		35.0	10.0		0.0	35.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.80			0.90	0.93	0.94		0.94	0.95	
Frt			0.850			0.850		0.889			0.910	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	3535	1507	1668	3535	1507	1685	1570	0	1685	1622	0
Flt Permitted	0.059			0.051			0.694			0.662		
Satd. Flow (perm)	104	3535	1211	90	3535	1362	1149	1570	0	1105	1622	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			65			65		91			51	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		154.9			238.7			102.7			123.9	
Travel Time (s)		9.3			14.3			9.2			11.2	
Confl. Peds. (#/hr)	21		50	50		21	56		52	52		56
Confl. Bikes (#/hr)			5			6						
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
Growth Factor	100%	120%	100%	100%	120%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	98	1832	77	125	1665	153	58	32	91	199	39	58
Shared Lane Traffic (%)												
Lane Group Flow (vph)	98	1832	77	125	1665	153	58	123	0	199	97	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.0			3.0			3.0			3.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane		Yes										
Headway Factor	1.09	1.01	1.09	1.09	1.01	1.09	1.09	1.01	1.01	1.09	1.01	1.01
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4		4	8		8	2			6		
Minimum Split (s)	13.0	63.0	63.0	13.0	63.0	63.0	37.0	37.0		37.0	37.0	
Total Split (s)	13.0	85.0	85.0	13.0	85.0	85.0	37.0	37.0		37.0	37.0	
Total Split (%)	9.6%	63.0%	63.0%	9.6%	63.0%	63.0%	27.4%	27.4%		27.4%	27.4%	
Maximum Green (s)	9.0	79.0	79.0	9.0	79.0	79.0	30.0	30.0		30.0	30.0	
Yellow Time (s)	2.0	4.0	4.0	2.0	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	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	7.0	7.0		7.0	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Walk Time (s)		7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		12.0	12.0		12.0	12.0	23.0	23.0		23.0	23.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Pedestrian Calls (#/hr)		0	0		0	0	0	0		0	0	
Act Effct Green (s)	90.0	79.0	79.0	90.0	79.0	79.0	30.0	30.0		30.0	30.0	
Actuated g/C Ratio	0.67	0.59	0.59	0.67	0.59	0.59	0.22	0.22		0.22	0.22	
v/c Ratio	0.57	0.89	0.10	0.76	0.81	0.19	0.23	0.29		0.81	0.24	
Control Delay	30.6	30.7	4.0	55.4	25.9	7.9	45.9	15.9		75.2	23.5	
Queue Delay	0.0	46.6	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	30.6	77.3	4.0	55.4	25.9	7.9	45.9	15.9		75.2	23.5	
LOS	C	E	A	E	C	A	D	B		E	C	
Approach Delay		72.2			26.4			25.5			58.3	
Approach LOS		E			C			C			E	

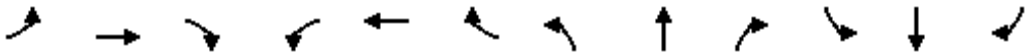
Intersection Summary			
Area Type:	Other		
Cycle Length: 135			
Actuated Cycle Length: 135			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 115			
Control Type: Pretimed			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 49.3		Intersection LOS: D	
Intersection Capacity Utilization 94.8%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 6: Rean Driv/Hawksbury Drive & Sheppard Avenue E



APPENDIX "E"

