6620 Rothschild Trail
Transportation Impact Study, Loading and Functional Design Assessment and TDM Options Report

Paradigm Transportation Solutions Limited

December 2018

Project Summary

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Signatures and Seals

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Executive Summary

Content

Paradigm Transportation Solutions Limited (Paradigm) was retained to carry out this Transportation Impact Study (TIS) for a proposed residential redevelopment located at 6620 Rothschild Trail in the City of Mississauga, Region of Peel.

The study includes an analysis of existing traffic conditions, a description of the proposed redevelopment, site traffic estimates, traffic forecasts, loading and functional design, outlines recommendations to improve future traffic conditions and strategies to reduce dependency on single occupancy vehicle travel.

Development Concept

The subject site is currently occupied by a single-family home with an individual driveway connection to Rothschild Trail. The existing building will be removed to permit the redevelopment to proceed. The redevelopment is planned to include a four (4)-storey apartment building containing 43 residential units. The site's parking supply is noted to consist of 88 underground resident parking spaces and 17 surface visitor parking spaces. The parking supply may be amended to reflect the final unit count.

Vehicular access is provided via the existing all-turns private driveway connection to Rothschild Trail. Build-out is anticipated to occur by the Year 2022; however, the timing and final unit count are subject to market conditions.

Conclusions

The main findings and conclusions of this study are as follows:

- **Study Area**: The intersections that form the study area include the McLaughlin Road intersections with Rothschild Trail/Ramonet Drive, Novo Star Drive/Arrowsmith Drive and Derry Road West.
- **Existing Traffic Conditions**: Intersection capacity issues are identified at the intersection of McLaughlin Road and Derry Road West, McLaughlin Road and Novo Star Drive and McLaughlin Road and Rothschild Trail/Ramonet Drive.
- **Development Generated Traffic**: The subject site is estimated to generate approximately 12 new AM peak hour trips and approximately 17 new PM peak hour trips after mode split reductions.
- **Forecast Traffic**: The forecast traffic volumes near the subject site have been assessed for five years (Year 2023) beyond the date of the

study. The likely future traffic volumes near the subject site are estimated to consist of:

- Generalized background traffic growth;
- Build-out of one (1) adjacent development application; and
- Traffic generated by the subject site.

- **Background Traffic Conditions**: The existing capacity constraints are expected to worsen with the growth in background traffic unrelated to the subject redevelopment.
- **Total Traffic Conditions**: The study area intersections are anticipated to continue to operate with levels of service similar to background traffic conditions.
- **Remedial Measures**: No remedial measures are necessary to accommodate the increase in traffic due to redevelopment of the subject site

Recommendations

Based on the findings of this study, the following is recommended:

- The development should be allowed to redevelop as planned;
- The applicant implements the recommendations outlined as part of the TDM review in Section 7. These include:
  - Providing safe, well-lit and attractive walkways for pedestrian throughout the site, including connections to the surrounding City sidewalk and multi-use path network;
  - Providing a minimum of three short-term bicycle parking spaces near the main building entrance and consider providing some long-term bicycle parking for residents and visitors who choose to access the site via bicycle;
  - Consultation with Miway to determine potential amenity improvements to the transit stops on McLaughlin Road at Rothschild Trail;
  - Unbundling parking from the purchase and sale agreement so that the supply and demand is matched; and
  - Provide general education of all travel mode options that identify benefits and how residents can best utilize these modes. New residents should be provided with a welcome package that outlines proximity to transit, cycling facilities and the proximity to local activity centres.

Contents

Appendices

Figures

Tables

1 Introduction

1.1 Overview

Paradigm Transportation Solutions Limited (Paradigm) was retained to carry out this Transportation Impact Study (TRIS) for a proposed residential redevelopment located at 6620 Rothschild Trail in the City of Mississauga.

Figure 1.1 details the location of the subject site.

The study includes an analysis of existing traffic conditions, a description of the proposed redevelopment, site traffic estimates, traffic forecasts, loading and functional design, outlines recommendations to improve future traffic conditions and strategies to reduce dependency on single occupancy vehicle travel.

- Assessment of the current traffic and site conditions within the study area;
- Estimates of background traffic growth;
- Estimates of additional traffic generated by the subject site;
- Analyses of the impact of the future traffic on the surrounding road network;
- Recommendations necessary to mitigate the site generated traffic in a satisfactory manner.

Appendix A contains the pre-study consultation material and responses from the City. This study has been conducted in accordance with the City of Mississauga Traffic Impact Study Guidelines[1]. This study assessed the 2023 horizon year to conform to the TIS guidelines and was approved though consultation with City staff.

1.2 Current Zoning Designation

The applicant is seeking a Zoning By-law Amendment (ZBA) and Official Plan Amendment (OPA) to permit the redevelopment to proceed. Under the current Official Plan, the site is identified as Residential Low Density 2 which allows a maximum density of 15 units per residential acre. The site comprises 2.3 acres; therefore, a maximum of 34 residential units are currently permitted on the site.

[1] City of Mississauga Traffic Impact Study Guidelines 2008

1.3 Study Area

The municipal roadway intersections assessed in this study include:

- McLaughlin Road and Rothschild Trail/Ramonet Drive (signalized);
- McLaughlin Road and Derry Road West (signalized); and
- McLaughlin Road and Novo Star Drive (signalized).

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Image Source: Open Street Map

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Location of Subject Site

2 Existing Conditions

2.1 Existing Roadways

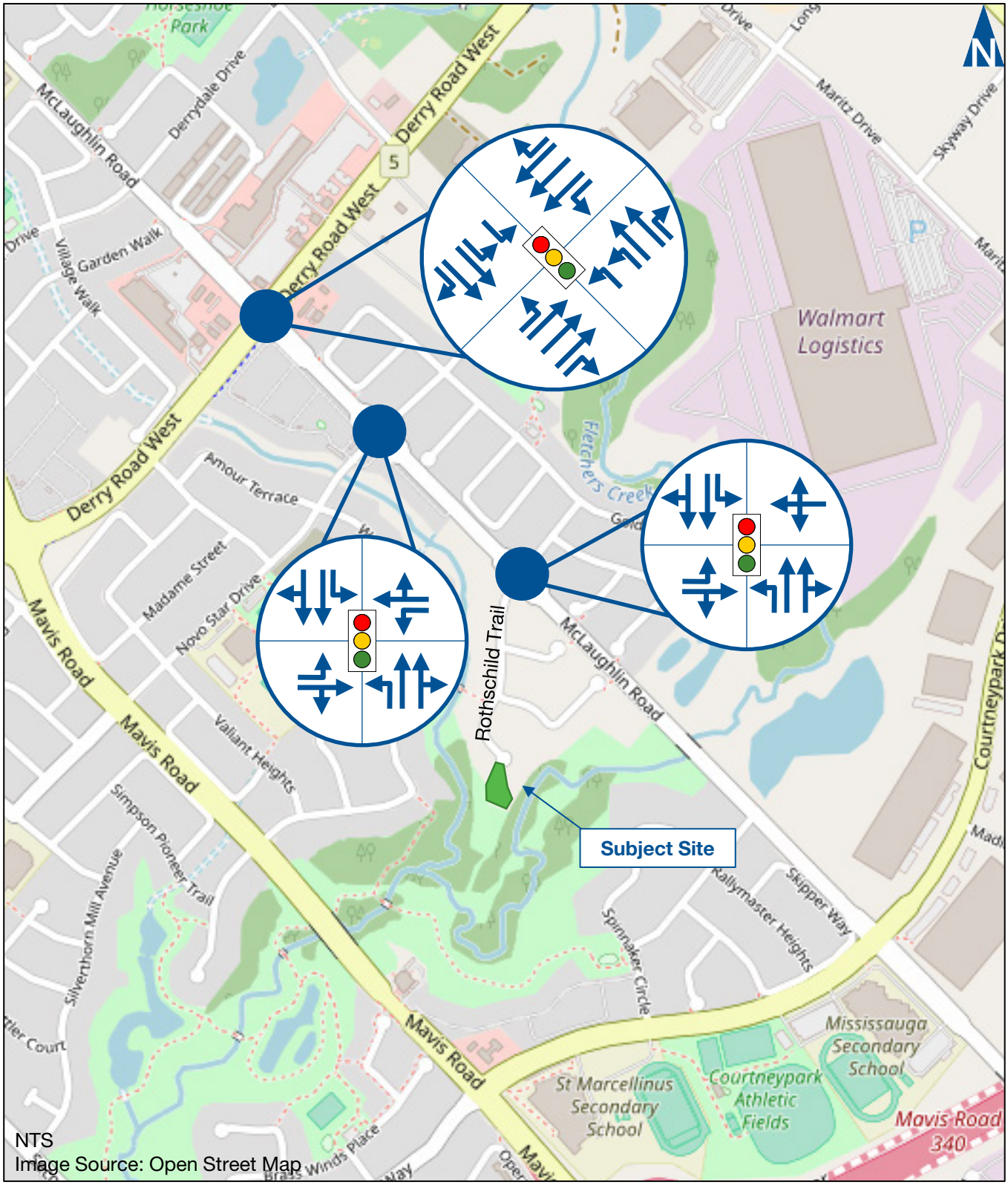
The main roadways near the subject site considered in assessing the traffic impacts of the redevelopment include:

- **McLaughlin Road** is a north-south major collector[2] roadway with a four-lane urban cross-section with a posted speed limit of 70 kilometres per hour.
- **Derry Road West** is an east-west regional arterial roadway with a six-lane urban cross-section and a posted speed limit of 70 kilometres per hour.
- **Novo Star Drive** is an east-west minor collector roadway with a two-lane urban cross-section and a posted speed limit of 50 kilometres per hour.
- **Rothschild Trail/Ramonet Drive** is an east-west local roadway with a two-lane urban cross section and an assumed speed limit of 50 kilometres per hour.

No visible cycling infrastructure is present along all study area roadways. Sidewalks are provided along both sides of all study area roadways.

Figure 2.1 details the existing lane configurations and traffic control at the study area intersections.

[2] City of Mississauga Official Plan – Schedule 5: Long Term Road Network



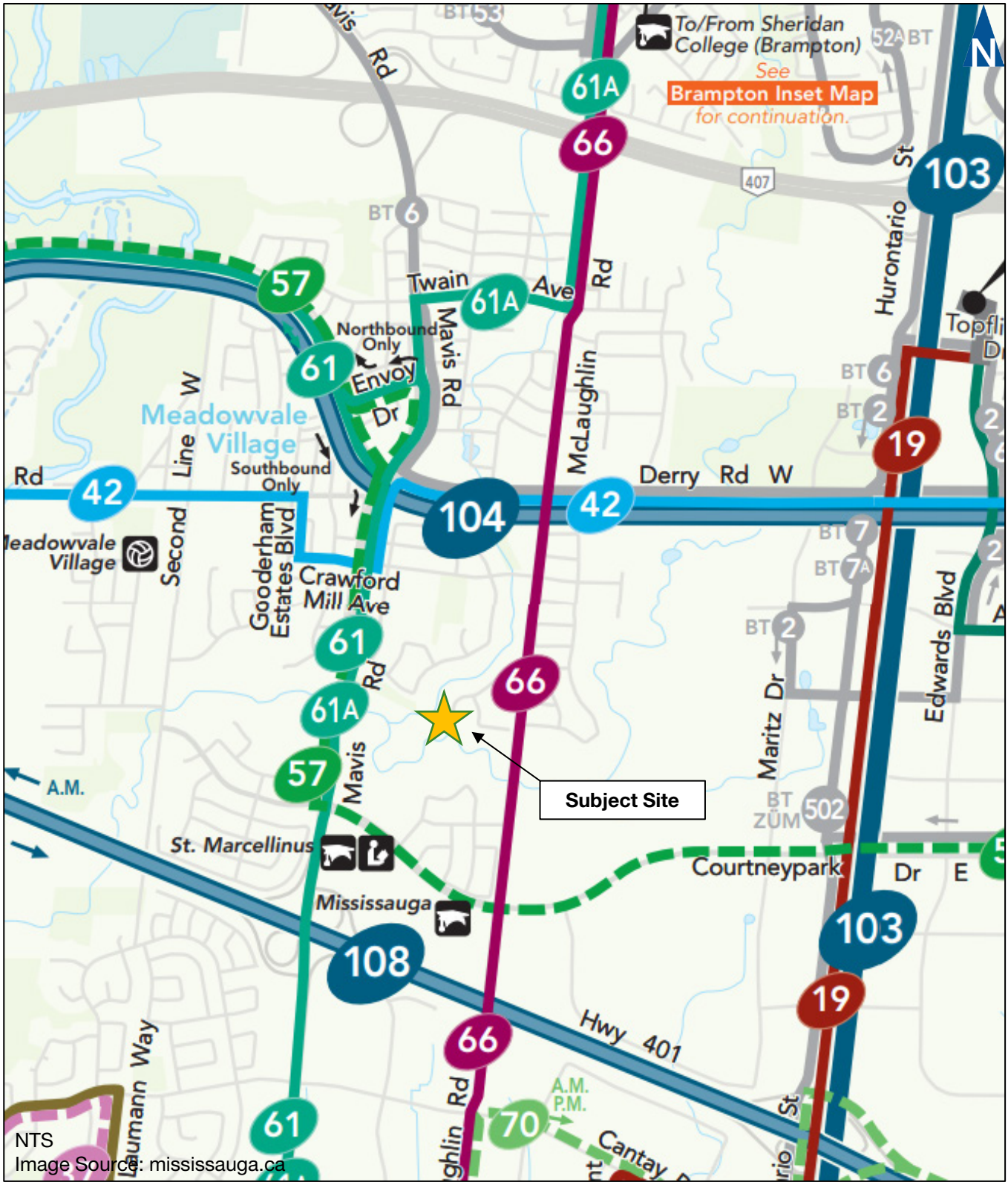
Existing Lane Configuration & Traffic Control

