

6038 Ottawa Street

Transportation Impact Assessment

Step 1 Screening Report

Step 2 Scoping Report

Step 3 Strategy Report

Prepared for:

Tamarack Homes & Taggart Investments
3187 Albion Road South
Ottawa ON K1V 8Y3

Prepared by:



6 Plaza Court
Ottawa, ON K2H 7W1

December 2024

PN: 2023-080

Table of Contents

1	Screening	1
2	Existing and Planned Conditions	1
2.1	Proposed Development.....	1
2.2	Existing Conditions	3
2.2.1	Area Road Network.....	3
2.2.2	Existing Intersections	3
2.2.3	Existing Driveways	3
2.2.4	Cycling and Pedestrian Facilities.....	4
2.2.5	Existing Transit.....	7
2.2.6	Existing Area Traffic Management Measures.....	8
2.2.7	Existing Peak Hour Travel Demand.....	8
2.2.8	Collision Analysis.....	10
2.3	Planned Conditions.....	11
2.3.1	Changes to the Area Transportation Network	11
2.3.2	Other Study Area Developments	11
3	Study Area and Time Periods	11
3.1	Study Area	11
3.2	Time Periods	12
3.3	Horizon Years.....	12
4	Development-Generated Travel Demand	12
4.1	Mode Shares.....	12
4.2	Trip Generation	13
4.3	Trip Distribution.....	14
4.4	Trip Assignment.....	14
5	Exemption Review	15
6	Development Design	17
6.1	Design for Sustainable Modes	17
6.2	New Street Networks	18
7	Boundary Street Design.....	19
8	Transportation Demand Management	20
8.1	Context for TDM	20
8.2	Need and Opportunity.....	20
8.3	TDM Program	20
9	Background Network Travel Demands.....	20
9.1	Transportation Network Plans	20
9.2	Background Growth.....	20
9.3	Other Developments	21
10	Demand Rationalization	21
10.1	2032 Future Background Intersection Operations.....	21
10.2	2037 Future Background Intersection Operations.....	23
10.3	Modal Share Sensitivity	25
11	Transit.....	25

11.1	Route Capacity.....	25
11.2	Transit Priority	25
12	Intersection Design.....	25
12.1	Intersection Control.....	25
12.2	Intersection Design.....	25
12.2.1	2032 Future Total Intersection Operations.....	25
12.2.2	2037 Future Total Intersection Operations.....	27
12.2.3	Intersection MMLOS.....	29
12.2.4	Recommended Design Elements.....	29
13	Summary of Improvements Indicated and Modifications Options	30
14	Conclusion	33

List of Figures

Figure 1: Area Context Plan	1
Figure 2: Concept Plan.....	2
Figure 3: Existing Area Driveways.....	4
Figure 4: Study Area Pedestrian Facilities	5
Figure 5: Study Area Cycling Facilities	5
Figure 6: Existing Pedestrian Volumes	6
Figure 7: Existing Cyclist Volumes	6
Figure 8: Existing Study Area Transit Service.....	7
Figure 9: Existing Study Area Transit Stops	8
Figure 10: Existing Traffic Counts	9
Figure 11: Study Area Collision Records	10
Figure 12: New Site Generation Auto Volumes.....	15
Figure 13: Concept Pedestrian and Cycling Network	17
Figure 14: Conceptual Transit Stops.....	18
Figure 15: Concept Traffic Calming Plan.....	19
Figure 16: 2032 Future Background Volumes	22
Figure 17: 2037 Future Background Volumes	24
Figure 18: 2032 Future Total Volumes	26
Figure 19: 2037 Future Total Volumes	28

Table of Tables

Table 1: Intersection Count Date.....	8
Table 2: Existing Intersection Operations.....	9
Table 3: Study Area Collision Summary, 2018-2022	10
Table 4: Summary of Collision Locations, 2018-2022	10
Table 5: TRANS Trip Generation Manual Recommended Mode Shares – Rural Districts Including Southwest	12
Table 6: Proposed Development Mode Shares – Rural Districts Including Southwest.....	13
Table 7: Trip Generation Person Trip Rates by Peak Period.....	13
Table 8: Total Residential Person Trip Generation by Peak Period	13

Table 9: Trip Generation by Mode	13
Table 10: OD Survey Distribution – Rural Southwest	14
Table 11: Exemption Review	15
Table 12: Boundary Street MMLOS Analysis	19
Table 13: TRANS Regional Model Projections – Study Area Growth Rates.....	20
Table 14: Applied Annual Growth Rates	21
Table 15: 2032 Future Background Intersection Operations	22
Table 16: 2037 Future Background Intersection Operations	24
Table 17: Trip Generation by Transit Mode	25
Table 18: 2032 Future Total Intersection Operations	26
Table 19: 2037 Future Total Intersection Operations	28
Table 20: Left-Turn Lane Warrant Results.....	29

List of Appendices

Appendix A – TIA Screening Form and Certification Form
Appendix B – Turning Movement Count Data
Appendix C – Synchro Intersection Worksheets – Existing Conditions
Appendix D – Collision Data
Appendix E – MMLOS Analysis
Appendix F – TDM Checklist
Appendix G – TRANS Model Plots
Appendix H – Background Development Volumes
Appendix I – Synchro Intersection Worksheets – 2032 Future Background Conditions
Appendix J – Synchro Intersection Worksheets – Signal Warrants
Appendix K – Synchro Intersection Worksheets – Left-Turn Lane Warrants
Appendix L – Synchro Intersection Worksheets – 2037 Future Background Conditions
Appendix M – Synchro Intersection Worksheets – 2032 Future Total Conditions
Appendix N – Synchro Intersection Worksheets – 2037 Future Total Conditions

1 Screening

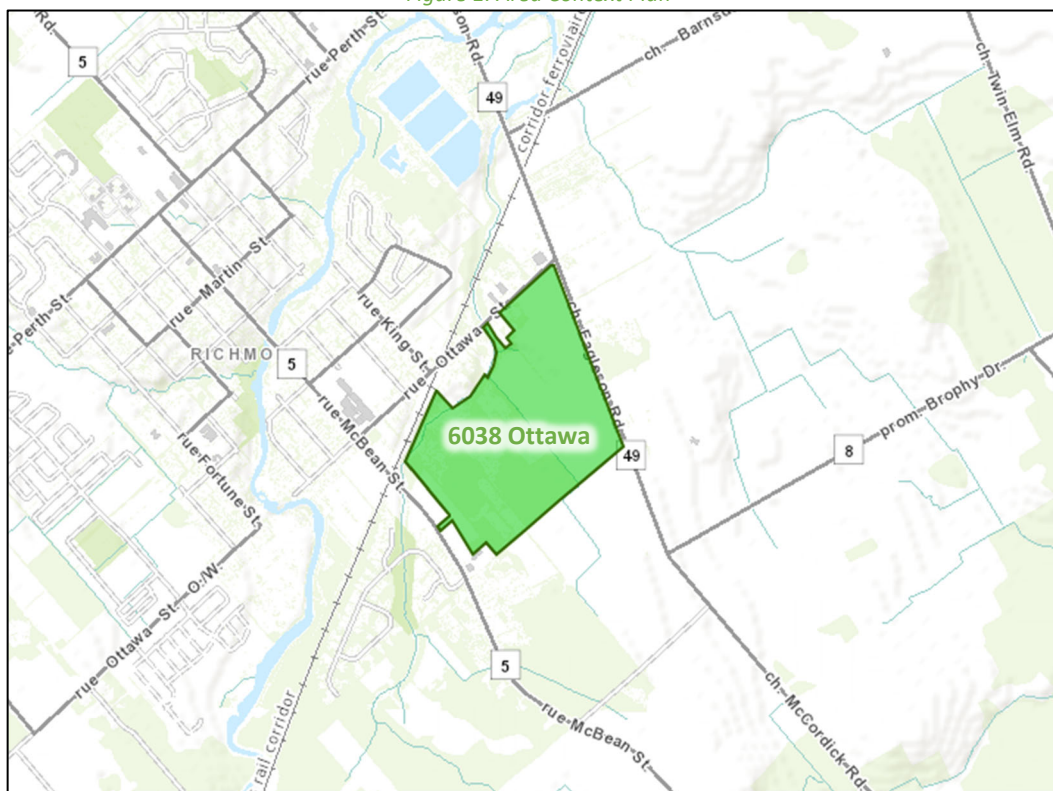
This study has been prepared according to the City of Ottawa's 2017 Transportation Impact Assessment (TIA) Guidelines, incorporating the 2023 Revision to Transportation Impact Assessment Guidelines. Accordingly, a Step 1 Screening Form has been prepared and is included as Appendix A, along with the Certification Form for the TIA Study PM. As shown in the Screening Form, a TIA is required, and this study has been prepared to support a draft plan of subdivision.

2 Existing and Planned Conditions

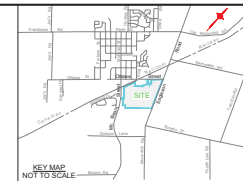
2.1 Proposed Development

The proposed site is located at 6038 Ottawa Street, currently zoned as Rural General Industrial Zone 3 (RG3). The proposed residential plan of subdivision includes a total of 1,173 homes, split between 535 single family homes, 144 semi-detached homes, and 494 townhomes. A new collector road between Eagleson Road and McBean Street is proposed via minor stop-controlled all-movement intersections at each road. The existing site is farm fields. The anticipated full build-out and occupancy horizon is 2032, and no phasing has been confirmed. The site is within the Village of Richmond Community Design Plan Area. Figure 1 illustrates the study area context. Figure 2 illustrates the proposed concept plan.

Figure 1: Area Context Plan



Source: <http://maps.ottawa.ca/geoOttawa/> Accessed: September 10, 2024



**SKETCH TO ILLUSTRATE PROPOSED
DEVELOPMENT
PART OF LOT 26
CONCESSION 2
VILLAGE OF RICHMOND
CITY OF OTTAWA**

Prepared by Annis, O'Sullivan, Vollebakk Ltd.
February 7, 2024
Revised October 24, 2024

Scale 1 : 1250

Metric

DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND

Notes & Legend

This is NOT a Plan of Survey and shall not be used except for the purposes indicated in the title block.



PROPOSED LAND USE TABLE				
PROPOSED USE	LOT / BLOCK	N OF	S OF	AREA HA / SQ. FT.
SINGLES				21.79 (51,891.83)
	537, 538, 544-545, 552-553, 556, 558, 560, 561, 566, 573-574, 574-576, 576, 580-586, 589-593, 594, 597-600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 712, 713, 714, 715, 717			
TOWNHOMES			387	8.425 (20,084)
SEMI-DETACHED	538, 544-545, 549, 550, 551, 552, 553, 558, 560, 561, 566, 573-574, 574-576, 576, 580-586, 589-593, 594, 597-600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 712, 713, 714, 715, 717		144	3.760 (9,303)
BACKS-BAKED UNITS	589, 622, 658		106	1.139 (2,819)
INSTITUTIONAL	667			3.144 (7,773)
COMMERCIAL	688			2.044 (5,055)
PARK-LAND	542, 556, 654, 658, 628, 718, 719			1.581 (3,945)
WALKWAYS	585			0.182 (450)
STORY-UNDER	595			3.302 (8,093)
OTHER	586			0.820 (2,033)
				4.252 (10,517)
STREETS	1-25			15.768 (38,944)
			1.779	6.752 (16,704)

2.2 Existing Conditions

2.2.1 Area Road Network

Eagleson Road: Eagleson Road is a City of Ottawa arterial road with a two-lane rural cross-section with gravel shoulders and a posted speed limit of 80 km/h. The measured right-of-way varies from 26.0 to 27.0 metres. Eagleson Road is a truck route north of Brophy Drive.

McBean Street: McBean Street is a City of Ottawa arterial road with a two-lane rural cross-section with paved shoulders north of the rail tracks and gravel shoulders to the south. The posted speed limit is 50 km/h north of the rail tracks and 70 km/h to the south. The City-protected right-of-way is 23.0 metres north of Ottawa Street and the measured right-of-way varies from 26.0-30.0 metres south of Ottawa Street. McBean Street is a truck route.

Brophy Drive: Brophy Drive is a City of Ottawa arterial road with a two-lane rural cross-section with gravel shoulders and a posted speed limit of 80 km/h. The measured right-of-way is 40.0 metres. Brophy Drive is a truck route.

Ottawa Street: Ottawa Street is a City of Ottawa collector road with a two-lane rural cross-section with a posted speed limit of 50 km/h. The measured right-of-way is 20.0 metres to the west of the rail tracks and 26.0 metres to the east.

King Street: King Street is a City of Ottawa collector road with a two-lane rural cross-section with gravel shoulders and an unposted speed limit of 50km/h. The measured right-of-way is 20.0 metres.

2.2.2 Existing Intersections

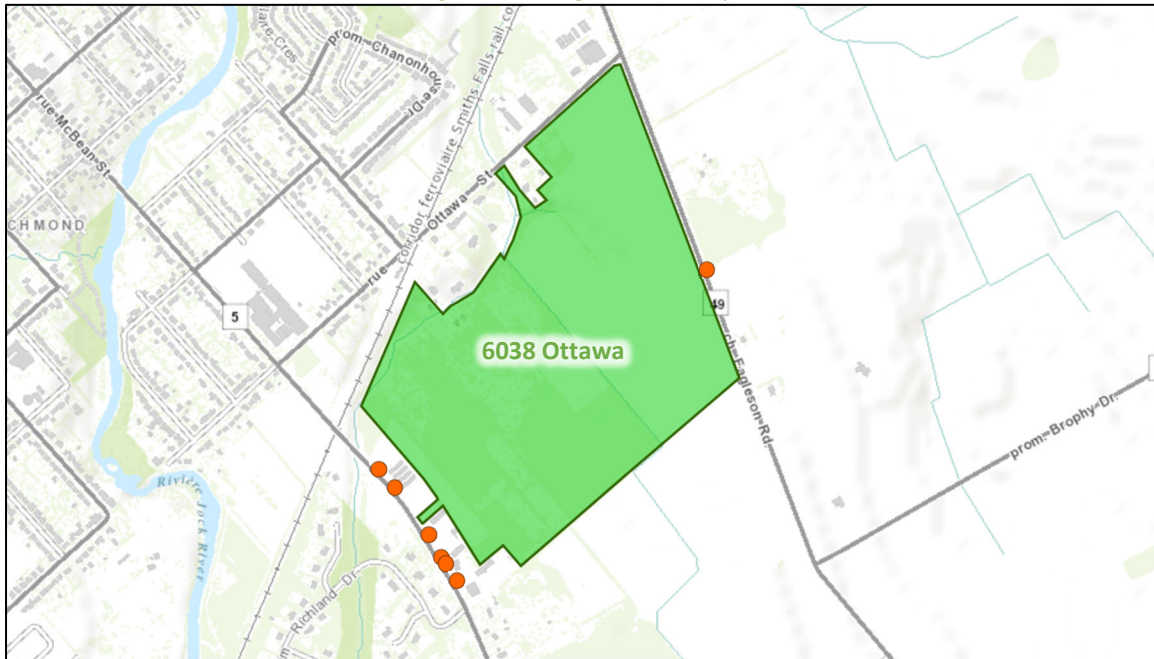
The key area intersections adjacent to the proposed site and additional signalized intersections within one kilometre of the site have been summarized below:

<i>Eagleson Road & Ottawa Street</i>	The intersection of Eagleson Road and Ottawa Street is an unsignalized intersection with stop-control on Ottawa Street. The northbound approach consists of a shared left-turn/through lane, the southbound approach consists of a shared through/right-turn lane, and the eastbound approach consists of a shared left-turn/right-turn lane. No turn restrictions are noted.
<i>Eagleson Road & Brophy Drive</i>	The intersection of Eagleson Road and Brophy Drive is an all-way stop-controlled intersection. The northbound approach consists of a shared through/right-turn lane, the southbound approach consists of a shared left-turn/through lane, the westbound approach consists of a shared left-turn/right-turn lane, and the eastbound approach is a private driveway. No turn restrictions are noted.
<i>McBean Street & Ottawa Street</i>	The intersection of McBean Street and Ottawa Street is an unsignalized intersection with stop control on Ottawa Street. All approaches consist of shared all-movement lanes. No turn restrictions are noted.

2.2.3 Existing Driveways

Within 200 metres of the proposed site, a number of private accesses are located along Eagleson Road and McBean Street. Along the east side of Eagleson Road, one private access for a farm is present, and along the east side of McBean Street, private accesses for residential and light industrial land uses are present. Figure 3 illustrates the area driveways within 200 metres of the proposed site accesses.

Figure 3: Existing Area Driveways

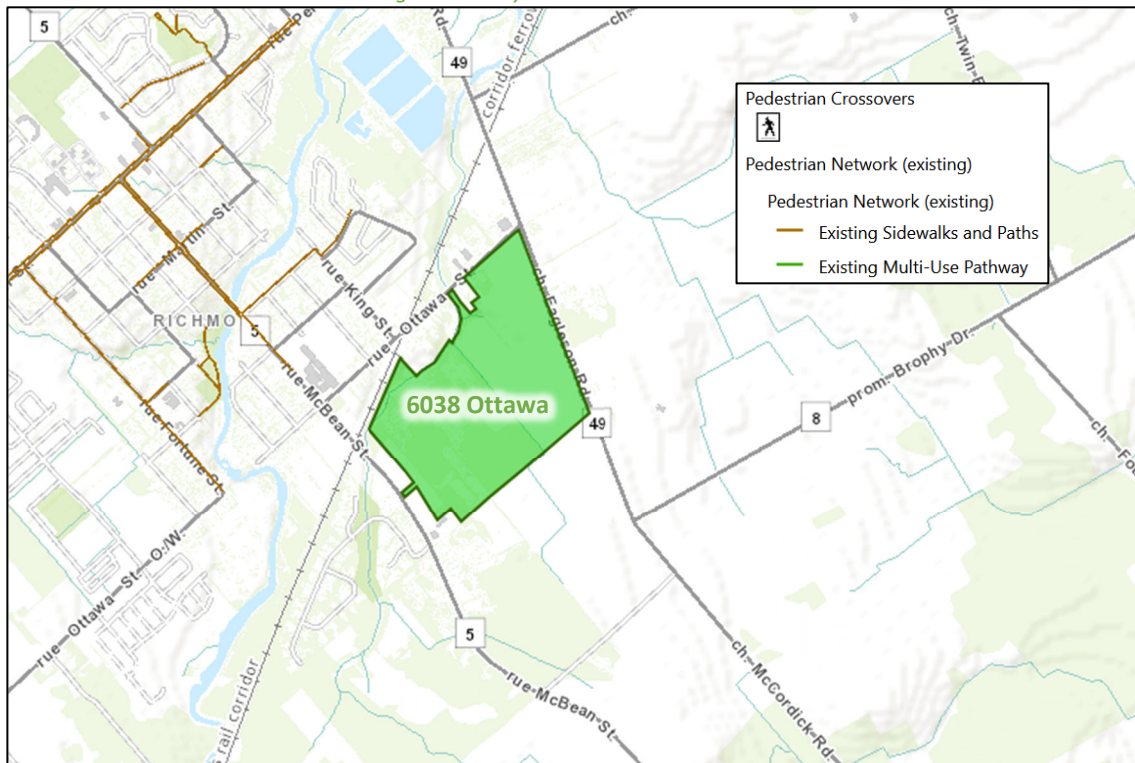


2.2.4 Cycling and Pedestrian Facilities

Figure 4 illustrates the pedestrian facilities in the study area and Figure 5 illustrates the cycling facilities.

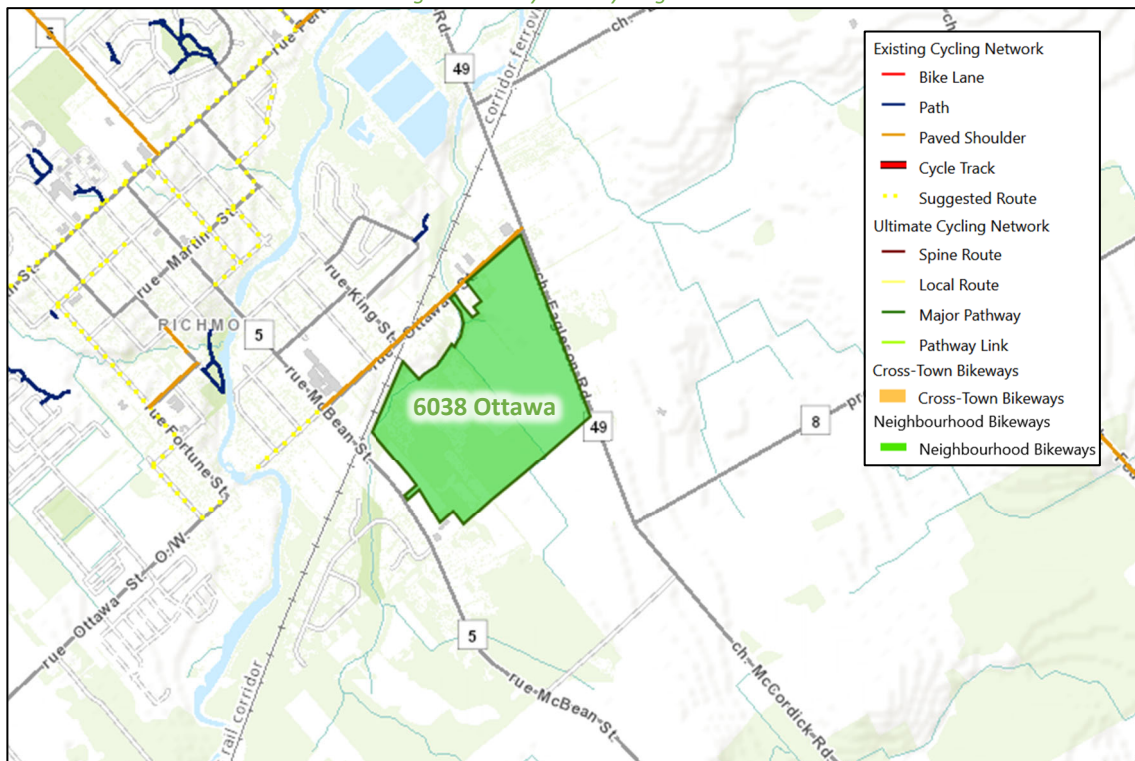
Sidewalks are provided along the east side of McBean Street to the north of the South Carleton High School and on a few local streets to the north of the study area. Per the geoOttawa layers, Ottawa Street depicts paved shoulders between McBean Street, however these do not exist and the City is studying the need to provide facilities in this location.

Figure 4: Study Area Pedestrian Facilities



Source: <http://maps.ottawa.ca/geoOttawa/> Accessed: September 10, 2024

Figure 5: Study Area Cycling Facilities



Source: <http://maps.ottawa.ca/geoOttawa/> Accessed: September 10, 2024

Pedestrian and cyclist volumes included in study area intersection counts, presented in Section 2.2.7, have been compiled and are illustrated in Figure 6 and Figure 7, respectively.

Figure 6: Existing Pedestrian Volumes

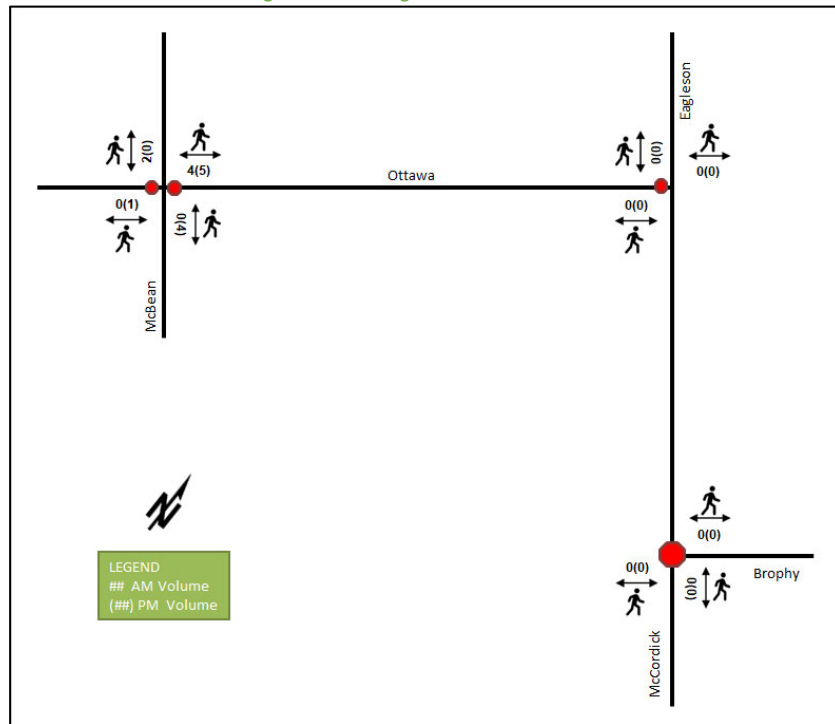
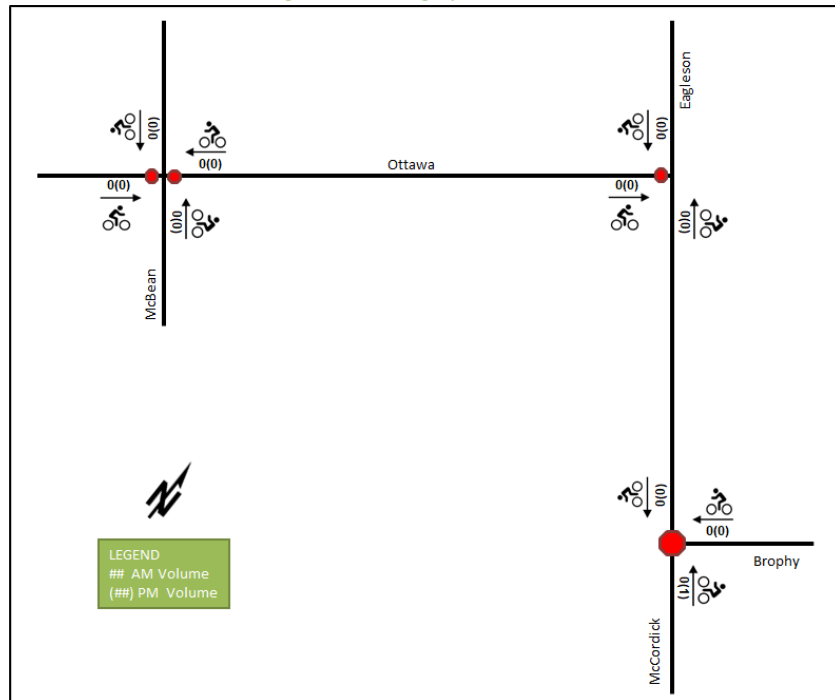


Figure 7: Existing Cyclist Volumes



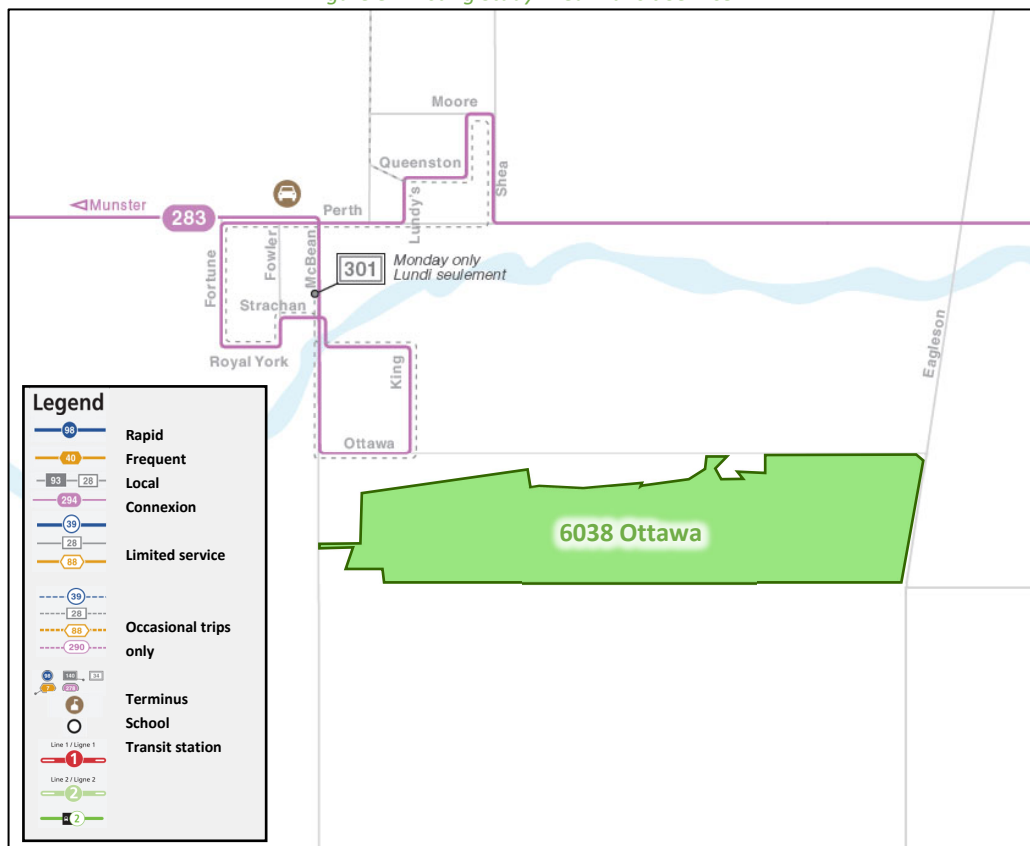
2.2.5 Existing Transit

Figure 8 illustrates the transit system map in the study area and Figure 9 illustrates nearby transit stops. All transit information is from September 10, 2024, and is included for general information purposes and context to the surrounding area.

Within the study area, the routes #283 and #301 travel along McBean Street, Ottawa Street, and King Street. Stops are located on Ottawa Street at McBean Street and Cockburn Street and on King Street at Burke Street and Royal York Street. The frequency of these routes within proximity of the proposed site based on September 10, 2024 service levels are:

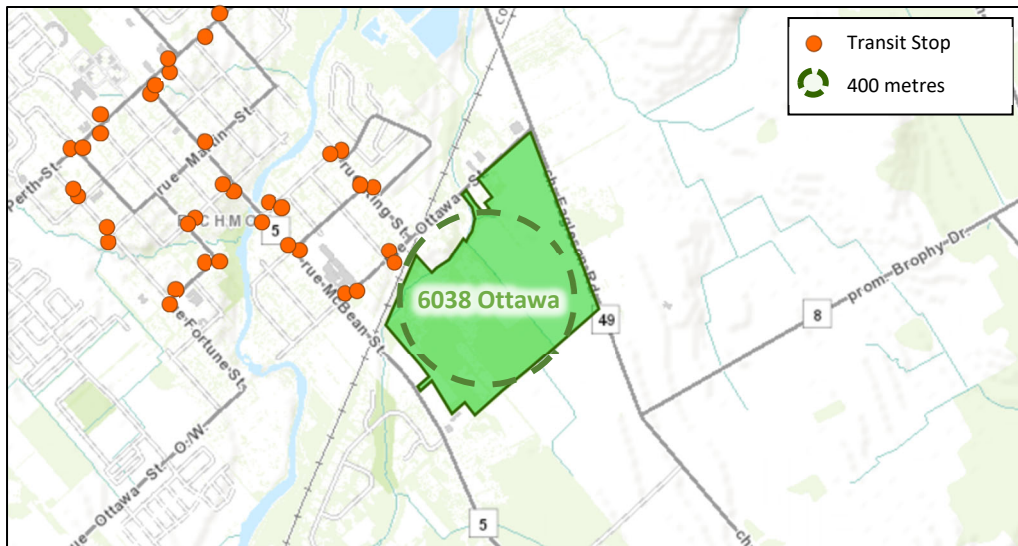
- Route #283 – Three AM buses to Tunney's Pasture and four PM return buses
- Route #301 – One AM bus to Carlingwood and one PM return bus – Mondays only

Figure 8: Existing Study Area Transit Service



Source: <http://www.octranspo.com/> Accessed: September 10, 2024

Figure 9: Existing Study Area Transit Stops



Source: <http://www.octranspo.com/> Accessed: September 10, 2024

2.2.6 Existing Area Traffic Management Measures

No traffic calming measures are noted in the study area. McBean Street and Ottawa Street are signed school zones in the vicinity of South Carleton High School.

2.2.7 Existing Peak Hour Travel Demand

Existing turning movement counts were acquired from the City of Ottawa for the existing study area intersections. Table 1 summarizes the intersection count dates.

Table 1: Intersection Count Date

Intersection	Count Date
Eagleson Road & Ottawa Street	Tuesday, March 7, 2023
Eagleson Road/McCordick Road & Brophy Drive	Tuesday, April 30, 2019
McBean Street & Ottawa Street	Thursday, March 12, 2020

Figure 10 illustrates the existing traffic counts and Table 2 summarizes the existing intersection operations. The level of service is based on HCM 2010 delay for unsignalized intersections. Detailed turning movement count data is included in Appendix B and the Synchro worksheets are provided in Appendix C.

Figure 10: Existing Traffic Counts

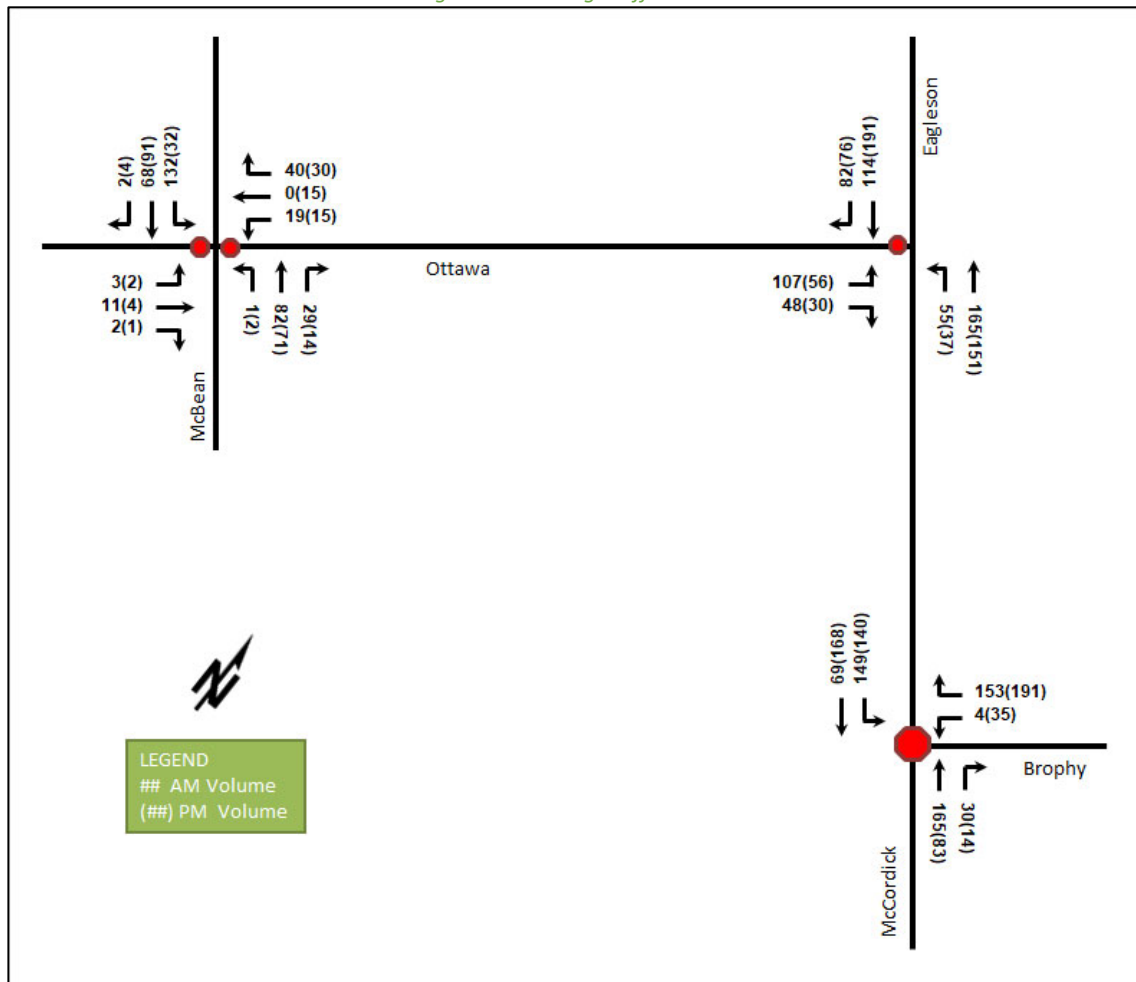


Table 2: Existing Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	Delay (s)	Q (95 th)
Eagleson Road & Ottawa Street <i>Unsignalized</i>	EB	B	0.29	13.5	9.0	B	0.17	12.4	4.5
	NB	A	0.05	7.8	0.8	A	0.03	7.9	0.8
	SB	-	-	-	-	-	-	-	-
	Overall	A	-	4.4	-	A	-	2.5	-
Eagleson Road & Brophy Drive <i>Unsignalized</i>	WB	A	0.21	8.6	6.0	A	0.32	9.7	10.5
	NB	A	0.27	9.2	8.3	A	0.15	8.7	3.8
	SB	A	0.32	9.9	10.5	B	0.45	11.6	17.3
	Overall	A	-	9.3	-	B	-	10.5	-
McBean Street & Ottawa Street <i>Unsignalized</i>	EB	B	0.04	13.2	0.8	B	0.01	10.6	0.0
	WB	B	0.10	10.8	2.3	B	0.09	10.1	2.3
	NB	A	0.00	7.4	0.0	A	0.00	7.4	0.0
	SB	A	0.10	7.7	2.3	A	0.02	7.5	0.8
	Overall	A	-	4.9	-	A	-	3.3	-

Notes: Saturation flow rate of 1800 veh/h/lane
 Queue is measured in metres
 Peak Hour Factor = 0.90

Delay = average vehicle delay in seconds
 m = metered queue
 # = volume for the 95th %ile cycle exceeds capacity

During both peak hours, the study area intersections operate well with LOS B or better on all movements. No capacity issues are noted.