Future Conditions (AM and PM Peak Hours) –
Synchro Report
Sim-Traffic Report



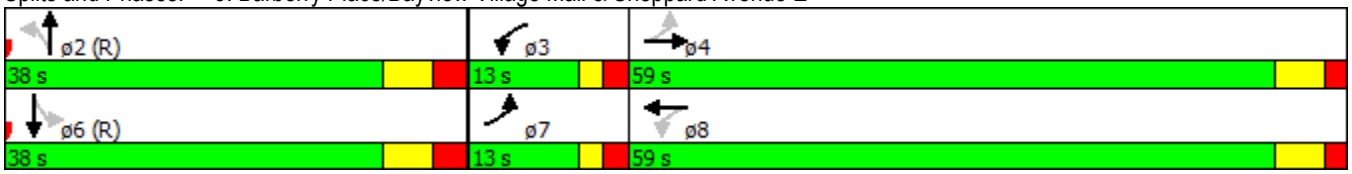
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	34	1254	46	13	1390	5	232	0	97	2	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.5
Storage Length (m)	35.0		0.0	35.0		0.0	50.0		0.0	25.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00		0.96	0.95				
Frt		0.996						0.850				
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1636	4940	0	1685	4977	0	1652	1438	0	1685	1879	0
Flt Permitted	0.075			0.075			0.757			0.687		
Satd. Flow (perm)	129	4940	0	133	4977	0	1270	1438	0	1218	1879	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			1			165				
Link Speed (k/h)		60			60			40			25	
Link Distance (m)		97.7			154.9			105.2			105.9	
Travel Time (s)		5.9			9.3			9.5			15.2	
Confl. Peds. (#/hr)	78		31	31		78	32		39			32
Confl. Bikes (#/hr)			8			7			1			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	120%	100%	100%	120%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	6%	0%	3%	0%	2%	0%	5%	0%	0%	0%
Adj. Flow (vph)	38	1672	51	14	1853	6	258	0	108	2	1	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	1723	0	14	1859	0	258	108	0	2	1	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.0			3.0			3.0			3.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane					Yes							
Headway Factor	1.09	1.01	1.01	1.09	1.01	1.01	1.09	1.01	1.01	1.09	1.01	1.01
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	13.0	59.0		13.0	59.0		38.0	38.0		38.0	38.0	
Total Split (s)	13.0	59.0		13.0	59.0		38.0	38.0		38.0	38.0	
Total Split (%)	11.8%	53.6%		11.8%	53.6%		34.5%	34.5%		34.5%	34.5%	
Maximum Green (s)	9.0	53.0		9.0	53.0		31.0	31.0		31.0	31.0	
Yellow Time (s)	2.0	4.0		2.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.0		4.0	6.0		7.0	7.0		7.0	7.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		14.0			14.0		23.0	23.0		23.0	23.0	

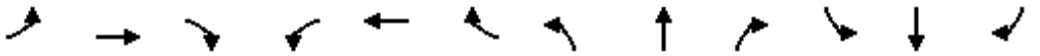
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Pedestrian Calls (#/hr)		0			0		0	0		0	0	
Act Effct Green (s)	64.0	53.0		64.0	53.0		31.0	31.0		31.0	31.0	
Actuated g/C Ratio	0.58	0.48		0.58	0.48		0.28	0.28		0.28	0.28	
v/c Ratio	0.19	0.72		0.07	0.78		0.72	0.21		0.01	0.00	
Control Delay	10.6	24.8		8.9	26.4		48.7	1.9		28.5	28.0	
Queue Delay	0.0	0.0		0.0	3.6		0.0	0.0		0.0	0.0	
Total Delay	10.6	24.8		8.9	29.9		48.7	1.9		28.5	28.0	
LOS	B	C		A	C		D	A		C	C	
Approach Delay		24.5			29.8			34.9			28.3	
Approach LOS		C			C			C			C	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 110
Control Type: Pretimed
Maximum v/c Ratio: 0.78
Intersection Signal Delay: 27.9 Intersection LOS: C
Intersection Capacity Utilization 80.8% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 3: Barberry Place/Bayview Village Mall & Sheppard Avenue E