2.2 Existing Transit Service

MiWay, Mississauga Transitway, operates one (1) route within proximity of the subject site. **Figure 2.2** details the existing transit network. The transit routes include:

- **Route 66 McLaughlin** operates along McLaughlin Road from Sheridan College to City Centre Transit Terminal. The route operates from Monday to Sunday (05:22-01:14) with headways of approximately 30 minutes. Sunday service is provided (08:30-21:33) with headways of approximately 30 minutes. This route has bus stops located at McLaughlin Road and Rothschild Trail which is approximately 400 metres from the subject site.

Direct connections to the larger Miway network are available along this route as well as at the City Centre Transit Terminal.



Existing Transit Network

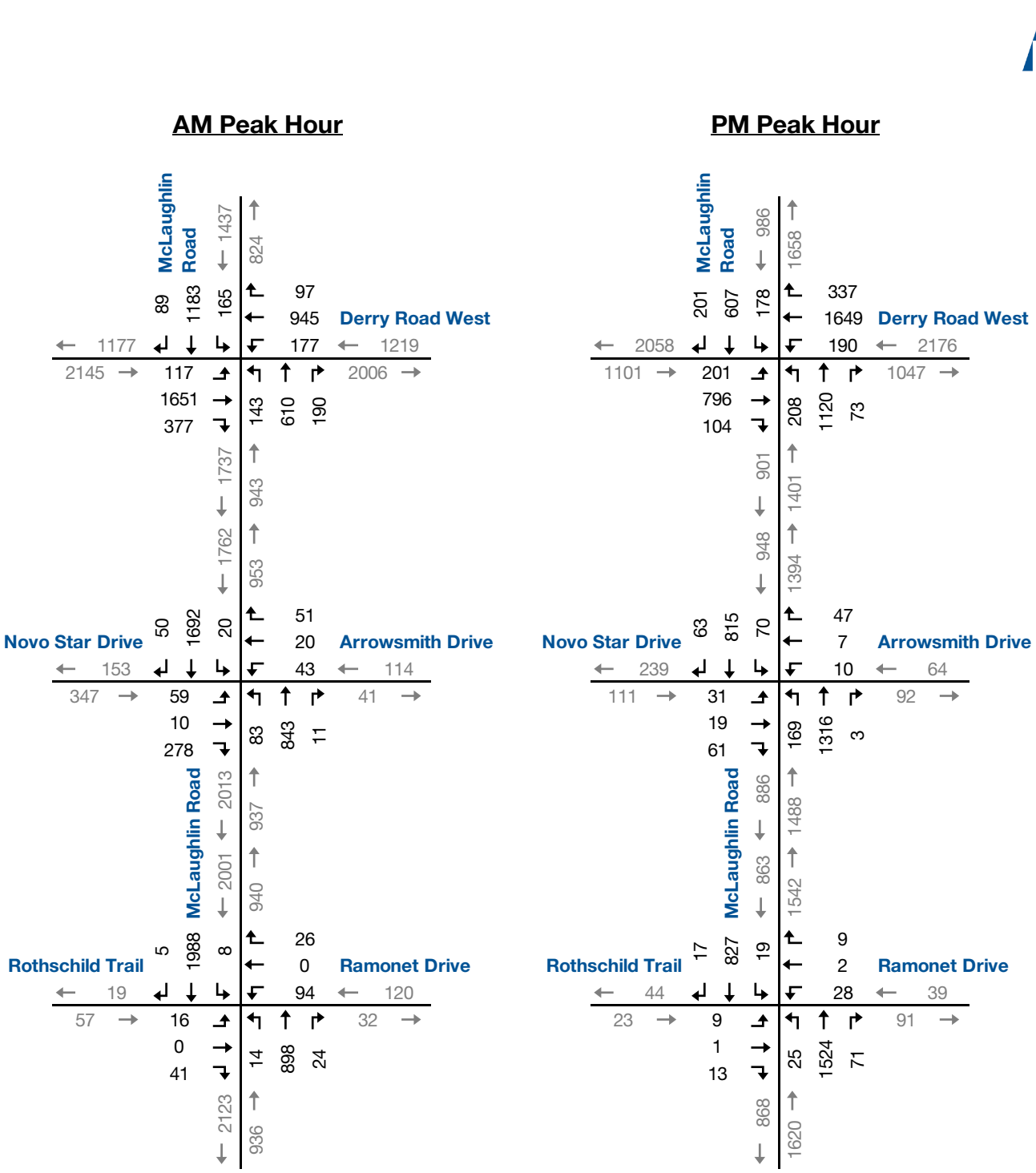
2.3 Existing Traffic Volumes

Table 2.1 summarizes the location, date and start of the peak hour of the intersection turning movement count (TMC) data used to develop the existing AM and PM peak hour traffic volumes for the study area intersections. The TMC data were collected using Miovision Scout Unit technology on Tuesday, September 25, 2018

TABLE 2.1: EXISTING COUNT DATA SUMMARY

Date	Intersection	Peak Hour	
		AM	PM
Tuesday, 25 September 2018	McLaughlin Road & Derry Road West	7:45	17:00
	McLaughlin Road & Novo Star Drive	7:30	16:45
	McLaughlin Road & Rothschild Trail/Ramonet Drive	7:30	15:45

Appendix B contains the detailed count data. **Figure 2.3** illustrates the existing weekday AM and PM peak hour traffic volumes at the study area intersections.



Existing Traffic Volumes

2.4 Existing Traffic Operations

Intersection level of service (LOS) is a recognized method of quantifying the efficiency of traffic flow at intersections. It is based on the delay experienced by individual vehicles executing the various movements. The delay is related to the number of vehicles desiring to make a movement, compared to the estimated capacity for that movement. The capacity is based on several criteria related to the opposing traffic flows. The highest possible rating is LOS A, under which the average total delay is equal or less than 10.0 seconds per vehicle. When the average delay exceeds 80 seconds at signalized intersections (50 seconds at unsignalized intersections), the movement is considered to have a LOS F and remedial measures are usually implemented, if they are feasible.

The operations of the intersections in the study area were evaluated using Synchro 9 and the existing lane configurations, traffic controls and the existing peak hour traffic volumes.

The level of service conditions on the existing road network have been assessed using Synchro 9 with HCM 2000 procedures. As per the City's TIS guidelines, movements are considered critical under the following conditions[3]:

- Volume/capacity (V/C) ratios for overall intersection operations, through movements or shared through/turning movements increased to 0.85 or above for signalized intersections;
- V/C ratios for exclusive movements increased to 0.95 or above for signalized intersections; and
- 95th percentile queue lengths for individual movements exceeds available lane storage. Queue lengths estimated using Synchro 9.

Table 2.2 details the existing level of service conditions at the study area intersections and are summarized below:

AM Peak Hour

- McLaughlin Road & Derry Road West
  - The overall intersection is forecast to operate with delays in the LOS F range and a v/c ratio greater than 1.00;
  - Eastbound right-turn movement is forecast to operate with Synchro 95th percentile back of queue exceeding the available storage by 77 metres;
  - Westbound left-turn movement is forecast to operate with delays in the LOS F range and v/c ratios greater than 1.00;

[3] City of Mississauga Traffic Impact Study Guidelines 2008

- Northbound left-turn movement Synchro 95th percentile back of queue is forecast to exceed available storage by 8 metres; and
- Eastbound and southbound through movements are forecast to operate with delays in the LOS F range and a v/c ratio greater than 1.00.

- McLaughlin Road & Novo Star Drive/Arrowsmith Drive
  - The overall intersection is forecast to operate with delays in the LOS F range and a v/c ratio greater than 1.00;
  - Eastbound shared through/right-turn movement is forecast to operate with delays in the LOS F range and a v/c ratio greater than 0.85;
  - Westbound left-turn movement is forecast to operate with delays in the LOS F range, a v/c ratio greater than 1.00 and Synchro 95th percentile back of queue is forecast to exceed available storage by 27 metres;
  - Northbound and eastbound left-turn movements are forecast to operate with Synchro 95th percentile back of queues exceeding the available storage by 2 metres and 15 metres respectively; and
  - Southbound through shared through/right-turn movement is forecast to operate with delays in the LOS F range and a v/c ratio greater than 1.00.
- McLaughlin Road & Rothschild Trail/Ramonet Drive
  - The overall intersection is forecast to operate with delays in the LOS F range and a v/c ratio greater than 1.00;
  - Westbound shared left-turn/through/right-turn movement is forecast to operate with delays in the LOS F range and a v/c ratio greater than 0.85; and
  - Southbound shared through/right-turn movement and is forecast to operate with delays in the LOS F range and a v/c ratio greater than 1.00.

PM Peak Hour

- McLaughlin Road & Derry Road West
  - The overall intersection is forecast to operate with delays in the LOS F range and a v/c ratio greater than 1.00;
  - Eastbound and northbound left-turn movements are forecast to operate with delays in the LOS F range, v/c ratios greater than 1.00 and Synchro 95th percentile back of queue is forecast to exceed available storage by 61 metres and 35 metres respectively;
  - Westbound through movement is forecast to operate with delays in the LOS F range and a v/c ratio greater than 1.00; and

  - Westbound right-turn movement is forecast to operate with Synchro 95th percentile back of queue exceeding the available storage by 3 metres.
- McLaughlin Road & Novo Star Drive/Arrowsmith Drive
  - Eastbound left-turn movement is forecast to operate with Synchro 95th percentile back of queue exceeding the available storage by 7 metres.
- McLaughlin Road & Rothschild Trail/Ramonet Drive
  - No Critical Movements

Appendix C contains the supporting detailed Synchro 9 reports.