2.2.8 Collision Analysis

Collision data have been acquired from the City of Ottawa open data website (data.ottawa.ca) for five years prior to the commencement of this TIA for the surrounding study area road network. Table 3 summarizes the collision types and conditions in the study area, Figure 11 illustrates the intersections and segments analyzed, and Table 4 summarizes the total collisions for each of these locations. Collision data are included in Appendix D.

Table 3: Study Area Collision Summary, 2018-2022

Total Collisions		Number	%
		7	100%
Classification	Fatality	0	0%
	Non-Fatal Injury	4	57%
	Property Damage Only	3	43%
Initial Impact Type	Angle	2	29%
	Rear end	1	14%
	SMV Other	4	57%
Road Surface Condition	Dry	7	100%
Pedestrian Involved		0	0%
Cyclists Involved		0	0%

Figure 11: Study Area Collision Records

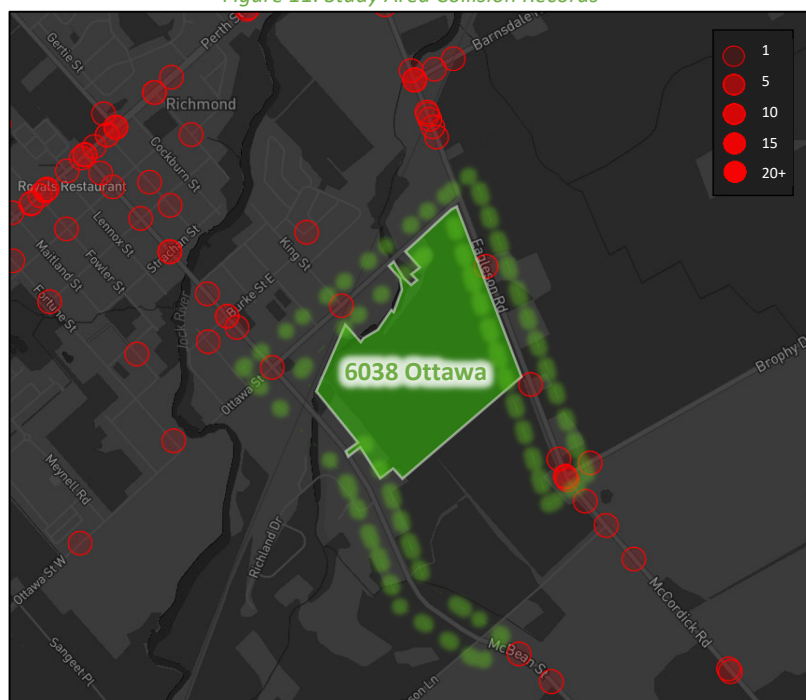


Table 4: Summary of Collision Locations, 2018-2022

Intersections / Segments	Number	%
	7	100%
Eagleson Rd Btwn Brophy Dr & Ottawa St	3	4%
Eagleson Rd/McCordick Rd @ Brophy Dr	2	3%
King St @ Ottawa St	1	1%

	Number	%
Intersections / Segments	7	100%
McBean St @ Ottawa St	1	1%

Within the study area, no locations are noted to have experienced an average of one collision per year. No further review of collisions is required as part of this study.

2.3 Planned Conditions

2.3.1 Changes to the Area Transportation Network

2.3.1.1 *Transportation Master Plan (2013)*

No roadway or transit improvements are included in the City of Ottawa's Transportation Master Plan (TMP) (2013) within the study area.

2.3.1.2 *Transportation Master Plan – Part 1*

The City of Ottawa's Transportation Master Plan – Part 1 includes a list of planned Active Transportation projects for implementation by 2046. Separated cycling facilities are planned along McBean Street north of Ottawa Street.

2.3.1.3 *Transportation Master Plan – Part 2*

The City of Ottawa's Transportation Master Plan – Part 2 will recommend road and transit projects up to 2046 and is currently in the consultation phase. No recommendations, planned projects, or timing of previously planned projects is currently available as part of this forthcoming document.

2.3.1.4 *Village of Richmond CDP*

The Village of Richmond CDP identifies a collector road between McBean Street and Eagleson Road, a gateway feature to the southeast corner of the development lands on Eagleson Road, and local road connections to Ottawa Street and Eagleson Road. The collector road is noted to have a rural cross-section with a sidewalk on a single side. McBean Street is classified as a rural arterial with a sidewalk on a single side, transitioning to a village arterial north of the rail tracks to transition to an urban cross-section with sidewalks on both sides, on-street parking during the off-peak hours and trees in the boulevards. Eagleson Road is shown to remain an existing rural arterial.

2.3.1.5 *Ottawa's Construction and Infrastructure Projects Portal*

From the Planned Construction Projects section of Ottawa's Construction and Infrastructure Projects online portal, area traffic management measures are planned along Ottawa Street in front of South Carleton High School to commence construction this year.

2.3.2 Other Study Area Developments

2780 Eagleson Road

The development is an extension of Cardel Homes Creekside and is proposed to include 251 single detached dwellings, 70 semi-detached dwellings, and 135 townhouses. Two accesses onto Eagleson Road are proposed north of Richmond Road. The development is anticipated to be built out by 2027 and to generate 310 new AM and 320 new PM peak hour two-way auto trips. (CGH, 2024)

3 Study Area and Time Periods

3.1 Study Area

The study area will include the following intersections:

- Eagleson Road at:
 - Ottawa Street

- New Road
- Brophy Drive
- McBean Street at:
 - Ottawa Street
 - New Road

The King Street and Ottawa Street intersection is not considered a study area intersection of note and will only be noted if the cycling route along Ottawa Street has any cycling facility recommendations resulting from this study.

The boundary roads are Eagleson Road and Ottawa Street. No screenlines are present near the proposed site and none will be reviewed as part of this study.

3.2 Time Periods

As the proposed development is composed primarily of residential units, the weekday AM and PM peak hours will be examined.

3.3 Horizon Years

The anticipated build-out year is 2032. As a result, the full build-out plus five years horizon year is 2037.

4 Development-Generated Travel Demand

4.1 Mode Shares

Examining the mode shares recommended in the TRANS Trip Generation Manual (2020) for the subject district, derived from the most recent National Capital Region Origin-Destination survey (OD Survey), the existing average district mode shares by land use for Rural Districts Including Southwest have been summarized in Table 5.

Table 5: TRANS Trip Generation Manual Recommended Mode Shares – Rural Districts Including Southwest

Travel Mode	Single-Detached		Multi-Unit (Low-Rise)	
	AM	PM	AM	PM
Auto Driver	60%	67%	66%	62%
Auto Passenger	14%	17%	13%	19%
Transit	24%	14%	21%	16%
Cycling	2%	2%	1%	3%
Walking	0%	0%	0%	0%
Total	100%	100%	100%	100%

OC Transpo has indicated through other development applications in Richmond Village that no intent to increase the number or diversity of bus routes is currently planned by area development build-out horizons. As there are no inbound transit routes to village in the AM peak period and no outbound transit routes from the village in the PM peak period, the off-peak directional transit mode shares will be reassigned to the auto mode shares. Consistent with City feedback and other studies in the area, the peak directional transit mode shares will be reduced and reassigned to the auto mode shares. Table 6 summarizes the directional mode share targets to be applied to the subject development by peak hour.

Table 6: Proposed Development Mode Shares – Rural Districts Including Southwest

Travel Mode	Single-Detached				Multi-Unit (Low-Rise)			
	AM		PM		AM		PM	
	In	Out	In	Out	In	Out	In	Out
Auto Driver	84%	79%	76%	81%	87%	82%	73%	78%
Auto Passenger	14%	14%	17%	17%	13%	13%	19%	19%
Transit	0%	5%	5%	0%	0%	5%	5%	0%
Bicycle	2%	2%	2%	2%	1%	1%	3%	3%
Walk	0%	0%	0%	0%	0%	0%	0%	0%
Total	100%	100%	100%	100%	100%	100%	100%	100%

4.2 Trip Generation

This TIA has been prepared using the vehicle and person trip rates for the residential dwellings using the TRANS Trip Generation Manual (2020). It is noted that a school and a commercial component each of unknown size are proposed within the development lands. No information or timelines are available for these components, and each will be subject to eventual individual site plan applications. Therefore, no trip generation will be undertaken for these future land uses. Table 7 summarizes the person trip rates for the proposed residential land uses for each peak period.

Table 7: Trip Generation Person Trip Rates by Peak Period

Land Use	Land Use Code	Peak Period	Person Trip Rates
Single-Detached	210 (TRANS)	AM	2.05
		PM	2.48
Multi-Unit (Low-Rise)	220 (TRANS)	AM	1.35
		PM	1.58

Using the above person trip rates, the total person trip generation has been estimated. Table 8 summarizes the total person trip generation for the residential land uses.

Table 8: Total Residential Person Trip Generation by Peak Period

Land Use	Units	AM Peak Period			PM Peak Period		
		In	Out	Total	In	Out	Total
Single-Detached	535	329	768	1097	823	504	1327
Multi-Unit (Low-Rise)	638	258	603	861	564	444	1008

Using the above mode share targets and the person trip rates, the person trips by mode have been projected. Trip generation by peak hour has been forecasted using the prescribed peak period conversion factors presented in the TRANS Trip Generation Manual (2020) for the residential component. Table 9 summarizes the residential trip generation by mode and peak hour.

Table 9: Trip Generation by Mode

Travel Mode		AM Peak Hour				PM Peak Hour			
		Mode Share	In	Out	Total	Mode Share	In	Out	Total
Single-Detached	Auto Driver	84%/79%	134	291	425	76%/81%	275	181	456
	Auto Passenger	14%	22	52	74	17%	61	38	99
	Transit	0%/5%	0	21	21	5%/0%	19	0	19
	Cycling	2%	4	9	13	2%	8	5	13
	Walking	0%	0	0	0	0%	0	0	0
	Total	100%	160	373	533	100%	363	224	587

Travel Mode		AM Peak Hour				PM Peak Hour			
		Mode Share	In	Out	Total	Mode Share	In	Out	Total
Multi-Unit (Low-Rise)	Auto Driver	87%/82%	109	237	346	73%/78%	181	154	335
	Auto Passenger	13%	16	38	54	19%	47	37	84
	Transit	0%/5%	0	17	17	5%/0%	13	0	13
	Cycling	1%	2	4	6	3%	8	6	14
	Walking	0%	0	0	0	0%	0	0	0
	Total	100%	127	296	422	100%	249	197	446
Total	Auto Driver	-	243	528	771	-	456	335	791
	Auto Passenger	-	38	90	128	-	108	75	183
	Transit	-	0	38	38	-	32	0	32
	Cycling	-	6	13	19	-	16	11	27
	Walking	-	0	0	0	-	0	0	0
	Total	-	287	669	955	-	612	421	1033

As shown above, a total of 771 AM and 791 PM new peak hour two-way vehicle trips are projected as a result of the proposed development.

4.3 Trip Distribution

To understand the travel patterns of the subject development, the OD Survey has been reviewed to determine the travel for the residential development, and these patterns were applied based on the build-out of Richmond Village and the Rural Southwest district. Table 10 below summarizes the distributions.

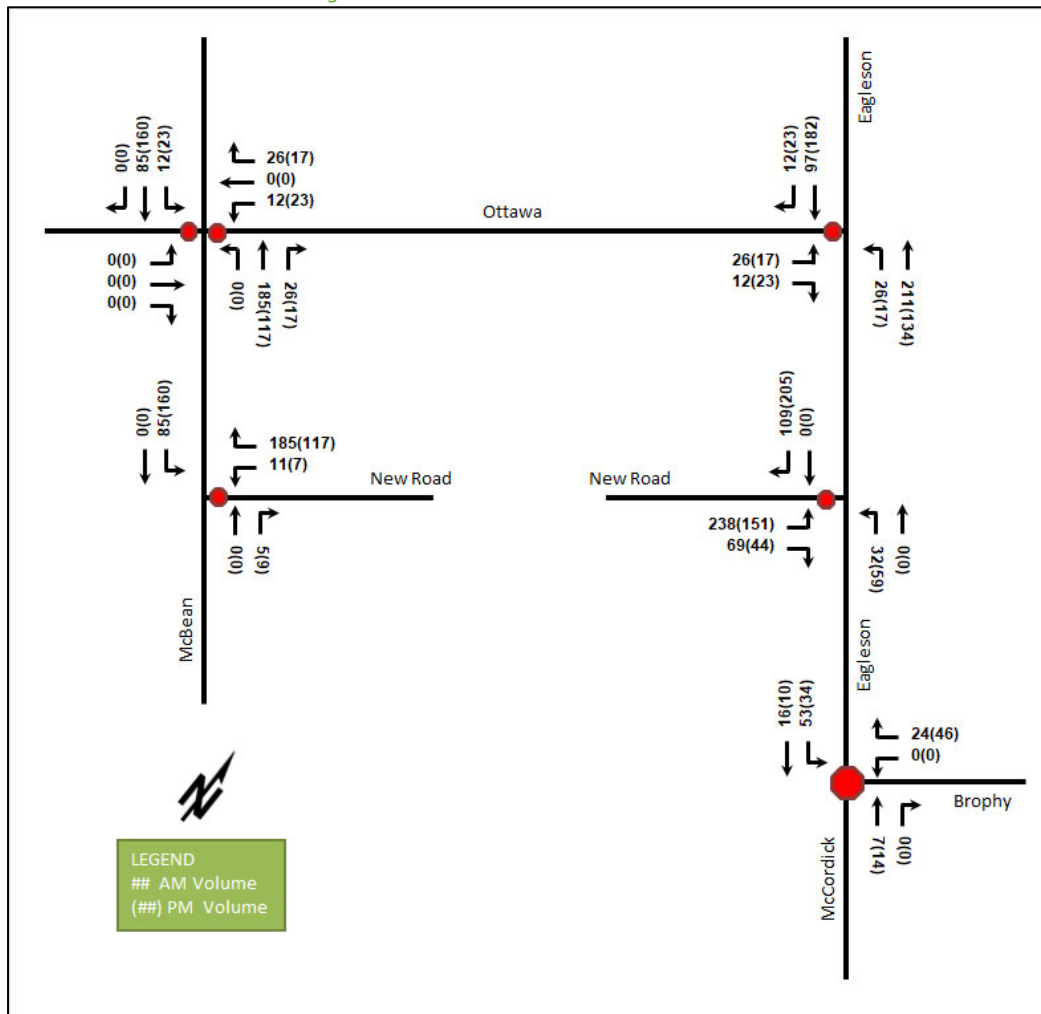
Table 10: OD Survey Distribution – Rural Southwest

To/From	% of Trips	Via
North	55%	30% Eagleson Rd, 25% McBean St
South	5%	3% Eagleson Rd, 2% McBean St
East	25%	10% Brophy Dr, 15% Eagleson Rd (north)
West	15%	McBean St (north)
Total	100%	-

4.4 Trip Assignment

Using the distribution outlined above, turning movement splits, and access to major transportation infrastructure, the trips generated by the site have been assigned to the study area road network. Figure 12 illustrates the new site generated volumes.

Figure 12: New Site Generation Auto Volumes



5 Exemption Review

Table 11 summarizes the exemptions for this TIA.

Table 11: Exemption Review

Module	Element	Explanation	Exempt/Required
Site Design and TDM			
4.1 Development Design	4.1.2 Circulation and Access	Only required for site plan and zoning by-law applications	Required
	4.1.3 New Street Networks	Only required for plans of subdivision	Required
4.2 Parking	4.2.1 Parking Supply	Only required for site plan and zoning by-law applications	Exempt
4.3 Boundary Street Design		All applications	Required
4.5 Transportation Demand Management	All Elements	Only required when the development generates more than 60 person-trips	Required
Network Impact			

Module	Element	Explanation	Exempt/Required
3.2 Background Network Travel Demand	All Elements	Only required when one or more other Network Impact Modules are triggered	Required
3.3 Demand Rationalization		Only required when one or more other Network Impact Modules are triggered	Required
4.6 Neighbourhood Traffic Calming	4.6.1 Adjacent Neighbourhoods	<p>If the development meets all of the following criteria along the route(s) site generated traffic is expected to utilize between an arterial road and the site's access:</p> <ol style="list-style-type: none"> 1. Access to Collector or Local; 2. "Significant sensitive land use presence" exists, where there is at least two of the following adjacent to the subject street segment: <ul style="list-style-type: none"> • School (within 250m walking distance); • Park; • Retirement / Older Adult Facility (i.e. long-term care and retirement homes); • Licenced Child Care Centre; • Community Centre; or • 50%, or greater, of adjacent property along the route(s) is occupied by residential lands and a minimum of 10 occupied residential units are present on the route. 3. Application is for Zoning By-Law Amendment or Draft Plan of Subdivision; 4. At least 75 site-generated auto trips; 5. Site Trip Infiltration is expected. Site traffic will increase peak hour vehicle volumes along the route by 50% or more. 	Exempt
4.7 Transit	4.7.1 Transit Route Capacity	Only required when the development generates more than 75 transit trips	Exempt
	4.7.2 Transit Priority Requirements	Only required when the development generates more than 75 auto trips	Exempt
4.8 Network Concept		Only required when proposed development generates more than 200 person-trips during the peak hour in excess of equivalent volume permitted by established zoning	Exempt
4.9 Intersection Design	4.9.1 Intersection Control	Only required when the development generates more than 75 auto trips	Required

Module	Element	Explanation	Exempt/Required
	4.9.2 Intersection Design	Only required when the development generates more than 75 auto trips	Required

6 Development Design

6.1 Design for Sustainable Modes

The proposed development is a residential subdivision where each dwelling will include a driveway and garage providing vehicular parking. Bicycle parking is assumed to be within the individual units. The Richmond CDP and Secondary Plan show a pathway from the subject lands through the north of the site continuing along the railway line terminating at Ottawa Street. The sidewalks and pathways proposed along the northern extent of the site satisfy this connectivity. It is anticipated that as the development builds out, transit stops will be located along the internal collector road. Figure 13 illustrates the planning context of the pedestrian and cycling network for the subdivision, and Figure 14 illustrates the conceptual transit stop locations, subject to OC Transpo requirements.

Figure 13: Concept Pedestrian and Cycling Network

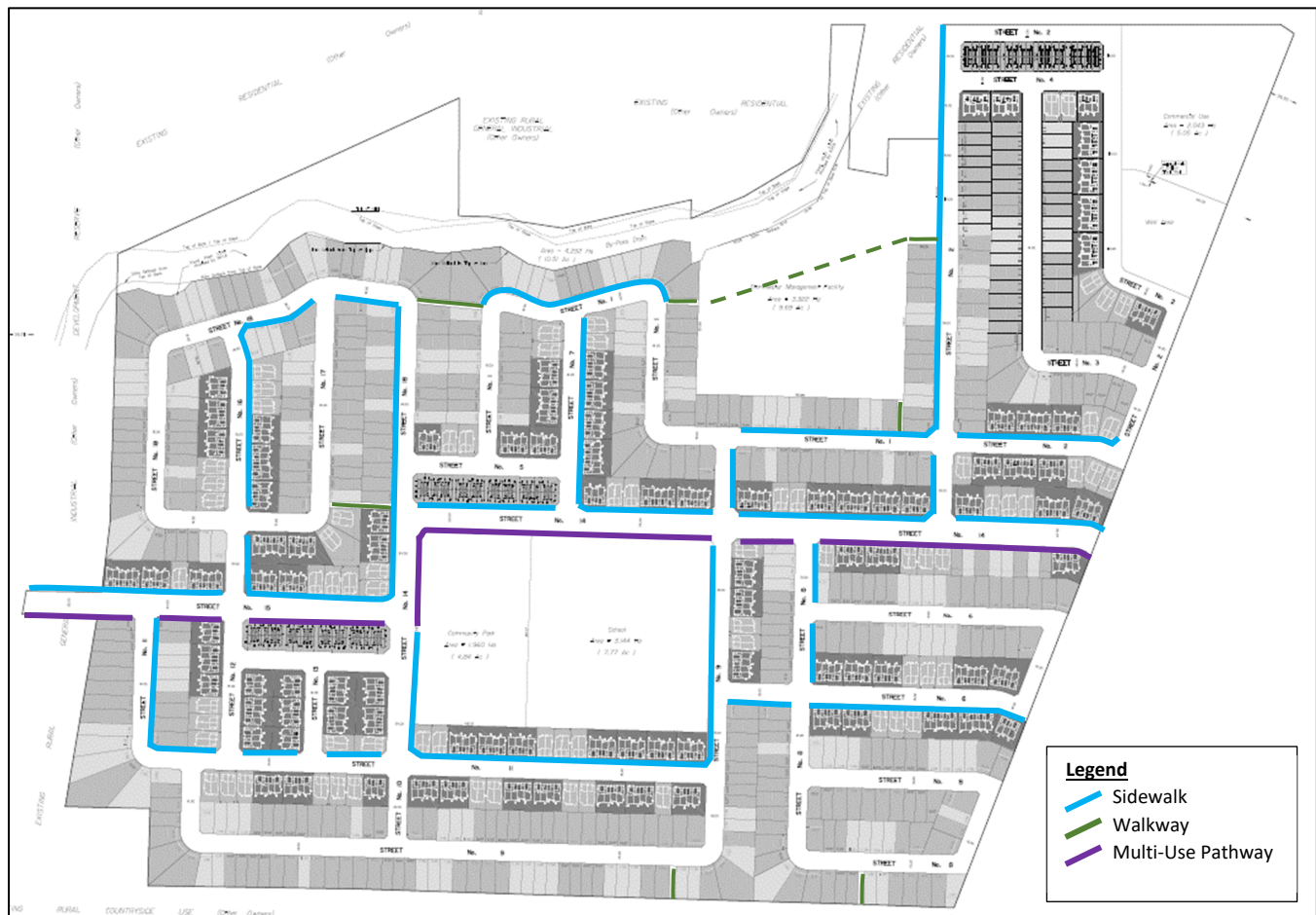


Figure 14: Conceptual Transit Stops



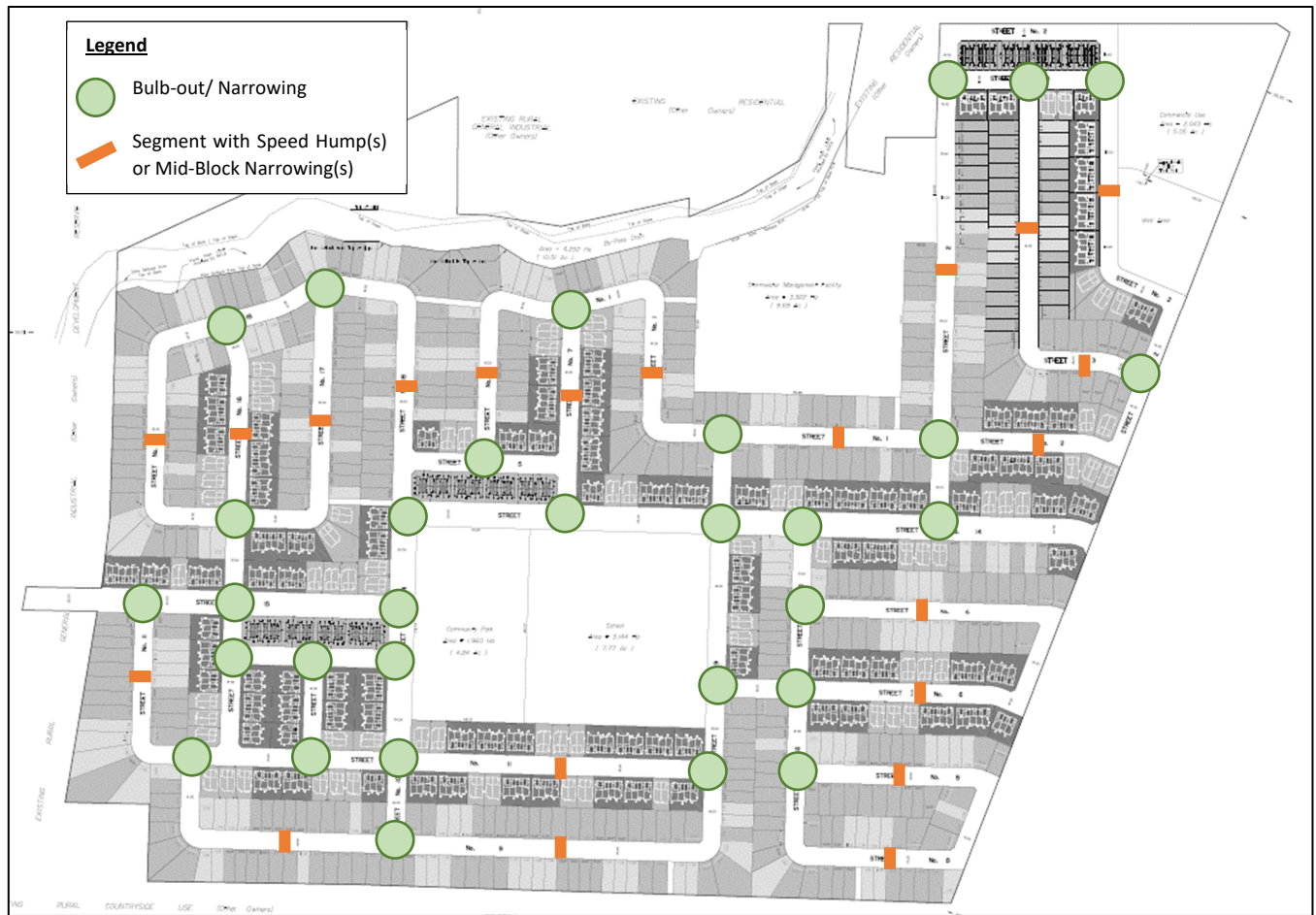
6.2 New Street Networks

The planned street network will include 18.0-metre local roads with an 8.5-metre pavement width and 16.30-metre window streets (based on a 14.0 metre standard) with 8.5-metre pavement widths. The local roads are proposed to be posted as 30 km/h, consistent with Ottawa's 30 km/h Policy framework. A 24.0-metre collector road with a sidewalk on one side and a MUP on the other is proposed through the subdivision, connecting Eagleson Road and McBean Street and is consistent with the Ottawa's 40 km/h collector road standard. West of the residential frontages to McBean Street, the right-of-way reduces to 22.0 metres given property constraints.

Traffic calming elements are recommended at the internal intersections, including bulb-outs to narrow each approach to the intersection (e.g. reduced crossing distance). Figure 15 illustrates the concept traffic calming plan.

The internal road intersections are recommended to be stop-controlled on the minor approaches of all intersections.

Figure 15: Concept Traffic Calming Plan



7 Boundary Street Design

Table 12 summarizes the MMLOS analysis for the boundary streets of Eagleson Road, and Ottawa Street. The existing and future conditions will be the same and are considered in one row. The boundary street analysis is based on the policy area of Village. The MMLOS worksheets has been provided in Appendix E.

Table 12: Boundary Street MMLOS Analysis

Segment	Pedestrian LOS		Bicycle LOS		Transit LOS		Truck LOS	
	PLOS	Target	BLOS	Target	TLOS	Target	TrLOS	Target
Eagleson Road	F	C	F	D	N/A	N/A	B	D
Ottawa Street	F	C	E	B	N/A	N/A	N/A	N/A

Pedestrian and bicycle LOS targets are not being met along the boundary streets due partly to the operating speeds associated with rural arterial and collector roads and partly to the absence of dedicated active facilities.

Eagleson Road cannot meet pedestrian LOS targets due to traffic volumes and operating speeds and Ottawa Street could meet pedestrian LOS targets with a 1.8-metre sidewalk.

To meet bicycle LOS targets, Eagleson Road would require physically separated facilities due to operating speeds and Ottawa Street would require a bike lane.

GeoOttawa depicts paved shoulders along Ottawa street, and the City has indicated that City staff are studying the provision of these facilities along the roadway and no additional facilities are proposed. Active transportation along Eagleson Road will be subject to City plans for the arterial corridor.

8 Transportation Demand Management

8.1 Context for TDM

The mode shares used within the TIA represent a reduction to transit from the typical rural districts mode shares in the peak direction and with no transit trips in the off-peak directions. Overall, these modal shares are likely to be achieved, however, given the stated intention of not expanding bus service in the Village, limited opportunity to provide supporting TDM measures exists to encourage shifts towards sustainable modes.

The subject site is within the Richmond Village CDP area. The total bedroom count within the development is subject to the final unit count and layout selections by purchasers. No age restrictions are noted.

8.2 Need and Opportunity

The subject site has been assumed to rely predominantly on auto travel, and assumptions have been carried through the analysis. Given the high auto mode share, there is negligible risk of not meeting the applied modal shares.

8.3 TDM Program

The “suite of post occupancy TDM measures” has been summarized in the TDM checklist and the checklist is provided in Appendix F. Given the transit limitations previously discussed, the only TDM measure recommended is the provision of a multimodal travel option information package to new residents. It is recommended that the City revisit its transit strategy in the Village of Richmond given the forecasted population increase and therefore potential ridership base.

9 Background Network Travel Demands

9.1 Transportation Network Plans

The transportation network plans were discussed in Section 2.3. Neither the listed CDP features nor the TMP – Part 1 project are expected to have an impact on the study area traffic volumes and travel patterns.

9.2 Background Growth

A review of the background projections from the City’s TRANS Regional Model for the 2011 and 2031 horizons was completed to determine the background growth for each of the study area roadways. Table 13 summarizes the results of the model and the projections are provided in Appendix G.

Table 13: TRANS Regional Model Projections – Study Area Growth Rates

Street	Direction Growth % from 2011 to 2031	
	Eastbound	Westbound
Ottawa St	-	-
Brophy Dr	1.48%	-0.13%
	Northbound	Southbound
Egleson Rd	0.06%	1.70%
McBean St	-0.24%	-0.12%

Annual growth rates derived from the TRANS model plots rounded to the nearest 0.25% will be applied to the identified roadway mainline movements and major turning movements at intersections in the AM peak hour and reversed in the PM peak hour. Table 10 summarizes the applied annual growth rates for each peak hour.

Table 14: Applied Annual Growth Rates

Street	AM Peak Hour		PM Peak Hour	
	Eastbound	Westbound	Eastbound	Westbound
Ottawa St	-	-	-	-
Brophy Dr	1.50%	-	-	1.50%
	Northbound	Southbound	Northbound	Southbound
Eagleson Rd	0.25%	1.75%	1.75%	0.25%
McBean St	-	-	-	-

9.3 Other Developments

As the only study area development, the volumes from the 2780 Eagleson Road TIA will be considered explicitly in the background conditions. The background development volumes have been provided in Appendix H.

10 Demand Rationalization

10.1 2032 Future Background Intersection Operations

Figure 16 illustrates the 2032 background volumes and Table 15 summarizes the 2032 background intersection operations. The level of service is based on HCM 2010 delay for unsignalized intersections. The synchro worksheets for the 2032 future background horizon are provided in Appendix I. Signal warrants using OTM Justification 7 for the forecasted volumes at the intersections of Eagleson Road at Ottawa Street, Eagleson Road at Brophy Drive, and McBean Street at Ottawa Street are not met at this horizon, and the warrants are provided in Appendix J. Left-turn lane warrants were evaluated for the northbound left-turn movement at the intersection of Eagleson Road at Ottawa Street, and the southbound left-turn movement at the intersections of Eagleson Road at Brophy Drive and McBean Street at Ottawa Street at this horizon to indicate where left-turn lanes should be considered, and are provided in Appendix K. The left turn warrants are met on the southbound approach of Eagleson Road at Brophy Drive and the northbound approach of Eagleson Road at Ottawa Street. Operations will be assessed without these turn lanes to help inform whether they should be provided and a discussion on the appropriateness of providing turn lanes within the study area is provided in Section 12.2.4.