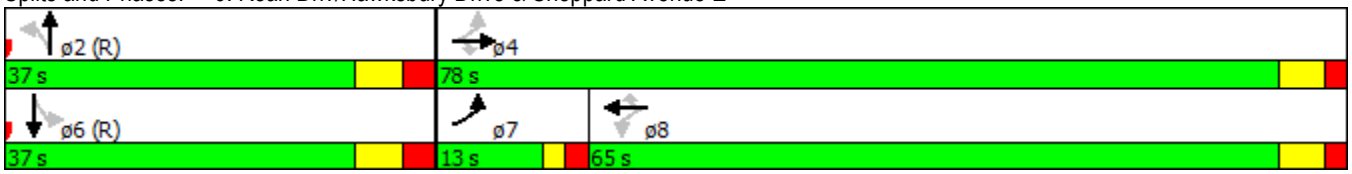


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	1255	17	35	1299	42	54	21	156	121	30	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.5
Storage Length (m)	35.0		0.0	35.0		35.0	10.0		0.0	35.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.90			0.95	0.96	0.96		0.98	0.96	
Frt			0.850			0.850		0.868			0.891	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1636	3500	1422	1620	3466	1507	1685	1559	0	1668	1499	0
Flt Permitted	0.063			0.091			0.679			0.563		
Satd. Flow (perm)	108	3500	1274	155	3466	1432	1159	1559	0	968	1499	0
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			38					26			89	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		154.9			265.0			102.7			123.9	
Travel Time (s)		9.3			15.9			9.2			11.2	
Confl. Peds. (#/hr)	10		28	28		10	39		25	25		39
Confl. Bikes (#/hr)			2									1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	120%	100%	100%	120%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	2%	6%	4%	3%	0%	0%	0%	1%	1%	10%	6%
Adj. Flow (vph)	78	1673	19	39	1732	47	60	23	173	134	33	89
Shared Lane Traffic (%)												
Lane Group Flow (vph)	78	1673	19	39	1732	47	60	196	0	134	122	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.0			3.0			3.0			3.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane		Yes										
Headway Factor	1.09	1.01	1.09	1.09	1.01	1.09	1.09	1.01	1.01	1.09	1.01	1.01
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Minimum Split (s)	13.0	63.0	63.0	63.0	63.0	63.0	37.0	37.0		37.0	37.0	
Total Split (s)	13.0	78.0	78.0	65.0	65.0	65.0	37.0	37.0		37.0	37.0	
Total Split (%)	11.3%	67.8%	67.8%	56.5%	56.5%	56.5%	32.2%	32.2%		32.2%	32.2%	
Maximum Green (s)	9.0	72.0	72.0	59.0	59.0	59.0	30.0	30.0		30.0	30.0	
Yellow Time (s)	2.0	4.0	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	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Walk Time (s)		7.0	7.0	7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		12.0	12.0	12.0	12.0	12.0	23.0	23.0		23.0	23.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Pedestrian Calls (#/hr)		0	0	0	0	0	0	0		0	0	
Act Effct Green (s)	74.0	72.0	72.0	59.0	59.0	59.0	30.0	30.0		30.0	30.0	
Actuated g/C Ratio	0.64	0.63	0.63	0.51	0.51	0.51	0.26	0.26		0.26	0.26	
v/c Ratio	0.41	0.76	0.02	0.49	0.97	0.06	0.20	0.46		0.53	0.27	
Control Delay	18.1	18.4	0.9	44.1	43.8	14.5	35.4	34.9		45.5	13.0	
Queue Delay	0.0	17.8	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	18.1	36.2	0.9	44.1	43.8	14.5	35.4	34.9		45.5	13.0	
LOS	B	D	A	D	D	B	D	C		D	B	
Approach Delay		35.0			43.1			35.0			30.0	
Approach LOS		D			D			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 115			
Actuated Cycle Length: 115			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 115			
Control Type: Pretimed			
Maximum v/c Ratio: 0.97			
Intersection Signal Delay: 38.3		Intersection LOS: D	
Intersection Capacity Utilization 135.8%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 6: Rean Driv/Hawksbury Drive & Sheppard Avenue E



Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded mScheduledIntervals	1	1	1	1	1	1
Vehs Entered	4606	4531	4705	4477	4718	4610
Vehs Exited	4408	4375	4593	4248	4563	4439
Starting Vehs	97	116	164	124	105	116
Ending Vehs	295	272	276	353	260	288
Travel Distance (km)	2693	2672	2797	2653	2765	2716
Travel Time (hr)	233.3	246.7	250.0	327.1	222.9	256.0
Total Delay (hr)	184.2	198.0	198.3	279.0	171.9	206.3
Total Stops	7712	7281	8175	7698	7785	7728
Fuel Used (l)	410.0	419.7	434.3	488.0	405.8	431.6

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10

Volumes adjusted by PHF, Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by PHF, Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	4606	4531	4705	4477	4718	4610
Vehs Exited	4408	4375	4593	4248	4563	4439
Starting Vehs	97	116	164	124	105	116
Ending Vehs	295	272	276	353	260	288
Travel Distance (km)	2693	2672	2797	2653	2765	2716
Travel Time (hr)	233.3	246.7	250.0	327.1	222.9	256.0
Total Delay (hr)	184.2	198.0	198.3	279.0	171.9	206.3
Total Stops	7712	7281	8175	7698	7785	7728
Fuel Used (l)	410.0	419.7	434.3	488.0	405.8	431.6

3: Barberry Place/Bayview Village Mall & Sheppard Avenue E Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	2.9	0.0	0.0	0.0	3.0
Denied Del/Veh (s)	6.1	0.0	0.3	2.0	2.8
Total Delay (hr)	19.6	12.9	3.5	0.0	36.1
Total Del/Veh (s)	40.1	25.7	38.9	37.2	33.3
Stop Delay (hr)	15.1	8.8	3.3	0.0	27.2
Stop Del/Veh (s)	30.8	17.6	36.3	36.7	25.2

6: Rean Driv/Hawksbury Drive & Sheppard Avenue E Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	16.2	0.0	0.2	16.4
Denied Del/Veh (s)	0.0	32.4	0.0	2.2	14.9
Total Delay (hr)	9.6	38.5	2.5	2.4	52.9
Total Del/Veh (s)	20.4	76.8	38.7	32.4	47.7
Stop Delay (hr)	5.2	26.9	2.4	2.2	36.6
Stop Del/Veh (s)	11.0	53.7	37.5	29.7	33.1