TABLE 2.2: EXISTING TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	OVERALL
AM Peak Hour	McLaughlin Road & Derry Road West	TCS	LOS	D	F	E	**F**	F	D	D	**E**	F	D	E	**E**	E	E	C	**E**	**F**
			Delay	44	134	55	**115**	197	48	37	**68**	102	50	59	**60**	75	72	29	**69**	**85**
			V/C	0.70	1.16	0.72		1.25	0.66	0.08		0.87	0.59	0.25		0.63	1.00	0.09		**1.11**
			95th	40	278	127		112	124	12		48	125	44		43	265	16		
			Storage	70	-	50		140	-	105		40	-	45		80	-	75		
			Avail.	30	-	-77		28	-	93		-8	-	1		37	-	59		
	McLaughlin Road & Novo Star Drive/Arrowsmith Drive	TCS	LOS	D	F	>	**E**	F	D	>	**F**	F	B	>	**B**	B	F	>	**F**	**F**
			Delay	49	83	>	**77**	323	47	>	**151**	96	12	>	**20**	10	144	>	**143**	**99**
			V/C	0.29	0.91	>		1.38	0.12	>		0.83	0.55	>		0.15	1.26	>		**1.26**
			95th	30	96	>		42	12	>		37	62	>		3	351	>		
			Storage	15	-	>		15	-	>		35	-	>		55	-	>		
			Avail.	-15	-	>		-27	-	>		-2	-	>		52	-	>		
	McLaughlin Road & Rothschild Trail/Ramonet Drive	TCS	LOS	E	E	>	**E**	<	F	>	**F**	D	B	>	**B**	A	F	>	**F**	**F**
			Delay	56	57	>	**57**	<	90	>	**90**	53	11	>	**12**	3	165	>	**164**	**114**
			V/C	0.12	0.19	>		<	0.86	>		0.57	0.64	>		0.11	1.34	>		**1.25**
			95th	11	14	>		<	49	>		8	77	>		1	169	>		
			Storage	20	-	>		<	-	>		30	-	>		35	-	>		
			Avail.	9	-	>		<	-	>		22	-	>		34	-	>		
PM Peak Hour	McLaughlin Road & Derry Road West	TCS	LOS	F	D	D	**E**	E	F	D	**F**	F	D	C	**E**	F	D	C	**D**	**E**
			Delay	176	44	37	**67**	56	106	50	**93**	160	50	23	**65**	113	38	33	**50**	**74**
			V/C	1.20	0.51	0.13		0.83	1.09	0.59		1.07	0.93	0.06		0.92	0.53	0.23		**1.07**
			95th	131	102	22		83	286	108		75	227	7		60	108	35		
			Storage	70	-	50		140	-	105		40	-	45		80	-	75		
			Avail.	-61	-	28		57	-	-3		-35	-	38		21	-	40		
	McLaughlin Road & Novo Star Drive/Arrowsmith Drive	TCS	LOS	E	E	>	**E**	E	E	>	**E**	B	A	>	**A**	C	A	>	**A**	**A**
			Delay	76	72	>	**73**	72	75	>	**74**	13	2	>	**4**	22	4	>	**6**	**9**
			V/C	0.48	0.28	>		0.23	0.48	>		0.58	0.62	>		0.62	0.46	>		**0.62**
			95th	22	17	>		10	25	>		5	24	>		12	44	>		
			Storage	15	-	>		15	-	>		35	-	>		55	-	>		
			Avail.	-7	-	>		5	-	>		30	-	>		44	-	>		
	McLaughlin Road & Rothschild Trail/Ramonet Drive	TCS	LOS	E	E	>	**E**	<	F	>	**F**	A	A	>	**A**	C	A	>	**A**	**A**
			Delay	72	71	>	**71**	<	84	>	**84**	3	8	>	**8**	25	2	>	**3**	**8**
			V/C	0.16	0.03	>		<	0.60	>		0.12	0.81	>		0.46	0.43	>		**0.80**
			95th	9	6	>		<	22	>		4	109	>		3	26	>		
			Storage	20	-	>		<	-	>		30	-	>		35	-	>		
			Avail.	11	-	>		<	-	>		27	-	>		32	-	>		

MOE - Measure of Effectiveness
TCS - Traffic Control Signal
LOS - Level of Service
V/C - Volume to Capacity Ratio
95th - 95th Percentile Queue Length
Storage - Existing Storage (m)
> - Shared Right-Turn Lane
< - Shared Left-Turn Lane
Avail. - Available Storage (m)

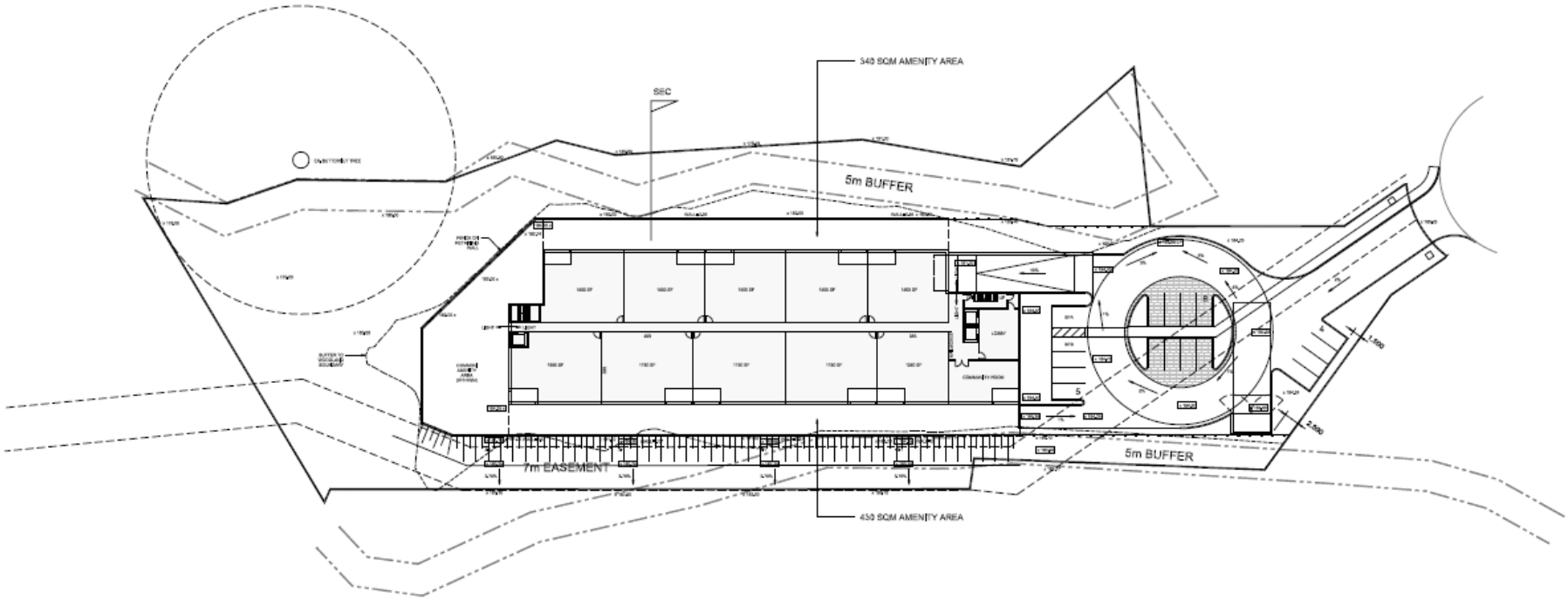
3 Development Concept

3.1 Site Description

The subject site is located at 6620 Rothschild Trail in the City of Mississauga, Region of Peel. **Figure 3.1** details the layout of the subject site.

The subject site is currently occupied by a single-family home with an individual driveway connection to Rothschild Trail. The existing building will be removed to permit the redevelopment to proceed. The redevelopment is planned to include a four (4)-storey apartment building containing 43 residential units. The site's parking supply is noted to consist of 88 underground resident parking spaces and 17 surface visitor parking spaces. The parking supply will be amended as needed to reflect the final unit count.

Vehicular access is provided via the existing all-turns private driveway connection to Rothschild Trail. Build-out is anticipated to occur by the Year 2022; however, timing is subject to market conditions.



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Site Concept Plan

Figure 3.1

3.2 Site Traffic Generation

The Institute of Transportation Engineers (ITE) Trip Generation[4] methods predict the site trip generation. Land Use Code 221 (Multifamily Housing (Mid-Rise) equation rates were used to estimate the site's trip generation since all criteria for their use were met.

Table 3.1 indicates that the subject site's total base trip generation is estimated to be 15 vehicle trips during the AM peak hour and 20 vehicle trips during the PM peak hour.

TABLE 3.1: BASE DEVELOPMENT TRIP GENERATION

Land Use	Number of Units	AM Peak Hour				PM Peak Hour			
		Rate	In	Out	Total	Rate	In	Out	Total
221 - Multifamily Housing (Mid-Rise)	43	Eq[1]	4	11	15	Eq[2]	12	8	20
Total Generation			**4**	**11**	**15**		**12**	**8**	**20**

[1] Ln(T) = 0.98Ln(X)-0.98 [2] Ln(T) = 0.96Ln(X)-0.63

Due to the proposed redevelopment's proximity to transit services, it is likely that some percentage of the trips generated by the site will be made by other modes (transit, walking, etc.). In order to determine the modal split for the site, the results of the 2016 Transportation Tomorrow Survey[5] (TTS) were reviewed. The data is structured so that it can be accessed by traffic analysis zone (TAZ) and trip mode to produce more accurate and site-specific results. The data was queried to display results for all inbound and outbound trips for subject site TAZ, 3619 (**Figure 3.2**). **Table 3.2** displays the resulting 14% modal split reduction for transit.

When the modal split reduction is applied to the base trip generation (**Table 3.1**), it is reduced by three (3) trips during the AM peak hour and three (3) trips during the PM peak hour. After reduction, the subject site is estimated to generate 12 trips during the AM peak hour and 17 trips during the PM peak hour as shown in **Table 3.2**.

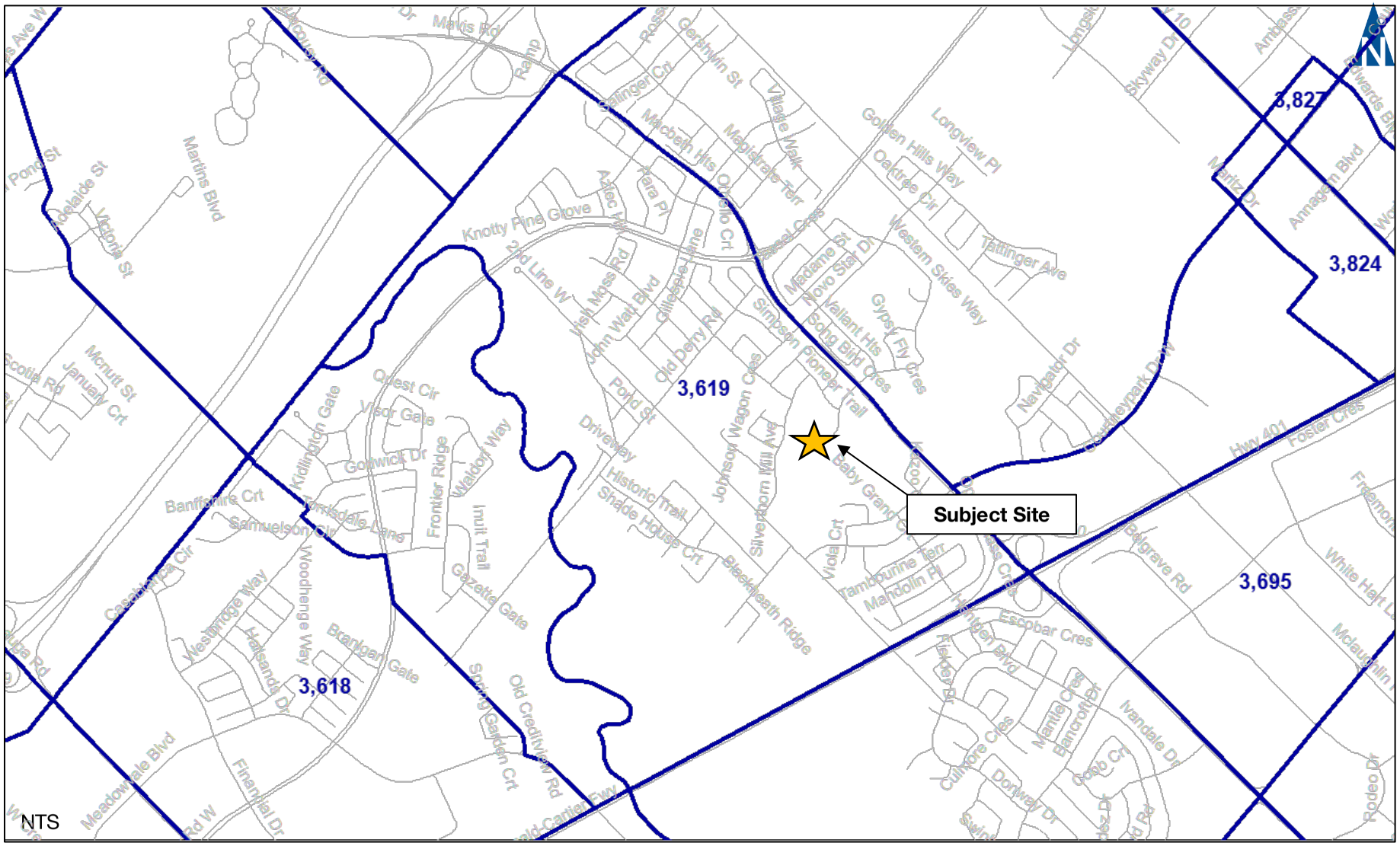
TABLE 3.2: ADJUSTED DEVELOPMENT TRIP GENERATION