Figure 16: 2032 Future Background Volumes

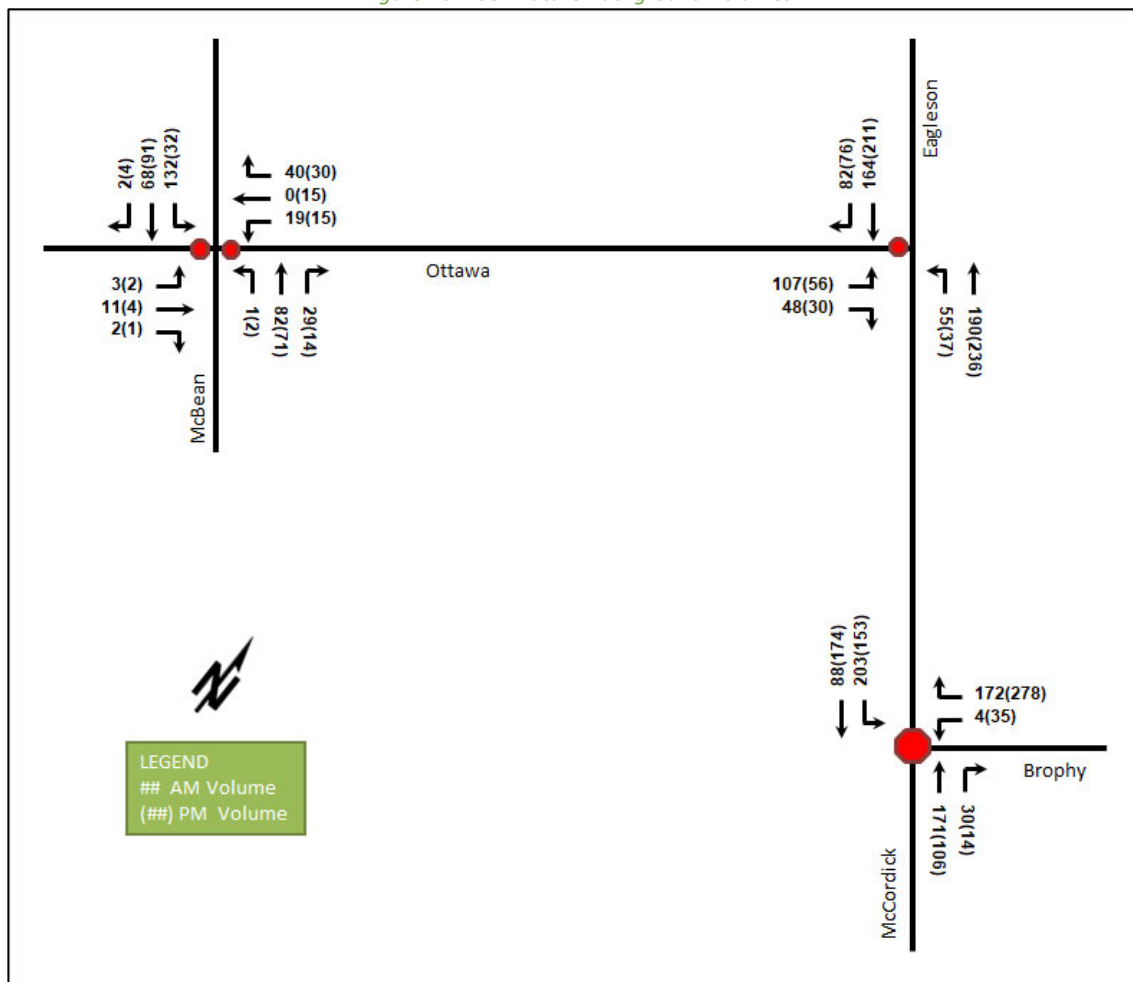


Table 15: 2032 Future Background Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95 th)	LOS	V/C	Delay	Q (95 th)
Eagleson Road & Ottawa Street Unsignalized	EBL/R	B	0.27	13.6	8.3	B	0.16	12.7	4.5
	NBL/T	A	0.04	7.8	0.8	A	0.03	7.9	0.8
	SBT/R	-	-	-	-	-	-	-	-
	Overall	A	-	3.9	-	A	-	2.2	-
Eagleson Road & Brophy Drive Unsignalized	WBL/R	A	0.22	8.8	6.0	B	0.39	10.5	14.3
	NBT/R	A	0.26	9.2	7.5	A	0.17	9.1	4.5
	SBT/L	B	0.38	10.6	13.5	B	0.45	11.9	17.3
	Overall	A	-	9.7	-	B	-	10.9	-
McBean Street & Ottawa Street Unsignalized	EB	B	0.03	12.5	0.8	B	0.01	10.4	0.0
	WB	B	0.08	10.4	2.3	A	0.08	9.9	1.5
	NB	A	0.00	7.4	0.0	A	0.00	7.4	0.0
	SB	A	0.09	7.7	2.3	A	0.02	7.4	0.8
	Overall	A	-	4.7	-	A	-	3.3	-

Notes: Saturation flow rate of 1800 veh/h/lane
 Queue is measured in metres
 Peak Hour Factor = 1.00

Delay = average vehicle delay in seconds
 m = metered queue
 # = volume for the 95th %ile cycle exceeds capacity

During both the AM and PM peak hours, the study area intersections operate similarly to existing conditions. No capacity issues are noted, and the intersection of Eagleson Road at Ottawa Street operates well without the inclusion of an auxiliary northbound left-turn lane with negligible delays and queues on the northbound approach. The intersection of Eagleson Road at Brophy Drive on the southbound approach, with the movement operating with LOS B and with queues of less than three vehicles.

10.2 2037 Future Background Intersection Operations

Figure 17 illustrates the 2037 background volumes and Table 16 summarizes the 2037 background intersection operations. The level of service is based on HCM 2010 delay for unsignalized intersections. The synchro worksheets for the 2037 future background horizon are provided in Appendix L. Signal warrants using OTM Justification 7 for the forecasted volumes at the intersections of Eagleson Road at Ottawa Street, Eagleson Road at Brophy Drive, and McBean Street at Ottawa Street are not met at this horizon, and the warrants are provided in Appendix J. Left-turn lane warrants were evaluated for the northbound left-turn movement at the intersection of Eagleson Road at Ottawa Street, and the southbound left-turn movement at the intersections of Eagleson Road at Brophy Drive and McBean Street at Ottawa Street at this horizon to indicate where left-turn lanes should be considered, and are provided in Appendix K. The left turn warrants are met on the southbound approach of Eagleson Road at Brophy Drive and the northbound approach of Eagleson Road at Ottawa Street. Operations will be assessed without these turn lanes to help inform whether they should be provided and a discussion on the appropriateness of providing turn lanes within the study area is provided in Section 12.2.4.

Figure 17: 2037 Future Background Volumes

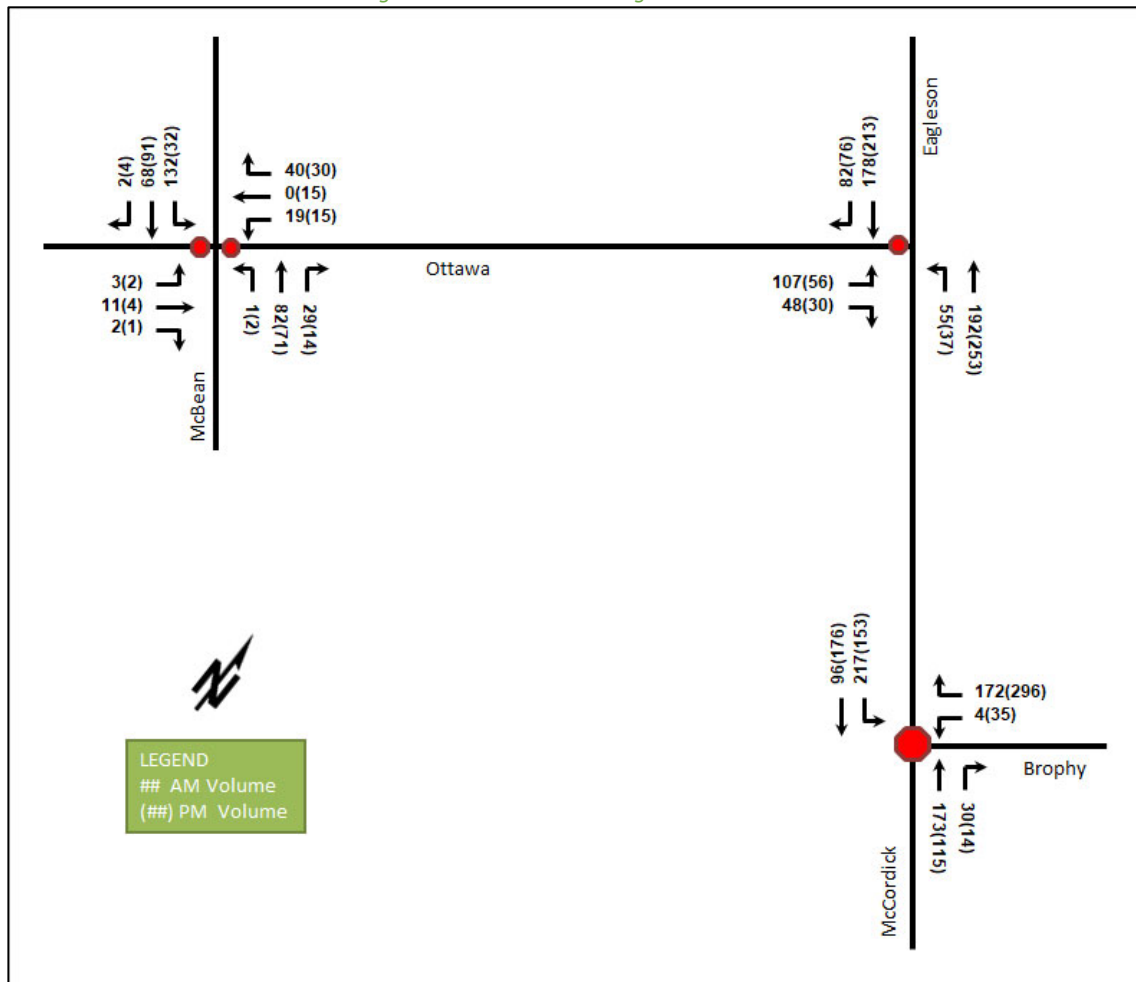


Table 16: 2037 Future Background Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95 th)	LOS	V/C	Delay	Q (95 th)
Eagleson Road & Ottawa Street <i>Unsignalized</i>	EBL/R	B	0.28	13.8	8.3	B	0.16	12.9	4.5
	NBL/T	A	0.04	7.9	0.8	A	0.03	7.9	0.8
	SBT/R	-	-	-	-	-	-	-	-
	Overall	A	-	3.9	-	A	-	2.1	-
Eagleson Road & Brophy Drive <i>Unsignalized</i>	WBL/R	A	0.22	8.9	6.0	B	0.42	10.8	15.8
	NBT/R	A	0.26	9.3	7.5	A	0.18	9.3	5.3
	SBT/L	B	0.41	11.0	15.0	B	0.46	12.1	18.0
	Overall	A	-	10.0	-	B	-	11.1	-
McBean Street & Ottawa Street <i>Unsignalized</i>	EB	B	0.03	12.5	0.8	B	0.01	10.4	0.0
	WB	B	0.08	10.4	2.3	A	0.08	9.9	1.5
	NB	-	-	-	-	-	-	-	-
	SB	A	0.09	7.7	2.3	A	0.02	7.4	0.8
	Overall	A	-	4.7	-	A	-	3.3	-

Notes: Saturation flow rate of 1800 veh/h/lane
 Queue is measured in metres
 Peak Hour Factor = 1.00

Delay = average vehicle delay in seconds
 m = metered queue
 # = volume for the 95th %ile cycle exceeds capacity

During both the AM and PM peak hours, the study area intersections operate similarly to 2032 background conditions. No capacity issues are noted, and the intersection of Eagleson Road at Ottawa Street operates well without the inclusion of an auxiliary northbound left-turn lane with negligible delays and queues on the northbound approach. The intersection of Eagleson Road at Brophy Drive on the southbound approach, with the movement operating with LOS B and with queues of less than three vehicles.

10.3 Modal Share Sensitivity

As an increased auto and reduced transit share beyond the typical rural district modal share targets have been applied to the development, the village and rural contexts are maintained, and no capacity constraints are noted within the study area, rationalization for adjusted demand is not required for this TIA.

11 Transit

11.1 Route Capacity

In Section 5.1 the trip generation by mode was estimated, including an estimate of the number of transit trips that will be generated by the proposed development. Table 17 summarizes the transit trip generation.

Table 17: Trip Generation by Transit Mode

Travel Mode	Mode Share	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Transit	varies	0	38	38	32	0	32

The proposed development is anticipated to generate an additional 38 AM peak hour transit trips and 32 PM peak hour peak direction transit trips. Overall, the forecasted new transit trips would result in the need for up to one additional single bus (55-person capacity) during the AM and PM peak hours. Should transit service increase in the village, the transit share may additionally increase and thus the need for additional buses may result.

11.2 Transit Priority

Site traffic is anticipated to increase delay on existing transit movements within the study area by 0.3 second or less, and thus is anticipated to have negligible impact on transit service in the Village.

12 Intersection Design

12.1 Intersection Control

No change to the existing control is recommended for the network intersections.

The site access road intersections are proposed as having minor stop control with Eagleson Road and McBean Street operating under free-flow conditions based on the projected volumes.

12.2 Intersection Design

12.2.1 2032 Future Total Intersection Operations

The 2032 future total intersection volumes are illustrated in Figure 18 and the intersection operations are summarized below in Table 18. The level of service is based on HCM 2010 delay for unsignalized intersections. The synchro worksheets have been provided in Appendix M. Signal warrants using OTM Justification 7 for the forecasted volumes at the intersections of Eagleson Road at Ottawa Street, Eagleson Road at Brophy Drive, McBean Street at Ottawa Street, Eagleson Road at the new collector, and McBean Street at the new collector are not met at this horizon, and the warrants are provided in Appendix J. Left-turn lane warrants were evaluated for the northbound left-turn movement at the intersection of Eagleson Road at Ottawa Street, and Eagleson Road at

the new collector road, and the southbound left turn at the intersections of Eagleson Road at Brophy Drive and McBean Street at Ottawa Street, and McBean Street at the new collector road at this horizon, and are provided in Appendix K. At this horizon, the left turn warrants are met on the southbound approaches of Eagleson Road at Brophy Drive and McBean Street at Ottawa Street, and on the northbound approaches of Eagleson Road at Ottawa Street and Eagleson Road at the new collector. Operations will be assessed without these turn lanes to help inform whether they should be provided, and a discussion on the appropriateness of providing turn lanes within the study area is provided in Section 12.2.4.

Figure 18: 2032 Future Total Volumes

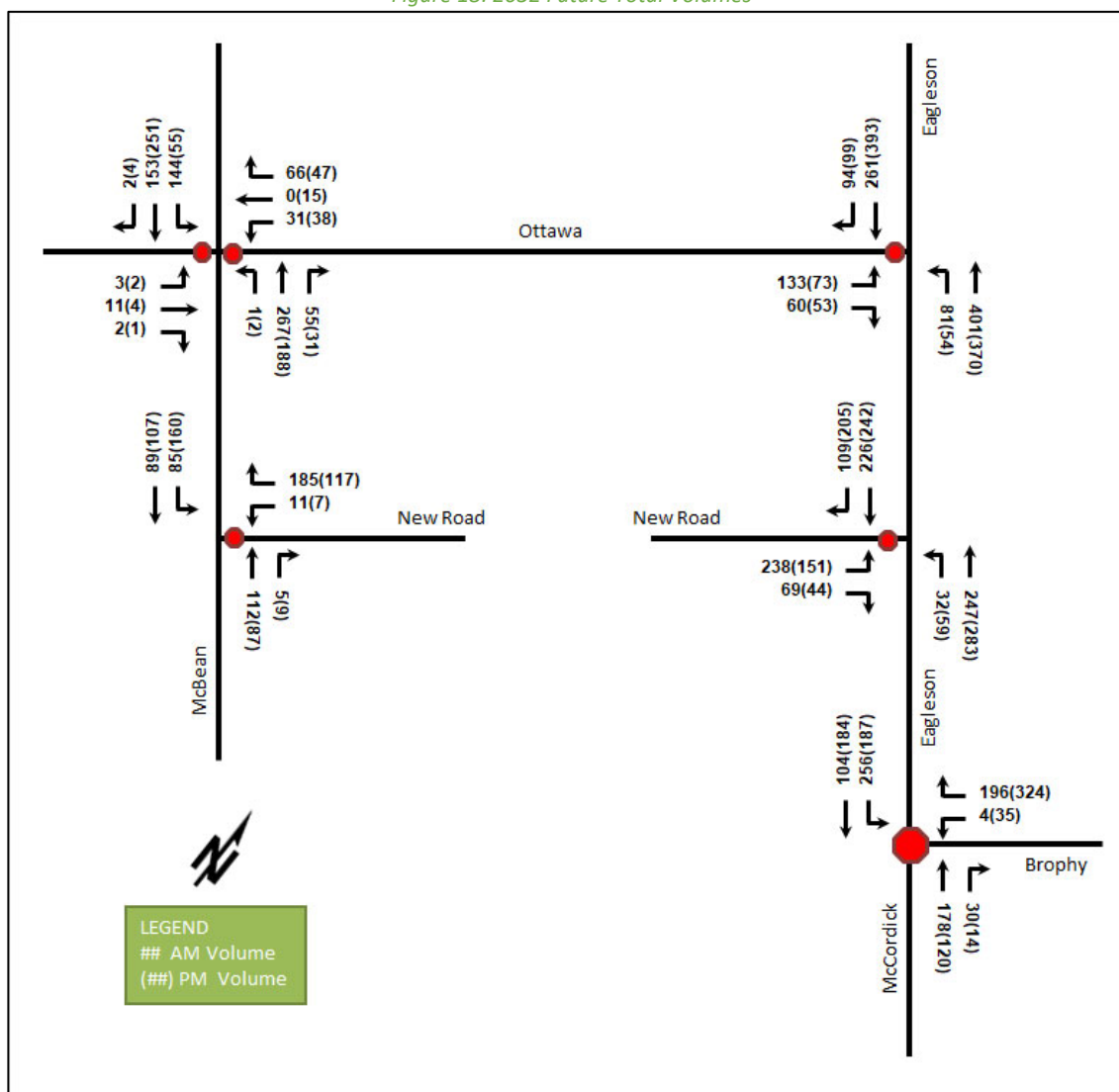


Table 18: 2032 Future Total Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	Delay (s)	Q (95 th)
Eagleson Road & Ottawa Street Unsignalized	EB	D	0.54	25.9	22.5	C	0.35	20.0	11.3
	NB	A	0.07	8.2	1.5	A	0.05	8.5	1.5
	SB	-	-	-	-	-	-	-	-
	Overall	A	-	5.5	-	A	-	2.9	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	Delay (s)	Q (95 th)
Eagleson Road & Brophy Drive <i>Unsignalized</i>	WB	A	0.26	9.4	7.5	B	0.47	11.8	18.8
	NB	A	0.28	9.6	8.3	A	0.20	9.6	5.3
	SB	B	0.48	12.2	19.5	B	0.53	13.9	24.0
	Overall	B	-	10.8	-	B	-	12.4	-
McBean Street & Ottawa Street <i>Unsignalized</i>	EB	C	0.05	17.2	1.5	B	0.02	13.8	0.8
	WB	B	0.20	14.1	5.3	B	0.19	13.2	5.3
	NB	A	0.00	7.5	0.0	A	0.00	7.8	0.0
	SB	A	0.12	8.3	3.0	A	0.04	7.8	0.8
	Overall	A	-	3.9	-	A	-	2.9	-
Eagleson Road & New Collector <i>Unsignalized</i>	EB	C	0.61	23.0	30.8	C	0.49	22.2	19.5
	NB	A	0.03	8.0	0.8	A	0.05	8.4	1.5
	SB	-	-	-	-	-	-	-	-
	Overall	A	-	7.9	-	A	-	4.9	-
McBean Street & New Collector <i>Unsignalized</i>	WB	B	0.22	10.1	6.0	A	0.14	9.6	3.8
	NB	-	-	-	-	-	-	-	-
	SB	A	0.06	7.6	1.5	A	0.11	7.7	3.0
	Overall	A	-	5.4	-	A	-	5.0	-

The study intersections at the 2032 future total horizon generally operate similarly to the 2032 future background conditions.

With the addition of site traffic, delays on the eastbound left/right movement at the intersection of Eagleson Road at Ottawa Street are forecast to increase by 12.3 seconds during the AM peak hour and 7.3 seconds during the PM peak hour above the background conditions. Beyond delays, the movement is anticipated to retain a high residual capacity in the total conditions. The intersection is forecast to continue to operate well without the inclusion of an auxiliary northbound left-turn lane with negligible delays and queues.

The intersection of Eagleson Road at Brophy Drive on the southbound approach, with the movement operating with LOS B and with queues of approximately three vehicles.

The site access intersections are anticipated to operate well at the 2032 horizon, with delays of 23.0 seconds or less on the outbound movements of the new collector road, and 8.4 seconds or less on the conflicting left movements on the arterials. The site access operate well without the inclusion of inbound left-turn lanes, with negligible delays and queues on the arterial approaches.

12.2.2 2037 Future Total Intersection Operations

The 2037 future total intersection volumes are illustrated in Figure 19 and the intersection operations are summarized below in Table 19. The level of service is based on HCM 2010 delay for unsignalized intersections. The synchro worksheets have been provided in Appendix N. Signal warrants using OTM Justification 7 for the forecasted volumes at the intersections of Eagleson Road at Ottawa Street, Eagleson Road at Brophy Drive, and McBean Street at Ottawa Street are not met at this horizon, and the warrants are provided in Appendix J. Left-turn lane warrants were evaluated for the northbound left-turn movement at the intersection of Eagleson Road at Ottawa Street, and the southbound left-turn movement at the intersections of Eagleson Road at Brophy Drive and McBean Street at Ottawa Street at this horizon to indicate where left-turn lanes should be considered, and are provided in Appendix K. The left turn warrants are met on the southbound approach of Eagleson Road at Brophy Drive and the northbound approach of Eagleson Road at Ottawa Street. Operations will be assessed

without these turn lanes to help inform whether they should be provided and a discussion on the appropriateness of providing turn lanes within the study area is provided in Section 12.2.4.

Figure 19: 2037 Future Total Volumes

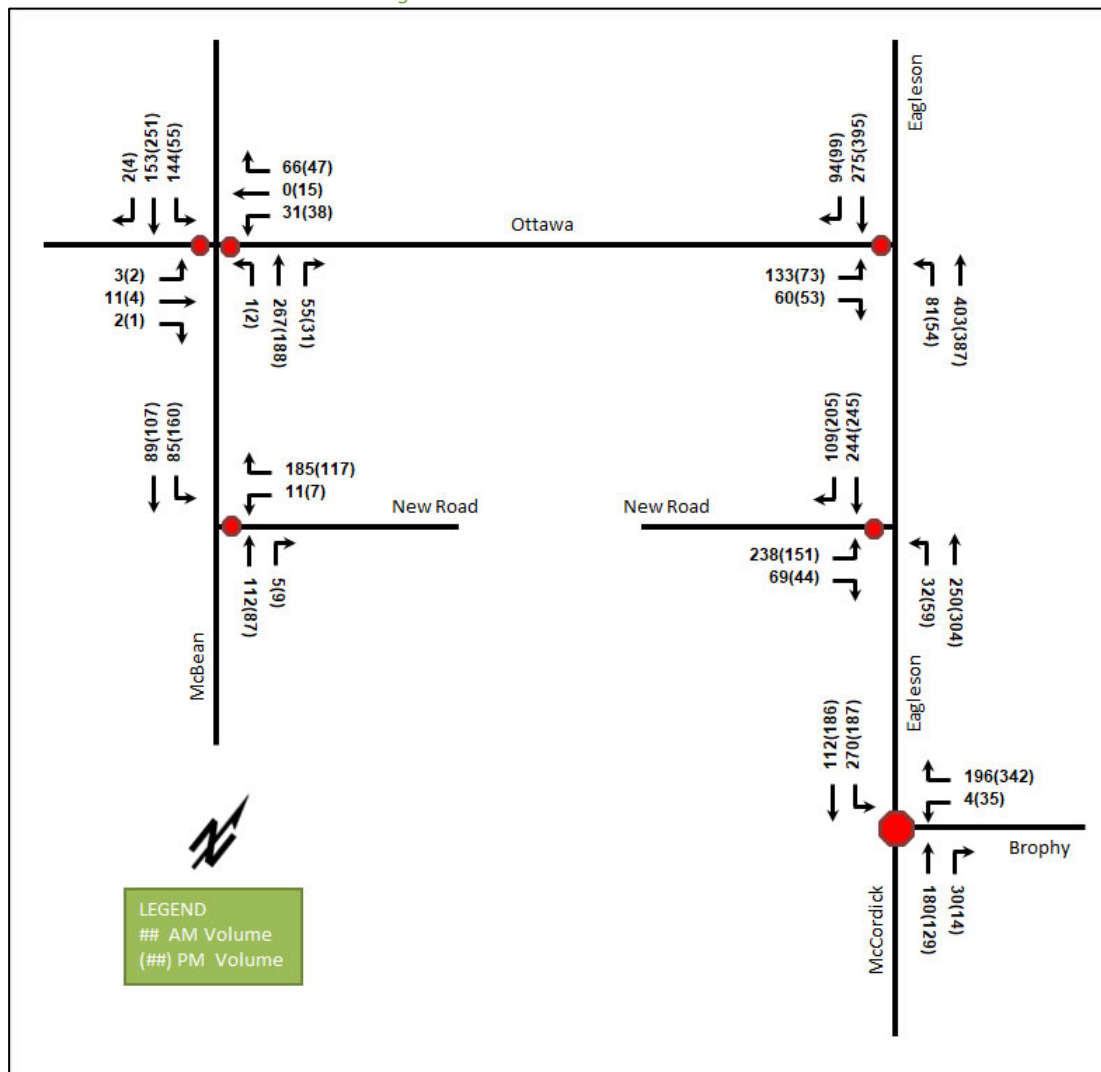


Table 19: 2037 Future Total Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	Delay (s)	Q (95 th)
Eagleson Road & Ottawa Street <i>Unsignalized</i>	EB	D	0.55	26.8	23.3	C	0.35	20.5	12.0
	NB	A	0.07	8.2	1.5	A	0.05	8.5	1.5
	SB	-	-	-	-	-	-	-	-
	Overall	A	-	5.6	-	A	-	2.9	-
Eagleson Road & Brophy Drive <i>Unsignalized</i>	WB	A	0.27	9.5	7.5	B	0.50	12.5	21.8
	NB	A	0.28	9.7	8.3	A	0.22	9.9	6.0
	SB	B	0.51	12.8	21.8	B	0.54	14.3	24.8
	Overall	B	-	11.1	-	B	-	12.8	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	Delay (s)	Q (95 th)
McBean Street & Ottawa Street <i>Unsignalized</i>	EB	C	0.05	17.2	1.5	B	0.02	13.8	0.8
	WB	B	0.20	14.1	5.3	B	0.19	13.2	5.3
	NB	A	0.00	7.5	0.0	A	0.00	7.8	0.0
	SB	A	0.12	8.3	3.0	A	0.04	7.8	0.8
	Overall	A	-	3.9	-	A	-	2.9	-
Eagleson Road & New Collector <i>Unsignalized</i>	EB	C	0.63	24.3	32.3	C	0.50	23.2	20.3
	NB	A	0.03	8.1	0.8	A	0.05	8.4	1.5
	SB	-	-	-	-	-	-	-	-
	Overall	A	-	8.2	-	A	-	5.0	-
McBean Street & New Collector <i>Unsignalized</i>	WB	B	0.22	10.1	6.0	A	0.14	9.6	3.8
	NB	-	-	-	-	-	-	-	-
	SB	A	0.06	7.6	1.5	A	0.11	7.7	3.0
	Overall	A	-	5.4	-	A	-	5.0	-

The network intersection operations at the 2037 future total horizon operate similarly to the 2032 future total conditions. No capacity or delay issues are noted. The intersection of Eagleson Road at Ottawa Street and at the new collector are forecast to continue to operate well without the inclusion of auxiliary northbound left-turn lane each with negligible delays and queues. The intersection of Eagleson Road at Brophy Drive on the southbound approach, with the movement operating with LOS B and with queues of less than three vehicles.

12.2.3 Intersection MMLOS

As the network and access intersections are not signalized, no intersection MMLOS analysis is required.

12.2.4 Recommended Design Elements

The design elements for the site access intersections will be typical for urban collector road intersections with rural arterial roads, subject to the civil design.

Signal warrants are not met for all network and access intersections. While planning to date has assumed that the intersection of Eagleson Road at Ottawa Street would be signalized in future, it is forecast to operate well with minor stop control and is not recommended to be implemented to support the subject residential development.

Turning lane warrants for evaluated movements are met at locations as of horizons summarized in Table 20.

Table 20: Left-Turn Lane Warrant Results

Intersection	Movement	First Horizon Met
McBean Street at Ottawa Street	Southbound Left	Future Total 2032
Eagleson Road at Ottawa Street	Northbound Left	Future Background 2032
Eagleson Road at Brophy Drive	Southbound Left	Future Background 2032
Eagleson Road at New Collector Road	Northbound Left	Future Total 2032
McBean Street at New Collector Road	Southbound Left	Not Warranted

As summarized in the operational assessment sections, the northbound movement at the intersection of Eagleson Road at Ottawa Street and the southbound movements at the intersections of McBean Street at Ottawa Street and Eagleson Road at Brophy Drive operate well without the inclusion of the warranted turn lanes. Turn lane warrants are only an indicator for the appropriateness of evaluating the inclusion of a turn lane and the subsequent traffic analysis indicated that no turn lane is required to support the operations at the network intersections where turn lanes are warranted. Therefore, no turn lanes are recommended for implementation at these locations.

As discussed in the operational assessments, the northbound Eagleson Road at the new collector road operates well without the inclusion of the inbound left-turn lane into the subject subdivision. Although warranted, this lane is not required to support the site operations and is not recommended for implementation. Should it be provided, the minor delays and negligible queues on the arterial approaches will be shifted to the turn lanes.

The desirability, location, design, and supportability of a northbound left-turn lane on Eagleson Road at the new collector road will ultimately need to be determined through consultation with City staff, given recent construction works on Eagleson Road and the low inbound volumes from the southeast. Should, through this consultation, the northbound left-turn lane on Eagleson Road be deemed required, an RMA would be initiated to satisfy the resulting subdivision conditions. The anticipated storage length for a northbound left-turn lanes on Eagleson Road at the new collector, per equation 9.14.1 of the Geometric Design Guide for Canadian Roads (TAC, 2017) and the TIA Guidelines requirement of using 1.5 times the expected traffic volumes is 21 metres for the 2037 future total horizon. A design length of would be 25 metres would be appropriate for this potential new lane.

13 Summary of Improvements Indicated and Modifications Options

The following summarizes the analysis and results presented in this TIA report:

Proposed Site and Screening

- The proposed site includes up to 1,173 homes, split between 535 single family homes, 144 semi-detached homes, and 494 townhomes
- Accesses will be provided along the internal road network, with a new collector road connecting McBean Street to Eagleson Road
- The development is proposed to be completed through an unconfirmed number of phases by 2032
- The trip generation, location, and safety triggers were met for the TIA Screening
- This report is in support of a draft plan of subdivision application

Existing Conditions

- Eagleson Road, McBean Street, and Brophy Drive are arterial roads, and Ottawa Street is a collector road in the study area
- Sidewalks are provided along the east side of McBean Street to the north of the South Carleton High School and on a few local streets to the north of the study area
- Per geoOttawa, Ottawa Street depicts paved shoulders between McBean Street, however these do not exist and the City is studying the need to provide facilities in this location
- One regular and one special transit route service the study area with stops at the northwest extent of the site
- No areas of high collisions are noted within the study area, with SMV other collisions, typical of rural arterials, accounting for a slight majority of collisions within the study area
- The study area intersections operate well during the peak hours

Planned Conditions

- Separated cycling facilities are planned along McBean Street north of Ottawa Street
- Area traffic management measures are planned along Ottawa Street in front of South Carleton High School to commence construction this year

Development Generated Travel Demand

- The proposed residential development is forecasted produce 955 two-way person trips during the AM peak hour and 1033 two-way person trips during the PM peak hour
- Of the forecasted person trips, 771 two-way trips will be vehicle trips during the AM peak hour and 791 two-way trips will be vehicle trips during the PM peak hour based on a 73%-87% auto mode share
- Of the forecasted trips, 55% are anticipated to travel to/from the north, 5% to/from the south, 25% to/from the east, and 15% to/from the west

Development Design

- The Richmond CDP and Secondary Plan show a pathway from the subject lands through the north of the site continuing along the railway line terminating at Ottawa Street and the sidewalks and pathways proposed along the northern extent of the site satisfy this connectivity
- Internal transit stop locations will be subject to OC Transpo requirements
- 18.0-metre local roads with 8.5-metre pavement widths and 16.30-metre local window streets (based on a 14.0 metre standard) with 8.5-metre pavement widths are proposed to be posted as 30 km/h, consistent with Ottawa's 30 km/h Policy framework
- A 24.0-metre collector road with a sidewalk on one side and a MUP on the other is proposed through the subdivision, connecting Eagleson Road and McBean Street and is consistent with the Ottawa's 40 km/h collector road standard
- Traffic calming elements are recommended at the internal intersections, including bulb-outs to narrow each approach to the intersection
- The internal road intersections are recommended to be stop-controlled on the minor approaches of all intersections

Boundary Street Design

- Pedestrian and bicycle LOS targets are not being met along the boundary streets due partly to the operating speeds associated with rural arterial and collector roads and partly to the absence of dedicated active facilities
- Eagleson Road cannot meet pedestrian LOS targets due to traffic volumes and operating speeds and Ottawa Street could meet pedestrian LOS targets with a 1.8-metre sidewalk
- To meet bicycle LOS targets, Eagleson Road would require physically separated facilities due to operating speeds and Ottawa Street would require a bike lane
- The City has indicated that City staff are studying the provision of these facilities along the roadway and no additional facilities are proposed, and active transportation along Eagleson Road will be subject to City plans for the arterial corridor

TDM

- Given the stated intention of not expanding bus service in the Village, limited opportunity to provide supporting TDM measures exists to encourage shifts towards sustainable modes
- The only TDM measure recommended is the provision of a multimodal travel option information package to new residents
- It is recommended that the City revisit its transit strategy in the Village of Richmond given the forecasted population increase and therefore potential ridership base

Background Conditions

- The 2780 Eagleson Road traffic was explicitly included in the background conditions, along with an annual background growth rate derived from the 2011 and 2031 TRANS volume plots applied to the mainline movements of Eagleson Road and the turns to and from Brophy Drive
- No intersections meet signal warrants for the future background conditions
- Left-turn lane warrants are met for the northbound left-turn movement at the intersection of Eagleson Road at Ottawa Street and the southbound left-turn movement at the intersection of Eagleson Road at Brophy Drive for the future background conditions
- The study area intersections at the 2032 and 2037 horizons are forecast to operate similarly to the existing conditions and the left-turn-warranted movements operate well without the inclusion of turn lanes

Transit

- Transit trips at the existing mode share result in 38 outbound AM trips and 32 inbound PM trips, resulting in the need for up to one additional peak-direction bus during each peak hour
- Should transit service increase in the village, the transit share may additionally increase and thus the need for additional buses may result
- Site traffic is anticipated to increase delay on existing transit movements within the study area by 0.3 second or less, and thus is anticipated to have negligible impact on transit service in the Village

Network Intersection Design

- The access intersections are recommended to be stop-controlled on the minor approach
- No intersections meet signal warrants for the future total conditions
- In addition to those warranted left-turn lanes for the background conditions, the southbound left-turn lane at the intersection of McBean Street at Eagleson Road and the northbound left-turn lane at the intersection of Eagleson Road at the new collector road are warranted at the future total horizons
- The intersections at the future total horizons generally operate similarly to the future background horizon, with a minor increase in delays on the eastbound approach of the intersection of Eagleson Road at Ottawa Street
- All study area intersections are forecast to operate well without the warranted left-turn lanes
- While planning to date has assumed that the intersection of Eagleson Road at Ottawa Street would be signalized in future, it is not warranted based on forecasted volumes, is forecast to operate well with minor stop control, and is not recommended to support the subject development traffic
- No left-turn lanes are required to address intersection operations at any study horizon, and none are recommended to be provided
- If through consultation with the City, it is deemed that a northbound left-turn lane on Eagleson Road at the new collector road is desirable and feasible, and an RMA would be initiated to satisfy the resulting subdivision conditions
- The anticipated required storage length of a left-turn lane on Eagleson Road at the new collector road is 25 metres

14 Conclusion

It is recommended that, from a transportation perspective, the proposed development applications proceed.

Prepared By:



John Kingsley
Transportation Engineering-Intern

Reviewed By:



Andrew Harte, P.Eng.
Senior Transportation Engineer

Appendix A

TIA Screening Form and PM Certification Form

City of Ottawa 2023 Revisions to 2017 TIA Guidelines
Step 1 - Screening Form

Date: 06-Dec-24
Project Number: 2023-080
Project Reference: Tamarack Richmond Village

1.1 Description of Proposed Development	
Municipal Address	6038 Ottawa St
Description of Location	Irregular shaped 67.24 ha parcel south of Ottawa St, west of Eagleson Road, east of McBean St
Land Use Classification	Rural General Industrial (RG3)
Development Size	1,1773 Residential Dwellings
Accesses	One new collector road connecting McBean St and Eagleson Rd
Phase of Development	Unknown
Buildout Year	2032
TIA Requirement	Full TIA Required

1.2 Trip Generation Trigger	
Land Use Type	Multi-Family (Low-Rise)
Development Size	1173 Units
Trip Generation Trigger	Yes

1.3 Location Triggers	
Does the development propose a new driveway to a boundary street that is designated as part of the Transit Priority Network, Rapid Transit network or Cross-Town Bikeways?	No
Is the development in a Hub, a Protected Major Transit Station Area (PMTSA), or a Design Priority Area (DPA)?	No
Location Trigger	No

1.4. Safety Triggers	
Are posted speed limits on a boundary street 80 km/hr or greater?	Yes
Are there any horizontal/vertical curvatures on a boundary street limits sight lines at a proposed driveway?	No
Is the proposed driveway within the area of influence of an adjacent traffic signal or roundabout (i.e. within 300 m of intersection in rural conditions, or within 150 m of intersection in urban/ suburban conditions)?	No
Is the proposed driveway within auxiliary lanes of an intersection?	No
Does the proposed driveway make use of an existing median break that serves an existing site?	No
Is there is a documented history of traffic operations or safety concerns on the boundary streets within 500 m of the development?	No
Does the development include a drive-thru facility?	No
Safety Trigger	Yes



Certification Form for TIA Study PM

TIA Plan Reports

On April 14, 2022, the Province's Bill 109 received Royal Assent providing legislative direction to implement the More Homes for Everyone Act, 2022 aiming to increase the supply of a range of housing options to make housing more affordable. Revisions have been made to the TIA guidelines to comply with Bill 109 and streamline the process for applicants and staff.