Total Zone Performance

Denied Delay (hr)	19.4
Denied Del/Veh (s)	32.6
Total Delay (hr)	88.9
Total Del/Veh (s)	1311.9
Stop Delay (hr)	63.8
Stop Del/Veh (s)	942.0

Intersection: 3: Barberry Place/Bayview Village Mall & Sheppard Avenue E

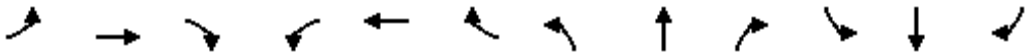
Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	TR	L	TR
Maximum Queue (m)	37.4	101.1	100.4	96.2	33.0	128.3	129.6	127.9	52.4	85.3	7.0	7.3
Average Queue (m)	13.6	89.5	89.8	73.6	4.9	67.3	70.8	72.6	39.1	27.3	0.4	0.5
95th Queue (m)	34.5	97.6	97.0	109.9	18.4	127.4	127.6	128.7	62.4	71.3	3.4	3.7
Link Distance (m)		84.1	84.1	84.1		138.5	138.5	138.5		82.5		90.7
Upstream Blk Time (%)		41	45	14		0	0	0		2		
Queuing Penalty (veh)		248	268	85		0	0	0		6		
Storage Bay Dist (m)	35.0				35.0				50.0		25.0	
Storage Blk Time (%)	0	52			0	24			12	1		
Queuing Penalty (veh)	1	20			0	3			13	1		

Intersection: 6: Rean Driv/Hawksbury Drive & Sheppard Avenue E

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	R	L	TR	L	TR
Maximum Queue (m)	37.2	140.7	146.4	70.8	37.2	257.3	254.1	37.4	12.3	74.2	37.4	67.4
Average Queue (m)	17.4	64.8	70.8	3.8	12.1	217.8	209.5	7.1	8.9	32.9	25.2	24.8
95th Queue (m)	33.9	145.4	150.5	32.2	31.1	313.7	311.6	26.4	16.5	67.1	41.8	53.3
Link Distance (m)		138.5	138.5	138.5		256.5	256.5			79.7		109.1
Upstream Blk Time (%)		1	2	0		26	24			1		
Queuing Penalty (veh)		4	9	1		0	0			1		
Storage Bay Dist (m)	35.0				35.0			35.0	10.0		35.0	
Storage Blk Time (%)	0	16			0	46	45	0	13	36	8	4
Queuing Penalty (veh)	3	12			1	18	21	1	25	22	9	5

Zone Summary

Zone wide Queuing Penalty: 778



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	80	0	0	0	0	38	10	211	0	21	29	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	89	0	0	0	0	42	11	234	0	23	32	11
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)											105	
pX, platoon unblocked												
vC, conflicting volume	383	341	38	341	347	234	43			234		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	383	341	38	341	347	234	43			234		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	83	100	100	100	100	95	99			98		
cM capacity (veh/h)	538	570	1040	605	566	810	1578			1345		

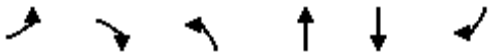
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	89	42	246	67
Volume Left	89	0	11	23
Volume Right	0	42	0	11
cSH	538	810	1578	1345
Volume to Capacity	0.17	0.05	0.01	0.02
Queue Length 95th (m)	4.5	1.3	0.2	0.4
Control Delay (s)	13.0	9.7	0.4	2.8
Lane LOS	B	A	A	A
Approach Delay (s)	13.0	9.7	0.4	2.8
Approach LOS	B	A		

Intersection Summary				
Average Delay	4.2			
Intersection Capacity Utilization	29.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1531	50	0	1900	0	90
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)	1701	56	0	2111	0	100
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				98		
pX, platoon unblocked					0.69	
vC, conflicting volume			1757		2433	595
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1757		1502	595
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	78
cM capacity (veh/h)			361		79	453

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1
Volume Total	680	680	396	704	704	704	100
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	56	0	0	0	100
cSH	1700	1700	1700	1700	1700	1700	453
Volume to Capacity	0.40	0.40	0.23	0.41	0.41	0.41	0.22
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	6.3
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	15.2
Lane LOS							C
Approach Delay (s)	0.0			0.0			15.2
Approach LOS							C