Land Use	Number of Units	AM Peak Hour				PM Peak Hour			
		Rate	In	Out	Total	Rate	In	Out	Total
221 - Multifamily Housing (Mid-Rise)	43	Eq[1]	4	11	15	Eq[2]	12	8	20
Total Trip Generation			**4**	**11**	**15**		**12**	**8**	**20**
Transit Mode Split		*14%*	*1*	*2*	*3*	*14%*	*2*	*1*	*3*
Net Trip Generation			**3**	**9**	**12**		**10**	**7**	**17**

[1] Ln(T) = 0.98Ln(X)-0.98 [2] Ln(T) = 0.96Ln(X)-0.63

[4] Trip Generation Manual 10th Edition Institute of Transportation Engineers Washington DC

[5] www.jpint.utoronto.ca/drs



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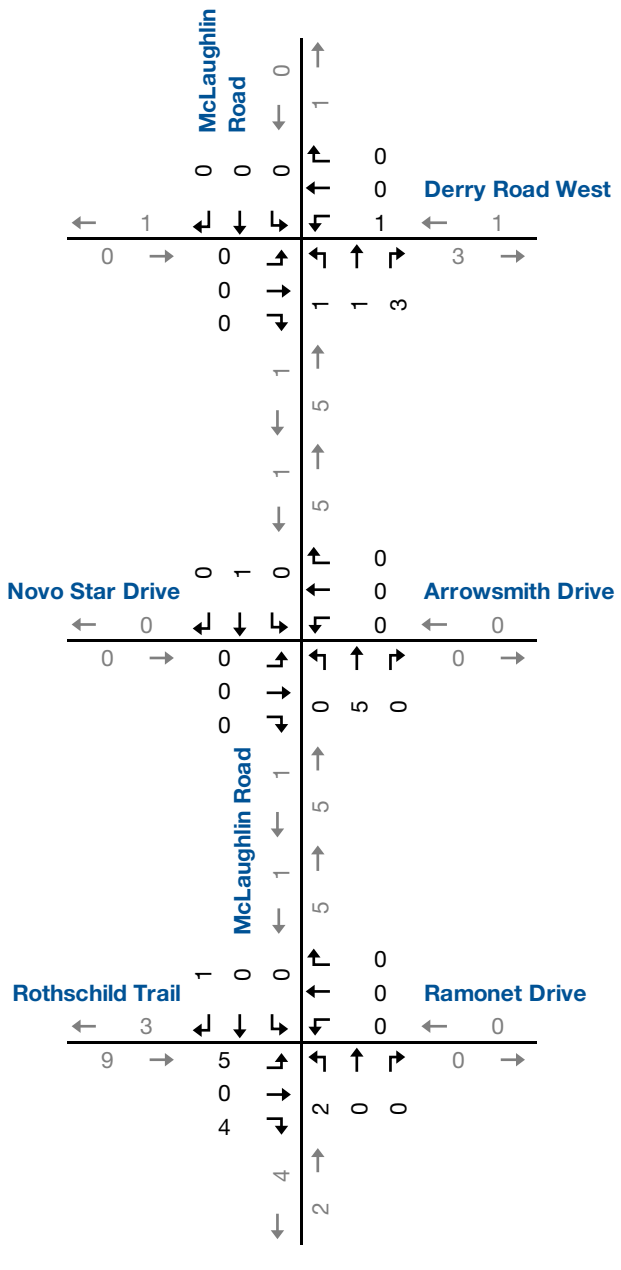
Subject Site Traffic Analysis Zone

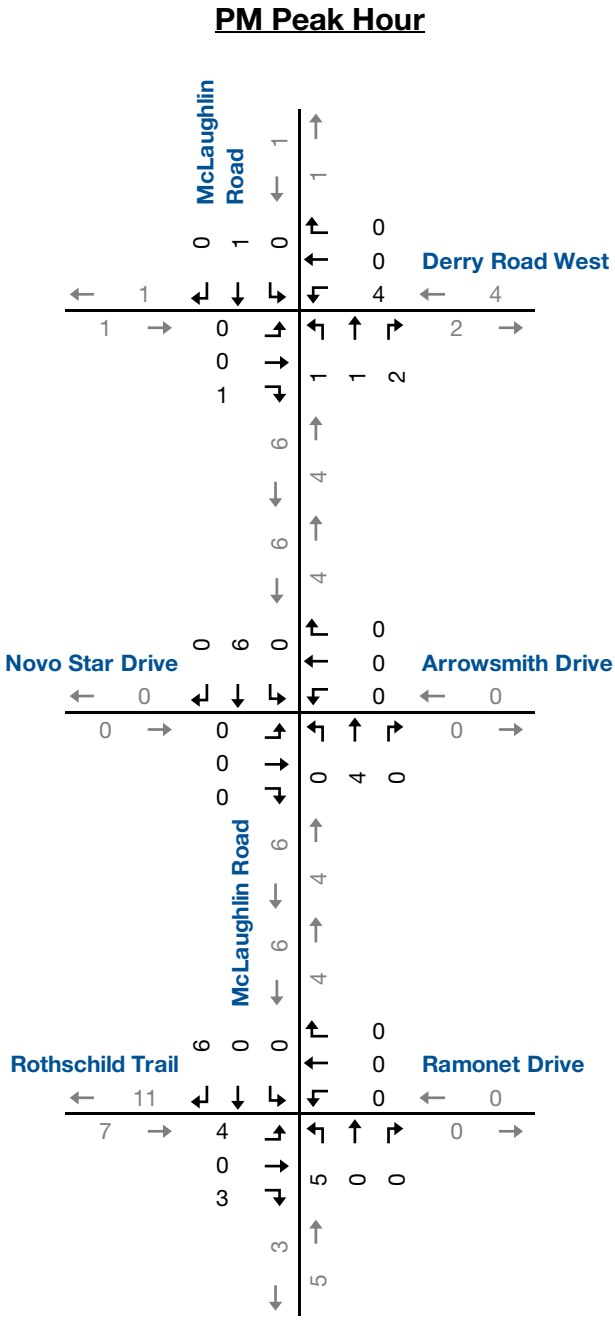
In order to determine the distribution of the traffic on the study area network, the results from the 2016 TTS were reviewed. The data was queried to display results for all inbound and outbound trips between the subject site TAZ (3619) and TTS regional municipalities. Trips within the Region of Peel were also taken into consideration by generating TTS data between the subject site TAZ and Region of Peel wards. **Table 3.3** summarizes the estimated trip distribution.

TABLE 3.3: ESTIMATED TRIP DISTRIBUTION

Origin/Destination	AM/PM Peak Hour
North via McLaughlin Road	10%
South via McLaughlin Road	45%
East via Derry Road West	35%
West via Derry Road West	10%
Total	**100%**

The site-generated trips were assigned to the roadway network using the TTS distribution. **Figure 3.3** illustrates the resulting AM and PM peak hour assignments.





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Estimated Site Generated Traffic

4 Future Traffic Conditions

The assessment of the future traffic conditions contained in this section includes the future background and total traffic forecasts as well as the level of service analyses.

4.1 General Background Traffic Growth

In order to derive the 2023 generalized background traffic volumes, a growth rate of 0.5% per annum compounded for five years (total growth of 2.5%) was applied to the existing traffic volumes. This growth rate was confirmed with the City of Mississauga during the pre-study consultation. **Figure 4.1** illustrates the 2023 AM and PM peak hour general background growth traffic forecasts.

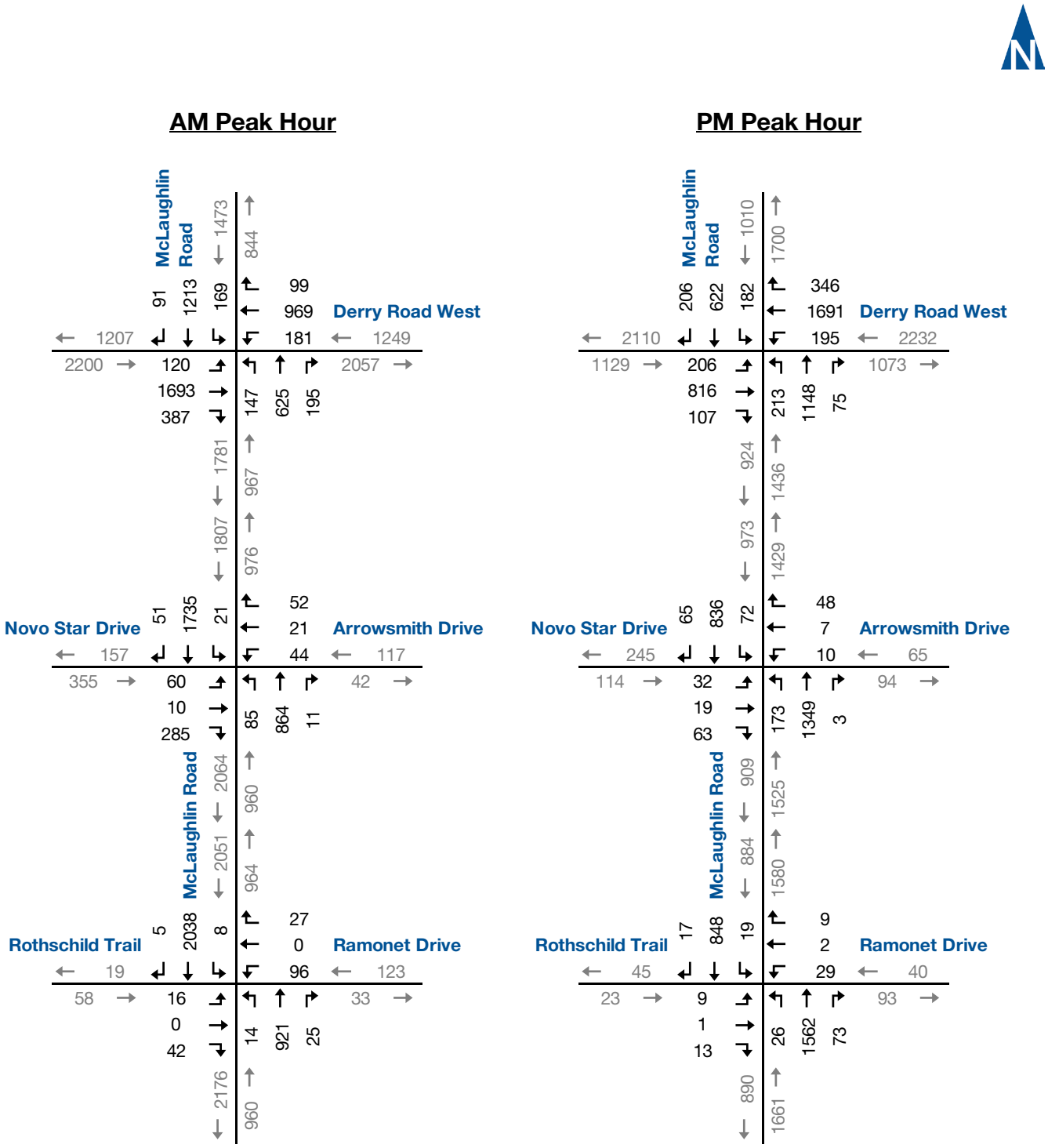
4.2 Other Planned Developments

The City requested that the traffic generated by nearby proposed developments be included in the background traffic forecasts over and above the general growth. The City's Development Applications Map[6] was used to determine the applicable development(s). 376 and 390 Derry Road West is currently in the application approval process for 126 townhouse units and 818 square metres (8,805 square feet) of commercial space. **Figure 4.2** details the location of the subject site.