Individuals submitting TIA reports will be responsible for all aspects of development-related transportation assessment and reporting, and undertaking such work, in accordance and compliance with the City of Ottawa's Official Plan, the Transportation Master Plan and the Transportation Impact Assessment (2017) Guidelines.

By submitting the attached TIA report (and any associated documents) and signing this document, the individual acknowledges that they meet the four criteria listed below.

CERTIFICATION



I have reviewed and have a sound understanding of the objectives, needs and requirements of the City of Ottawa's Official Plan, Transportation Master Plan and the Transportation Impact Assessment (2017) Guidelines; (Update effective July 2023)



I have a sound knowledge of industry standard practice with respect to the preparation of transportation impact assessment reports, including multi modal level of service review;



I have substantial experience (more than 5 years) in undertaking and delivering transportation impact studies (analysis, reporting and geometric design) with strong background knowledge in transportation planning, engineering or traffic operations; and



I am either a licensed or registered¹ professional in good standing, whose field of expertise



is either transportation engineering



or transportation planning.

¹ License of registration body that oversees the profession is required to have a code of conduct and ethics guidelines that will ensure appropriate conduct and representation for transportation planning and/or transportation engineering works.

Dated at Ottawa this 17 day of August, 20 23.
(City)

Name : Andrew Harte

Professional title: Senior Transportation Engineer / Vice-President Ottawa



Signature of individual certifier that s/he/they meet the above criteria

Office Contact Information (Please Print)

Address: 6 Plaza Court

City / Postal Code: Ottawa, K2H 7W1

Telephone / Extension: 613-697-3797

Email Address: andrew.harte@cghtransportation.com

Stamp



Revision Date: June 2023

Appendix B

Turning Movement Counts



Transportation Services - Traffic Services

Turning Movement Count - Study Results

EAGLESON RD @ OTTAWA ST

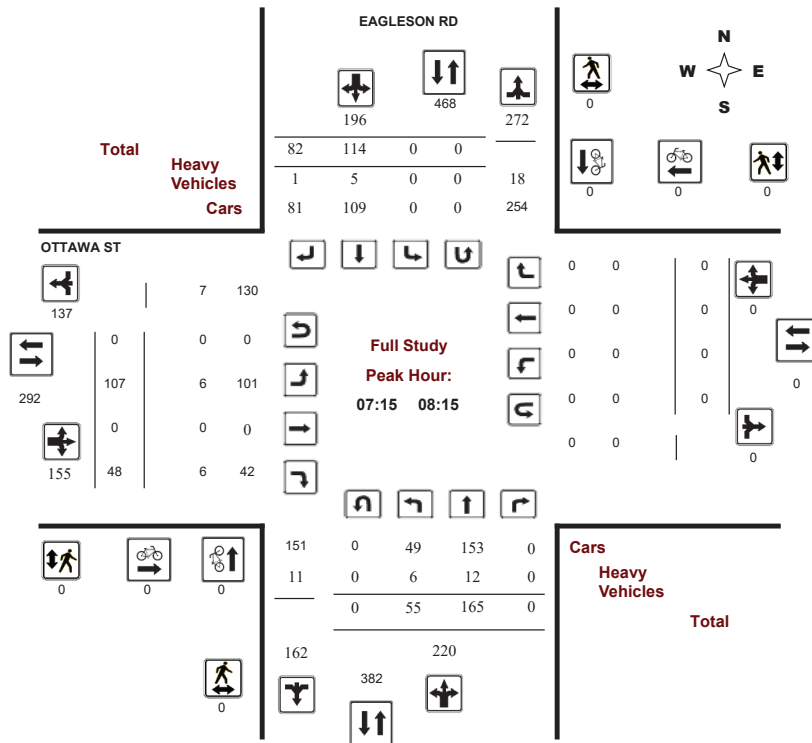
Survey Date: Tuesday, March 07, 2023

WO No: 40864

Start Time: 07:00

Device: Miovision

Full Study Peak Hour Diagram



Transportation Services - Traffic Services

Turning Movement Count - Study Results

EAGLESON RD @ OTTAWA ST

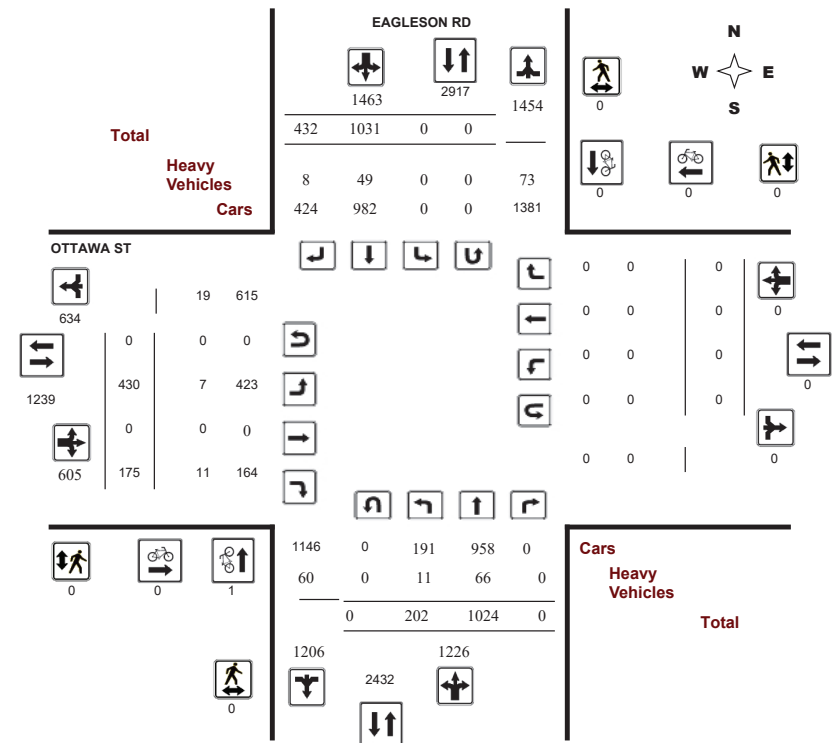
Survey Date: Tuesday, March 07, 2023

WO No: 40864

Start Time: 07:00

Device: Miovision

Full Study Diagram





Transportation Services - Traffic Services

Turning Movement Count - Study Results

EAGLESON RD @ OTTAWA ST

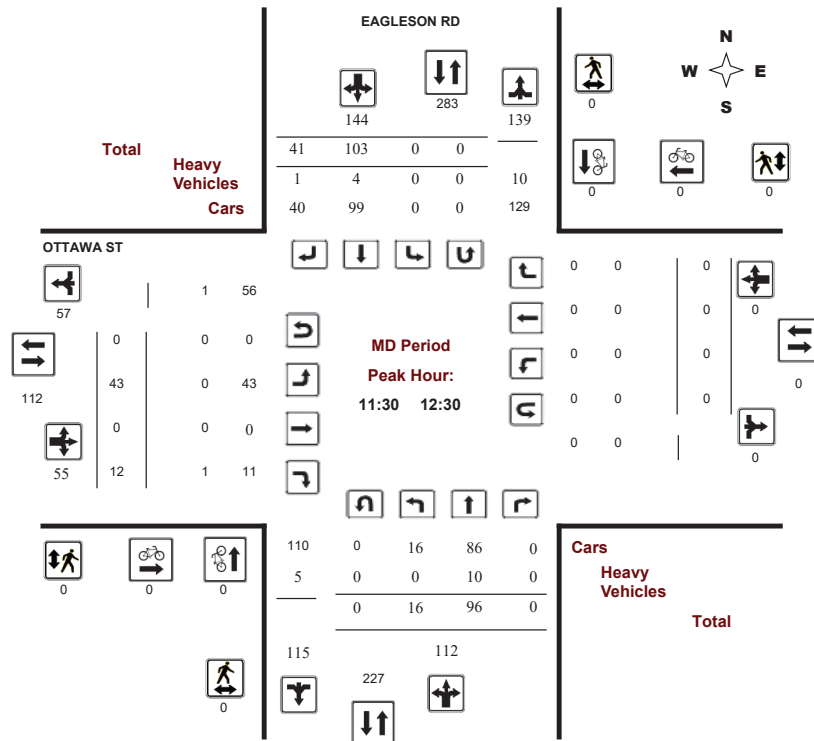
Survey Date: Tuesday, March 07, 2023

WO No: 40864

Start Time: 07:00

Device: Miovision

MD Period Peak Hour Diagram



Transportation Services - Traffic Services

Turning Movement Count - Study Results

EAGLESON RD @ OTTAWA ST

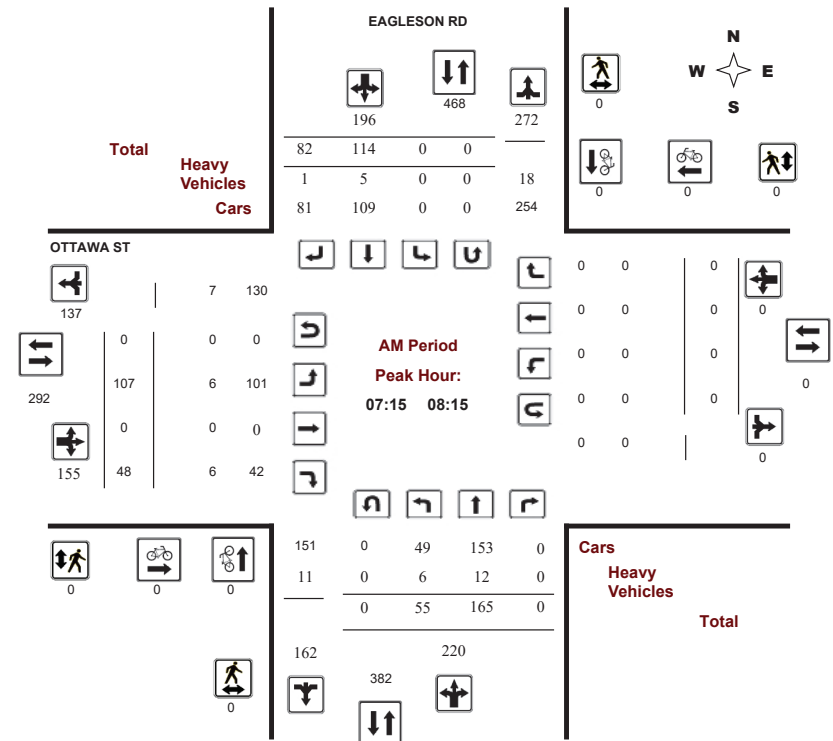
Survey Date: Tuesday, March 07, 2023

WO No: 40864

Start Time: 07:00

Device: Miovision

AM Period Peak Hour Diagram





Transportation Services - Traffic Services

Turning Movement Count - Study Results

EAGLESON RD @ OTTAWA ST

Survey Date: Tuesday, March 07, 2023

WO No: 40864

Start Time: 07:00

Device: Miovision

Full Study Summary (8 HR Standard)

Survey Date: Tuesday, March 07, 2023

Total Observed U-Turns

AADT Factor

Northbound: 0 Southbound: 0
Eastbound: 0 Westbound: 0

EAGLESON RD										OTTAWA ST									
Period	Northbound			Southbound			SB TOT	STR TOT		Eastbound			EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total
	LT	ST	RT	LT	ST	RT				LT	ST	RT							
07:00 08:00	52	160	0	212	0	96	85	181	393	95	0	44	139	0	0	0	0	139	532
08:00 09:00	23	168	0	191	0	115	26	141	332	67	0	19	86	0	0	0	0	86	418
09:00 10:00	19	123	0	142	0	96	31	127	269	36	0	22	58	0	0	0	0	58	327
11:30 12:30	16	96	0	112	0	103	41	144	256	43	0	12	55	0	0	0	0	55	311
12:30 13:30	16	83	0	99	0	94	40	134	233	46	0	16	62	0	0	0	0	62	295
15:00 16:00	19	136	0	155	0	159	67	226	381	47	0	25	72	0	0	0	0	72	453
16:00 17:00	39	141	0	180	0	188	74	262	442	59	0	26	85	0	0	0	0	85	527
17:00 18:00	18	117	0	135	0	180	68	248	383	37	0	11	48	0	0	0	0	48	431
Sub Total	202	1024	0	1226	0	1031	432	1463	2689	430	0	175	605	0	0	0	0	605	3294
U Turns	0			0			0	0		0			0	0	0	0	0	0	0
Total	202	1024	0	1226	0	1031	432	1463	2689	430	0	175	605	0	0	0	0	605	3294
EQ 12Hr	281	1423	0	1704	0	1433	600	2034	3738	598	0	243	841	0	0	0	0	841	4579
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.										1.39									
AVG 12Hr	281	1423	0	1704	0	1877	787	2034	3738	598	0	243	841	0	0	0	0	841	4579
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.										1.00									
AVG 24Hr	368	1864	0	2232	0	2459	1031	2665	4897	783	0	318	1102	0	0	0	0	1102	5998
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.										1.31									
Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.																			



Transportation Services - Traffic Services

Turning Movement Count - Study Results

EAGLESON RD @ OTTAWA ST

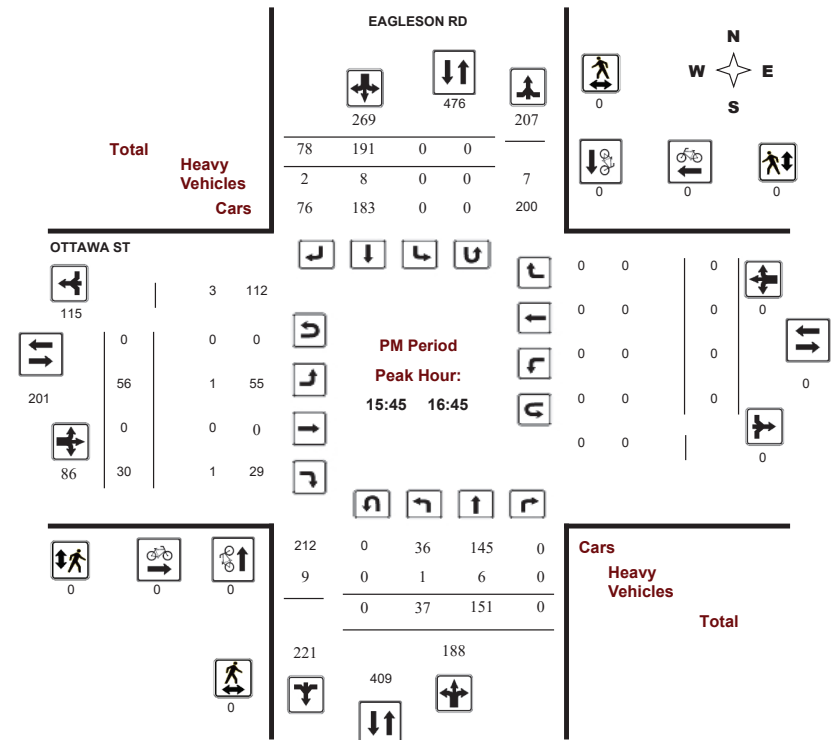
Survey Date: Tuesday, March 07, 2023

WO No: 40864

Start Time: 07:00

Device: Miovision

PM Period Peak Hour Diagram





Transportation Services - Traffic Services

Turning Movement Count - Study Results

EAGLESON RD @ OTTAWA ST

Survey Date: Tuesday, March 07, 2023

WO No: 40864

Start Time: 07:00

Device: Miovision

Full Study Cyclist Volume

EAGLESON RD				OTTAWA ST			
Time Period	Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00 07:15	1	0	1	0	0	0	1
07:15 07:30	0	0	0	0	0	0	0
07:30 07:45	0	0	0	0	0	0	0
07:45 08:00	0	0	0	0	0	0	0
08:00 08:15	0	0	0	0	0	0	0
08:15 08:30	0	0	0	0	0	0	0
08:30 08:45	0	0	0	0	0	0	0
08:45 09:00	0	0	0	0	0	0	0
09:00 09:15	0	0	0	0	0	0	0
09:15 09:30	0	0	0	0	0	0	0
09:30 09:45	0	0	0	0	0	0	0
09:45 10:00	0	0	0	0	0	0	0
11:30 11:45	0	0	0	0	0	0	0
11:45 12:00	0	0	0	0	0	0	0
12:00 12:15	0	0	0	0	0	0	0
12:15 12:30	0	0	0	0	0	0	0
12:30 12:45	0	0	0	0	0	0	0
12:45 13:00	0	0	0	0	0	0	0
13:00 13:15	0	0	0	0	0	0	0
13:15 13:30	0	0	0	0	0	0	0
15:00 15:15	0	0	0	0	0	0	0
15:15 15:30	0	0	0	0	0	0	0
15:30 15:45	0	0	0	0	0	0	0
15:45 16:00	0	0	0	0	0	0	0
16:00 16:15	0	0	0	0	0	0	0
16:15 16:30	0	0	0	0	0	0	0
16:30 16:45	0	0	0	0	0	0	0
16:45 17:00	0	0	0	0	0	0	0
17:00 17:15	0	0	0	0	0	0	0
17:15 17:30	0	0	0	0	0	0	0
17:30 17:45	0	0	0	0	0	0	0
17:45 18:00	0	0	0	0	0	0	0
Total	1	0	1	0	0	0	1



Transportation Services - Traffic Services

Turning Movement Count - Study Results

EAGLESON RD @ OTTAWA ST

Survey Date: Tuesday, March 07, 2023

WO No: 40864

Start Time: 07:00

Device: Miovision

Full Study 15 Minute Increments

EAGLESON RD										OTTAWA ST										Grand Total
Northbound					Southbound					Eastbound					Westbound					
Time Period	LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT		
07:00	07:15	3	32	0	35	0	17	11	28	63	18	0	5	23	0	0	0	23	86	
07:15	07:30	11	46	0	57	0	26	29	55	112	25	0	10	35	0	0	0	35	147	
07:30	07:45	17	37	0	54	0	31	18	49	103	33	0	14	47	0	0	0	47	150	
07:45	08:00	21	45	0	66	0	22	27	49	115	19	0	15	34	0	0	0	34	149	
08:00	08:15	6	37	0	43	0	35	8	43	86	30	0	9	39	0	0	0	39	125	
08:15	08:30	3	39	0	42	0	28	8	36	78	14	0	4	18	0	0	0	18	96	
08:30	08:45	8	51	0	59	0	31	3	34	93	11	0	4	15	0	0	0	15	108	
08:45	09:00	6	41	0	47	0	21	7	28	75	12	0	2	14	0	0	0	14	89	
09:00	09:15	10	28	0	38	0	22	7	29	67	13	0	5	18	0	0	0	18	85	
09:15	09:30	6	30	0	36	0	26	6	32	68	13	0	7	20	0	0	0	20	88	
09:30	09:45	1	38	0	39	0	20	9	29	68	5	0	6	11	0	0	0	11	79	
09:45	10:00	2	27	0	29	0	28	9	37	66	5	0	4	9	0	0	0	9	75	
11:30	11:45	6	32	0	38	0	31	7	38	76	9	0	7	16	0	0	0	16	92	
11:45	12:00	3	20	0	23	0	23	13	36	59	14	0	1	15	0	0	0	15	74	
12:00	12:15	4	27	0	31	0	19	10	29	60	11	0	3	14	0	0	0	14	74	
12:15	12:30	3	17	0	20	0	30	11	41	61	9	0	1	10	0	0	0	10	71	
12:30	12:45	8	23	0	31	0	31	7	38	69	14	0	3	17	0	0	0	17	86	
12:45	13:00	1	18	0	19	0	20	6	26	45	9	0	3	12	0	0	0	12	57	
13:00	13:15	3	23	0	26	0	20	11	31	57	11	0	8	19	0	0	0	19	76	
13:15	13:30	4	19	0	23	0	23	16	39	62	12	0	2	14	0	0	0	14	76	
15:00	15:15	3	26	0	29	0	36	15	51	80	12	0	6	18	0	0	0	18	98	
15:15	15:30	6	30	0	36	0	28	11	39	75	13	0	8	21	0	0	0	21	96	
15:30	15:45	6	42	0	48	0	44	19	63	111	13	0	4	17	0	0	0	17	128	
15:45	16:00	4	38	0	42	0	51	22	73	115	9	0	7	16	0	0	0	16	131	
16:00	16:15	9	35	0	44	0	46	17	63	107	15	0	5	20	0	0	0	20	127	
16:15	16:30	14	36	0	50	0	41	14	55	105	16	0	6	22	0	0	0	22	127	
16:30	16:45	10	42	0	52	0	53	25	78	130	16	0	12	28	0	0	0	28	158	
16:45	17:00	6	28	0	34	0	48	18	66	100	12	0	3	15	0	0	0	15	115	
17:00	17:15	5	17	0	22	0	39	22	61	83	17	0	2	19	0	0	0	19	102	
17:15	17:30	7	44	0	51	0	50	15	65	116	6	0	1	7	0	0	0	7	123	
17:30	17:45	3	33	0	36	0	58	10	68	104	8	0	5	13	0	0	0	13	117	
17:45	18:00	3	23	0	26	0	33	21	54	80	6	0	3	9	0	0	0	9	89	
Total:		202	1024	0	1226	0	1031	432	1463	2689	430	0	175	605	0	0	0	605	3,294	

Note: U-Turns are included in Totals.



Transportation Services - Traffic Services

Turning Movement Count - Study Results

EAGLESON RD @ OTTAWA ST

Survey Date: Tuesday, March 07, 2023

WO No: 40864

Start Time: 07:00

Device: Miovision

Full Study Heavy Vehicles

EAGLESON RD										OTTAWA ST									
Northbound					Southbound					Eastbound					Westbound				
Time Period	LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00 07:15	0	3	0	3	0	1	0	1	4	0	0	0	0	0	0	0	0	0	4
07:15 07:30	0	4	0	4	0	1	0	1	5	0	0	0	0	0	0	0	0	0	5
07:30 07:45	5	2	0	7	0	3	1	4	11	4	0	2	6	0	0	0	0	6	17
07:45 08:00	0	2	0	2	0	1	0	1	3	2	0	3	5	0	0	0	0	5	8
08:00 08:15	1	4	0	5	0	0	0	0	5	0	0	1	1	0	0	0	0	1	6
08:15 08:30	0	3	0	3	0	1	1	2	5	0	0	0	0	0	0	0	0	0	5
08:30 08:45	0	2	0	2	0	5	0	5	7	0	0	0	0	0	0	0	0	0	7
08:45 09:00	0	1	0	1	0	5	1	6	7	0	0	0	0	0	0	0	0	0	7
09:00 09:15	1	0	0	1	0	1	0	1	2	0	0	0	0	0	0	0	0	0	2
09:15 09:30	0	1	0	1	0	2	0	2	3	0	0	1	1	0	0	0	0	1	4
09:30 09:45	0	6	0	6	0	4	0	4	10	0	0	0	0	0	0	0	0	0	10
09:45 10:00	0	4	0	4	0	1	0	1	5	0	0	0	0	0	0	0	0	0	5
11:30 11:45	0	3	0	3	0	1	0	1	4	0	0	0	0	0	0	0	0	0	4
11:45 12:00	0	3	0	3	0	0	1	1	4	0	0	0	0	0	0	0	0	0	4
12:00 12:15	0	2	0	2	0	3	0	3	5	0	0	1	1	0	0	0	0	1	6
12:15 12:30	0	2	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2
12:30 12:45	0	2	0	2	0	2	0	2	4	0	0	0	0	0	0	0	0	0	4
12:45 13:00	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
13:00 13:15	0	1	0	1	0	1	0	1	2	0	0	0	0	0	0	0	0	0	2
13:15 13:30	0	2	0	2	0	2	0	2	4	0	0	0	0	0	0	0	0	0	6
15:00 15:15	1	3	0	4	0	2	0	2	6	0	0	0	0	0	0	0	0	0	6
15:15 15:30	1	2	0	3	0	1	0	1	4	0	0	1	1	0	0	0	0	1	5
15:30 15:45	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
15:45 16:00	0	0	0	0	0	2	2	4	4	0	0	0	0	0	0	0	0	0	4
16:00 16:15	1	3	0	4	0	2	0	2	6	1	0	1	2	0	0	0	0	2	8
16:15 16:30	0	2	0	2	0	2	0	2	4	0	0	0	0	0	0	0	0	0	4
16:30 16:45	0	1	0	1	0	2	0	2	3	0	0	0	0	0	0	0	0	0	3
16:45 17:00	1	1	0	2	0	3	0	3	5	0	0	1	1	0	0	0	0	1	6
17:00 17:15	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
17:15 17:30	0	1	0	1	0	1	0	1	2	0	0	0	0	0	0	0	0	0	2
17:30 17:45	0	3	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3
17:45 18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total: None	11	66	0	77	0	49	8	57	134	7	0	11	18	0	0	0	0	18	152



Transportation Services - Traffic Services

Turning Movement Count - Study Results

EAGLESON RD @ OTTAWA ST

Survey Date: Tuesday, March 07, 2023

WO No: 40864

Start Time: 07:00

Device: Miovision

Full Study Pedestrian Volume

EAGLESON RD										OTTAWA ST									
Time Period	NB Approach (E or W Crossing)			SB Approach (E or W Crossing)			Total			EB Approach (N or S Crossing)			WB Approach (N or S Crossing)			Total			Grand Total
07:00 07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 09:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:00 09:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15 09:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:30 09:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:45 10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00 13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15 13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:00 15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:15 15:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:30 15:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:45 16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00 16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15 16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30 16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00 17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15 17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30 17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45 18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



Transportation Services - Traffic Services

Turning Movement Count - Study Results

EAGLESON RD/MCCORDICK RD @ BROPHY DR

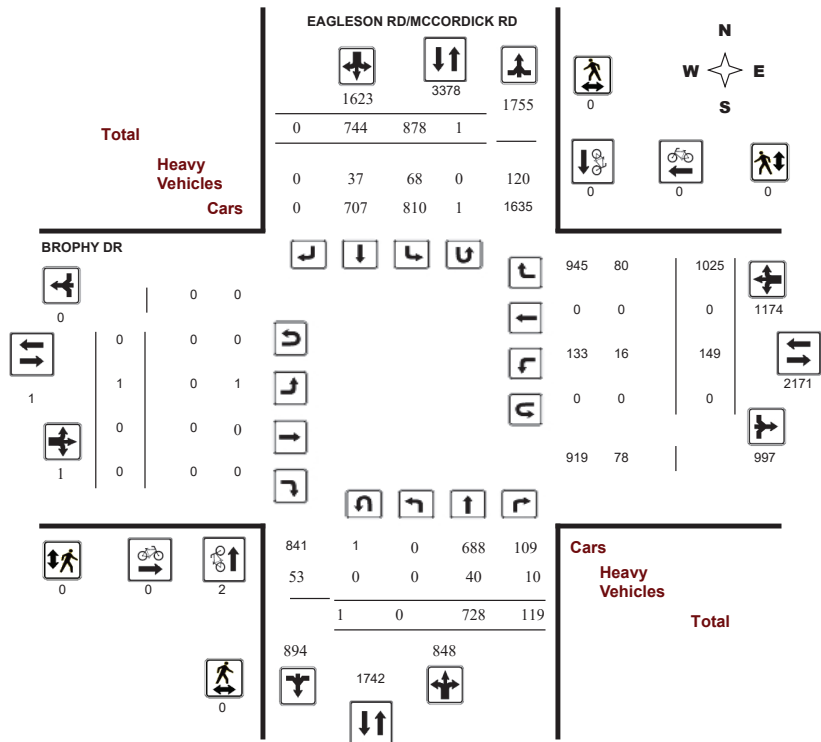
Survey Date: Tuesday, April 30, 2019

WO No: 38627

Start Time: 07:00

Device: Miovision

Full Study Diagram



Transportation Services - Traffic Services

Turning Movement Count - Study Results

EAGLESON RD @ OTTAWA ST

Survey Date: Tuesday, March 07, 2023

WO No: 40864

Start Time: 07:00

Device: Miovision

Full Study 15 Minute U-Turn Total

		EAGLESON RD		OTTAWA ST		Total
Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	
07:00	07:15	0	0	0	0	0
07:15	07:30	0	0	0	0	0
07:30	07:45	0	0	0	0	0
07:45	08:00	0	0	0	0	0
08:00	08:15	0	0	0	0	0
08:15	08:30	0	0	0	0	0
08:30	08:45	0	0	0	0	0
08:45	09:00	0	0	0	0	0
09:00	09:15	0	0	0	0	0
09:15	09:30	0	0	0	0	0
09:30	09:45	0	0	0	0	0
09:45	10:00	0	0	0	0	0
11:30	11:45	0	0	0	0	0
11:45	12:00	0	0	0	0	0
12:00	12:15	0	0	0	0	0
12:15	12:30	0	0	0	0	0
12:30	12:45	0	0	0	0	0
12:45	13:00	0	0	0	0	0
13:00	13:15	0	0	0	0	0
13:15	13:30	0	0	0	0	0
15:00	15:15	0	0	0	0	0
15:15	15:30	0	0	0	0	0
15:30	15:45	0	0	0	0	0
15:45	16:00	0	0	0	0	0
16:00	16:15	0	0	0	0	0
16:15	16:30	0	0	0	0	0
16:30	16:45	0	0	0	0	0
16:45	17:00	0	0	0	0	0
17:00	17:15	0	0	0	0	0
17:15	17:30	0	0	0	0	0
17:30	17:45	0	0	0	0	0
17:45	18:00	0	0	0	0	0
Total		0	0	0	0	0