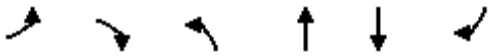
Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	42.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	220	10	40	250	80	30
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	244	11	44	278	89	33
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)					193	
pX, platoon unblocked						
vC, conflicting volume	472	106	122			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	472	106	122			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	55	99	97			
cM capacity (veh/h)	537	954	1478			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	256	322	122
Volume Left	244	44	0
Volume Right	11	0	33
cSH	548	1478	1700
Volume to Capacity	0.47	0.03	0.07
Queue Length 95th (m)	18.7	0.7	0.0
Control Delay (s)	17.2	1.3	0.0
Lane LOS	C	A	
Approach Delay (s)	17.2	1.3	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	6.9		
Intersection Capacity Utilization	41.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	16	0	0	215	48	33
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	18	0	0	239	53	37
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)					103	
pX, platoon unblocked						
vC, conflicting volume	311	72	90			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	311	72	90			
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	100	100			
cM capacity (veh/h)	686	996	1518			

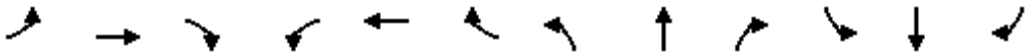
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	18	239	90
Volume Left	18	0	0
Volume Right	0	0	37
cSH	686	1518	1700
Volume to Capacity	0.03	0.00	0.05
Queue Length 95th (m)	0.6	0.0	0.0
Control Delay (s)	10.4	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.4	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	21.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	20	70	10	10	40
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	22	78	11	11	44
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	150	83			89	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	150	83			89	
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	98			99	
cM capacity (veh/h)	840	982			1519	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	22	89	56
Volume Left	0	0	11
Volume Right	22	11	0
cSH	982	1700	1519
Volume to Capacity	0.02	0.05	0.01
Queue Length 95th (m)	0.5	0.0	0.2
Control Delay (s)	8.8	0.0	1.5
Lane LOS	A		A
Approach Delay (s)	8.8	0.0	1.5
Approach LOS	A		

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	19.3%	ICU Level of Service	A
Analysis Period (min)	15		

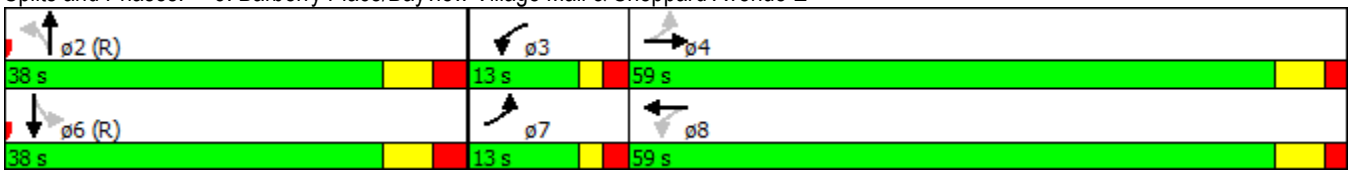


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	181	1555	126	32	1286	57	114	16	33	53	19	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.5
Storage Length (m)	35.0		0.0	35.0		0.0	50.0		0.0	25.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99			0.99		0.95	0.96		0.96	0.94	
Frt		0.990			0.995			0.899			0.873	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	4941	0	1685	5009	0	1685	1622	0	1652	1546	0
Flt Permitted	0.075			0.075			0.675			0.723		
Satd. Flow (perm)	132	4941	0	133	5009	0	1140	1622	0	1203	1546	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13			7			35			108	
Link Speed (k/h)		60			60			40			25	
Link Distance (m)		97.7			154.9			105.2			105.9	
Travel Time (s)		5.9			9.3			9.5			15.2	
Confl. Peds. (#/hr)	81		44	44		81	52		42	42		52
Confl. Bikes (#/hr)			6			9			2			
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
Growth Factor	100%	120%	100%	100%	120%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	2%	0%	0%	1%	2%	0%	0%	0%	2%	0%	0%
Adj. Flow (vph)	191	1964	133	34	1624	60	120	17	35	56	20	108
Shared Lane Traffic (%)												
Lane Group Flow (vph)	191	2097	0	34	1684	0	120	52	0	56	128	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.0			3.0			3.0			3.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane					Yes							
Headway Factor	1.09	1.01	1.01	1.09	1.01	1.01	1.09	1.01	1.01	1.09	1.01	1.01
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	13.0	59.0		13.0	59.0		38.0	38.0		38.0	38.0	
Total Split (s)	13.0	59.0		13.0	59.0		38.0	38.0		38.0	38.0	
Total Split (%)	11.8%	53.6%		11.8%	53.6%		34.5%	34.5%		34.5%	34.5%	
Maximum Green (s)	9.0	53.0		9.0	53.0		31.0	31.0		31.0	31.0	
Yellow Time (s)	2.0	4.0		2.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.0		4.0	6.0		7.0	7.0		7.0	7.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		14.0			14.0		23.0	23.0		23.0	23.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Pedestrian Calls (#/hr)		0			0		0	0		0	0	
Act Effct Green (s)	64.0	53.0		64.0	53.0		31.0	31.0		31.0	31.0	
Actuated g/C Ratio	0.58	0.48		0.58	0.48		0.28	0.28		0.28	0.28	
v/c Ratio	0.95	0.88		0.17	0.70		0.37	0.11		0.17	0.25	
Control Delay	77.6	30.8		10.2	24.1		35.9	14.6		31.5	9.5	
Queue Delay	0.0	0.0		0.0	1.3		0.0	0.0		0.0	0.0	
Total Delay	77.6	30.8		10.2	25.3		35.9	14.6		31.5	9.5	
LOS	E	C		B	C		D	B		C	A	
Approach Delay		34.7			25.0			29.4			16.2	
Approach LOS		C			C			C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 110			
Control Type: Pretimed			
Maximum v/c Ratio: 0.95			
Intersection Signal Delay: 29.9		Intersection LOS: C	
Intersection Capacity Utilization 125.9%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 3: Barberry Place/Bayview Village Mall & Sheppard Avenue E