Peak hour trips forecast to be generated by the components of the development are based on the Institute of Transportation Engineers (ITE) Trip Generation Manual for the following Land Use Codes (LUC):

- **LUC 221 (Multifamily Housing (Mid-Rise)):** Includes apartments, townhouses and condominiums located within the same building with at least three other dwelling units and that have between three and ten levels (floors).
- **LUC 820 (Shopping Center)**: An integrated group of commercial establishments that is planned, developed, owned, and managed as a unit. A shopping center's composition is related to its market area in terms of size, location and type of store. A shopping center also provides on-site parking facilities sufficient to serve its own parking demands.

[6]http://mississauga.maps.arcgis.com/apps/Viewer/index.html?appid=a5ba296f43514bf59dccfdf76cd07e14



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Forecast Background Growth Volumes

The estimated trip generation for the background development is displayed in **Table 4.1**, which indicates a total of 199 and 145 new trips are forecast to be generated during the AM and PM peak hours, respectively.

TABLE 4.1: BACKGROUND DEVELOPMENT TRIP GENERATION

Land Use	Number of Units	Unit	AM Peak Hour				PM Peak Hour			
			Rate	In	Out	Total	Rate	In	Out	Total
221 - Multifamily Housing (Mid-Rise)	126	Units	Eq[1]	11	32	43	Eq[2]	34	21	55
820 - Shopping Centre	9	1000 sq.ft	Eq[3]	97	59	156	Eq[4]	43	47	90
Total Generation				**108**	**91**	**199**		**77**	**68**	**145**

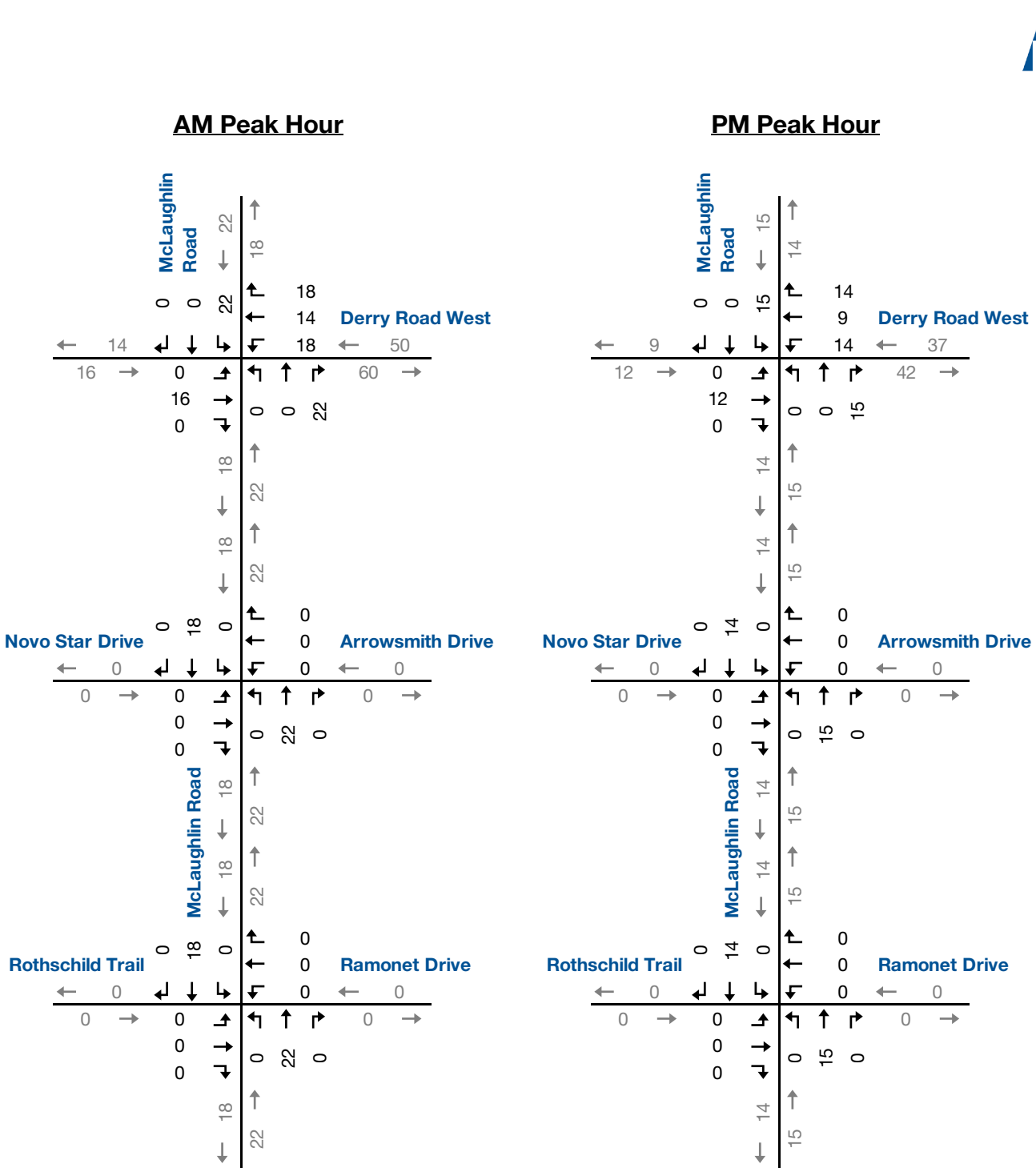
[1] Ln(T) = 0.98Ln(X)-0.98 [2] Ln(T) = 0.96Ln(X)-0.63
[3] T = 0.50(X)+151.78 [4] Ln(T) = 0.74Ln(X)+2.89

The trips were assigned to the road network based on the distribution of traffic outlined in **Table 3.3**. Note that due to its location at the northerly limits of the study area, not all trips generated by the background development will enter the study area.

Figure 4.3 details the site-generated traffic assignments for the background development.

NTS
Image Source: Open Street Map

Location of Background Development



NTS

Background Development Traffic Volumes

4.3 Future Total Background Traffic

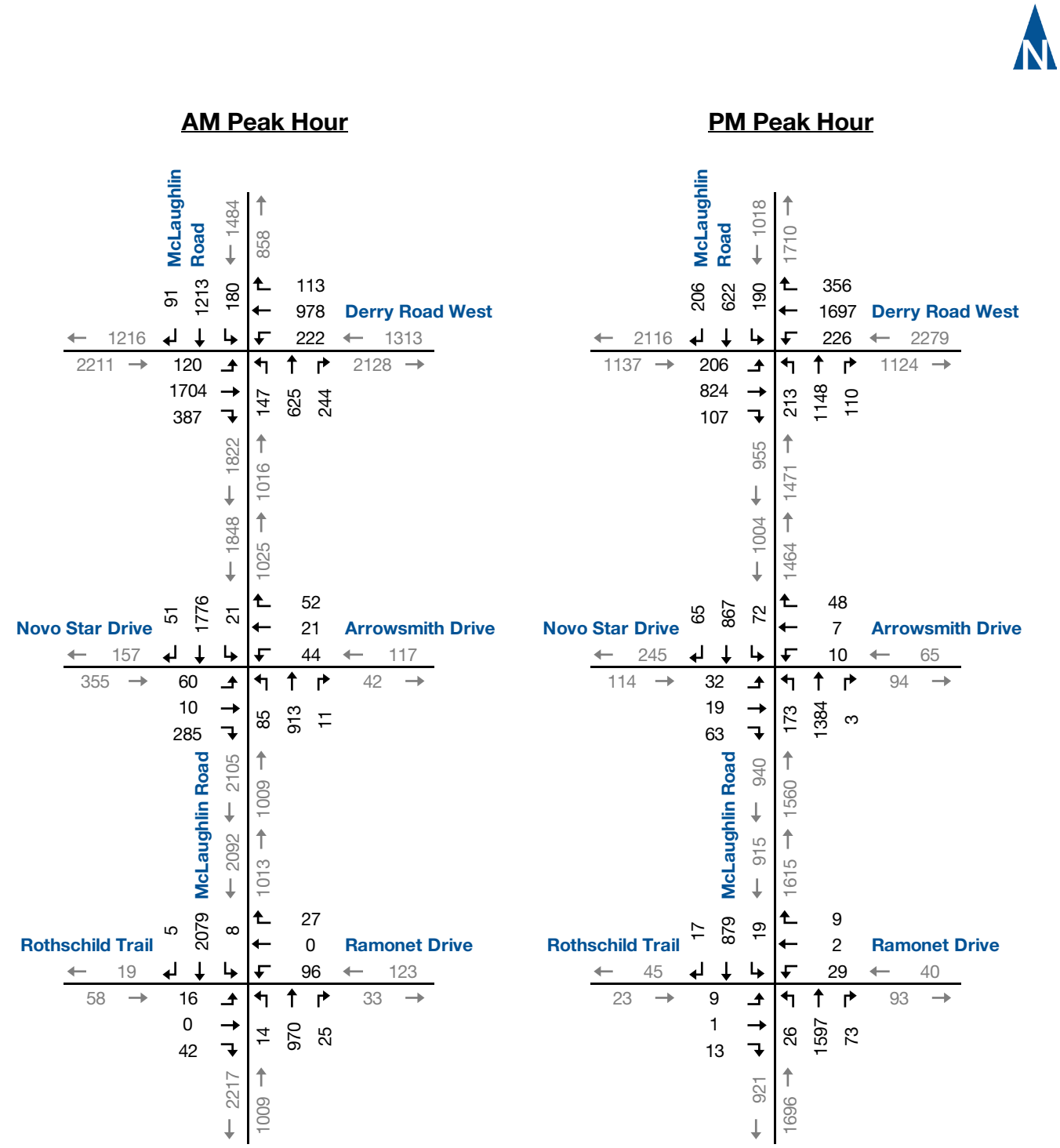
Figure 4.2 illustrates the 2023 forecast total background (general growth + background development) traffic forecasts for the AM and PM peak hours.

4.4 Background Traffic Operations

The operations of the study area intersections under background traffic volumes were evaluated following the same methodology used for existing conditions. Signal timings have been optimized. **Table 4.2** details the background traffic level of service conditions at the study area intersections. The critical movements are summarized below:

AM Peak Hour

- McLaughlin Road & Derry Road West
  - The overall intersection is forecast to operate with delays in the LOS F range and a v/c ratio greater than 1.00;
  - Eastbound right-turn movement is forecast to operate with Synchro 95th percentile back of queue exceeding the available storage by 86 metres;
  - Westbound left-turn movement is forecast to operate with delays in the LOS F range, v/c ratios greater than 1.00 and Synchro 95th percentile back of queue is forecast to exceed available storage by 11 metres;
  - Northbound left-turn and right-turn movement Synchro 95th percentile back of queues are forecast to exceed available storage by 10 metres and 8 metres respectively;
  - Eastbound and southbound through movements are forecast to operate with delays in the LOS F range and v/c ratios greater than 1.00; and
  - Southbound left-turn movement is forecast to operate with delays in the LOS F range and a v/c ratio greater than 0.95.
- McLaughlin Road & Novo Star Drive/Arrowsmith Drive
  - The overall intersection is forecast to operate with delays in the LOS F range and a v/c ratio greater than 1.00;
  - Eastbound shared through/right-turn movement is forecast to operate with delays in the LOS F range and a v/c ratio greater than 0.85;
  - Westbound left-turn movement is forecast to operate with delays in the LOS F range, a v/c ratio greater than 1.00 and Synchro 95th percentile back of queue is forecast to exceed available storage by 28 metres;



Forecast Background Traffic Plus Other Developments

- Northbound and eastbound left-turn movements are forecast to operate with Synchro 95th percentile back of queues exceeding the available storage by 3 metres and 15 metres respectively; and
- Southbound through shared through/right-turn movement is forecast to operate with delays in the LOS F range and a v/c ratio greater than 1.00.