Transportation Services - Traffic Services

Turning Movement Count - Study Results

EAGLESON RD/MCCORDICK RD @ BROPHY DR

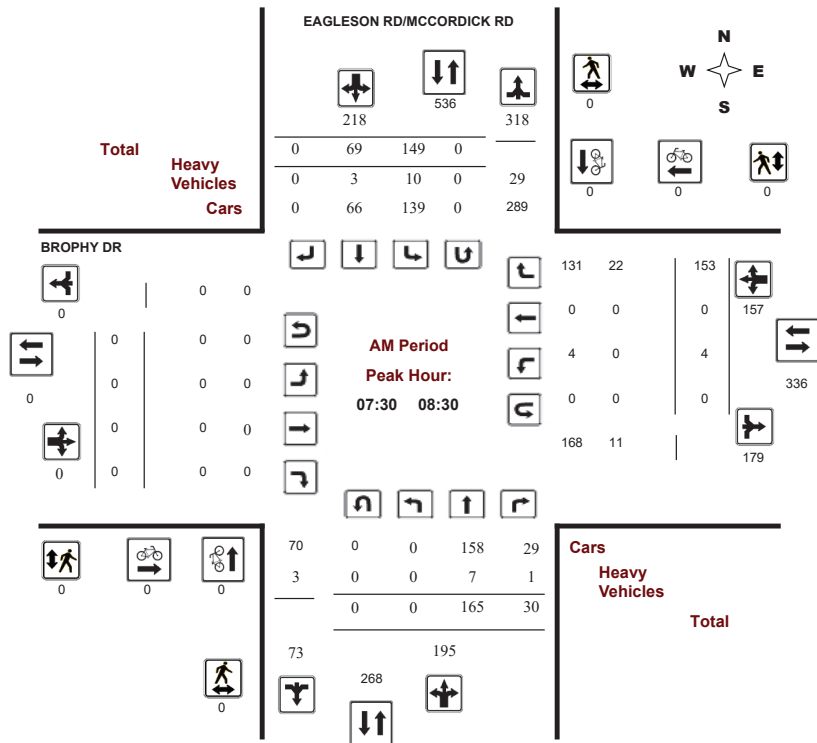
Survey Date: Tuesday, April 30, 2019

WO No: 38627

Start Time: 07:00

Device: Miovision

AM Period Peak Hour Diagram



Transportation Services - Traffic Services

Turning Movement Count - Study Results

EAGLESON RD/MCCORDICK RD @ BROPHY DR

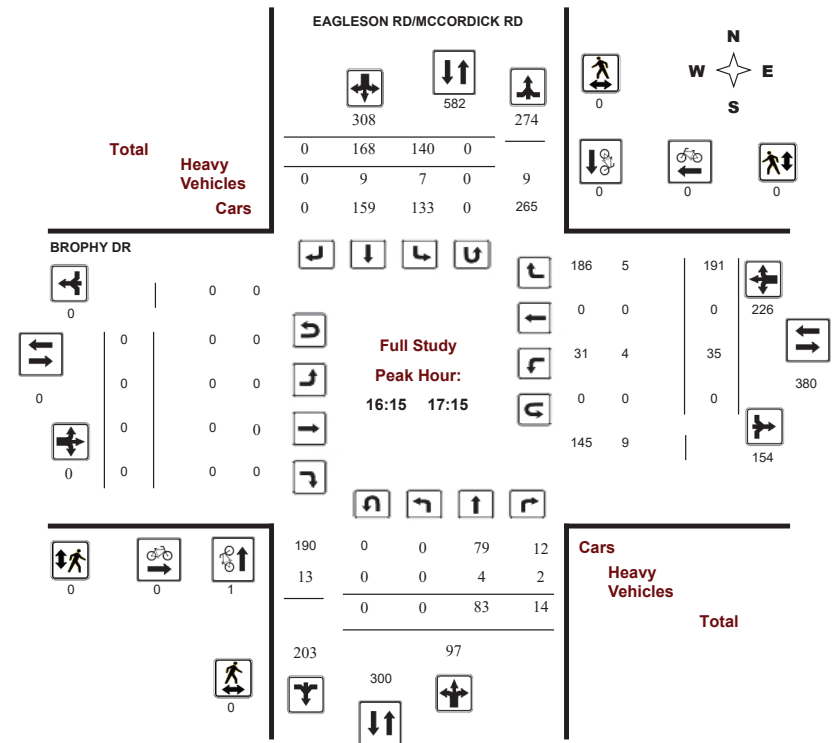
Survey Date: Tuesday, April 30, 2019

WO No: 38627

Start Time: 07:00

Device: Miovision

Full Study Peak Hour Diagram





Transportation Services - Traffic Services

Turning Movement Count - Study Results

EAGLESON RD/MCCORDICK RD @ BROPHY DR

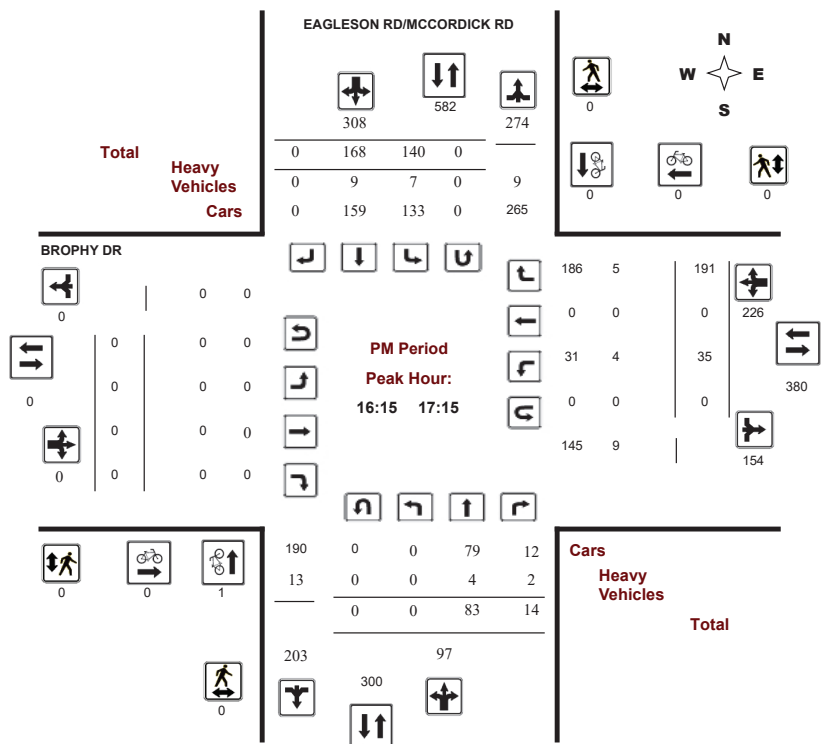
Survey Date: Tuesday, April 30, 2019

WO No: 38627

Start Time: 07:00

Device: Miovision

PM Period Peak Hour Diagram



Transportation Services - Traffic Services

Turning Movement Count - Study Results

EAGLESON RD/MCCORDICK RD @ BROPHY DR

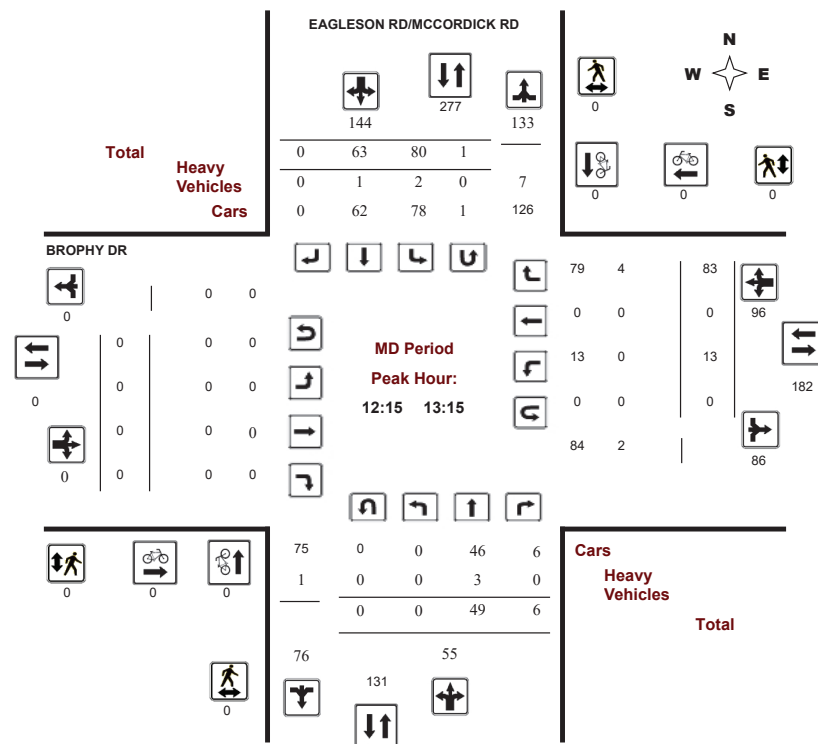
Survey Date: Tuesday, April 30, 2019

WO No: 38627

Start Time: 07:00

Device: Miovision

MD Period Peak Hour Diagram





Transportation Services - Traffic Services

Turning Movement Count - Study Results

EAGLESON RD/MCCORDICK RD @ BROPHY DR

Survey Date: Tuesday, April 30, 2019

WO No: 38627

Start Time: 07:00

Device: Miovision

Full Study 15 Minute Increments

EAGLESON RD/MCCORDICK RD												BROPHY DR											
Northbound						Southbound						Eastbound						Westbound					
Time Period	LT	ST	RT	N TOT		LT	ST	RT	S TOT	STR TOT		LT	ST	RT	E TOT		LT	ST	RT	W TOT	STR TOT	Grand Total	
15:00	15:15	0	25	2	27	24	23	0	47	74	1	0	0	0	1	5	0	29	34	35	109		
15:15	15:30	0	21	2	23	29	35	0	64	87	0	0	0	0	0	8	0	32	40	40	127		
15:30	15:45	0	28	8	36	28	32	0	60	96	0	0	0	0	0	13	0	33	46	46	142		
15:45	16:00	0	27	6	33	31	38	0	69	102	0	0	0	0	0	7	0	34	41	41	143		
16:00	16:15	0	15	4	19	37	34	0	71	90	0	0	0	0	0	15	0	31	46	46	136		
16:15	16:30	0	22	5	27	37	47	0	84	111	0	0	0	0	0	7	0	56	63	63	174		
16:30	16:45	0	21	3	24	35	49	0	84	108	0	0	0	0	0	14	0	54	68	68	176		
16:45	17:00	0	16	2	18	38	30	0	68	86	0	0	0	0	0	6	0	37	43	43	129		
17:00	17:15	0	24	4	28	30	42	0	72	100	0	0	0	0	0	8	0	44	52	52	152		
17:15	17:30	0	18	5	23	32	38	0	70	93	0	0	0	0	0	5	0	58	63	63	156		
17:30	17:45	0	16	2	18	26	41	0	67	85	0	0	0	0	0	11	0	44	55	55	140		
17:45	18:00	0	17	4	22	29	34	0	63	85	0	0	0	0	0	4	0	45	49	49	134		
13:15	13:30	0	15	1	16	22	17	0	39	55	0	0	0	0	0	3	0	19	22	22	77		
11:30	11:45	0	12	2	14	26	13	0	39	53	0	0	0	0	0	1	0	23	24	24	77		
07:00	07:15	0	32	5	37	26	16	0	42	79	0	0	0	0	0	1	0	39	40	40	119		
07:15	07:30	0	49	4	53	28	10	0	38	91	0	0	0	0	0	0	0	27	27	27	118		
07:30	07:45	0	45	13	58	50	15	0	65	123	0	0	0	0	0	2	0	42	44	44	167		
07:45	08:00	0	43	6	49	37	17	0	54	103	0	0	0	0	0	2	0	44	46	46	149		
08:00	08:15	0	33	5	38	30	15	0	45	83	0	0	0	0	0	0	0	27	27	27	110		
08:15	08:30	0	44	6	50	32	22	0	54	104	0	0	0	0	0	0	0	40	40	40	144		
08:30	08:45	0	31	2	33	30	23	0	53	86	0	0	0	0	0	1	0	36	37	37	123		
08:45	09:00	0	22	4	26	18	11	0	29	55	0	0	0	0	0	1	0	33	34	34	89		
09:00	09:15	0	32	3	35	26	10	0	36	71	0	0	0	0	0	1	0	17	18	18	89		
09:15	09:30	0	29	5	34	17	16	0	33	67	0	0	0	0	0	7	0	20	27	27	94		
09:30	09:45	0	16	4	20	20	10	0	30	50	0	0	0	0	0	4	0	19	23	23	73		
09:45	10:00	0	8	2	10	24	18	0	42	52	0	0	0	0	0	3	0	26	29	29	81		
12:00	12:15	0	7	2	9	15	11	0	26	35	0	0	0	0	0	3	0	18	21	21	56		
12:15	12:30	0	10	1	11	21	17	0	38	49	0	0	0	0	0	4	0	25	29	29	78		
12:30	12:45	0	10	2	12	22	12	0	34	46	0	0	0	0	0	4	0	18	22	22	68		
12:45	13:00	0	14	2	16	21	13	0	35	51	0	0	0	0	0	2	0	21	23	23	74		
13:00	13:15	0	15	1	16	16	21	0	37	53	0	0	0	0	0	3	0	19	22	22	75		
11:45	12:00	0	11	2	13	21	14	0	35	48	0	0	0	0	0	4	0	15	19	19	67		
Total:		0	728	119	848	878	744	0	1623	2471	1	0	0	0	1	149	0	1025	1174	1175	3,646		

Note: U-Turns are included in Totals.



Transportation Services - Traffic Services

Turning Movement Count - Study Results

EAGLESON RD/MCCORDICK RD @ BROPHY DR

Survey Date: Tuesday, April 30, 2019

WO No: 38627

Start Time: 07:00

Device: Miovision

Full Study Summary (8 HR Standard)

Survey Date:		Tuesday, April 30, 2019										Total Observed U-Turns										AADT Factor		
										Northbound:		1		Southbound:		1		.90						
										Eastbound:		0		Westbound:		0								
EAGLESON RD/MCCORDICK RD										BROPHY DR														
Northbound										Southbound				Eastbound				Westbound						
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total					
07:00 08:00	0	169	28	197	141	58	0	199	396	0	0	0	0	5	0	152	157	157	553					
08:00 09:00	0	130	17	147	110	71	0	181	328	0	0	0	0	2	0	136	138	138	466					
09:00 10:00	0	85	14	99	87	54	0	141	240	0	0	0	0	15	0	82	97	97	337					
11:30 12:30	0	40	7	47	83	55	0	138	185	0	0	0	0	12	0	81	93	93	278					
12:30 13:30	0	54	6	60	81	63	0	144	204	0	0	0	0	12	0	77	89	89	293					
15:00 16:00	0	101	18	119	112	128	0	240	359	1	0	0	1	33	0	128	161	162	521					
16:00 17:00	0	74	14	88	147	160	0	307	395	0	0	0	0	42	0	178	220	220	615					
17:00 18:00	0	75	15	90	117	155	0	272	362	0	0	0	0	28	0	191	219	219	581					
Sub Total	0	728	119	847	878	744	0	1622	2469	1	0	0	1	149	0	1025	1174	1175	3644					
U Turns				1				1	2				0				0	0	2					
Total	0	728	119	848	878	744	0	1623	2471	1	0	0	1	149	0	1025	1174	1175	3646					
EQ 12Hr	0	1012	165	1179	1220	1034	0	2256	3435	1	0	0	1	207	0	1425	1632	1633	5068					
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														1.39										
AVG 12Hr	0	911	148	1061	1098	1219	0	2030	3092	1	0	0	1	186	0	1282	1469	1470	4561					
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														.90										
AVG 24Hr	0	1193	194	1390	1438	1597	0	2659	4051	1	0	0	1	244	0	1679	1924	1926	5975					
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.														1.31										
Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.																								



Transportation Services - Traffic Services

Turning Movement Count - Study Results

EAGLESON RD/MCCORDICK RD @ BROPHY DR

Survey Date: Tuesday, April 30, 2019

WO No: 38627

Start Time: 07:00

Device: Miovision

Full Study Pedestrian Volume

Time Period	EAGLESON RD/MCCORDICK RD			BROPHY DR			Grand Total
	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	
15:00 15:15	0	0	0	0	0	0	0
15:15 15:30	0	0	0	0	0	0	0
15:30 15:45	0	0	0	0	0	0	0
15:45 16:00	0	0	0	0	0	0	0
16:00 16:15	0	0	0	0	0	0	0
16:15 16:30	0	0	0	0	0	0	0
16:30 16:45	0	0	0	0	0	0	0
16:45 17:00	0	0	0	0	0	0	0
17:00 17:15	0	0	0	0	0	0	0
17:15 17:30	0	0	0	0	0	0	0
17:30 17:45	0	0	0	0	0	0	0
17:45 18:00	0	0	0	0	0	0	0
13:15 13:30	0	0	0	0	0	0	0
11:30 11:45	0	0	0	0	0	0	0
07:00 07:15	0	0	0	0	0	0	0
07:15 07:30	0	0	0	0	0	0	0
07:30 07:45	0	0	0	0	0	0	0
07:45 08:00	0	0	0	0	0	0	0
08:00 08:15	0	0	0	0	0	0	0
08:15 08:30	0	0	0	0	0	0	0
08:30 08:45	0	0	0	0	0	0	0
08:45 09:00	0	0	0	0	0	0	0
09:00 09:15	0	0	0	0	0	0	0
09:15 09:30	0	0	0	0	0	0	0
09:30 09:45	0	0	0	0	0	0	0
09:45 10:00	0	0	0	0	0	0	0
12:00 12:15	0	0	0	0	0	0	0
12:15 12:30	0	0	0	0	0	0	0
12:30 12:45	0	0	0	0	0	0	0
12:45 13:00	0	0	0	0	0	0	0
13:00 13:15	0	0	0	0	0	0	0
11:45 12:00	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0



Transportation Services - Traffic Services

Turning Movement Count - Study Results

EAGLESON RD/MCCORDICK RD @ BROPHY DR

Survey Date: Tuesday, April 30, 2019

WO No: 38627

Start Time: 07:00

Device: Miovision

Full Study Cyclist Volume

Time Period	EAGLESON RD/MCCORDICK RD			BROPHY DR			Grand Total
	Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	
15:00 15:15	0	0	0	0	0	0	0
15:15 15:30	0	0	0	0	0	0	0
15:30 15:45	0	0	0	0	0	0	0
15:45 16:00	0	0	0	0	0	0	0
16:00 16:15	0	0	0	0	0	0	0
16:15 16:30	0	0	0	0	0	0	0
16:30 16:45	0	0	0	0	0	0	0
16:45 17:00	0	0	0	0	0	0	0
17:00 17:15	1	0	1	0	0	0	1
17:15 17:30	0	0	0	0	0	0	0
17:30 17:45	1	0	1	0	0	0	1
17:45 18:00	0	0	0	0	0	0	0
13:15 13:30	0	0	0	0	0	0	0
11:30 11:45	0	0	0	0	0	0	0
07:00 07:15	0	0	0	0	0	0	0
07:15 07:30	0	0	0	0	0	0	0
07:30 07:45	0	0	0	0	0	0	0
07:45 08:00	0	0	0	0	0	0	0
08:00 08:15	0	0	0	0	0	0	0
08:15 08:30	0	0	0	0	0	0	0
08:30 08:45	0	0	0	0	0	0	0
08:45 09:00	0	0	0	0	0	0	0
09:00 09:15	0	0	0	0	0	0	0
09:15 09:30	0	0	0	0	0	0	0
09:30 09:45	0	0	0	0	0	0	0
09:45 10:00	0	0	0	0	0	0	0
12:00 12:15	0	0	0	0	0	0	0
12:15 12:30	0	0	0	0	0	0	0
12:30 12:45	0	0	0	0	0	0	0
12:45 13:00	0	0	0	0	0	0	0
13:00 13:15	0	0	0	0	0	0	0
11:45 12:00	0	0	0	0	0	0	0
Total	2	0	2	0	0	0	2



Transportation Services - Traffic Services

Turning Movement Count - Study Results

EAGLESON RD/MCCORDICK RD @ BROPHY DR

Survey Date: Tuesday, April 30, 2019

WO No: 38627

Start Time: 07:00

Device: Miovision

Full Study 15 Minute U-Turn Total

EAGLESON RD/MCCORDICK RD

BROPHY DR

Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
15:00	15:15	0	0	0	0	0
15:15	15:30	0	0	0	0	0
15:30	15:45	0	0	0	0	0
15:45	16:00	0	0	0	0	0
16:00	16:15	0	0	0	0	0
16:15	16:30	0	0	0	0	0
16:30	16:45	0	0	0	0	0
16:45	17:00	0	0	0	0	0
17:00	17:15	0	0	0	0	0
17:15	17:30	0	0	0	0	0
17:30	17:45	0	0	0	0	0
17:45	18:00	1	0	0	0	1
13:15	13:30	0	0	0	0	0
11:30	11:45	0	0	0	0	0
07:00	07:15	0	0	0	0	0
07:15	07:30	0	0	0	0	0
07:30	07:45	0	0	0	0	0
07:45	08:00	0	0	0	0	0
08:00	08:15	0	0	0	0	0
08:15	08:30	0	0	0	0	0
08:30	08:45	0	0	0	0	0
08:45	09:00	0	0	0	0	0
09:00	09:15	0	0	0	0	0
09:15	09:30	0	0	0	0	0
09:30	09:45	0	0	0	0	0
09:45	10:00	0	0	0	0	0
12:00	12:15	0	0	0	0	0
12:15	12:30	0	0	0	0	0
12:30	12:45	0	0	0	0	0
12:45	13:00	0	1	0	0	1
13:00	13:15	0	0	0	0	0
11:45	12:00	0	0	0	0	0
Total		1	1	0	0	2



Transportation Services - Traffic Services

Turning Movement Count - Study Results

EAGLESON RD/MCCORDICK RD @ BROPHY DR

Survey Date: Tuesday, April 30, 2019

WO No: 38627

Start Time: 07:00

Device: Miovision

Full Study Heavy Vehicles

EAGLESON RD/MCCORDICK RD

BROPHY DR

		Northbound				Southbound				Eastbound				Westbound						
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
15:00	15:15	0	2	1	3	2	1	0	3	6	0	0	0	0	2	0	3	5	5	11
15:15	15:30	0	4	0	4	5	0	0	5	9	0	0	0	0	2	0	3	5	5	14
15:30	15:45	0	3	2	5	4	1	0	5	10	0	0	0	0	1	0	2	3	3	13
15:45	16:00	0	1	0	1	4	0	0	4	5	0	0	0	0	0	0	1	1	1	6
16:00	16:15	0	0	0	0	9	2	0	11	11	0	0	0	0	3	0	0	3	3	14
16:15	16:30	0	2	0	2	1	2	0	3	5	0	0	0	0	1	0	1	2	2	7
16:30	16:45	0	1	1	2	4	2	0	6	8	0	0	0	0	3	0	2	5	5	13
16:45	17:00	0	1	0	1	1	0	0	1	2	0	0	0	0	0	0	2	2	2	4
17:00	17:15	0	0	1	1	1	5	0	6	7	0	0	0	0	0	0	0	0	0	7
17:15	17:30	0	0	2	2	1	4	0	5	7	0	0	0	0	1	0	1	2	2	9
17:30	17:45	0	0	0	0	1	1	0	2	2	0	0	0	0	0	0	2	2	2	4
17:45	18:00	0	1	0	1	1	0	0	1	2	0	0	0	0	0	0	5	5	5	7
13:15	13:30	0	3	1	4	2	1	0	3	7	0	0	0	0	0	0	3	3	3	10
11:30	11:45	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0	2	2	2	4
07:00	07:15	0	1	1	2	0	2	0	2	4	0	0	0	0	0	0	5	5	5	9
07:15	07:30	0	3	0	3	4	0	0	4	7	0	0	0	0	0	0	7	7	7	14
07:30	07:45	0	2	0	2	4	2	0	6	8	0	0	0	0	0	0	10	10	10	18
07:45	08:00	0	2	0	2	2	1	0	3	5	0	0	0	0	0	0	3	3	3	8
08:00	08:15	0	2	0	2	3	0	0	3	5	0	0	0	0	0	0	4	4	4	9
08:15	08:30	0	1	1	2	1	0	0	1	3	0	0	0	0	0	0	5	5	5	8
08:30	08:45	0	1	0	1	2	1	0	3	4	0	0	0	0	0	0	3	3	3	7
08:45	09:00	0	1	0	1	1	0	0	1	2	0	0	0	0	0	0	3	3	3	5
09:00	09:15	0	3	0	3	2	2	0	4	7	0	0	0	0	0	0	3	3	3	10
09:15	09:30	0	1	0	1	3	3	0	6	7	0	0	0	0	2	0	2	4	4	11
09:30	09:45	0	1	0	1	3	2	0	5	6	0	0	0	0	1	0	1	2	2	8
09:45	10:00	0	0	0	0	2	1	0	3	3	0	0	0	0	0	0	1	1	1	4
12:00	12:15	0	0	0	0	2	1	0	3	3	0	0	0	0	0	0	1	1	1	4
12:15	12:30	0	2	0	2	1	0	0	1	3	0	0	0	0	0	0	0	0	0	3
12:30	12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
12:45	13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
13:00	13:15	0	1	0	1	1	1	0	2	3	0	0	0	0	0	0	2	2	2	5
11:45	12:00	0	1	0	1	1	0	0	1	2	0	0	0	0	0	0	1	1	1	3
Total:	None	0	40	10	50	68	37	0	105	155	0	0	0	0	16	0	80	96	96	251



Transportation Services - Traffic Services

Turning Movement Count - Study Results

MCBEAN ST @ OTTAWA ST

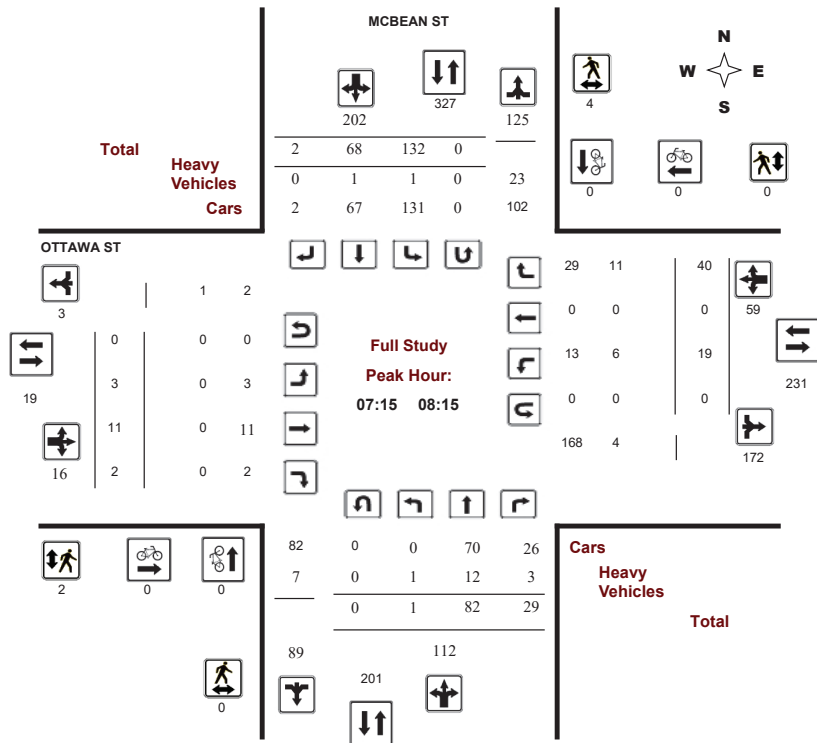
Survey Date: Thursday, March 12, 2020

WO No: 39618

Start Time: 07:00

Device: Miovision

Full Study Peak Hour Diagram



Transportation Services - Traffic Services

Turning Movement Count - Study Results

MCBEAN ST @ OTTAWA ST

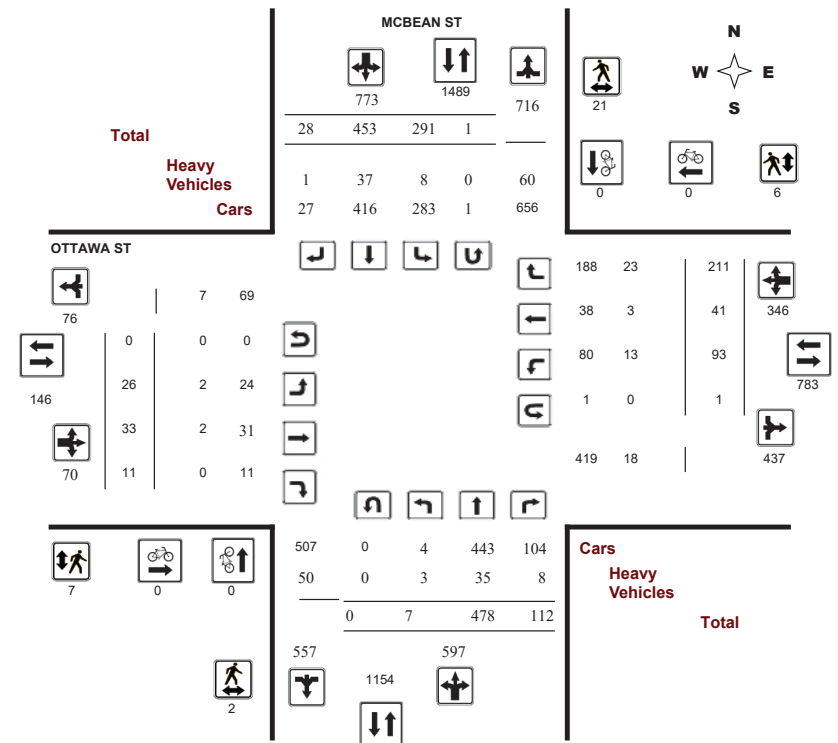
Survey Date: Thursday, March 12, 2020

WO No: 39618

Start Time: 07:00

Device: Miovision

Full Study Diagram





Transportation Services - Traffic Services

Turning Movement Count - Study Results

MCBEAN ST @ OTTAWA ST

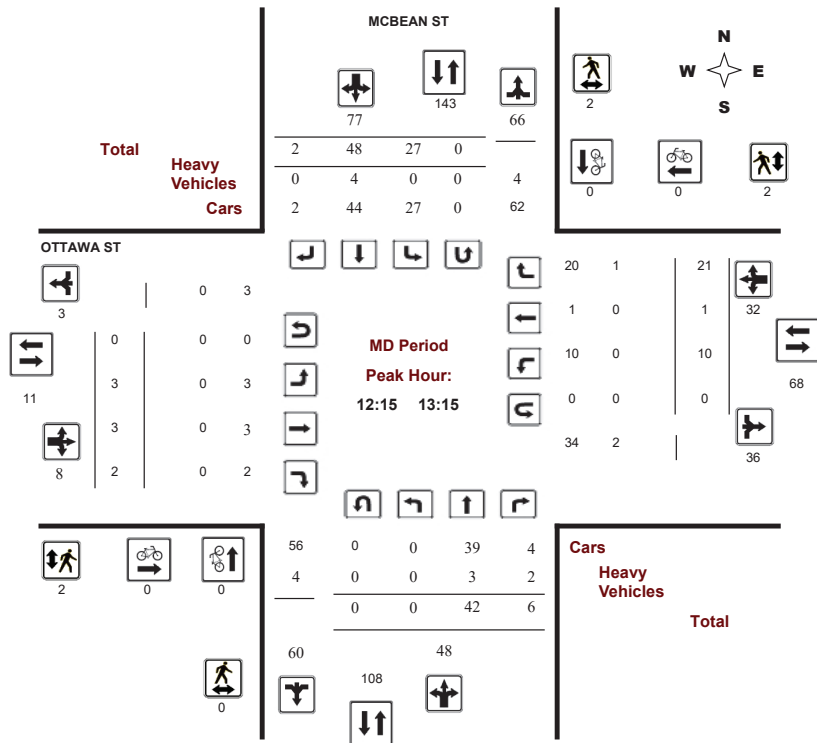
Survey Date: Thursday, March 12, 2020

WO No: 39618

Start Time: 07:00

Device: Miovision

MD Period Peak Hour Diagram



- MAR 12 2020 - 8HRS - KERRY-LYNN MOHR



Transportation Services - Traffic Services

Turning Movement Count - Study Results

MCBEAN ST @ OTTAWA ST

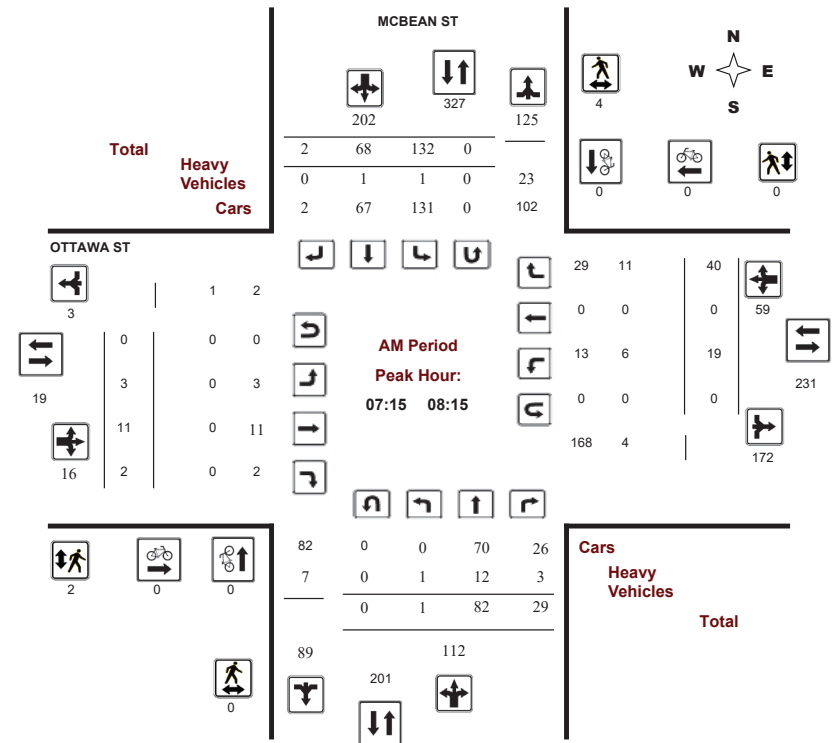
Survey Date: Thursday, March 12, 2020

WO No: 39618

Start Time: 07:00

Device: Miovision

AM Period Peak Hour Diagram



- MAR 12 2020 - 8HRS - KERRY-LYNN MOHR



Transportation Services - Traffic Services

Turning Movement Count - Study Results

MCBEAN ST @ OTTAWA ST

Survey Date: Thursday, March 12, 2020

WO No: 39618

Start Time: 07:00

Device: Miovision

Full Study Summary (8 HR Standard)

Survey Date: Thursday, March 12, 2020

Total Observed U-Turns

AADT Factor

Northbound: 0 Southbound: 1
Eastbound: 0 Westbound: 1

MCBEAN ST										OTTAWA ST									
Period	Northbound			Southbound			SB TOT	STR TOT		Eastbound			EB TOT	Westbound			WB TOT	STR TOT	Grand Total
	LT	ST	RT	LT	ST	RT				LT	ST	RT		LT	ST	RT			
07:00 08:00	1	69	31	101	118	53	1	172	273	4	12	2	18	14	0	41	55	73	346
08:00 09:00	1	68	22	91	42	44	4	90	181	3	5	2	10	19	5	13	37	47	228
09:00 10:00	1	65	9	75	27	57	0	84	159	0	4	1	5	7	3	15	25	30	189
11:30 12:30	0	32	15	47	20	40	5	65	112	3	2	1	6	9	3	22	34	40	152
12:30 13:30	0	37	8	45	28	44	1	73	118	3	2	2	7	12	1	21	34	41	159
15:00 16:00	1	70	6	77	26	81	12	119	196	4	1	0	5	11	7	33	51	56	252
16:00 17:00	2	79	15	96	22	74	2	98	194	3	4	1	8	14	18	28	60	68	262
17:00 18:00	1	58	6	65	8	60	3	71	136	6	3	2	11	7	4	38	49	60	196
Sub Total	7	478	112	597	291	453	28	772	1369	26	33	11	70	93	41	211	345	415	1784
U Turns	0			1			1	1		0			0	1			1	1	2
Total	7	478	112	597	291	453	28	773	1370	26	33	11	70	93	41	211	346	416	1786
EQ 12Hr	10	664	156	830	404	630	39	1074	1904	36	46	15	97	129	57	293	481	578	2483
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.										1.39									
AVG 12Hr	10	664	156	830	404	825	51	1074	1904	36	46	15	97	129	57	293	481	578	2483
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.										1.00									
AVG 24Hr	13	870	204	1087	529	1081	67	1407	2494	47	60	20	127	169	75	384	630	757	3253
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.										1.31									
Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.																			



Transportation Services - Traffic Services

Turning Movement Count - Study Results

MCBEAN ST @ OTTAWA ST

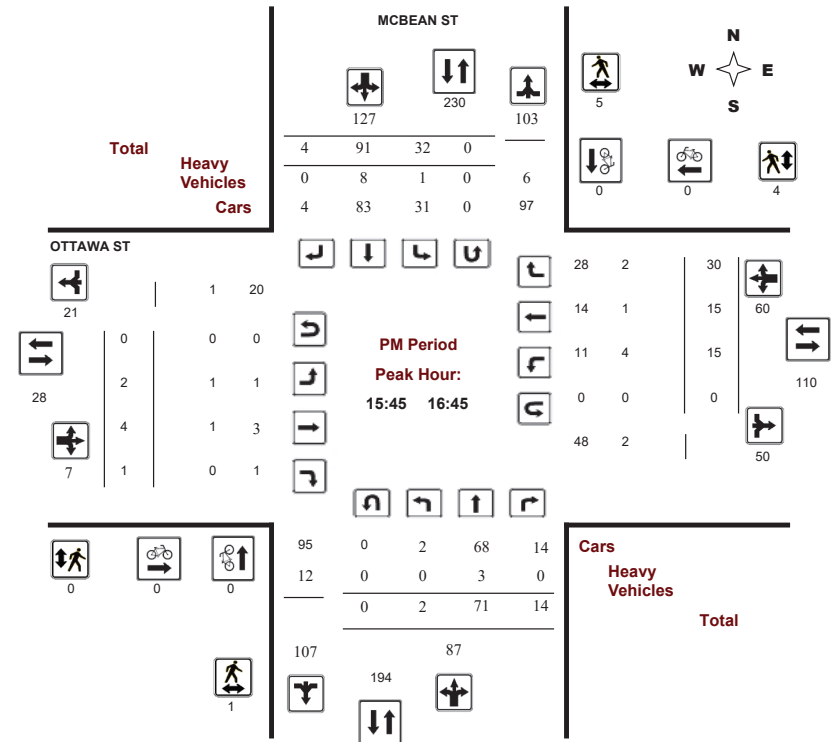
Survey Date: Thursday, March 12, 2020

WO No: 39618

Start Time: 07:00

Device: Miovision

PM Period Peak Hour Diagram



- MAR 12 2020 - 8HRS - KERRY-LYNN MOHR



Transportation Services - Traffic Services

Turning Movement Count - Study Results

MCBEAN ST @ OTTAWA ST

Survey Date: Thursday, March 12, 2020

WO No: 39618

Start Time: 07:00

Device: Miovision

Full Study Cyclist Volume

MCBEAN ST				OTTAWA ST			
Time Period	Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00 07:15	0	0	0	0	0	0	0
07:15 07:30	0	0	0	0	0	0	0
07:30 07:45	0	0	0	0	0	0	0
07:45 08:00	0	0	0	0	0	0	0
08:00 08:15	0	0	0	0	0	0	0
08:30 08:45	0	0	0	0	0	0	0
09:15 09:30	0	0	0	0	0	0	0
09:45 10:00	0	0	0	0	0	0	0
15:30 15:45	0	0	0	0	0	0	0
11:45 12:00	0	0	0	0	0	0	0
12:30 12:45	0	0	0	0	0	0	0
12:45 13:00	0	0	0	0	0	0	0
15:00 15:15	0	0	0	0	0	0	0
15:45 16:00	0	0	0	0	0	0	0
16:00 16:15	0	0	0	0	0	0	0
16:30 16:45	0	0	0	0	0	0	0
16:45 17:00	0	0	0	0	0	0	0
17:00 17:15	0	0	0	0	0	0	0
17:15 17:30	0	0	0	0	0	0	0
08:15 08:30	0	0	0	0	0	0	0
08:45 09:00	0	0	0	0	0	0	0
13:00 13:15	0	0	0	0	0	0	0
09:00 09:15	0	0	0	0	0	0	0
09:30 09:45	0	0	0	0	0	0	0
11:30 11:45	0	0	0	0	0	0	0
16:15 16:30	0	0	0	0	0	0	0
12:00 12:15	0	0	0	0	0	0	0
12:15 12:30	0	0	0	0	0	0	0
13:15 13:30	0	0	0	0	0	0	0
17:30 17:45	0	0	0	0	0	0	0
15:15 15:30	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0



Transportation Services - Traffic Services

Turning Movement Count - Study Results

MCBEAN ST @ OTTAWA ST

Survey Date: Thursday, March 12, 2020

WO No: 39618

Start Time: 07:00

Device: Miovision

Full Study 15 Minute Increments

MCBEAN ST										OTTAWA ST									
Northbound					Southbound					Eastbound					Westbound				
Time Period	LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00 07:15	0	9	6	15	4	2	0	6	21	1	3	0	4	2	0	4	6	10	31
07:15 07:30	1	17	6	24	22	15	0	37	61	1	4	1	6	2	0	3	5	11	72
07:30 07:45	0	20	7	27	37	13	0	50	77	1	1	1	3	6	0	23	29	32	109
07:45 08:00	0	12	2	14	2	15	1	18	32	1	0	0	1	1	1	13	15	16	48
07:45 08:00	0	23	12	35	55	23	1	79	114	1	4	0	5	4	0	11	15	20	134
08:00 08:15	0	22	4	26	18	17	1	36	62	0	2	0	2	7	0	3	10	12	74
08:30 08:45	0	11	8	19	5	8	1	14	33	0	1	1	2	4	2	1	7	9	42
09:15 09:30	1	17	3	21	11	22	0	33	54	0	1	0	1	2	0	3	6	7	61
09:45 10:00	0	14	3	17	2	10	0	12	29	0	0	0	0	1	1	6	8	8	37
15:30 15:45	0	23	1	24	5	16	4	25	49	0	0	0	0	1	1	8	10	10	59
11:45 12:00	0	6	5	11	7	6	1	14	25	1	1	0	2	4	2	4	10	12	37
12:30 12:45	0	11	0	11	4	10	0	14	25	0	1	0	1	2	0	2	4	5	30
12:45 13:00	0	7	5	12	12	11	0	23	35	1	1	0	2	3	1	9	13	15	50
15:00 15:15	1	15	1	17	4	14	3	21	38	3	0	0	3	1	1	8	10	13	51
15:45 16:00	0	14	2	16	10	35	4	49	65	0	0	0	0	4	3	9	16	16	81
16:00 16:15	0	22	7	29	14	18	0	32	61	0	3	0	3	3	3	9	15	18	79
16:30 16:45	1	22	2	25	3	15	0	18	43	1	1	0	2	5	3	6	14	16	59
16:45 17:00	0	22	3	25	0	18	2	20	45	1	0	0	1	3	6	7	16	17	62
17:00 17:15	0	20	1	21	3	19	2	24	45	0	2	0	2	3	0	7	10	12	57
17:15 17:30	0	15	2	17	1	11	0	12	29	2	0	0	2	2	2	10	14	16	45
08:15 08:30	0	15	8	23	12	10	2	24	47	2	1	0	3	5	2	3	10	13	60
08:45 09:00	1	20	2	23	7	9	0	17	40	1	1	1	3	3	1	6	10	13	53
13:00 13:15	0	11	0	11	5	15	1	21	32	2	0	2	4	3	0	7	10	14	46
09:00 09:15	0	23	2	25	8	12	0	20	45	0	1	1	2	2	2	5	9	11	56
09:30 09:45	0	11	1	12	6	13	0	19	31	0	2	0	2	2	0	1	3	5	36
11:30 11:45	0	6	7	13	3	9	1	13	26	0	0	1	1	3	0	8	11	12	38
16:15 16:30	1	13	3	17	5	23	0	28	45	1	0	1	2	3	6	6	15	17	62
12:00 12:15	0	7	2	9	4	13	2	19	28	2	0	0	2	0	1	7	8	10	38
12:15 12:30	0	13	1	14	6	12	1	19	33	0	1	0	1	2	0	3	5	6	39
13:15 13:30	0	8	3	11	7	8	0	15	26	0	0	0	0	4	0	3	7	7	33
17:30 17:45	1	11	1	13	2	15	0	17	30	3	1	2	6	1	1	8	10	16	46
15:15 15:30	0	18	2	20	7	16	1	24	44	1	1	0	2	5	2	8	15	17	61
Total:	7	478	112	597	291	453	28	773	1370	26	33	11	70	93	41	211	346	416	1,786

Note: U-Turns are included in Totals.