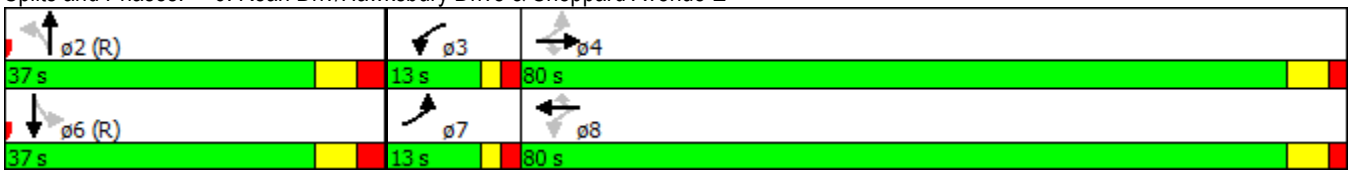


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	93	1450	73	119	1318	145	55	30	86	189	37	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.5	3.0	3.5	3.5
Storage Length (m)	35.0		0.0	35.0		35.0	10.0		0.0	35.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.81			0.91	0.94	0.94		0.94	0.95	
Frt			0.850			0.850		0.889			0.910	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	3535	1507	1668	3535	1507	1685	1574	0	1685	1625	0
Flt Permitted	0.054			0.054			0.694			0.670		
Satd. Flow (perm)	95	3535	1220	95	3535	1366	1152	1574	0	1121	1625	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			67			67		91			54	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		154.9			238.7			102.7			123.9	
Travel Time (s)		9.3			14.3			9.2			11.2	
Confl. Peds. (#/hr)	21		50	50		21	56		52	52		56
Confl. Bikes (#/hr)			5			6						
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
Growth Factor	100%	120%	100%	100%	120%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	98	1832	77	125	1665	153	58	32	91	199	39	58
Shared Lane Traffic (%)												
Lane Group Flow (vph)	98	1832	77	125	1665	153	58	123	0	199	97	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.0			3.0			3.0			3.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		3.0			3.0			3.0			3.0	
Two way Left Turn Lane		Yes										
Headway Factor	1.09	1.01	1.09	1.09	1.01	1.09	1.09	1.01	1.01	1.09	1.01	1.01
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4		4	8		8	2			6		
Minimum Split (s)	13.0	63.0	63.0	13.0	63.0	63.0	37.0	37.0		37.0	37.0	
Total Split (s)	13.0	80.0	80.0	13.0	80.0	80.0	37.0	37.0		37.0	37.0	
Total Split (%)	10.0%	61.5%	61.5%	10.0%	61.5%	61.5%	28.5%	28.5%		28.5%	28.5%	
Maximum Green (s)	9.0	74.0	74.0	9.0	74.0	74.0	30.0	30.0		30.0	30.0	
Yellow Time (s)	2.0	4.0	4.0	2.0	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	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	7.0	7.0		7.0	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Walk Time (s)		7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		12.0	12.0		12.0	12.0	23.0	23.0		23.0	23.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Pedestrian Calls (#/hr)		0	0		0	0	0	0		0	0	
Act Effct Green (s)	85.0	74.0	74.0	85.0	74.0	74.0	30.0	30.0		30.0	30.0	
Actuated g/C Ratio	0.65	0.57	0.57	0.65	0.57	0.57	0.23	0.23		0.23	0.23	
v/c Ratio	0.57	0.91	0.11	0.73	0.83	0.19	0.22	0.28		0.77	0.23	
Control Delay	33.6	33.2	4.0	49.9	27.4	8.0	43.2	15.1		67.5	21.2	
Queue Delay	0.0	46.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	33.6	79.3	4.0	49.9	27.4	8.0	43.2	15.1		67.5	21.2	
LOS	C	E	A	D	C	A	D	B		E	C	
Approach Delay		74.1			27.3			24.1			52.3	
Approach LOS		E			C			C			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 115			
Control Type: Pretimed			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay: 50.1		Intersection LOS: D	
Intersection Capacity Utilization 94.8%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 6: Rean Driv/Hawksbury Drive & Sheppard Avenue E



Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	3:50	3:50	3:50	3:50	3:50	3:50
End Time	5:00	5:00	5:00	5:00	5:00	5:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded mScheduledIntervals	1	1	1	1	1	1
Vehs Entered	4728	4306	4589	4453	4495	4514
Vehs Exited	4651	4221	4448	4374	4258	4392
Starting Vehs	204	201	211	212	187	202
Ending Vehs	281	286	352	291	424	328
Travel Distance (km)	2796	2571	2723	2650	2610	2670
Travel Time (hr)	381.1	469.9	515.3	611.0	592.4	513.9
Total Delay (hr)	327.4	420.8	463.3	560.5	542.9	463.0
Total Stops	8036	7784	8017	7838	7636	7864
Fuel Used (l)	545.4	605.3	656.6	729.7	711.3	649.7

Interval #0 Information Seeding

Start Time	3:50
End Time	4:00
Total Time (min)	10

Volumes adjusted by PHF, Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by PHF, Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	4728	4306	4589	4453	4495	4514
Vehs Exited	4651	4221	4448	4374	4258	4392
Starting Vehs	204	201	211	212	187	202
Ending Vehs	281	286	352	291	424	328
Travel Distance (km)	2796	2571	2723	2650	2610	2670
Travel Time (hr)	381.1	469.9	515.3	611.0	592.4	513.9
Total Delay (hr)	327.4	420.8	463.3	560.5	542.9	463.0
Total Stops	8036	7784	8017	7838	7636	7864
Fuel Used (l)	545.4	605.3	656.6	729.7	711.3	649.7

3: Barberry Place/Bayview Village Mall & Sheppard Avenue E Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	2.7	0.0	0.0	3.0	5.6
Denied Del/Veh (s)	5.5	0.0	0.0	60.8	5.4
Total Delay (hr)	22.6	13.7	1.2	4.3	41.8
Total Del/Veh (s)	45.6	27.8	38.8	93.2	39.3
Stop Delay (hr)	18.0	9.7	1.2	4.3	33.1
Stop Del/Veh (s)	36.4	19.6	37.2	93.0	31.1

6: Rean Driv/Hawksbury Drive & Sheppard Avenue E Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	1.8	0.0	1.0	2.8
Denied Del/Veh (s)	0.0	3.4	0.2	11.6	2.6
Total Delay (hr)	12.1	23.8	1.7	7.4	45.0
Total Del/Veh (s)	27.8	43.9	47.3	84.7	40.9
Stop Delay (hr)	7.8	15.2	1.6	7.0	31.6
Stop Del/Veh (s)	17.9	28.0	46.0	80.0	28.7

Total Zone Performance

Denied Delay (hr)	8.4
Denied Del/Veh (s)	12.3
Total Delay (hr)	86.8
Total Del/Veh (s)	1192.3
Stop Delay (hr)	64.7
Stop Del/Veh (s)	888.9

Intersection: 3: Barberry Place/Bayview Village Mall & Sheppard Avenue E

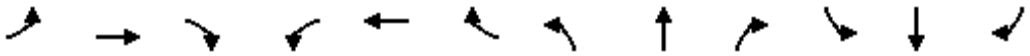
Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	TR	L	TR
Maximum Queue (m)	37.4	101.2	100.7	96.7	37.4	137.5	134.1	132.5	38.9	18.3	27.2	93.2
Average Queue (m)	28.5	87.8	87.8	76.5	16.2	72.3	72.7	68.1	15.6	6.3	10.7	38.7
95th Queue (m)	45.2	110.8	111.9	112.1	38.8	135.0	131.6	124.2	31.6	14.8	26.5	93.0
Link Distance (m)		84.4	84.4	84.4		138.5	138.5	138.5		82.5		90.7
Upstream Blk Time (%)		40	45	29		0	0	0				19
Queuing Penalty (veh)		306	341	220		1	1	1				0
Storage Bay Dist (m)	35.0				35.0				50.0		25.0	
Storage Blk Time (%)	9	47			13	19			0		3	29
Queuing Penalty (veh)	57	89			73	7			0		4	16