- McLaughlin Road & Rothschild Trail/Ramonet Drive
  - The overall intersection is forecast to operate with delays in the LOS F range and a v/c ratio greater than 1.00;
  - Westbound shared left-turn/through /right-turn movement is forecast to operate with delays in the LOS F range and v/c ratios greater than 0.85; and
  - Southbound shared through/right-turn movement and is forecast to operate with delays in the LOS F range and a v/c ratio greater than 1.00.

PM Peak Hour

- McLaughlin Road & Derry Road West
  - The overall intersection is forecast to operate with delays in the LOS F range and a v/c ratio greater than 1.00;
  - Eastbound and northbound left-turn movements are forecast to operate with delays in the LOS F range, v/c ratios greater than 1.00 and Synchro 95th percentile back of queues are forecast to exceed available storage by 66 metres and 36 metres respectively;
  - Westbound through and left-turn movements are forecast to operate with delays in the LOS F range and v/c ratios greater than 1.00;
  - Westbound right-turn movement is forecast to operate with Synchro 95th percentile back of queue exceeding the available storage by 14 metres; and
  - Southbound left-turn movement is forecast to operate with delays in the LOS F range and a v/c ratio greater than 0.95.
- McLaughlin Road & Novo Star Drive/Arrowsmith Drive
  - Eastbound left-turn movement is forecast to operate with Synchro 95th percentile back of queue exceeding the available storage by 7 metres.
- McLaughlin Road & Rothschild Trail/Ramonet Drive
  - Northbound shared through/right-turn movement is forecast to operate with delays in the LOS A range and a v/c ratio equivalent to 0.85.

Appendix E contains the detailed Synchro 9 reports.

TABLE 4.2: BACKGROUND TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																	
				Eastbound				Westbound				Northbound				Southbound				OVERALL
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	McLaughlin Road & Derry Road West	TCS	LOS	D	F	E	**F**	F	D	D	**F**	F	D	E	**E**	F	E	C	**F**	**F**
			Delay	49	150	58	**128**	322	48	37	**93**	105	46	57	**57**	133	79	30	**82**	**97**
			V/C	0.75	1.20	0.76		1.55	0.68	0.10		0.90	0.57	0.31		0.99	1.03	0.10		**1.28**
			95th	41	293	136		151	129	13		50	102	53		60	277	17		
			Storage	70	-	50		140	-	105		40	-	45		80	-	75		
			Avail.	29	-	-86		-11	-	92		-10	-	-8		20	-	59		
	McLaughlin Road & Novo Star Drive/Arrowsmith Drive	TCS	LOS	D	F	>	**F**	F	D	>	**F**	F	B	>	**B**	B	F	>	**F**	**F**
			Delay	50	89	>	**82**	340	47	>	**157**	95	13	>	**20**	11	172	>	**170**	**115**
			V/C	0.30	0.94	>		1.43	0.15	>		0.84	0.60	>		0.19	1.32	>		**1.31**
			95th	30	100	>		43	16	>		38	70	>		3	367	>		
			Storage	15	-	>		15	-	>		35	-	>		55	-	>		
			Avail.	-15	-	>		-28	-	>		-3	-	>		52	-	>		
	McLaughlin Road & Rothschild Trail/Ramonet Drive	TCS	LOS	E	E	>	**E**	<	F	>	**F**	D	B	>	**B**	A	F	>	**F**	**F**
			Delay	56	57	>	**56**	<	91	>	**91**	53	13	>	**13**	3	195	>	**195**	**133**
			V/C	0.12	0.19	>		<	0.86	>		0.57	0.69	>		0.14	1.41	>		**1.30**
			95th	11	15	>		<	50	>		8	85	>		1	250	>		
			Storage	20	-	>		<	-	>		30	-	>		35	-	>		
			Avail.	9	-	>		<	-	>		22	-	>		34	-	>		
PM Peak Hour	McLaughlin Road & Derry Road West	TCS	LOS	F	D	D	**E**	F	F	D	**F**	F	D	C	**E**	F	D	C	**D**	**F**
			Delay	191	45	38	**71**	105	122	52	**109**	166	52	25	**67**	129	38	33	**54**	**82**
			V/C	1.24	0.54	0.14		1.02	1.13	0.64		1.10	0.94	0.13		0.98	0.54	0.24		**1.10**
			95th	136	106	23		119	300	119		76	238	14		65	111	37		
			Storage	70	-	50		140	-	105		40	-	45		80	-	75		
			Avail.	-66	-	27		21	-	-14		-36	-	31		15	-	38		
	McLaughlin Road & Novo Star Drive/Arrowsmith Drive	TCS	LOS	E	E	>	**E**	E	E	>	**E**	C	A	>	**A**	C	A	>	**A**	**A**
			Delay	75	71	>	**72**	72	75	>	**75**	20	3	>	**5**	34	5	>	**7**	**10**
			V/C	0.47	0.28	>		0.22	0.51	>		0.62	0.65	>		0.73	0.50	>		**0.70**
			95th	22	17	>		10	27	>		6	30	>		38	51	>		
			Storage	15	-	>		15	-	>		35	-	>		55	-	>		
			Avail.	-7	-	>		5	-	>		29	-	>		18	-	>		
	McLaughlin Road & Rothschild Trail/Ramonet Drive	TCS	LOS	E	E	>	**E**	<	F	>	**F**	A	A	>	**A**	D	A	>	**A**	**A**
			Delay	71	70	>	**71**	<	85	>	**85**	3	10	>	**10**	48	3	>	**3**	**9**
			V/C	0.15	0.03	>		<	0.61	>		0.14	0.85	>		0.60	0.46	>		**0.83**
			95th	9	6	>		<	23	>		4	121	>		13	31	>		
			Storage	20	-	>		<	-	>		30	-	>		35	-	>		
			Avail.	11	-	>		<	-	>		26	-	>		22	-	>		

MOE - Measure of Effectiveness
TCS - Traffic Control Signal
LOS - Level of Service
V/C - Volume to Capacity Ratio
95th - 95th Percentile Queue Length
Storage - Existing Storage (m)
> - Shared Right-Turn Lane
< - Shared Left-Turn Lane
Avail. - Available Storage (m)

4.5 Future Total Traffic

A five-year horizon (Year 2023) beyond the date of the study has been assessed. The total future traffic volumes are estimated to consist of the site generated traffic and the background traffic volumes.

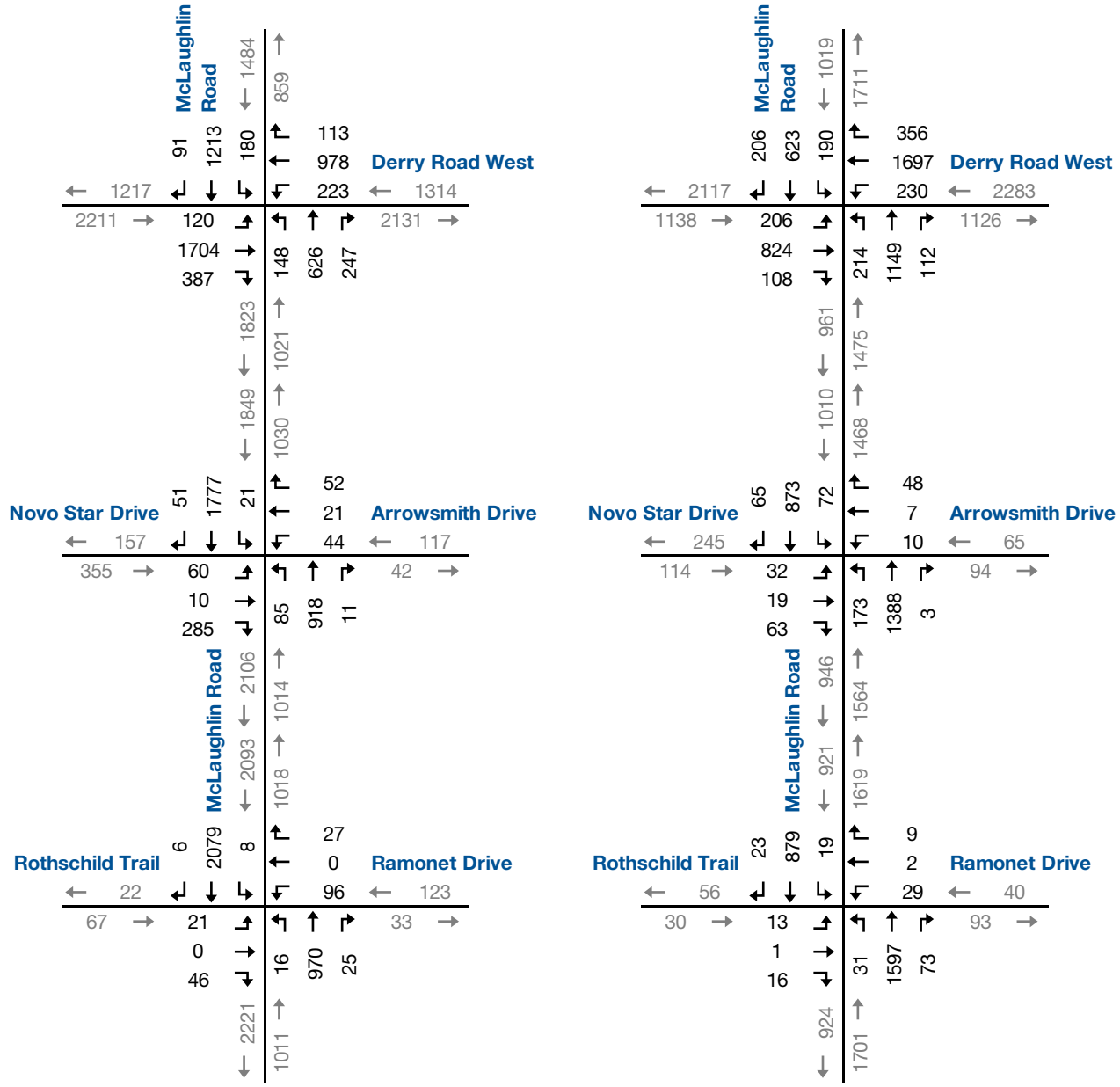
Figure 4.2 details the forecast Total Traffic Volumes.

4.6 Future Total Traffic Operations

The operations of the study area intersection under future total traffic volumes were evaluated following the same methodology used for existing conditions. Signal timings have been optimized. **Table 4.3** details the total traffic level of service conditions at the study area intersections, and the critical movements are summarized below:

AM Peak Hour

- McLaughlin Road & Derry Road West
  - The overall intersection is forecast to operate with delays in the LOS F range and a v/c ratio greater than 1.00;
  - Eastbound right-turn movement is forecast to operate with Synchro 95th percentile back of queue exceeding the available storage by 84 metres;
  - Westbound left-turn movement is forecast to operate with delays in the LOS F range, v/c ratios greater than 1.00 and Synchro 95th percentile back of queue is forecast to exceed available storage by 12 metres;
  - Northbound left-turn and right-turn movement Synchro 95th percentile back of queues are forecast to exceed available storage by 10 metres and 8 metres respectively; and
  - Eastbound and southbound through movements are forecast to operate with delays in the LOS F range and v/c ratios greater than 1.00.
- McLaughlin Road & Novo Star Drive/Arrowsmith Drive
  - The overall intersection is forecast to operate with delays in the LOS F range and a v/c ratio greater than 1.00;
  - Eastbound shared through/right-turn movement is forecast to operate with delays in the LOS F range and a v/c ratio greater than 0.85;



NTS

Forecast Total Traffic

- Westbound left-turn movement is forecast to operate with delays in the LOS F range, a v/c ratio greater than 1.00 and Synchro 95th percentile back of queue is forecast to exceed available storage by 28 metres;
- Northbound and eastbound left-turn movements are forecast to operate with Synchro 95th percentile back of queues exceeding the available storage by 3 metres and 15 metres respectively; and
- Southbound through shared through/right-turn movement is forecast to operate with delays in the LOS F range and a v/c ratio greater than 1.00.