- MAR 12 2020 - 8HRS - KERRY-LYNN MOHR



Transportation Services - Traffic Services

Turning Movement Count - Study Results

MCBEAN ST @ OTTAWA ST

Survey Date: Thursday, March 12, 2020

WO No: 39618

Start Time: 07:00

Device: Miovision

Full Study Heavy Vehicles

MCBEAN ST										OTTAWA ST									
Northbound					Southbound					Eastbound					Westbound				
Time Period	LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00 07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2	2	2
07:15 07:30	1	2	2	5	1	0	0	1	6	0	0	0	0	0	0	0	0	0	6
07:30 07:45	0	8	0	8	0	0	0	0	8	0	0	0	0	3	0	9	12	12	20
17:45 18:00	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	1
07:45 08:00	0	1	0	1	0	0	0	0	1	0	0	0	0	3	0	2	5	5	6
08:00 08:15	0	1	1	2	0	1	0	1	3	0	0	0	0	0	0	0	0	0	3
08:30 08:45	0	1	0	1	0	1	1	2	3	0	0	0	0	0	1	0	1	1	4
09:15 09:30	1	0	0	1	1	7	0	8	9	0	1	0	1	0	0	0	0	1	10
09:45 10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:30 15:45	0	2	0	2	0	2	0	2	4	0	0	0	0	0	0	0	0	0	4
11:45 12:00	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	1
12:30 12:45	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	1
12:45 13:00	0	1	2	3	0	1	0	1	4	0	0	0	0	0	0	0	0	0	4
15:00 15:15	0	2	0	2	0	1	0	1	3	1	0	0	1	0	0	1	1	2	5
15:45 16:00	0	1	0	1	0	1	0	1	2	0	0	0	0	1	0	0	1	1	3
16:00 16:15	0	1	0	1	1	2	0	3	4	0	1	0	1	3	0	0	3	4	8
16:30 16:45	0	1	0	1	0	2	0	2	3	0	0	0	0	0	0	1	1	1	4
16:45 17:00	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	1
17:00 17:15	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0	0	0	0	2
17:15 17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 08:30	0	1	2	3	1	1	0	2	5	0	0	0	0	2	1	1	4	4	9
08:45 09:00	1	1	0	2	0	1	0	1	3	0	0	0	0	0	0	0	0	0	3
13:00 13:15	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0	1	1	1	3
09:00 09:15	0	3	0	3	1	4	0	5	8	0	0	0	0	0	0	3	3	3	11
09:30 09:45	0	0	0	0	1	2	0	3	3	0	0	0	0	0	0	0	0	0	3
11:30 11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
16:15 16:30	0	0	0	0	0	3	0	3	3	1	0	0	1	0	1	1	2	3	6
12:00 12:15	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	1
12:15 12:30	0	2	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2
13:15 13:30	0	2	1	3	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3
17:30 17:45	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	1	1	1	2
15:15 15:30	0	4	0	4	1	0	0	1	5	0	0	0	0	0	0	1	1	1	6
Total: None	3	35	8	46	8	37	1	46	92	2	2	0	4	13	3	23	39	43	135



Transportation Services - Traffic Services

Turning Movement Count - Study Results

MCBEAN ST @ OTTAWA ST

Survey Date: Thursday, March 12, 2020

WO No: 39618

Start Time: 07:00

Device: Miovision

Full Study Pedestrian Volume

MCBEAN ST				OTTAWA ST			
Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00 07:15	0	1	1	0	0	0	1
07:15 07:30	0	0	0	2	0	2	2
07:30 07:45	0	2	2	0	0	0	2
17:45 18:00	0	0	0	0	0	0	0
07:45 08:00	0	2	2	0	0	0	2
08:00 08:15	0	0	0	0	0	0	0
08:30 08:45	0	0	0	0	0	0	0
09:15 09:30	0	0	0	0	0	0	0
09:45 10:00	0	0	0	0	0	0	0
15:30 15:45	0	0	0	0	0	0	0
11:45 12:00	0	0	0	0	0	0	0
12:30 12:45	0	2	2	2	0	2	4
12:45 13:00	0	0	0	0	0	0	0
15:00 15:15	0	1	1	0	0	0	1
15:45 16:00	1	2	3	0	0	0	3
16:00 16:15	0	0	0	0	1	1	1
16:30 16:45	0	2	2	0	2	2	4
16:45 17:00	0	1	1	1	0	1	2
17:00 17:15	0	0	0	0	0	0	0
17:15 17:30	0	0	0	1	0	1	1
08:15 08:30	0	0	0	0	0	0	0
08:45 09:00	0	0	0	0	0	0	0
13:00 13:15	0	0	0	0	2	2	2
09:00 09:15	0	0	0	0	0	0	0
09:30 09:45	0	2	2	0	0	0	2
11:30 11:45	1	0	1	0	0	0	1
16:15 16:30	0	1	1	0	1	1	2
12:00 12:15	0	0	0	0	0	0	0
12:15 12:30	0	0	0	0	0	0	0
13:15 13:30	0	3	3	0	0	0	3
17:30 17:45	0	0	0	0	0	0	0
15:15 15:30	0	2	2	1	0	1	3
Total	2	21	23	7	6	13	36

- MAR 12 2020 - 8HRS - KERRY-LYNN MOHR



Transportation Services - Traffic Services

Turning Movement Count - Study Results

MCBEAN ST @ OTTAWA ST

Survey Date: Thursday, March 12, 2020

WO No: 39618

Start Time: 07:00

Device: Miovision

Full Study 15 Minute U-Turn Total

		MCBEAN ST		OTTAWA ST		Total
Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	
07:00	07:15	0	0	0	0	0
07:15	07:30	0	0	0	0	0
07:30	07:45	0	0	0	0	0
17:45	18:00	0	0	0	0	0
07:45	08:00	0	0	0	0	0
08:00	08:15	0	0	0	0	0
08:30	08:45	0	0	0	0	0
09:15	09:30	0	0	0	1	1
09:45	10:00	0	0	0	0	0
15:30	15:45	0	0	0	0	0
11:45	12:00	0	0	0	0	0
12:30	12:45	0	0	0	0	0
12:45	13:00	0	0	0	0	0
15:00	15:15	0	0	0	0	0
15:45	16:00	0	0	0	0	0
16:00	16:15	0	0	0	0	0
16:30	16:45	0	0	0	0	0
16:45	17:00	0	0	0	0	0
17:00	17:15	0	0	0	0	0
17:15	17:30	0	0	0	0	0
08:15	08:30	0	0	0	0	0
08:45	09:00	0	1	0	0	1
13:00	13:15	0	0	0	0	0
09:00	09:15	0	0	0	0	0
09:30	09:45	0	0	0	0	0
11:30	11:45	0	0	0	0	0
16:15	16:30	0	0	0	0	0
12:00	12:15	0	0	0	0	0
12:15	12:30	0	0	0	0	0
13:15	13:30	0	0	0	0	0
17:30	17:45	0	0	0	0	0
15:15	15:30	0	0	0	0	0
Total		0	1	0	1	2

Appendix C

Synchro Intersection Worksheets – Existing Conditions

HCM 2010 AWSC

2: McCordick/Eagleson & Brophy

10-02-2024

Intersection						
Intersection Delay, s/veh	9.3					
Intersection LOS	A					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	4	153	165	30	149	69
Future Vol, veh/h	4	153	165	30	149	69
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	170	183	33	166	77
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	8.6	9.2	9.9
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	3%	68%
Vol Thru, %	85%	0%	32%
Vol Right, %	15%	97%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	195	157	218
LT Vol	0	4	149
Through Vol	165	0	69
RT Vol	30	153	0
Lane Flow Rate	217	174	242
Geometry Grp	1	1	1
Degree of Util (X)	0.272	0.213	0.317
Departure Headway (Hd)	4.517	4.402	4.706
Convergence, Y/N	Yes	Yes	Yes
Cap	793	813	763
Service Time	2.554	2.441	2.743
HCM Lane V/C Ratio	0.274	0.214	0.317
HCM Control Delay	9.2	8.6	9.9
HCM Lane LOS	A	A	A
HCM 95th-tile Q	1.1	0.8	1.4

HCM 2010 TWSC

1: Eagleson & Ottawa

10-02-2024

Intersection						
Int Delay, s/veh	4.4					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			T	T	
Traffic Vol, veh/h	107	48	55	165	114	82
Future Vol, veh/h	107	48	55	165	114	82
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	119	53	61	183	127	91

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	478	173	218
Stage 1	173	-	-
Stage 2	305	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	546	871	1352
Stage 1	857	-	-
Stage 2	748	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	519	871	1352
Mov Cap-2 Maneuver	519	-	-
Stage 1	814	-	-
Stage 2	748	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.5	1.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT EBLn1	SBT	SBR
Capacity (veh/h)	1352	-	593	-
HCM Lane V/C Ratio	0.045	-	0.29	-
HCM Control Delay (s)	7.8	0	13.5	-
HCM Lane LOS	A	A	B	-
HCM 95th %tile Q(veh)	0.1	-	1.2	-

HCM 2010 TWSC
1: Eagleson & Ottawa

10-02-2024

Intersection						
Int Delay, s/veh	2.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			↑	↑	
Traffic Vol, veh/h	56	30	37	151	191	76
Future Vol, veh/h	56	30	37	151	191	76
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	62	33	41	168	212	84

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	504	254	296
Stage 1	254	-	-
Stage 2	250	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	528	785	1265
Stage 1	788	-	-
Stage 2	792	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	509	785	1265
Mov Cap-2 Maneuver	509	-	-
Stage 1	760	-	-
Stage 2	792	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.4	1.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1265	-	580	-	-
HCM Lane V/C Ratio	0.032	-	0.165	-	-
HCM Control Delay (s)	7.9	0	12.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.6	-	-

HCM 2010 TWSC
3: McBean & Ottawa

10-02-2024

Intersection												
Int Delay, s/veh	4.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	3	11	2	19	0	40	1	82	29	132	68	2
Future Vol, veh/h	3	11	2	19	0	40	1	82	29	132	68	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	12	2	21	0	44	1	91	32	147	76	2

Major/Minor	Minor2	Minor1	Major1	Major2
Conflicting Flow All	502	496	77	487
Stage 1	371	371	-	109
Stage 2	131	125	-	378
Critical Hdwy	7.12	6.52	6.22	7.12
Critical Hdwy Stg 1	6.12	5.52	-	6.12
Critical Hdwy Stg 2	6.12	5.52	-	6.12
Follow-up Hdwy	3.518	4.018	3.318	3.518
Pot Cap-1 Maneuver	480	475	984	491
Stage 1	649	620	-	896
Stage 2	873	792	-	644
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	420	425	984	440
Mov Cap-2 Maneuver	420	425	-	440
Stage 1	648	555	-	895
Stage 2	831	791	-	562

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.2	10.8	0.1	5.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1520	-	-	456	691	1464	-	-
HCM Lane V/C Ratio	0.001	-	-	0.039	0.095	0.1	-	-
HCM Control Delay (s)	7.4	0	-	13.2	10.8	7.7	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.3	0.3	-	-

HCM 2010 TWSC
3: McBean & Ottawa

10-02-2024

Intersection												
Int Delay, s/veh	3.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↔			↔		
Traffic Vol, veh/h	2	4	1	15	15	30	2	71	14	32	91	4
Future Vol, veh/h	2	4	1	15	15	30	2	71	14	32	91	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	4	1	17	17	33	2	79	16	36	101	4

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	291	274	103	269	268	87	105	0	0	95	0	0
Stage 1	175	175	-	91	91	-	-	-	-	-	-	-
Stage 2	116	99	-	178	177	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	661	633	952	684	638	971	1486	-	-	1499	-	-
Stage 1	827	754	-	916	820	-	-	-	-	-	-	-
Stage 2	889	813	-	824	753	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	613	616	952	666	621	971	1486	-	-	1499	-	-
Mov Cap-2 Maneuver	613	616	-	666	621	-	-	-	-	-	-	-
Stage 1	826	734	-	915	819	-	-	-	-	-	-	-
Stage 2	840	812	-	797	733	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.6	10.1	0.2	1.9
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1486	-	-	648	773	1499	-	-
HCM Lane V/C Ratio	0.001	-	-	0.012	0.086	0.024	-	-
HCM Control Delay (s)	7.4	0	-	10.6	10.1	7.5	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.3	0.1	-	-

6038 Ottawa St PM Peak Hour Existing

Synchro 10 Light Report
Page 3

HCM 2010 AWSC
2: McCordick/Eagleson & Brophy

10-02-2024

Intersection	
Intersection Delay, s/veh	10.5
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Vol, veh/h	35	191	83	14	140	168
Future Vol, veh/h	35	191	83	14	140	168
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	39	212	92	16	156	187
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	9.7	8.7	11.6
HCM LOS	A	A	B

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	15%	45%
Vol Thru, %	86%	0%	55%
Vol Right, %	14%	85%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	97	226	308
LT Vol	0	35	140
Through Vol	83	0	168
RT Vol	14	191	0
Lane Flow Rate	108	251	342
Geometry Grp	1	1	1
Degree of Util (X)	0.145	0.316	0.45
Departure Headway (Hd)	4.841	4.527	4.737
Convergence, Y/N	Yes	Yes	Yes
Cap	735	791	756
Service Time	2.905	2.571	2.789
HCM Lane V/C Ratio	0.147	0.317	0.452
HCM Control Delay	8.7	9.7	11.6
HCM Lane LOS	A	A	B
HCM 95th-tile Q	0.5	1.4	2.3

6038 Ottawa St PM Peak Hour Existing

Synchro 10 Light Report
Page 2

Appendix D

Collision Data

Accident Date	Accident Year	Accident Time	Location	Environment Condition	Light	Traffic Control	Traffic Control Condition	Classification Of Accident	Initial Impact Type	Road Surface Condition	# Vehicles	# Motorcycles	# Bicycles	# Pedestrians
2018-08-08	2018	13:01	MCBEAN ST @ OTTAWA ST (0000133)	01 - Clear	01 - Daylight	02 - Stop sign	0	02 - Non-fatal injury	02 - Angle	01 - Dry	0	1	0	0
2021-11-24	2021	7:44	KING ST @ OTTAWA ST (0000369)	01 - Clear	01 - Daylight	02 - Stop sign	0	03 - P.D. only	02 - Angle	01 - Dry	0	0	0	0
2018-09-15	2018	14:19	EAGLESON RD/MCCORDICK RD @ BROPHY DR (0000160)	01 - Clear	01 - Daylight	02 - Stop sign	0	02 - Non-fatal injury	07 - SMV other	01 - Dry	0	1	0	0
2018-09-29	2018	20:30	EAGLESON RD/MCCORDICK RD @ BROPHY DR (0000160)	01 - Clear	07 - Dark	02 - Stop sign	0	03 - P.D. only	07 - SMV other	01 - Dry	0	0	0	0
2020-07-09	2020	9:40	EAGLESON RD btwn BROPHY DR & OTTAWA ST (____3ZA4ZN)	01 - Clear	01 - Daylight	10 - No control	0	02 - Non-fatal injury	03 - Rear end	01 - Dry	0	0	0	0
2021-07-30	2021	20:32	EAGLESON RD btwn BROPHY DR & OTTAWA ST (____3ZA4ZN)	01 - Clear	05 - Dusk	10 - No control	0	02 - Non-fatal injury	07 - SMV other	01 - Dry	0	0	0	0
2022-01-06	2022	17:45	EAGLESON RD btwn BROPHY DR & OTTAWA ST (____3ZA4ZN)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	07 - SMV other	01 - Dry	0	0	0	0

Appendix E

MMLOS Analysis

Multi-Modal Level of Service - Segments Form

Consultant Scenario Comments	CGH Transportation Inc.	Project Date	2023-080
	Existing/Future		2024-12-06

SEGMENTS		Street A	Eagleson	Ottawa	
			Rd	St	
Pedestrian	Sidewalk Width		no sidewalk	no sidewalk	
	Boulevard Width		n/a	n/a	
	Avg Daily Curb Lane Traffic Volume		> 3000	≤ 3000	
	Operating Speed		> 60 km/h	> 50 to 60 km/h	
	On-Street Parking		no	no	
	Exposure to Traffic PLoS		F	F	
	Effective Sidewalk Width				
	Pedestrian Volume				
	Crowding PLoS		-	-	
Level of Service	-	-			
Bicycle	Type of Cycling Facility		Mixed Traffic	Mixed Traffic	
	Number of Travel Lanes		2-3 lanes total	2-3 lanes total	
	Operating Speed		≥ 60 km/h	≥ 50 to 60 km/h	
	# of Lanes & Operating Speed LoS		F	E	
	Bike Lane (+ Parking Lane) Width				
	Bike Lane Width LoS		-	-	
	Bike Lane Blockages				
	Blockage LoS		-	-	
	Median Refuge Width (no median = < 1.8 m)		< 1.8 m refuge	< 1.8 m refuge	
	No. of Lanes at Unsignalized Crossing		≤ 3 lanes	≤ 3 lanes	
	Sidestreet Operating Speed		≤ 40 km/h	≤ 40 km/h	
	Unsignalized Crossing - Lowest LoS		A	A	
	Level of Service		F	E	
	Transit		Facility Type		
Friction or Ratio Transit:Posted Speed					
Level of Service		-	-		
Truck	Truck Lane Width		> 3.7 m	> 3.7 m	
	Travel Lanes per Direction		1	1	
	Level of Service		B	B	
Auto	Level of Service	Not Applicable			

Appendix F

TDM Checklist

TDM Measures Checklist:

Residential Developments (multi-family, condominium or subdivision)

Legend	
BASIC	The measure is generally feasible and effective, and in most cases would benefit the development and its users
BETTER	The measure could maximize support for users of sustainable modes, and optimize development performance
★	The measure is one of the most dependably effective tools to encourage the use of sustainable modes

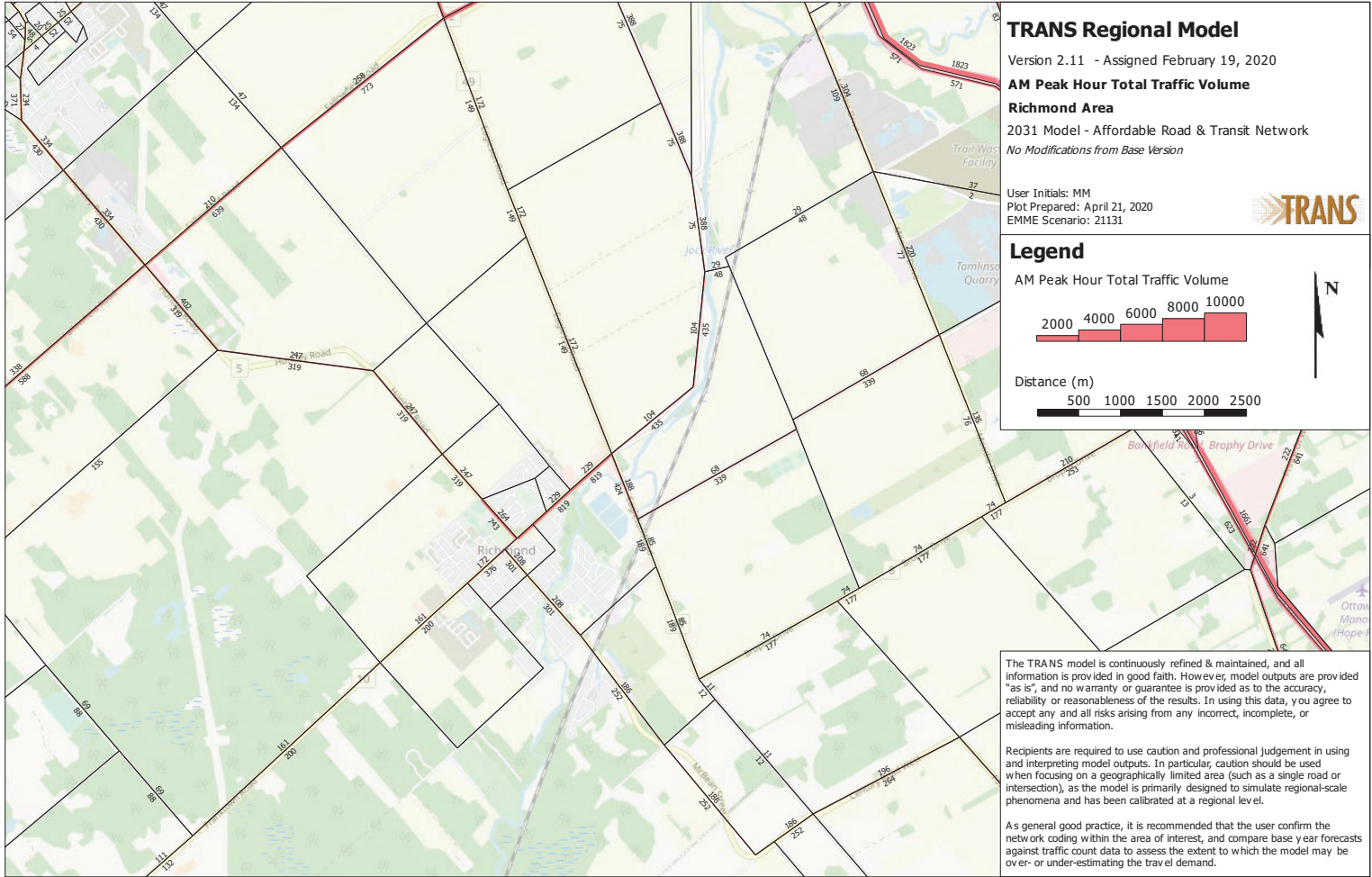
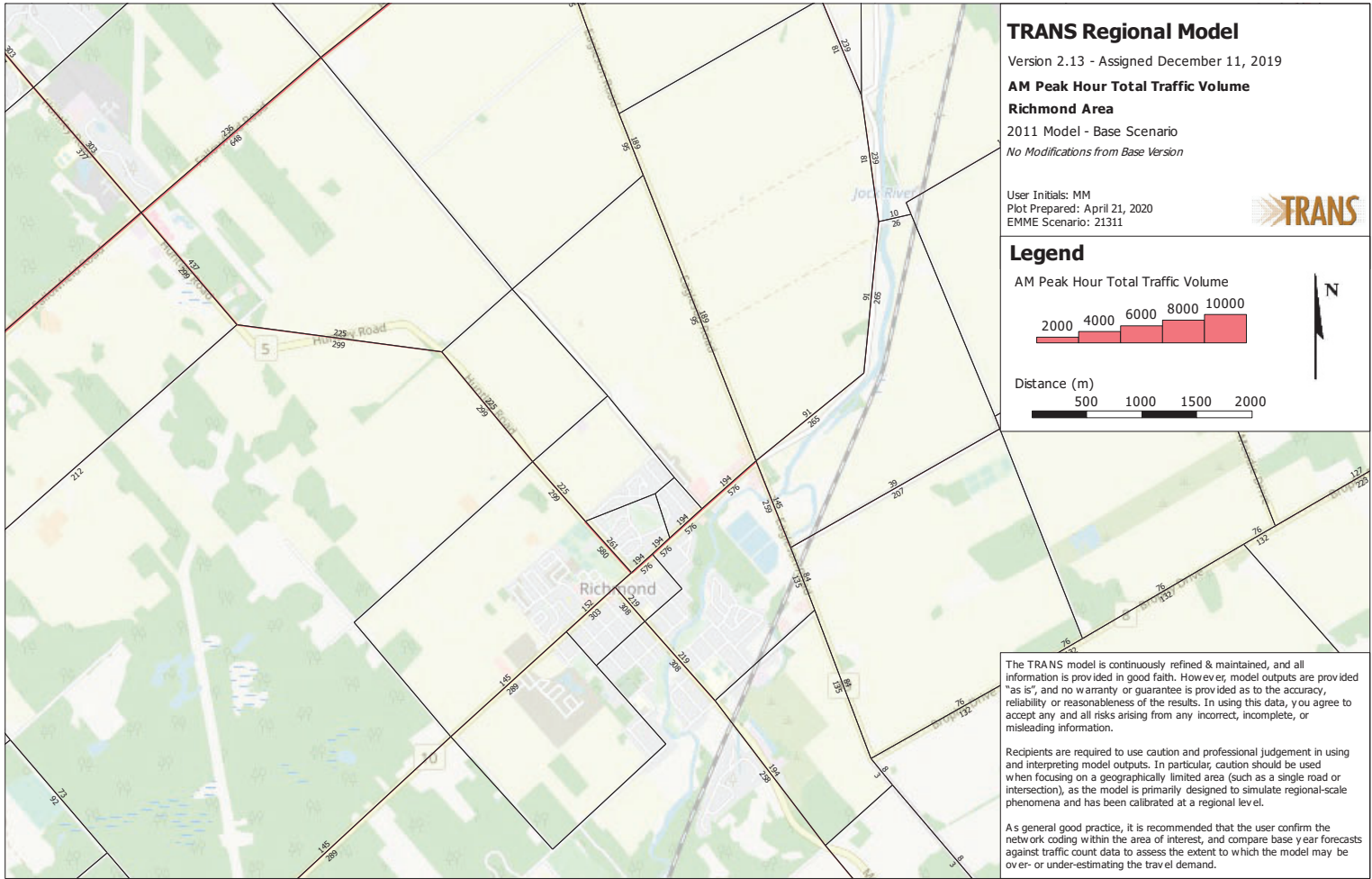
TDM measures: Residential developments		Check if proposed & add descriptions
1. TDM PROGRAM MANAGEMENT		
1.1 Program coordinator		
BASIC ★	1.1.1 Designate an internal coordinator, or contract with an external coordinator	<input type="checkbox"/>
1.2 Travel surveys		
BETTER	1.2.1 Conduct periodic surveys to identify travel-related behaviours, attitudes, challenges and solutions, and to track progress	<input type="checkbox"/>
2. WALKING AND CYCLING		
2.1 Information on walking/cycling routes & destinations		
BASIC	2.1.1 Display local area maps with walking/cycling access routes and key destinations at major entrances (<i>multi-family, condominium</i>)	<input type="checkbox"/>
2.2 Bicycle skills training		
BETTER	2.2.1 Offer on-site cycling courses for residents, or subsidize off-site courses	<input type="checkbox"/>

TDM measures: Residential developments		Check if proposed & add descriptions
3. TRANSIT		
3.1 Transit information		
BASIC	3.1.1 Display relevant transit schedules and route maps at entrances (<i>multi-family, condominium</i>)	<input type="checkbox"/>
BETTER	3.1.2 Provide real-time arrival information display at entrances (<i>multi-family, condominium</i>)	<input type="checkbox"/>
3.2 Transit fare incentives		
BASIC ★	3.2.1 Offer PRESTO cards preloaded with one monthly transit pass on residence purchase/move-in, to encourage residents to use transit	<input type="checkbox"/>
BETTER	3.2.2 Offer at least one year of free monthly transit passes on residence purchase/move-in	<input type="checkbox"/>
3.3 Enhanced public transit service		
BETTER ★	3.3.1 Contract with OC Transpo to provide early transit services until regular services are warranted by occupancy levels (<i>subdivision</i>)	<input type="checkbox"/>
3.4 Private transit service		
BETTER	3.4.1 Provide shuttle service for seniors homes or lifestyle communities (e.g. scheduled mall or supermarket runs)	<input type="checkbox"/>
4. CARSHARING & BIKESHARING		
4.1 Bikeshare stations & memberships		
BETTER	4.1.1 Contract with provider to install on-site bikeshare station (<i>multi-family</i>)	<input type="checkbox"/>
BETTER	4.1.2 Provide residents with bikeshare memberships, either free or subsidized (<i>multi-family</i>)	<input type="checkbox"/>
4.2 Carshare vehicles & memberships		
BETTER	4.2.1 Contract with provider to install on-site carshare vehicles and promote their use by residents	<input type="checkbox"/>
BETTER	4.2.2 Provide residents with carshare memberships, either free or subsidized	<input type="checkbox"/>
5. PARKING		
5.1 Priced parking		
BASIC ★	5.1.1 Unbundle parking cost from purchase price (<i>condominium</i>)	<input type="checkbox"/>
BASIC ★	5.1.2 Unbundle parking cost from monthly rent (<i>multi-family</i>)	<input type="checkbox"/>

TDM measures: <i>Residential developments</i>		Check if proposed & add descriptions
6. TDM MARKETING & COMMUNICATIONS		
6.1 Multimodal travel information		
BASIC ★	6.1.1 Provide a multimodal travel option information package to new residents	<input checked="" type="checkbox"/>
6.2 Personalized trip planning		
BETTER ★	6.2.1 Offer personalized trip planning to new residents	<input type="checkbox"/>

Appendix G

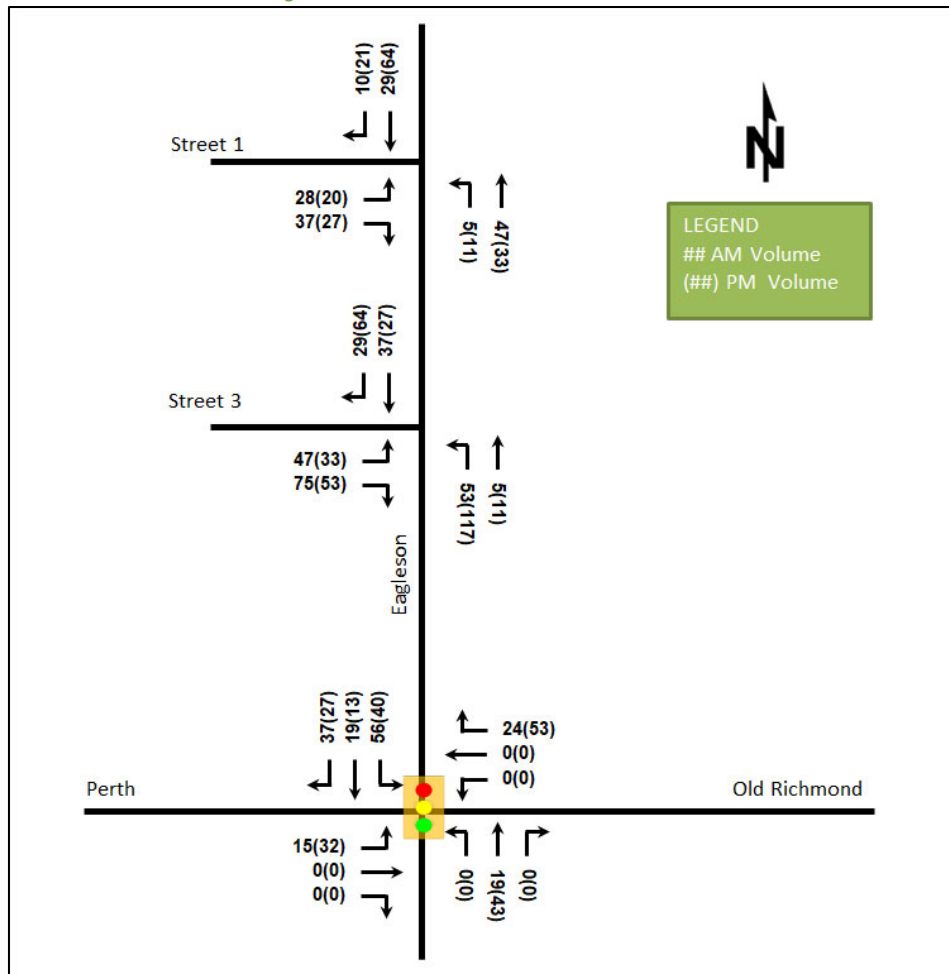
TRANS Model Plots



Appendix H

Background Development Volumes

Figure 9: New Site Generation Auto Volumes



5 Exemption Review

Table 13 summarizes the exemptions for this TIA.