Intersection: 6: Rean Driv/Hawksbury Drive & Sheppard Avenue E

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	R	L	TR	L	TR
Maximum Queue (m)	37.3	142.8	142.4	30.7	37.3	236.6	227.9	37.5	12.3	76.0	37.3	112.2
Average Queue (m)	17.0	85.5	87.8	6.1	23.3	163.1	152.6	16.6	6.8	20.5	35.5	67.2
95th Queue (m)	35.5	163.2	164.9	23.9	41.2	248.2	236.9	42.5	15.6	52.8	41.6	126.8
Link Distance (m)		138.5	138.5	138.5		229.8	229.8			79.7		108.8
Upstream Blk Time (%)		2	2			8	5			1		12
Queuing Penalty (veh)		12	15			0	0			2		0
Storage Bay Dist (m)	35.0				35.0			35.0	10.0		35.0	
Storage Blk Time (%)	2	22			5	35	34	0	8	23	49	4
Queuing Penalty (veh)	15	22			43	44	52	2	9	14	48	8

Zone Summary

Zone wide Queuing Penalty: 1404



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	40	0	0	0	0	30	20	93	0	26	126	25
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
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
Hourly flow rate (vph)	42	0	0	0	0	32	21	98	0	27	133	26
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)											105	
pX, platoon unblocked												
vC, conflicting volume	372	341	146	341	354	98	159			98		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	372	341	146	341	354	98	159			98		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	92	100	100	100	100	97	99			98		
cM capacity (veh/h)	555	565	907	602	556	964	1433			1508		

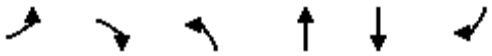
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	42	32	119	186
Volume Left	42	0	21	27
Volume Right	0	32	0	26
cSH	555	964	1433	1508
Volume to Capacity	0.08	0.03	0.01	0.02
Queue Length 95th (m)	1.9	0.8	0.3	0.4
Control Delay (s)	12.0	8.9	1.4	1.2
Lane LOS	B	A	A	A
Approach Delay (s)	12.0	8.9	1.4	1.2
Approach LOS	B	A		

Intersection Summary				
Average Delay	3.1			
Intersection Capacity Utilization	27.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	2133	220	0	1760	0	40
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	2245	232	0	1853	0	42
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				98		
pX, platoon unblocked					0.74	
vC, conflicting volume			2477		2979	864
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			2477		2445	864
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	86
cM capacity (veh/h)			189		20	301

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1
Volume Total	898	898	681	618	618	618	42
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	232	0	0	0	42
cSH	1700	1700	1700	1700	1700	1700	301
Volume to Capacity	0.53	0.53	0.40	0.36	0.36	0.36	0.14
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	3.6
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	18.9
Lane LOS							C
Approach Delay (s)	0.0			0.0			18.9
Approach LOS							C

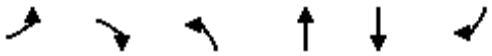
Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	56.1%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	110	40	20	100	240	90
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	116	42	21	105	253	95
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)					193	
pX, platoon unblocked						
vC, conflicting volume	447	300	347			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	447	300	347			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	79	94	98			
cM capacity (veh/h)	563	744	1223			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	158	126	347
Volume Left	116	21	0
Volume Right	42	0	95
cSH	602	1223	1700
Volume to Capacity	0.26	0.02	0.20
Queue Length 95th (m)	8.0	0.4	0.0
Control Delay (s)	13.1	1.5	0.0
Lane LOS	B	A	
Approach Delay (s)	13.1	1.5	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	37.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	27	0	0	144	189	40
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	28	0	0	152	199	42
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)					103	
pX, platoon unblocked	0.99	0.99	0.99			
vC, conflicting volume	372	220	241			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	355	201	222			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	100	100			
cM capacity (veh/h)	638	833	1339			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	28	152	241
Volume Left	28	0	0
Volume Right	0	0	42
cSH	638	1339	1700
Volume to Capacity	0.04	0.00	0.14
Queue Length 95th (m)	1.1	0.0	0.0
Control Delay (s)	10.9	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.9	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	22.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	10	30	20	25	195
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	11	32	21	26	205
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	300	42			53	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	300	42			53	
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	99			98	
cM capacity (veh/h)	684	1034			1566	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	11	53	232
Volume Left	0	0	26
Volume Right	11	21	0
cSH	1034	1700	1566
Volume to Capacity	0.01	0.03	0.02
Queue Length 95th (m)	0.2	0.0	0.4
Control Delay (s)	8.5	0.0	1.0
Lane LOS	A		A
Approach Delay (s)	8.5	0.0	1.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	28.3%	ICU Level of Service	A
Analysis Period (min)	15		