- McLaughlin Road & Rothschild Trail/Ramonet Drive
  - The overall intersection is forecast to operate with delays in the LOS F range and a v/c ratio greater than 1.00;
  - Westbound shared left-turn/through/right-turn movement is forecast to operate with delays in the LOS F range and a v/c ratio greater than 0.85; and
  - Southbound shared through/right-turn movement and is forecast to operate with delays in the LOS F range and a v/c ratio greater than 1.00.

PM Peak Hour

- McLaughlin Road & Derry Road West
  - The overall intersection is forecast to operate with delays in the LOS F range and a v/c ratio greater than 1.00;
  - Eastbound and northbound left-turn movements are forecast to operate with delays in the LOS F range, v/c ratios greater than 1.00 and Synchro 95th percentile back of queues forecast to exceed available storage by 65 metres and 37 metres respectively;
  - Westbound through and left-turn movements are forecast to operate with delays in the LOS F range and a v/c ratio greater than 1.00;
  - Westbound right-turn movement is forecast to operate with Synchro 95th percentile back of queue exceeding the available storage by 14 metres; and
  - Southbound left-turn movement is forecast to operate with delays in the LOS F range and a v/c ratio greater than 0.95.
- McLaughlin Road & Novo Star Drive/Arrowsmith Drive
  - Eastbound left-turn movement is forecast to operate with Synchro 95th percentile back of queue exceeding the available storage by 7 metres.
- McLaughlin Road & Rothschild Trail/Ramonet Drive

- Northbound shared through/right-turn movement is forecast to operate with delays in the LOS A range and a v/c ratio equivalent to 0.85.

Inclusion of the site generated traffic increases overall intersection delay by one second or less during the AM and PM peak hours.

Appendix F contains the detailed Synchro 9.

TABLE 4.3: TOTAL TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																
				Eastbound				Westbound				Northbound				Southbound				OVERALL
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	McLaughlin Road & Derry Road West	TCS	LOS	D	F	E	**F**	F	D	D	**F**	F	D	E	**E**	E	E	C	**E**	**F**
			Delay	49	150	57	**128**	324	48	37	**94**	107	50	59	**60**	77	79	30	**75**	**96**
			V/C	0.75	1.20	0.75		1.56	0.68	0.10		0.90	0.61	0.33		0.69	1.03	0.10		**1.27**
			95th	41	293	134		152	129	13		50	115	53		47	277	17		
			Storage	70	-	50		140	-	105		40	-	45		80	-	75		
			Avail.	29	-	-84		-12	-	92		-10	-	-8		33	-	59		
	McLaughlin Road & Novo Star Drive/Arrowsmith Drive	TCS	LOS	D	F	>	**F**	F	D	>	**F**	F	B	>	**B**	B	F	>	**F**	**F**
			Delay	50	89	>	**82**	340	47	>	**157**	95	13	>	**20**	11	172	>	**170**	**114**
			V/C	0.30	0.94	>		1.43	0.15	>		0.84	0.60	>		0.19	1.32	>		**1.31**
			95th	30	100	>		43	16	>		38	71	>		3	367	>		
			Storage	15	-	>		15	-	>		35	-	>		55	-	>		
			Avail.	-15	-	>		-28	-	>		-3	-	>		52	-	>		
	McLaughlin Road & Rothschild Trail/Ramonet Drive	TCS	LOS	E	E	>	**E**	<	F	>	**F**	E	B	>	**B**	A	F	>	**F**	**F**
			Delay	56	57	>	**57**	<	91	>	**91**	68	13	>	**14**	3	196	>	**195**	**133**
			V/C	0.16	0.22	>		<	0.86	>		0.66	0.69	>		0.14	1.41	>		**1.30**
			95th	13	16	>		<	50	>		11	85	>		1	253	>		
			Storage	20	-	>		<	-	>		30	-	>		35	-	>		
			Avail.	7	-	>		<	-	>		19	-	>		34	-	>		
PM Peak Hour	McLaughlin Road & Derry Road West	TCS	LOS	F	D	D	**E**	F	F	D	**F**	F	D	C	**E**	F	D	C	**D**	**F**
			Delay	161	45	38	**65**	110	134	54	**119**	167	52	25	**67**	129	38	33	**54**	**84**
			V/C	1.16	0.54	0.14		1.04	1.16	0.65		1.10	0.94	0.13		0.98	0.54	0.24		**1.07**
			95th	135	106	24		121	300	119		77	239	15		65	111	37		
			Storage	70	-	50		140	-	105		40	-	45		80	-	75		
			Avail.	-65	-	26		19	-	-14		-37	-	30		15	-	38		
	McLaughlin Road & Novo Star Drive/Arrowsmith Drive	TCS	LOS	E	E	>	**E**	E	E	>	**E**	C	A	>	**A**	C	A	>	**A**	**B**
			Delay	75	71	>	**72**	72	75	>	**75**	21	3	>	**5**	35	6	>	**8**	**10**
			V/C	0.47	0.28	>		0.22	0.51	>		0.61	0.65	>		0.73	0.51	>		**0.70**
			95th	22	17	>		10	27	>		8	30	>		37	53	>		
			Storage	15	-	>		15	-	>		35	-	>		55	-	>		
			Avail.	-7	-	>		5	-	>		27	-	>		18	-	>		
	McLaughlin Road & Rothschild Trail/Ramonet Drive	TCS	LOS	E	E	>	**E**	<	F	>	**F**	A	A	>	**A**	D	A	>	**A**	**A**
			Delay	72	70	>	**71**	<	85	>	**85**	3	10	>	**10**	48	3	>	**3**	**9**
			V/C	0.22	0.04	>		<	0.62	>		0.16	0.85	>		0.60	0.46	>		**0.83**
			95th	11	6	>		<	23	>		5	121	>		13	31	>		
			Storage	20	-	>		<	-	>		30	-	>		35	-	>		
			Avail.	9	-	>		<	-	>		26	-	>		22	-	>		

MOE - Measure of Effectiveness
TCS - Traffic Control Signal
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Storage - Existing Storage (m)
> - Shared Right-Turn Lane
< - Shared Left-Turn Lane
Avail. - Available Storage (m)

5 Remedial Measures

5.1 Traffic Control Improvements

Under background and total traffic conditions, the analyses indicate capacity constraints at all study area intersections except for the intersection of McLaughlin Road and Rothschild Trail/Ramonet Drive. The addition of the traffic from the subject redevelopment has negligible impact on the operations of the intersections as shown in the operational analysis in Section 4.4. Therefore, the capacity issues at study area intersections is not as a result of the proposed redevelopment.

Potential remedial measures for the critical movements at the study area intersections include:

- McLaughlin Road & Derry Road West
  - An additional eastbound through lane, which would allow the high volume of through to clear the intersection; and
  - An additional southbound through lane, which would allow for the high volume of through movements to clear the intersection.
- McLaughlin Road & Novo Star Drive/Arrowsmith Drive
  - An additional southbound through lane; and
  - An eastbound right-turn lane, which would allow the high volume of right-turn movements to clear the intersection.
- McLaughlin Road & Rothschild Trail/Ramonet Drive
  - Westbound left-turn lane; and
  - An additional northbound through lane; however, the movement is still considered critical.

The remedial measures mentioned above are potential solutions to deal with total traffic operations and are not warranted by the subject development. Geometrically, there is available width to add lanes; however, this would require major road reconstruction.

6 Site Design & Layout

6.1 Vehicle Circulation

The site circulation has been assessed using the following design vehicles:

- Transportation Association of Canada[7] (TAC) Heavy Single Unit (HSU);
  - Typical heavy truck used for delivery and refuse collection.
- TAC Medium Single Unit (MSU); and
- TAC Passenger Car (P) design vehicle

Appendix F contains reduced scale vehicle turning movement diagrams for the site driveway/entrance and underground parking. The diagrams were produced using the site plan and AutoTURN swept path analysis software.

The proposed geometry for the site driveways is sufficient to accommodate the intended design vehicles. The TAC P will require the full width of the circle road to turn right at the top of the underground parking ramp. The door swing illustrated for the garbage area will block one lane of traffic and the vehicle accessing the garbage area will block all lanes of traffic when being serviced.

Traffic control for the two-way circle located at the driveway should be considered as a yield entry due to circulation.

[7] Canada, Transportation Association o. Geometric Design Guide for Canadian Roads (2017), Section 2.4 Design Vehicles

7 Transportation Demand Management

Transportation Demand Management (TDM) programs[8] consider how people's choices of mode travel are affected by land use patterns, development design, parking availability, parking cost, and the relative cost, convenience, and availability of alternative modes of travel. Various TDM strategies are used to influence those factors so that alternatives to single occupant vehicle travel, such as transit or carpooling, are more competitive. TDM strategies that can be considered at a residential site development can be divided into two basic categories:

- **Pre-occupancy:** things that need to be done while a development is being designed and built; and
- **Post-development:** things that can be done once people have moved into the development.

The pre-occupancy actions are critical because they are most likely to determine how attractive, convenient and safe alternative travel will be once the site is occupied. Before a site is occupied, or during a remodel, it can be designed to be convenient and safe for pedestrians and cyclists. As well, vehicle parking can be provided to meet but not exceed demand.

After the development is built, incentives can be offered, but those incentives will not work as well if the site and its surroundings are already auto-oriented. The incentives generally include subsidies to use transit or rideshare and information about where and how to use alternative modes of transportation.

TDM is one of the tools that municipalities are using to create vibrant and sustainable communities. Using policies and programs to make active and sustainable transportation more convenient, a TDM approach to transportation can deliver long-term environmental sustainability, improve public health, create stronger communities, and build more prosperous and liveable cities.

7.1 Potential TDM Measures

To further promote sustainable modes of travel, some of the TDM measures that could be implemented are described below. Due to the subject site's location adjacent to existing transit routes and pedestrian facilities several initiatives could be considered.

7.1.1 Walking

The pedestrian accessibility of a development is essential is helping to ensure that those that can walk, have accessible pedestrian connections. Proper pedestrian connections from the surrounding community to the site

[8] City of Mississauga Official Plan – Section 8 Create a Multi-Modal City 2015

should be available to ensure safety and to enhance the experience of those that choose to walk.

Sidewalks currently exist on both sides of Rothschild Trail north of Amarone Court, McLaughlin Road, Ramonet Drive, Novo Star Drive, Arrowsmith Drive and Derry Road West.

To further enhance the attractiveness of walking, proper lighting should be provided on site, and near all building entrances and exits. Weather protection at the proposed building's main entrance and adjacent sidewalk provided either by a building overhang, or a stand-alone structure is also recommended as an additional pedestrian enhancement. The future landscaping plan should consider enhancing the common areas to include pedestrian amenities such as benches or seating areas.

7.1.2 Cycling

In creating an environment that supports pedestrian and cycling activity, the public space must be accessible, safe and comfortable to encourage movement on the street and in the surrounding area(s). Providing safe and secure long-term bicycle storage in the underground parking level or within the development should be considered in the site design. Short-term bike storage along the frontage of the building within the public domain can be provided for visitors to the site. The City of Mississauga Cycling Master Plan[9] recommends the following bicycle parking for a residential development:

- Long-term bicycle parking: 0.7 parking spaces/unit; and
- Short-term bicycle parking: 0.08 parking spaces/unit.

Based on this guideline, it is recommended that a total of 33 bike parking spaces would be provided. As zero spaces are being proposed there is a shortfall of 33 spaces. As a minimum, it is recommended at least three short-term bicycle parking spaces be provided near the main building entrance to accommodate those users who choose to bike to/from the site. Providing some long-term bicycle parking for residents who choose to access the site via bicycle should also be considered.