Appendix I

Synchro Intersection Worksheets – 2032 Future Background Conditions

HCM 2010 AWSC

2: McCordick/Eagleson & Brophy

10-03-2024

Intersection	
Intersection Delay, s/veh	9.7
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	4	172	171	30	203	88
Future Vol, veh/h	4	172	171	30	203	88
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	172	171	30	203	88
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	8.8	9.2	10.6
HCM LOS	A	A	B

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	2%	70%
Vol Thru, %	85%	0%	30%
Vol Right, %	15%	98%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	201	176	291
LT Vol	0	4	203
Through Vol	171	0	88
RT Vol	30	172	0
Lane Flow Rate	201	176	291
Geometry Grp	1	1	1
Degree of Util (X)	0.256	0.219	0.38
Departure Headway (Hd)	4.584	4.481	4.702
Convergence, Y/N	Yes	Yes	Yes
Cap	782	799	762
Service Time	2.628	2.522	2.744
HCM Lane V/C Ratio	0.257	0.22	0.382
HCM Control Delay	9.2	8.8	10.6
HCM Lane LOS	A	A	B
HCM 95th-tile Q	1	0.8	1.8

HCM 2010 TWSC

1: Eagleson & Ottawa

10-03-2024

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T	T	
Traffic Vol, veh/h	107	48	55	190	164	82
Future Vol, veh/h	107	48	55	190	164	82
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	107	48	55	190	164	82

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	505	205	246
Stage 1	205	-	-
Stage 2	300	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	527	836	1320
Stage 1	829	-	-
Stage 2	752	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	502	836	1320
Mov Cap-2 Maneuver	502	-	-
Stage 1	790	-	-
Stage 2	752	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.6	1.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT EBLn1	SBT	SBR
Capacity (veh/h)	1320	-	573	-
HCM Lane V/C Ratio	0.042	-	0.271	-
HCM Control Delay (s)	7.8	0	13.6	-
HCM Lane LOS	A	A	B	-
HCM 95th %tile Q(veh)	0.1	-	1.1	-

HCM 2010 TWSC
1: Eagleson & Ottawa

10-03-2024

Intersection						
Int Delay, s/veh	2.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			↑	↑	
Traffic Vol, veh/h	56	30	37	236	211	76
Future Vol, veh/h	56	30	37	236	211	76
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	56	30	37	236	211	76

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	559	249	287
Stage 1	249	-	-
Stage 2	310	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	490	790	1275
Stage 1	792	-	-
Stage 2	744	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	474	790	1275
Mov Cap-2 Maneuver	474	-	-
Stage 1	766	-	-
Stage 2	744	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.7	1.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1275	-	551	-	-
HCM Lane V/C Ratio	0.029	-	0.156	-	-
HCM Control Delay (s)	7.9	0	12.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.6	-	-

HCM 2010 TWSC
3: McBean & Ottawa

10-03-2024

Intersection												
Int Delay, s/veh	4.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	11	2	19	0	40	1	82	29	132	68	2
Future Vol, veh/h	3	11	2	19	0	40	1	82	29	132	68	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	11	2	19	0	40	1	82	29	132	68	2

Major/Minor	Minor2	Minor1	Major1	Major2
Conflicting Flow All	452	446	69	439
Stage 1	333	333	-	99
Stage 2	119	113	-	340
Critical Hdwy	7.12	6.52	6.22	7.12
Critical Hdwy Stg 1	6.12	5.52	-	6.12
Critical Hdwy Stg 2	6.12	5.52	-	6.12
Follow-up Hdwy	3.518	4.018	3.318	3.518
Pot Cap-1 Maneuver	518	507	994	528
Stage 1	681	644	-	907
Stage 2	885	802	-	675
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	461	459	994	480
Mov Cap-2 Maneuver	461	459	-	480
Stage 1	680	584	-	906
Stage 2	847	801	-	599

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.5	10.4	0.1	5
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1531	-	-	493	726	1479	-	-
HCM Lane V/C Ratio	0.001	-	-	0.032	0.081	0.089	-	-
HCM Control Delay (s)	7.4	0	-	12.5	10.4	7.7	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.3	0.3	-	-

HCM 2010 TWSC
3: McBean & Ottawa

10-03-2024

Intersection												
Int Delay, s/veh	3.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	2	4	1	15	15	30	2	71	14	32	91	4
Future Vol, veh/h	2	4	1	15	15	30	2	71	14	32	91	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	4	1	15	15	30	2	71	14	32	91	4

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	262	246	93	242	241	78	95	0	0	85	0	0
Stage 1	157	157	-	82	82	-	-	-	-	-	-	-
Stage 2	105	89	-	160	159	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	691	656	964	712	660	983	1499	-	-	1512	-	-
Stage 1	845	768	-	926	827	-	-	-	-	-	-	-
Stage 2	901	821	-	842	766	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	647	641	964	696	645	983	1499	-	-	1512	-	-
Mov Cap-2 Maneuver	647	641	-	696	645	-	-	-	-	-	-	-
Stage 1	844	751	-	925	826	-	-	-	-	-	-	-
Stage 2	857	820	-	818	749	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.4	9.9	0.2	1.9
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1499	-	-	675	797	1512	-	-
HCM Lane V/C Ratio	0.001	-	-	0.01	0.075	0.021	-	-
HCM Control Delay (s)	7.4	0	-	10.4	9.9	7.4	0	-
HCM Lane LOS	A	A	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.2	0.1	-	-

6038 Ottawa St PM Peak Hour FB2032

Synchro 10 Light Report
Page 3

HCM 2010 AWSC
2: McCordick/Eagleson & Brophy

10-03-2024

Intersection	
Intersection Delay, s/veh	10.9
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Vol, veh/h	35	278	106	14	153	174
Future Vol, veh/h	35	278	106	14	153	174
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	35	278	106	14	153	174
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	10.5	9.1	11.9
HCM LOS	B	A	B

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	11%	47%
Vol Thru, %	88%	0%	53%
Vol Right, %	12%	89%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	120	313	327
LT Vol	0	35	153
Through Vol	106	0	174
RT Vol	14	278	0
Lane Flow Rate	120	313	327
Geometry Grp	1	1	1
Degree of Util (X)	0.167	0.392	0.445
Departure Headway (Hd)	4.999	4.509	4.899
Convergence, Y/N	Yes	Yes	Yes
Cap	710	795	729
Service Time	3.082	2.563	2.969
HCM Lane V/C Ratio	0.169	0.394	0.449
HCM Control Delay	9.1	10.5	11.9
HCM Lane LOS	A	B	B
HCM 95th-tile Q	0.6	1.9	2.3

6038 Ottawa St PM Peak Hour FB2032

Synchro 10 Light Report
Page 2

Appendix J

Signalization Warrants

Eagleson Road @ Ottawa Street
Future Background 2032

Justification #7

Justification	Description	Minimum Requirement		Minimum Requirement		Compliance		Signal	
		1 Lane Highway		2 or More Lanes		Sectional			Entire %
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	323	67%	67%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	90	75%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	263	55%	55%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	41	82%		

Notes

1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, $AHV = PM/2$ or $(AM + PM) / 4$, including amplification factors
4. T-intersection factor corrected, applies only to 1B

Eagleson Road @ Ottawa Street
Future Background 2037

Justification #7

Justification	Description	Minimum Requirement		Minimum Requirement		Compliance		Signal	
		1 Lane Highway		2 or More Lanes		Sectional			Entire %
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	332	69%	69%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	90	75%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	272	57%	57%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	41	82%		

Notes

1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, $AHV = PM/2$ or $(AM + PM) / 4$, including amplification factors
4. T-intersection factor corrected, applies only to 1B

Eagleson Road @ Ottawa Street
Future Total 2032

Justification #7

Justification	Description	Minimum Requirement		Minimum Requirement		Compliance		Signal	
		1 Lane Highway		2 or More Lanes		Sectional			Entire %
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	518	108%	100%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	120	100%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	438	91%	91%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	52	103%		

Notes

1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, $AHV = PM/2$ or $(AM + PM) / 4$, including amplification factors
4. T-intersection factor corrected, applies only to 1B

Eagleson Road @ Ottawa Street
Future Total 2037

Justification #7

Justification	Description	Minimum Requirement		Minimum Requirement		Compliance		Signal	
		1 Lane Highway		2 or More Lanes		Sectional			Entire %
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	527	110%	100%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	120	100%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	447	93%	93%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	52	103%		

Notes

1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, $AHV = PM/2$ or $(AM + PM) / 4$, including amplification factors
4. T-intersection factor corrected, applies only to 1B

Eagleson Road @ Brophy Drive
Future Total 2037

Justification #7

Justification	Description	Minimum Requirement		Minimum Requirement		Compliance		Entire %	Signal
		1 Lane Highway		2 or More Lanes		Sectional			
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	421	88%	88%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	216	180%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	277	58%	20%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	10	20%		

Notes

1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, $AHV = PM/2$ or $(AM + PM) / 4$, including amplification factors
4. T-intersection factor corrected, applies only to 1B

McBean Street @ Ottawa Street
Future Total 2037

Justification #7

Justification	Description	Minimum Requirement		Minimum Requirement		Compliance		Entire %	Signal
		1 Lane Highway		2 or More Lanes		Sectional			
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	343	72%	46%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	55	46%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	288	60%	45%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	22	45%		

Notes

1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, $AHV = PM/2$ or $(AM + PM) / 4$, including amplification factors
4. T-intersection factor corrected, applies only to 1B

Eagleson Road @ New Collector
Future Total 2032

Justification #7

Justification	Description	Minimum Requirement		Minimum Requirement		Compliance		Signal	
		1 Lane Highway		2 or More Lanes		Sectional			Entire %
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	476	99%	99%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	188	157%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	351	73%	73%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	97	195%		

Notes

1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, $AHV = PM/2$ or $(AM + PM) / 4$, including amplification factors
4. T-intersection factor corrected, applies only to 1B

Eagleson Road @ New Collector
Future Total 2037

Justification #7

Justification	Description	Minimum Requirement		Minimum Requirement		Compliance		Signal	
		1 Lane Highway		2 or More Lanes		Sectional			Entire %
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	488	102%	102%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	188	157%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	362	75%	75%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	97	195%		

Notes

1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, $AHV = PM/2$ or $(AM + PM) / 4$, including amplification factors
4. T-intersection factor corrected, applies only to 1B

McBean Street @ New Collector
 Future Total 2032/Future Total 2037

Justification #7

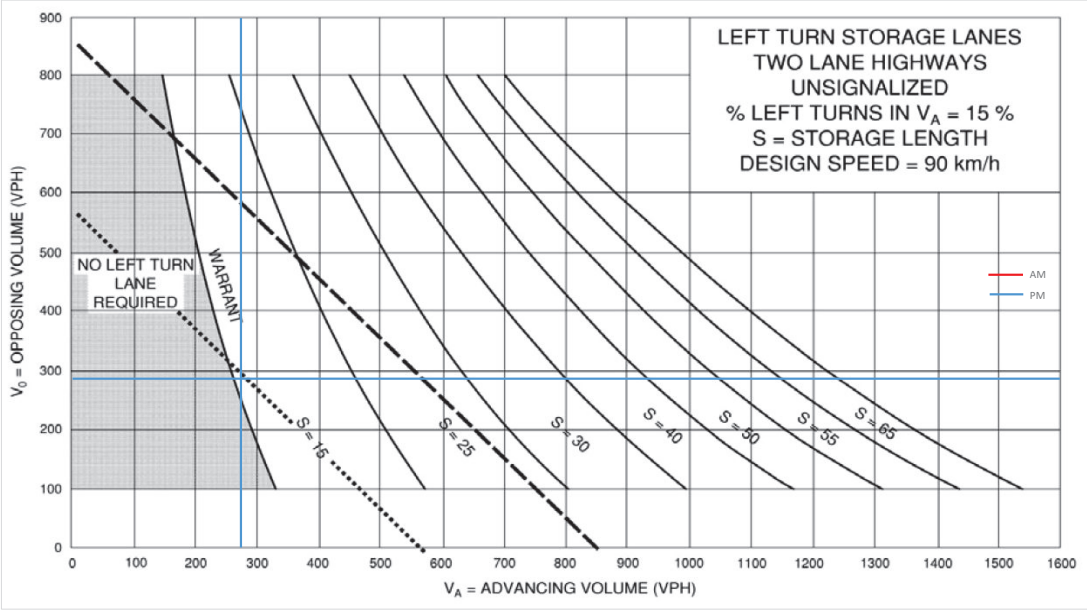
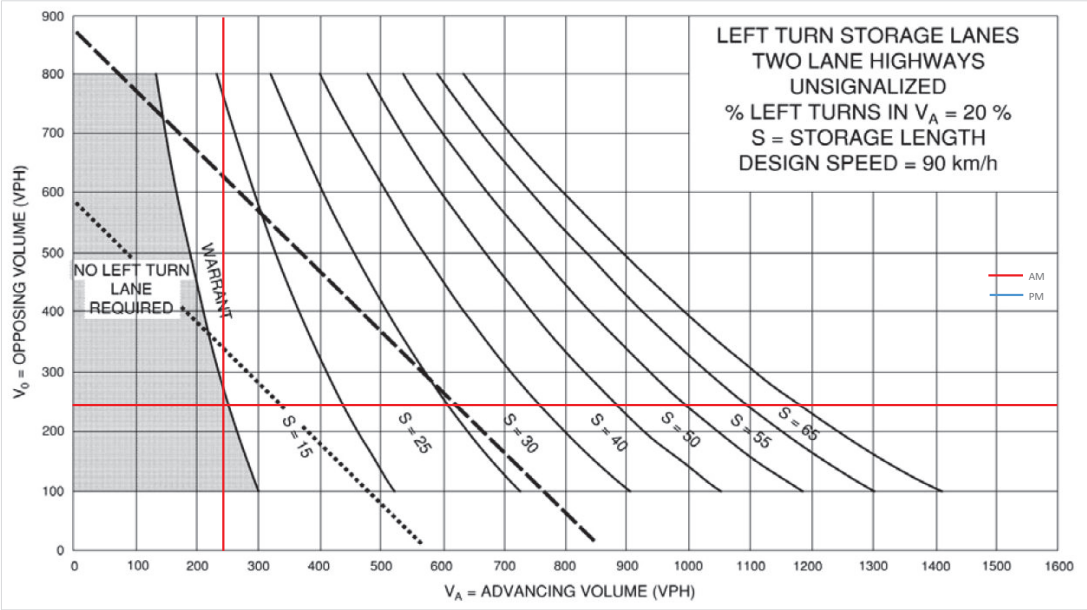
Justification	Description	Minimum Requirement		Minimum Requirement		Compliance		Signal	
		1 Lane Highway		2 or More Lanes		Sectional			Entire %
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	244	51%	51%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	120	100%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	164	34%	9%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	5	9%		

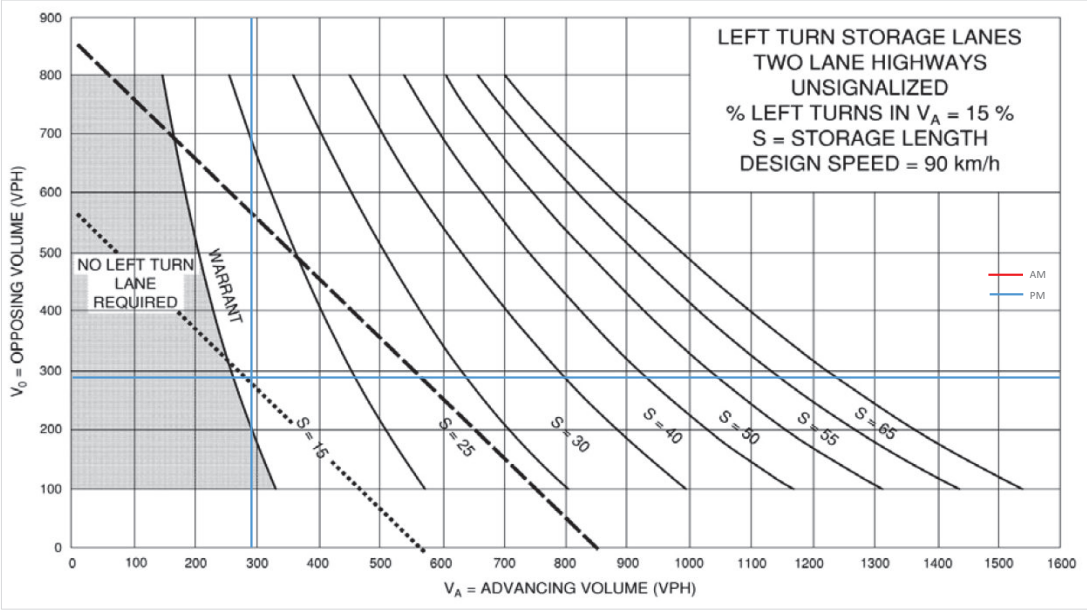
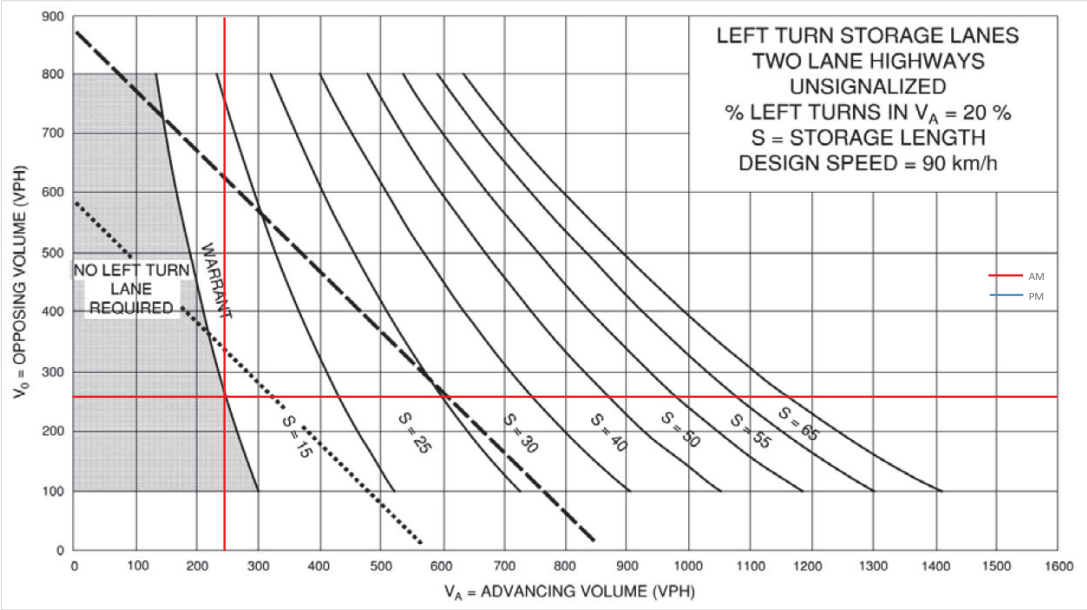
Notes

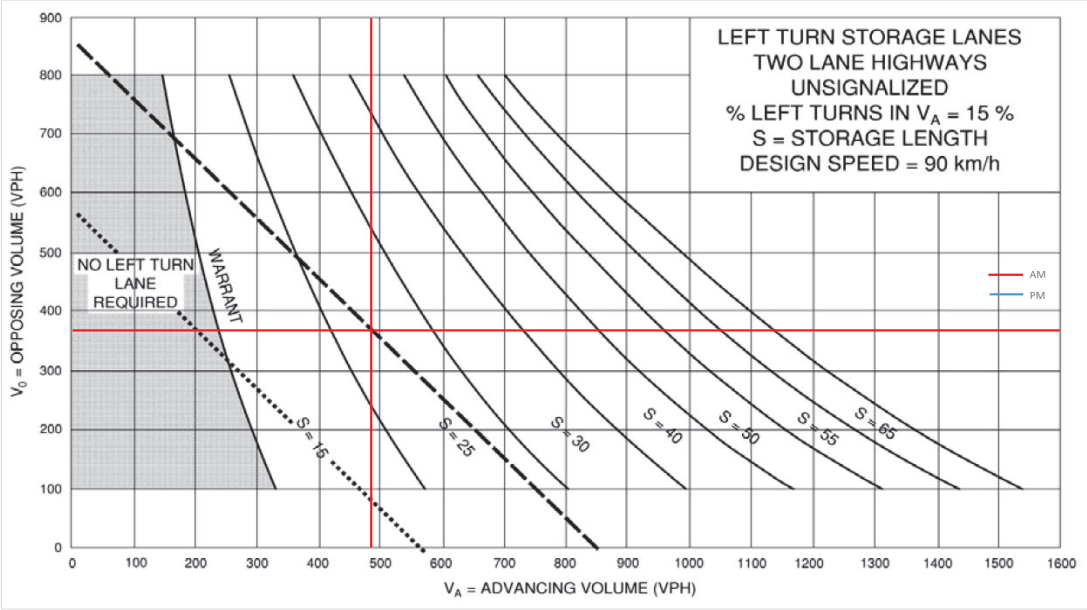
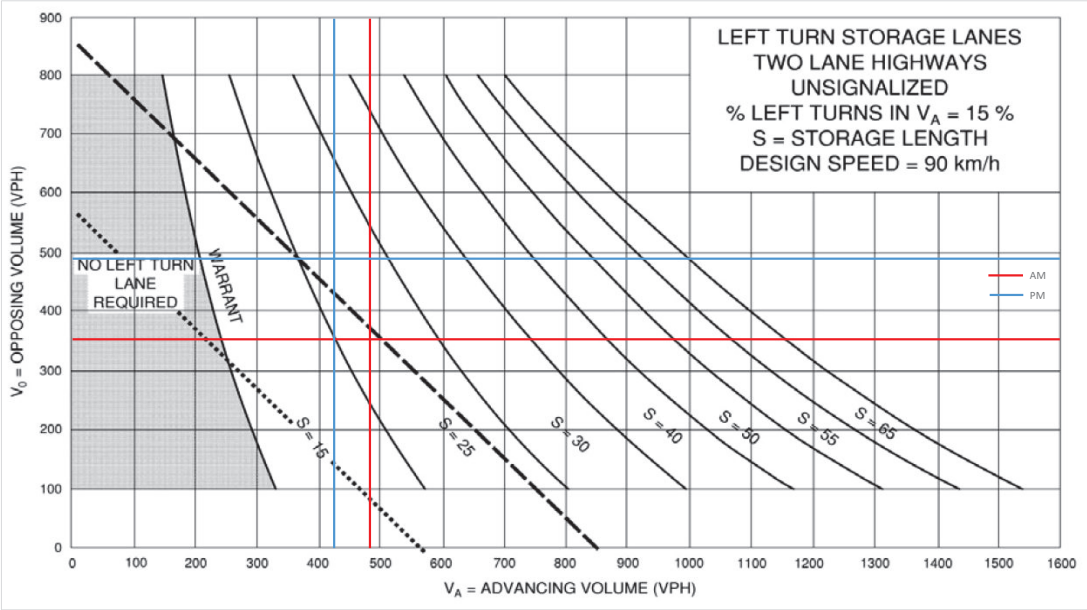
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, $AHV = PM/2$ or $(AM + PM) / 4$, including amplification factors
4. T-intersection factor corrected, applies only to 1B

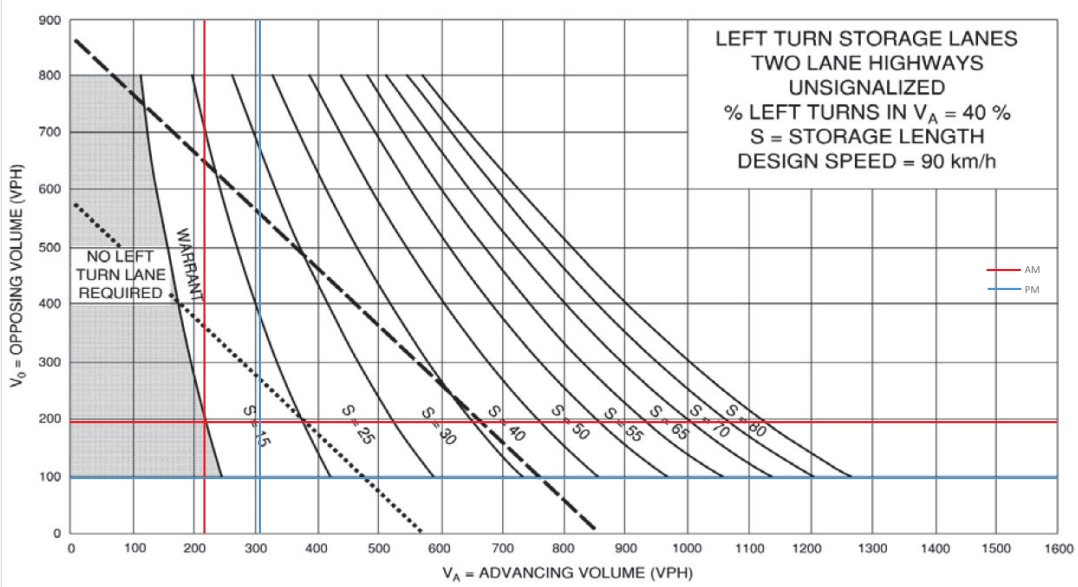
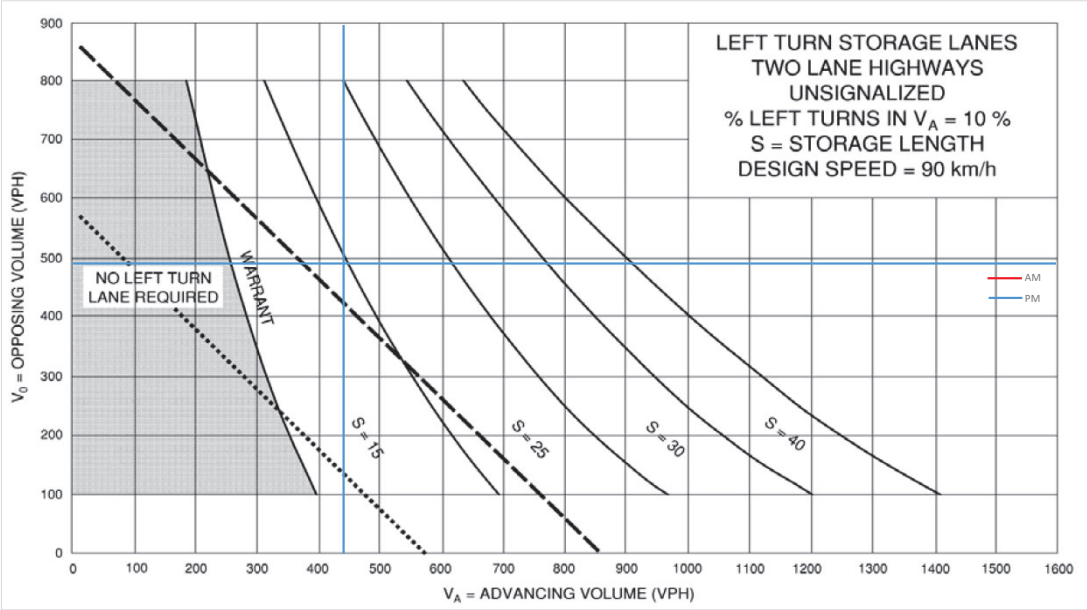
Appendix K

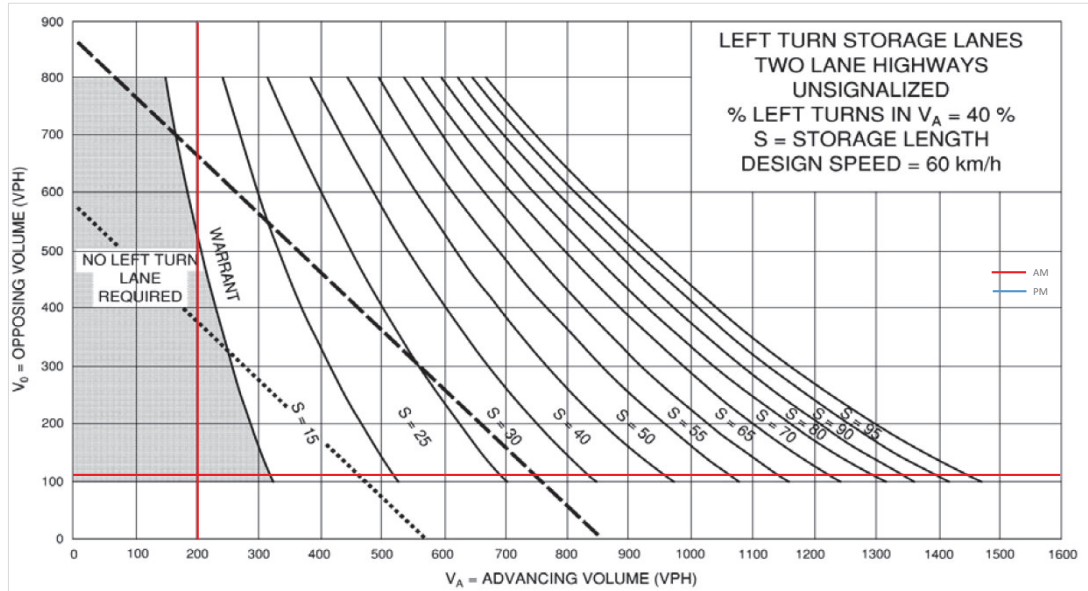
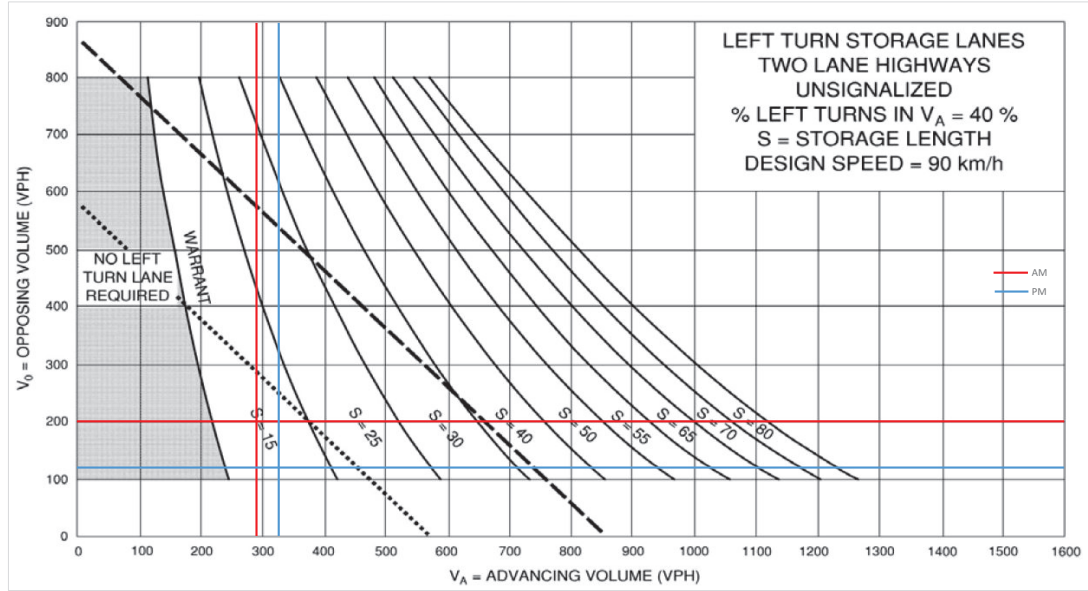
Left-Turn Lane Warrants

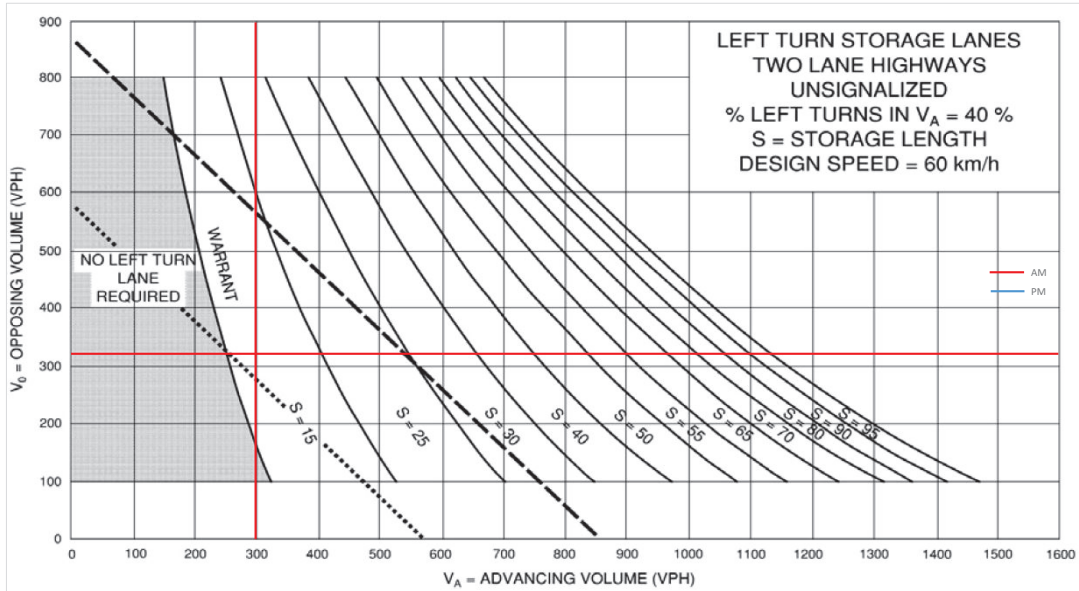
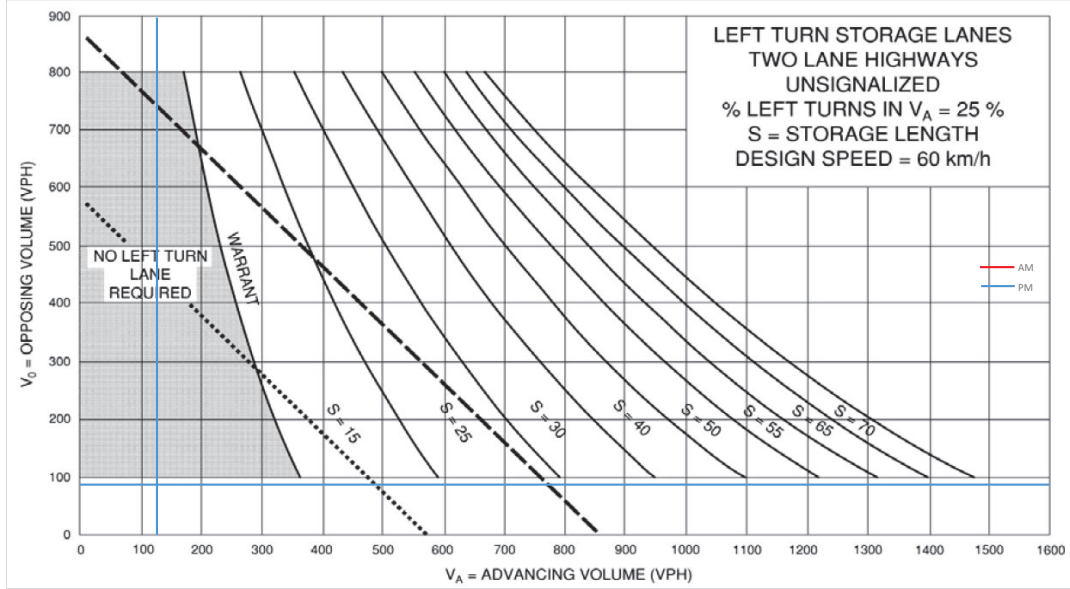


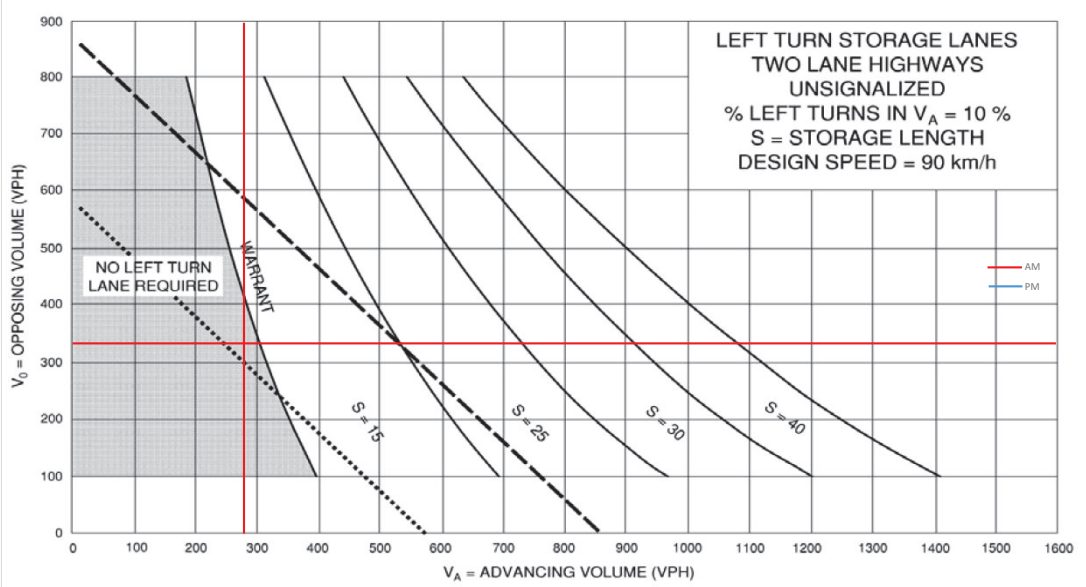
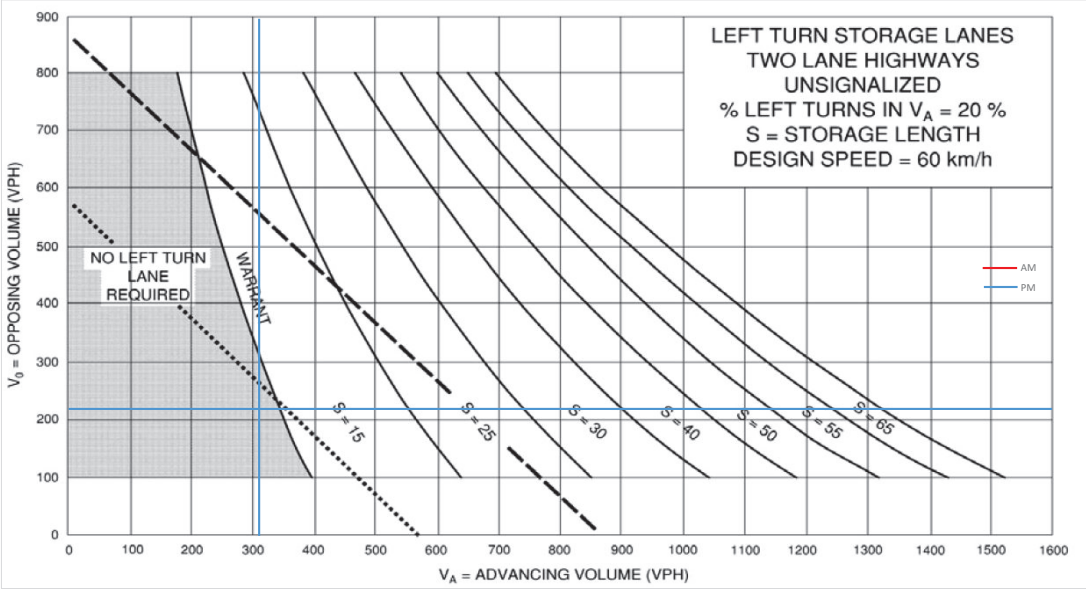


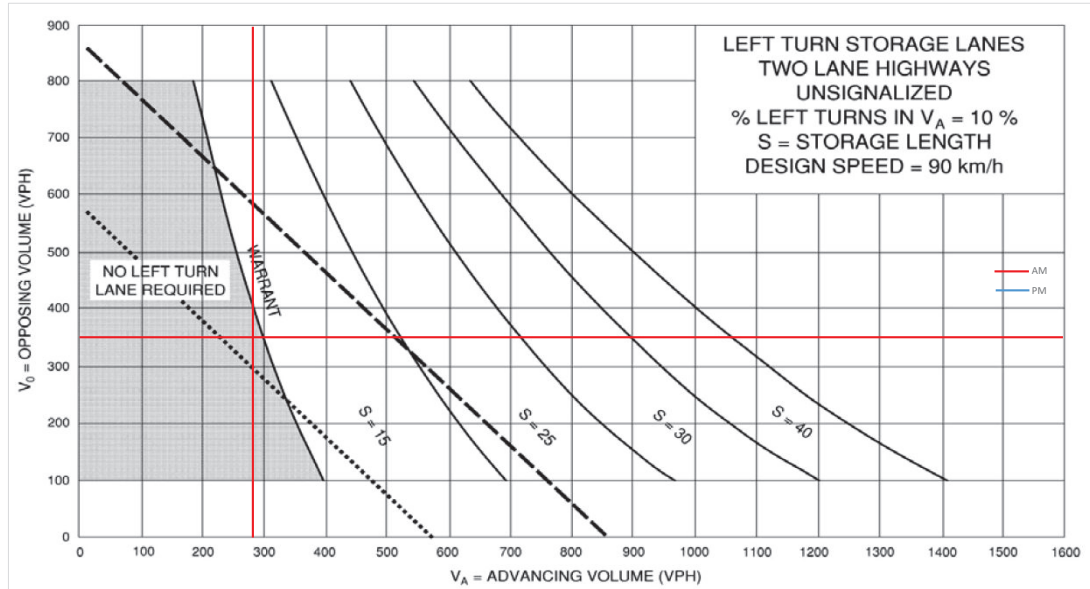
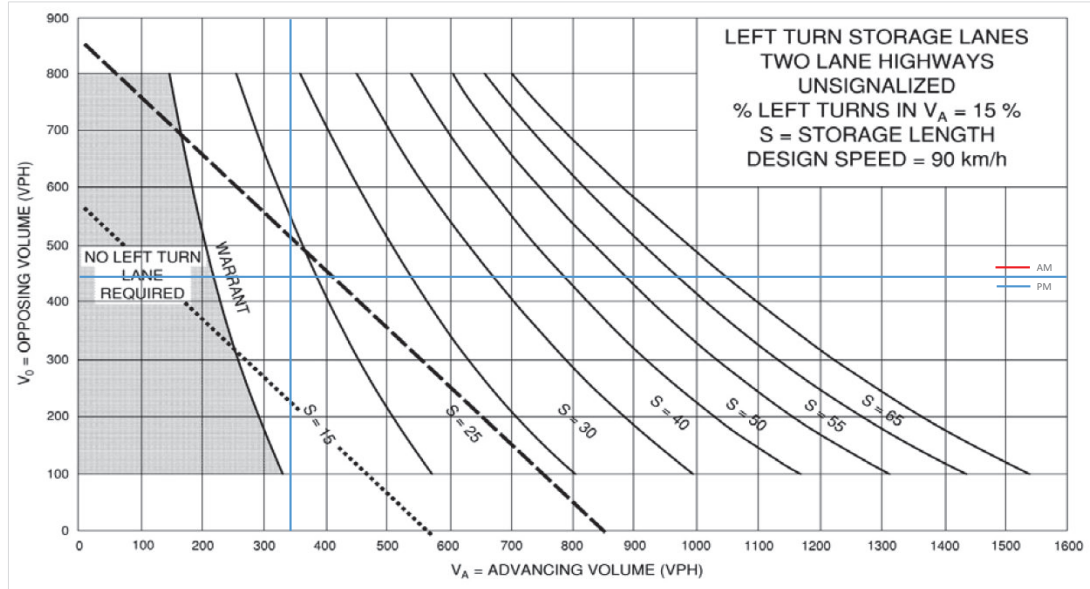


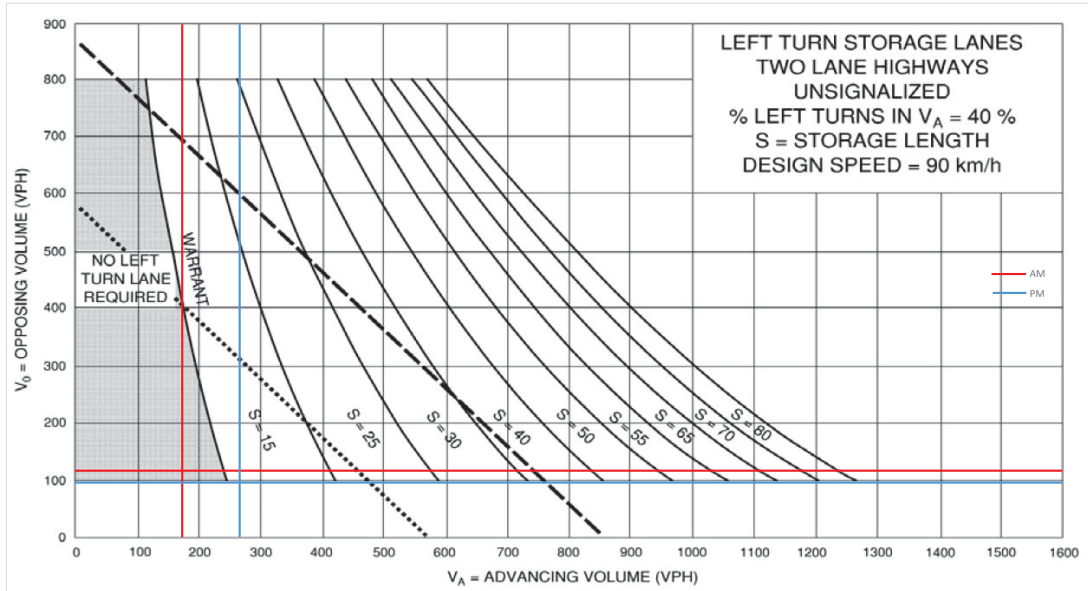
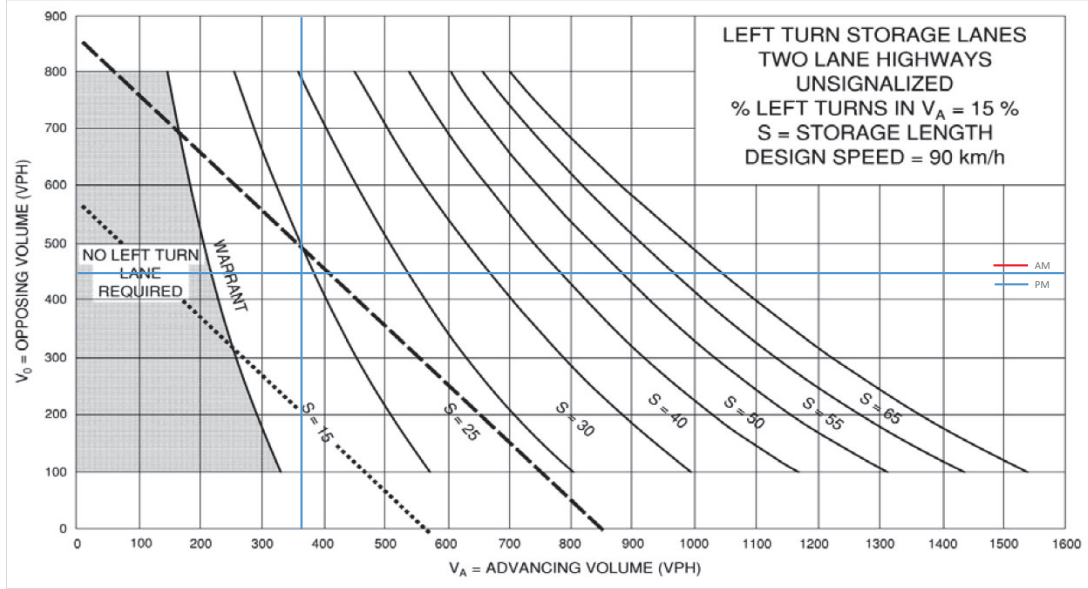












Appendix L

Synchro Intersection Worksheets – 2037 Future Background Conditions

HCM 2010 AWSC

2: McCordick/Eagleson & Brophy

10-03-2024

Intersection						
Intersection Delay, s/veh	10					
Intersection LOS	A					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	4	172	173	30	217	96
Future Vol, veh/h	4	172	173	30	217	96
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	172	173	30	217	96
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	8.9	9.3	11
HCM LOS	A	A	B

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	2%	69%
Vol Thru, %	85%	0%	31%
Vol Right, %	15%	98%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	203	176	313
LT Vol	0	4	217
Through Vol	173	0	96
RT Vol	30	172	0
Lane Flow Rate	203	176	313
Geometry Grp	1	1	1
Degree of Util (X)	0.26	0.222	0.409
Departure Headway (Hd)	4.615	4.536	4.708
Convergence, Y/N	Yes	Yes	Yes
Cap	775	788	761
Service Time	2.662	2.58	2.753
HCM Lane V/C Ratio	0.262	0.223	0.411
HCM Control Delay	9.3	8.9	11
HCM Lane LOS	A	A	B
HCM 95th-tile Q	1	0.8	2

HCM 2010 TWSC

1: Eagleson & Ottawa

10-03-2024

Intersection						
Int Delay, s/veh	3.9					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T	T	
Traffic Vol, veh/h	107	48	55	192	178	82
Future Vol, veh/h	107	48	55	192	178	82
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	107	48	55	192	178	82

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	521	219	260
Stage 1	219	-	-
Stage 2	302	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	516	821	1304
Stage 1	817	-	-
Stage 2	750	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	492	821	1304
Mov Cap-2 Maneuver	492	-	-
Stage 1	779	-	-
Stage 2	750	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.8	1.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1304	-	562	-	-
HCM Lane V/C Ratio	0.042	-	0.276	-	-
HCM Control Delay (s)	7.9	0	13.8	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	1.1	-	-

HCM 2010 TWSC
1: Eagleson & Ottawa

10-03-2024

Intersection						
Int Delay, s/veh	2.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			↑	↑	
Traffic Vol, veh/h	56	30	37	253	213	76
Future Vol, veh/h	56	30	37	253	213	76
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	56	30	37	253	213	76

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	578	251	289
Stage 1	251	-	-
Stage 2	327	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	478	788	1273
Stage 1	791	-	-
Stage 2	731	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	462	788	1273
Mov Cap-2 Maneuver	462	-	-
Stage 1	764	-	-
Stage 2	731	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.9	1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1273	-	540	-	-
HCM Lane V/C Ratio	0.029	-	0.159	-	-
HCM Control Delay (s)	7.9	0	12.9	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.6	-	-

HCM 2010 TWSC
3: McBean & Ottawa

10-03-2024

Intersection												
Int Delay, s/veh	4.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	11	2	19	0	40	1	82	29	132	68	2
Future Vol, veh/h	3	11	2	19	0	40	1	82	29	132	68	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	11	2	19	0	40	1	82	29	132	68	2

Major/Minor	Minor2	Minor1	Major1	Major2
Conflicting Flow All	452	446	69	439
Stage 1	333	333	-	99
Stage 2	119	113	-	340
Critical Hdwy	7.12	6.52	6.22	7.12
Critical Hdwy Stg 1	6.12	5.52	-	6.12
Critical Hdwy Stg 2	6.12	5.52	-	6.12
Follow-up Hdwy	3.518	4.018	3.318	3.518
Pot Cap-1 Maneuver	518	507	994	528
Stage 1	681	644	-	907
Stage 2	885	802	-	675
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	461	459	994	480
Mov Cap-2 Maneuver	461	459	-	480
Stage 1	680	584	-	906
Stage 2	847	801	-	599

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.5	10.4	0.1	5
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1531	-	-	493	726	1479	-	-
HCM Lane V/C Ratio	0.001	-	-	0.032	0.081	0.089	-	-
HCM Control Delay (s)	7.4	0	-	12.5	10.4	7.7	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.3	0.3	-	-

HCM 2010 TWSC
3: McBean & Ottawa

10-03-2024

Intersection												
Int Delay, s/veh	3.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	2	4	1	15	15	30	2	71	14	32	91	4
Future Vol, veh/h	2	4	1	15	15	30	2	71	14	32	91	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	4	1	15	15	30	2	71	14	32	91	4

Major/Minor	Minor2	Minor1	Major1	Major2								
Conflicting Flow All	262	246	93	242	241	78	95	0	0	85	0	0
Stage 1	157	157	-	82	82	-	-	-	-	-	-	-
Stage 2	105	89	-	160	159	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	691	656	964	712	660	983	1499	-	-	1512	-	-
Stage 1	845	768	-	926	827	-	-	-	-	-	-	-
Stage 2	901	821	-	842	766	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	647	641	964	696	645	983	1499	-	-	1512	-	-
Mov Cap-2 Maneuver	647	641	-	696	645	-	-	-	-	-	-	-
Stage 1	844	751	-	925	826	-	-	-	-	-	-	-
Stage 2	857	820	-	818	749	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.4	9.9	0.2	1.9
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1499	-	-	675	797	1512	-	-
HCM Lane V/C Ratio	0.001	-	-	0.01	0.075	0.021	-	-
HCM Control Delay (s)	7.4	0	-	10.4	9.9	7.4	0	-
HCM Lane LOS	A	A	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.2	0.1	-	-

6038 Ottawa St PM Peak Hour FB2037

Synchro 10 Light Report
Page 3

HCM 2010 AWSC
2: McCordick/Eagleson & Brophy

10-03-2024

Intersection	
Intersection Delay, s/veh	11.1
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Vol, veh/h	35	296	115	14	153	176
Future Vol, veh/h	35	296	115	14	153	176
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	35	296	115	14	153	176
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	10.8	9.3	12.1
HCM LOS	B	A	B

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	11%	47%
Vol Thru, %	89%	0%	53%
Vol Right, %	11%	89%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	129	331	329
LT Vol	0	35	153
Through Vol	115	0	176
RT Vol	14	296	0
Lane Flow Rate	129	331	329
Geometry Grp	1	1	1
Degree of Util (X)	0.181	0.417	0.453
Departure Headway (Hd)	5.057	4.536	4.956
Convergence, Y/N	Yes	Yes	Yes
Cap	700	788	721
Service Time	3.149	2.596	3.034
HCM Lane V/C Ratio	0.184	0.42	0.456
HCM Control Delay	9.3	10.8	12.1
HCM Lane LOS	A	B	B
HCM 95th-tile Q	0.7	2.1	2.4

6038 Ottawa St PM Peak Hour FB2037

Synchro 10 Light Report
Page 2

Appendix M

Synchro Intersection Worksheets – 2032 Future Total Conditions

HCM 2010 AWSC

2: McCordick/Eagleson & Brophy

10-03-2024

Intersection	
Intersection Delay, s/veh	10.8
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	4	196	178	30	256	104
Future Vol, veh/h	4	196	178	30	256	104
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	196	178	30	256	104
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	9.4	9.6	12.2
HCM LOS	A	A	B

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	2%	71%
Vol Thru, %	86%	0%	29%
Vol Right, %	14%	98%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	208	200	360
LT Vol	0	4	256
Through Vol	178	0	104
RT Vol	30	196	0
Lane Flow Rate	208	200	360
Geometry Grp	1	1	1
Degree of Util (X)	0.274	0.259	0.479
Departure Headway (Hd)	4.746	4.667	4.789
Convergence, Y/N	Yes	Yes	Yes
Cap	751	766	749
Service Time	2.809	2.724	2.847
HCM Lane V/C Ratio	0.277	0.261	0.481
HCM Control Delay	9.6	9.4	12.2
HCM Lane LOS	A	A	B
HCM 95th-tile Q	1.1	1	2.6

HCM 2010 TWSC

1: Eagleson & Ottawa

10-03-2024

Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T	T	
Traffic Vol, veh/h	133	60	81	401	261	94
Future Vol, veh/h	133	60	81	401	261	94
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	133	60	81	401	261	94

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	871	308	355
Stage 1	308	-	-
Stage 2	563	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	322	732	1204
Stage 1	745	-	-
Stage 2	570	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	294	732	1204
Mov Cap-2 Maneuver	294	-	-
Stage 1	680	-	-
Stage 2	570	-	-

Approach	EB	NB	SB
HCM Control Delay, s	25.9	1.4	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1204	-	361	-	-
HCM Lane V/C Ratio	0.067	-	0.535	-	-
HCM Control Delay (s)	8.2	0	25.9	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0.2	-	3	-	-

HCM 2010 TWSC
6: Eagleson & New Road

10-03-2024

Intersection						
Int Delay, s/veh	7.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔			↑	↑	
Traffic Vol, veh/h	238	69	32	247	226	109
Future Vol, veh/h	238	69	32	247	226	109
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	238	69	32	247	226	109

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	592	281	335
Stage 1	281	-	-
Stage 2	311	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	469	758	1224
Stage 1	767	-	-
Stage 2	743	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	455	758	1224
Mov Cap-2 Maneuver	455	-	-
Stage 1	744	-	-
Stage 2	743	-	-

Approach	EB	NB	SB
HCM Control Delay, s	23	0.9	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1224	-	500	-	-
HCM Lane V/C Ratio	0.026	-	0.614	-	-
HCM Control Delay (s)	8	-	23	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.1	-	4.1	-	-

HCM 2010 TWSC
3: McBean & Ottawa

10-03-2024

Intersection												
Int Delay, s/veh	3.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	11	2	31	0	66	1	267	55	144	153	2
Future Vol, veh/h	3	11	2	31	0	66	1	267	55	144	153	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	11	2	31	0	66	1	267	55	144	153	2

Major/Minor	Minor2	Minor1	Major1	Major2
Conflicting Flow All	772	766	154	746
Stage 1	442	442	-	297
Stage 2	330	324	-	449
Critical Hdwy	7.12	6.52	6.22	7.12
Critical Hdwy Stg 1	6.12	5.52	-	6.12
Critical Hdwy Stg 2	6.12	5.52	-	6.12
Follow-up Hdwy	3.518	4.018	3.318	3.518
Pot Cap-1 Maneuver	317	333	892	330
Stage 1	594	576	-	712
Stage 2	683	650	-	589
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	261	290	892	288
Mov Cap-2 Maneuver	261	290	-	288
Stage 1	593	503	-	711
Stage 2	622	649	-	502

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.2	14.1	0	4
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1425	-	-	310	494	1238	-	-
HCM Lane V/C Ratio	0.001	-	-	0.052	0.196	0.116	-	-
HCM Control Delay (s)	7.5	0	-	17.2	14.1	8.3	0	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.7	0.4	-	-

HCM 2010 TWSC
1: Eagleson & Ottawa

10-03-2024

Intersection						
Int Delay, s/veh	2.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			W	W	
Traffic Vol, veh/h	73	53	54	370	393	99
Future Vol, veh/h	73	53	54	370	393	99
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	73	53	54	370	393	99

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	921	443	492
Stage 1	443	-	-
Stage 2	478	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	300	615	1071
Stage 1	647	-	-
Stage 2	624	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	281	615	1071
Mov Cap-2 Maneuver	281	-	-
Stage 1	606	-	-
Stage 2	624	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20	1.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1071	-	364	-	-
HCM Lane V/C Ratio	0.05	-	0.346	-	-
HCM Control Delay (s)	8.5	0	20	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.2	-	1.5	-	-

HCM 2010 TWSC
7: McBean & New Road

10-03-2024

Intersection						
Int Delay, s/veh	5.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		W			W
Traffic Vol, veh/h	11	185	112	5	85	89
Future Vol, veh/h	11	185	112	5	85	89
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	185	112	5	85	89

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	374	115	0
Stage 1	115	-	-
Stage 2	259	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	627	937	1471
Stage 1	910	-	-
Stage 2	784	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	589	937	1471
Mov Cap-2 Maneuver	589	-	-
Stage 1	910	-	-
Stage 2	736	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.1	0	3.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	907	1471	-
HCM Lane V/C Ratio	-	-	0.216	0.058	-
HCM Control Delay (s)	-	-	10.1	7.6	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.8	0.2	-

HCM 2010 TWSC
3: McBean & Ottawa

10-03-2024

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	2	4	1	38	15	47	2	188	31	55	251	4
Future Vol, veh/h	2	4	1	38	15	47	2	188	31	55	251	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	4	1	38	15	47	2	188	31	55	251	4

Major/Minor	Minor2	Minor1	Major1	Major2								
Conflicting Flow All	602	586	253	574	573	204	255	0	0	219	0	0
Stage 1	363	363	-	208	208	-	-	-	-	-	-	-
Stage 2	239	223	-	366	365	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	412	422	786	430	430	837	1310	-	-	1350	-	-
Stage 1	656	625	-	794	730	-	-	-	-	-	-	-
Stage 2	764	719	-	653	623	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	364	401	786	410	409	837	1310	-	-	1350	-	-
Mov Cap-2 Maneuver	364	401	-	410	409	-	-	-	-	-	-	-
Stage 1	655	596	-	792	729	-	-	-	-	-	-	-
Stage 2	705	718	-	617	594	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.8	13.2	0.1	1.4
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1310	-	-	418	539	1350	-	-
HCM Lane V/C Ratio	0.002	-	-	0.017	0.186	0.041	-	-
HCM Control Delay (s)	7.8	0	-	13.8	13.2	7.8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.7	0.1	-	-

6038 Ottawa St PM Peak Hour Future Total 2032

Synchro 10 Light Report
Page 3

HCM 2010 AWSC
2: McCordick/Eagleson & Brophy

10-03-2024

Intersection	
Intersection Delay, s/veh	12.4
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Vol, veh/h	35	324	120	14	187	184
Future Vol, veh/h	35	324	120	14	187	184
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	35	324	120	14	187	184
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	11.8	9.6	13.9
HCM LOS	B	A	B

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	10%	50%
Vol Thru, %	90%	0%	50%
Vol Right, %	10%	90%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	134	359	371
LT Vol	0	35	187
Through Vol	120	0	184
RT Vol	14	324	0
Lane Flow Rate	134	359	371
Geometry Grp	1	1	1
Degree of Util (X)	0.198	0.465	0.532
Departure Headway (Hd)	5.325	4.76	5.158
Convergence, Y/N	Yes	Yes	Yes
Cap	677	761	705
Service Time	3.336	2.76	3.158
HCM Lane V/C Ratio	0.198	0.472	0.526
HCM Control Delay	9.6	11.8	13.9
HCM Lane LOS	A	B	B
HCM 95th-tile Q	0.7	2.5	3.2

6038 Ottawa St PM Peak Hour Future Total 2032

Synchro 10 Light Report
Page 2

HCM 2010 TWSC
7: McBean & New Road

10-03-2024

Intersection						
Int Delay, s/veh	5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↑			↑
Traffic Vol, veh/h	7	117	87	9	160	107
Future Vol, veh/h	7	117	87	9	160	107
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	117	87	9	160	107

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	519	92	0	0	96
Stage 1	92	-	-	-	-
Stage 2	427	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	517	965	-	-	1498
Stage 1	932	-	-	-	-
Stage 2	658	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	458	965	-	-	1498
Mov Cap-2 Maneuver	458	-	-	-	-
Stage 1	932	-	-	-	-
Stage 2	583	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.6	0	4.6
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	908	1498
HCM Lane V/C Ratio	-	-	0.137	0.107
HCM Control Delay (s)	-	-	9.6	7.7
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0.4

HCM 2010 TWSC
6: Eagleson & New Road

10-03-2024

Intersection						
Int Delay, s/veh	4.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔			↑	↑	
Traffic Vol, veh/h	151	44	59	283	242	205
Future Vol, veh/h	151	44	59	283	242	205
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	151	44	59	283	242	205

Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	746	345	447	0	0
Stage 1	345	-	-	-	-
Stage 2	401	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	381	698	1113	-	-
Stage 1	717	-	-	-	-
Stage 2	676	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	357	698	1113	-	-
Mov Cap-2 Maneuver	357	-	-	-	-
Stage 1	672	-	-	-	-
Stage 2	676	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	22.2	1.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT EBLn1	SBT	SBR
Capacity (veh/h)	1113	-	401	-
HCM Lane V/C Ratio	0.053	-	0.486	-
HCM Control Delay (s)	8.4	-	22.2	-
HCM Lane LOS	A	-	C	-
HCM 95th %tile Q(veh)	0.2	-	2.6	-

Appendix N

Synchro Intersection Worksheets – 2037 Future Total Conditions

HCM 2010 AWSC

2: McCordick/Eagleson & Brophy

10-03-2024

Intersection						
Intersection Delay, s/veh	11.1					
Intersection LOS	B					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	4	196	180	30	270	112
Future Vol, veh/h	4	196	180	30	270	112
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	196	180	30	270	112
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	9.5	9.7	12.8
HCM LOS	A	A	B

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	2%	71%
Vol Thru, %	86%	0%	29%
Vol Right, %	14%	98%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	210	200	382
LT Vol	0	4	270
Through Vol	180	0	112
RT Vol	30	196	0
Lane Flow Rate	210	200	382
Geometry Grp	1	1	1
Degree of Util (X)	0.279	0.262	0.509
Departure Headway (Hd)	4.78	4.723	4.798
Convergence, Y/N	Yes	Yes	Yes
Cap	746	756	749
Service Time	2.845	2.785	2.857
HCM Lane V/C Ratio	0.282	0.265	0.51
HCM Control Delay	9.7	9.5	12.8
HCM Lane LOS	A	A	B
HCM 95th-tile Q	1.1	1	2.9

HCM 2010 TWSC

1: Eagleson & Ottawa

10-03-2024

Intersection						
Int Delay, s/veh	5.6					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T	T	
Traffic Vol, veh/h	133	60	81	403	275	94
Future Vol, veh/h	133	60	81	403	275	94
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	133	60	81	403	275	94

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	887	322	369
Stage 1	322	-	-
Stage 2	565	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	315	719	1190
Stage 1	735	-	-
Stage 2	569	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	287	719	1190
Mov Cap-2 Maneuver	287	-	-
Stage 1	670	-	-
Stage 2	569	-	-

Approach	EB	NB	SB
HCM Control Delay, s	26.8	1.4	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1190	-	353	-	-
HCM Lane V/C Ratio	0.068	-	0.547	-	-
HCM Control Delay (s)	8.2	0	26.8	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0.2	-	3.1	-	-

HCM 2010 TWSC
6: Eagleson & New Road

10-03-2024

Intersection						
Int Delay, s/veh	8.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔			↑	↑	
Traffic Vol, veh/h	238	69	32	250	244	109
Future Vol, veh/h	238	69	32	250	244	109
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	238	69	32	250	244	109

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	613	299	353
Stage 1	299	-	-
Stage 2	314	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	456	741	1206
Stage 1	752	-	-
Stage 2	741	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	442	741	1206
Mov Cap-2 Maneuver	442	-	-
Stage 1	729	-	-
Stage 2	741	-	-

Approach	EB	NB	SB
HCM Control Delay, s	24.3	0.9	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1206	-	486	-	-
HCM Lane V/C Ratio	0.027	-	0.632	-	-
HCM Control Delay (s)	8.1	-	24.3	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.1	-	4.3	-	-

HCM 2010 TWSC
3: McBean & Ottawa

10-03-2024

Intersection												
Int Delay, s/veh	3.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	11	2	31	0	66	1	267	55	144	153	2
Future Vol, veh/h	3	11	2	31	0	66	1	267	55	144	153	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	11	2	31	0	66	1	267	55	144	153	2

Major/Minor	Minor2	Minor1	Major1	Major2
Conflicting Flow All	772	766	154	746
Stage 1	442	442	-	297
Stage 2	330	324	-	449
Critical Hdwy	7.12	6.52	6.22	7.12
Critical Hdwy Stg 1	6.12	5.52	-	6.12
Critical Hdwy Stg 2	6.12	5.52	-	6.12
Follow-up Hdwy	3.518	4.018	3.318	3.518
Pot Cap-1 Maneuver	317	333	892	330
Stage 1	594	576	-	712
Stage 2	683	650	-	589
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	261	290	892	288
Mov Cap-2 Maneuver	261	290	-	288
Stage 1	593	503	-	711
Stage 2	622	649	-	502

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.2	14.1	0	4
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1425	-	-	310	494	1238	-	-
HCM Lane V/C Ratio	0.001	-	-	0.052	0.196	0.116	-	-
HCM Control Delay (s)	7.5	0	-	17.2	14.1	8.3	0	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.7	0.4	-	-

HCM 2010 TWSC
1: Eagleson & Ottawa

10-03-2024

Intersection						
Int Delay, s/veh	2.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			↑	↑	
Traffic Vol, veh/h	73	53	54	387	395	99
Future Vol, veh/h	73	53	54	387	395	99
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	73	53	54	387	395	99

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	940	445	494
Stage 1	445	-	-
Stage 2	495	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	293	613	1070
Stage 1	646	-	-
Stage 2	613	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	274	613	1070
Mov Cap-2 Maneuver	274	-	-
Stage 1	605	-	-
Stage 2	613	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20.5	1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1070	-	357	-	-
HCM Lane V/C Ratio	0.05	-	0.353	-	-
HCM Control Delay (s)	8.5	0	20.5	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.2	-	1.6	-	-

HCM 2010 TWSC
7: McBean & New Road

10-03-2024

Intersection						
Int Delay, s/veh	5.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		↑			↑
Traffic Vol, veh/h	11	185	112	5	85	89
Future Vol, veh/h	11	185	112	5	85	89
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	185	112	5	85	89

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	374	115	0
Stage 1	115	-	-
Stage 2	259	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	627	937	1471
Stage 1	910	-	-
Stage 2	784	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	589	937	1471
Mov Cap-2 Maneuver	589	-	-
Stage 1	910	-	-
Stage 2	736	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.1	0	3.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	907	1471	-
HCM Lane V/C Ratio	-	-	0.216	0.058	-
HCM Control Delay (s)	-	-	10.1	7.6	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.8	0.2	-

HCM 2010 TWSC
3: McBean & Ottawa

10-03-2024

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↔			↔		
Traffic Vol, veh/h	2	4	1	38	15	47	2	188	31	55	251	4
Future Vol, veh/h	2	4	1	38	15	47	2	188	31	55	251	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	4	1	38	15	47	2	188	31	55	251	4

Major/Minor	Minor2	Minor1	Major1	Major2								
Conflicting Flow All	602	586	253	574	573	204	255	0	0	219	0	0
Stage 1	363	363	-	208	208	-	-	-	-	-	-	-
Stage 2	239	223	-	366	365	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	412	422	786	430	430	837	1310	-	-	1350	-	-
Stage 1	656	625	-	794	730	-	-	-	-	-	-	-
Stage 2	764	719	-	653	623	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	364	401	786	410	409	837	1310	-	-	1350	-	-
Mov Cap-2 Maneuver	364	401	-	410	409	-	-	-	-	-	-	-
Stage 1	655	596	-	792	729	-	-	-	-	-	-	-
Stage 2	705	718	-	617	594	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.8	13.2	0.1	1.4
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1310	-	-	418	539	1350	-	-
HCM Lane V/C Ratio	0.002	-	-	0.017	0.186	0.041	-	-
HCM Control Delay (s)	7.8	0	-	13.8	13.2	7.8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.7	0.1	-	-

6038 Ottawa St PM Peak Hour Future Total 2037

Synchro 10 Light Report
Page 3

HCM 2010 AWSC
2: McCordick/Eagleson & Brophy

10-03-2024

Intersection	
Intersection Delay, s/veh	12.8
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Vol, veh/h	35	342	129	14	187	186
Future Vol, veh/h	35	342	129	14	187	186
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	35	342	129	14	187	186
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	12.5	9.9	14.3
HCM LOS	B	A	B

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	9%	50%
Vol Thru, %	90%	0%	50%
Vol Right, %	10%	91%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	143	377	373
LT Vol	0	35	187
Through Vol	129	0	186
RT Vol	14	342	0
Lane Flow Rate	143	377	373
Geometry Grp	1	1	1
Degree of Util (X)	0.214	0.502	0.541
Departure Headway (Hd)	5.396	4.798	5.222
Convergence, Y/N	Yes	Yes	Yes
Cap	665	758	690
Service Time	3.431	2.798	3.25
HCM Lane V/C Ratio	0.215	0.497	0.541
HCM Control Delay	9.9	12.5	14.3
HCM Lane LOS	A	B	B
HCM 95th-tile Q	0.8	2.9	3.3

6038 Ottawa St PM Peak Hour Future Total 2037

Synchro 10 Light Report
Page 2

HCM 2010 TWSC
7: McBean & New Road

10-03-2024

Intersection						
Int Delay, s/veh	5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↑			↑
Traffic Vol, veh/h	7	117	87	9	160	107
Future Vol, veh/h	7	117	87	9	160	107
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	117	87	9	160	107

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	519	92	0
Stage 1	92	-	-
Stage 2	427	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	517	965	-
Stage 1	932	-	-
Stage 2	658	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	458	965	-
Mov Cap-2 Maneuver	458	-	-
Stage 1	932	-	-
Stage 2	583	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.6	0	4.6
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	908	1498
HCM Lane V/C Ratio	-	-	0.137	0.107
HCM Control Delay (s)	-	-	9.6	7.7
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0.4

HCM 2010 TWSC
6: Eagleson & New Road

10-03-2024

Intersection						
Int Delay, s/veh	5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔			↑	↑	
Traffic Vol, veh/h	151	44	59	304	245	205
Future Vol, veh/h	151	44	59	304	245	205
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	151	44	59	304	245	205

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	770	348	450
Stage 1	348	-	-
Stage 2	422	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	369	695	1110
Stage 1	715	-	-
Stage 2	662	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	345	695	1110
Mov Cap-2 Maneuver	345	-	-
Stage 1	669	-	-
Stage 2	662	-	-

Approach	EB	NB	SB
HCM Control Delay, s	23.2	1.4	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT EBLn1	SBT	SBR
Capacity (veh/h)	1110	-	389	-
HCM Lane V/C Ratio	0.053	-	0.501	-
HCM Control Delay (s)	8.4	-	23.2	-
HCM Lane LOS	A	-	C	-
HCM 95th %tile Q(veh)	0.2	-	2.7	-