7.1.3 Transit

The availability of convenient and desirable transit options can reduce the number of personal automobile trips. As previously discussed, public transportation is provided via Miway Transit Route 66. This route provides good connectivity to the broader transit network and key destinations within the City, including recreational facilities and shopping. However, the existing amenities at the surrounding transit stops limit the attractiveness of public transportation.

[9] City of Mississauga Cycling Master Plan 2010

Miway Transit in consultation with City staff should consider the installation of bus shelters at the bus stops near the subject site, specifically on McLaughlin Road and Rothschild Trail. These bus shelters should be installed as to not impede visibility for motorists entering either roadway from cross-streets, or other driveway connections. To further enhance these stops, it is recommended that seating (benches), illumination, and bus stop schedules/information be provided. Information about transit services could also be provided within the main lobby of the building on-site.

7.1.4 Parking Management

TDM measures aim to reduce auto ownership and private vehicle trips, thereby reducing the need for an oversupply of parking with the intent of encouraging the use of other forms of transportation. However, a parking supply should not be reduced to a point in which significant parking issues are created. Managing parking supply helps to reduce the undesirable impacts of parking demand on local and regional traffic levels and can result in positive impacts on community livability and design.

When reducing the number of parking spaces, adequate accessibility to other transportation modes should be provided. Additional provisions should be made, such as short-term and/or long-term bicycle parking, improved pedestrian and cycling connections, and improved access to transit to ensure alternate modes of transportation are attractive and readily accessible.

To further encourage residents to the building to utilize sustainable travel modes, the redevelopment should consider unbundling parking spaces from the cost to rent/purchase a unit. This is more equitable and efficient since occupants are not forced to pay for parking they do not need and allows consumers to adjust their parking supply to reflect their needs.

7.1.5 Carshare and Carpooling

Car sharing refers to automobile rental services intended to substitute for private vehicle ownership. It makes occasional use of a vehicle affordable, even for low-income households, while providing an incentive to minimize driving and increase reliance on alternative travel options as much as possible.

Where car sharing services are available, some households reduce their vehicle ownership, either shifting from two to one vehicle, or from one to zero vehicles. The use of car share benefits employees as well as nearby residents and businesses in suitable environments.

By providing this type of service onsite, lower automobile ownership rates and parking requirements can be further obtained. Residents of the building could choose to use walking, transit or cycling as their primary mode of travel and utilize the car share as a secondary mode of travel.

There are currently two car share providers in the City of Mississauga:

- **ZipCar**[10] has nine locations in the City of Mississauga with the closet location to the subject site is situated in close proximity to Square One Shopping Centre.
- **Enterprise Carshare**[11] has four locations in the City of Mississauga with the closest location at Square One Shopping Centre.

Ride-share/carpooling involves two or more people sharing a vehicle for a trip. The cost of the journey (fuel, tolls, parking, etc.) can be split between the driver and passengers, resulting in savings for all concerned. This also reduces the number of vehicle trips and parking demands.

There are several tools available such as Car Pool World[12] or Smart Commute[13] Mississauga, which set up online ride sharing databases. These databases enable people to enter their daily journey so that the database can automatically search out coworkers whose journeys match. Notice boards could also be put up in the lobby of the building for residents who may want to organize informal carpools.

Ride sharing opportunities can also be used in combination with carpool parking stalls. These parking stalls are typically positioned in desirable locations (i.e. next to the building entrance) and are specifically reserved for vehicles with two (2) or more people. Providing a convenient parking location can be a good incentive for residents and visitors to carpool. One or more of the proposed surface parking spaces could be utilized as carpool parking.

7.1.6 Wayfinding and Travel Planning

Increasing awareness of sustainable transportation opportunities for residents of the redevelopment could be considered. New residents of the building should be provided with a welcome package that outlines the available transit and active transportation options such as the availability of bicycle parking, trails, car share/bike share facilities, etc. Signage and kiosks could also be considered to direct residents to nearby transit routes and schedules, bicycle routes and pedestrian walkways.

Providing awareness of commuting events such as, bike to work day and promotional materials that inform residents that all Miway buses are equipped with bike racks can be regularly distributed to residents through the condominium corporation.

The condominium corporation could also allow the City and Miway staff to hold regular events at or near the building to promote sustainable transportation. Some of these events could include how to properly load and unload a bicycle onto a Miway bus. Additionally, these events could also

[10] https://www.zipcar.ca/
[11] https://www.enterprisecarshare.ca/ca/en/home.html
[12] https://www.carpoolworld.com/
[13] https://smartcommute.ca/

include a workshop to problem solve issues the community is experiencing with incorporating sustainable travel.

A fully engaged travel plan will help to engage and educate residents and the community of available sustainable modes of travel and how to overcome obstacles that may be perceived.

7.1.7 Education/Promotion and Incentives

The following measures could be implemented to inform residents of existing transit and active transportation opportunities and encourage their usage:

- Travel planning resources for residents (individualized marketing, active transportation maps, community resources) be provided;
- Wayfinding signage be considered in the Lobby or near main entrances; and
- Provision of annual transit passes with purchase of apartment units.

The above TDM measures can assist in further mitigating the site's impact on the adjacent road network, promote a strong and vibrant economy, and create a livable community that has a balanced transportation network that accommodates all modes of transportation.

8 Conclusions and Recommendations

8.1 Conclusions

The main findings and conclusions of this study are as follows:

- **Study Area**: The intersections that form the study area include the McLaughlin Road intersections with Rothschild Trail/Ramonet Drive, Novo Star Drive/Arrowsmith Drive and Derry Road West.
- **Existing Traffic Conditions**: Intersection capacity issues are identified at the intersection of McLaughlin Road and Derry Road West, McLaughlin Road and Novo Star Drive and McLaughlin Road and Rothschild Trail/Ramonet Drive.
- **Development Generated Traffic**: The subject site is estimated to generate approximately 12 new AM peak hour trips and approximately 17 new PM peak hour trips after mode split reductions.
- **Forecast Traffic**: The forecast traffic volumes near the subject site have been assessed for five years (Year 2023) beyond the date of the study. The likely future traffic volumes near the subject site are estimated to consist of:
  - Generalized background traffic growth;
  - Build-out of one (1) adjacent development application; and
  - Traffic generated by the subject site.
- **Background Traffic Conditions**: The existing capacity constraints are expected to worsen with the growth in background traffic unrelated to the subject redevelopment.
- **Total Traffic Conditions**: The study area intersections are anticipated to continue to operate with levels of service similar to background traffic conditions.
- **Remedial Measures**: No remedial measures are necessary to accommodate the increase in traffic due to redevelopment of the subject site

8.2 Recommendations

Based on the findings of this study, the following is recommended:

- The development should be allowed to redevelop as planned;
- The applicant implements the recommendations outlined as part of the TDM review in Section 7. These include:
  - Providing safe, well-lit and attractive walkways for pedestrian throughout the site, including connections to the surrounding City sidewalk and multi-use path network;

- Providing a minimum of three short-term bicycle parking spaces near the main building entrance and consider providing some long-term bicycle parking for residents and visitors who choose to access the site via bicycle;
- Consultation with Miway to determine potential amenity improvements to the transit stops on McLaughlin Road at Rothschild Trail;
- Unbundling parking from the purchase and sale agreement so that the supply and demand is matched; and
- Provide general education of all travel mode options that identify benefits and how residents can best utilize these modes. New residents should be provided with a welcome package that outlines proximity to transit, cycling facilities and the proximity to local activity centres.

Appendix A

Pre-Study Consultation

5A-150 Pinebush Road
Cambridge, ON N1R 8L2
p: 519.896.3163
905.381.2229
416.479.9684

www.ptsl.com

10 September 2018
Project: 180231

By Email

RE: TRANSPORTATION IMPACT STUDY
6620 ROTHSCHILD TRAIL, MISSISSAUGA, ON – SCOPE OF WORK

Paradigm Transportation Solutions Limited has been retained to prepare a Transportation Impact Study (TRIS) for a proposed development in the City of Mississauga, Regional Municipality of Peel.

Project Understanding

The subject parcel is located on the south side of current terminus of Rothschild Trail, west of Amarone Court. The parcel is currently occupied by a single-family home with an individual driveway connection to Rothschild Trail. The existing building will be removed to permit the redevelopment to proceed.

The redevelopment is planned to include a four (4)-storey apartment building containing 43 residential units. A total of 105 parking spaces are proposed to service the site: 86 underground resident parking spaces and 19 surface visitor parking spaces. Access to the site will be provided via the existing all-turns private driveway connection to Rothschild Trail.

In assessing the transportation impacts, we intend to analyze the operation of the following three (3) intersections:

- McLaughlin Road and Rothschild Trail/Ramonet Drive (signalized);
- McLaughlin Road and Derry Road West (signalized); and
- McLaughlin Road and Novo Star Drive (signalized).

We will complete the TRIS in accordance with the *City of Mississauga Traffic Impact Study Guidelines* and any further direction provided by City staff.

Work Plan

Based on our understanding of the development proposal, we propose to carry out the following work plan:

- **Task 1 - Data Collection:** We will request available traffic counts, background growth rates, relevant background reports, and information about any other development applications in the vicinity. If acceptable (less than two years old) traffic data is not available, we will arrange for eight (8)-hour traffic counts to be conducted on a weekday at the subject intersections.

  We will conduct a site visit to view and assess current road and transportation conditions in the study area during the typical peak periods for commuter traffic flow (weekday morning (AM) and afternoon (PM) peak hours).

- **Task 2 – Traffic Forecasting:** We will request confirmation of the opening year of the redevelopment and site plan statistics, including total number of units and parking provisions. According to the City of Mississauga TIS guidelines, we have assumed that we will be requested to develop traffic forecasts for the weekday AM and PM peak hours for one (1) future horizon five (5) years from the date of the study to satisfy City requirements. The components of the traffic forecasts will be as follows:

  - Existing (Base Year) – We will develop Existing (2018) vehicle traffic volumes for the AM and PM peak hours from available counts for the study area intersections.

  - Future (Horizon Years) Background – We will estimate Future Background (five years from date of the study) vehicle traffic volumes for the AM and PM peak hours by applying the approved growth rate to the Base Year volumes and adding anticipated trips from nearby approved. We will factor out any existing site-related trips that will be removed from the network when the existing land use is removed from the site.

  - Future (Horizon Years) Total – We will forecast the AM and PM peak hour vehicle traffic volumes generated by the proposed redevelopment based on rates contained in the Institute of Transportation Engineers (ITE) *Trip Generation* (10th Edition). The site vehicle trips will be distributed and assigned to the adjacent road network based on the distribution information contained in the 2016 Transportation Tomorrow Survey (TTS) for the subject site traffic analysis zone (TAZ). These trips will be added to the Future Background estimates to produce Future Total traffic volumes for the horizon year.

- **Task 3 – Operational Analyses:** We will evaluate the operations of the study area intersections for the Existing, Future Background and Future Total AM and PM peak hour traffic conditions for the horizon year. The operational analyses will be completed using Synchro 9 with HCM procedures. The analyses will assess volume-to-capacity (v/c) ratios, Level of Service (LOS) and queuing conditions. Based on the analysis results, we will identify any existing deficiencies, as well as the net impact of the proposed development on the study area road network. The need for road improvements (e.g., provision of auxiliary turn lanes) and/or modifications to traffic control devices (e.g., addition of traffic control signals) to address any deficiencies will be determined. An assessment of whether these measures are required due to non-site traffic (i.e. Existing or Future Background) or the increase in traffic resulting from the proposed development will be completed.

If you have any questions related to this work plan, please contact the undersigned at (905) 381-2229 x103 or (519) 896-3163 x103 or by email at selkins@ptsl.com.

Yours very truly,

PARADIGM TRANSPORTATION SOLUTIONS LIMITED

Stew Elkins
BES, MITE
Vice President and Chief Resource Officer

Appendix B

Existing Count Data

Ontario Traffic Inc.

Morning Peak Diagram

Specified Period
From: 6:00:00
To: 10:00:00

One Hour Peak
From: 7:45:00
To: 8:45:00

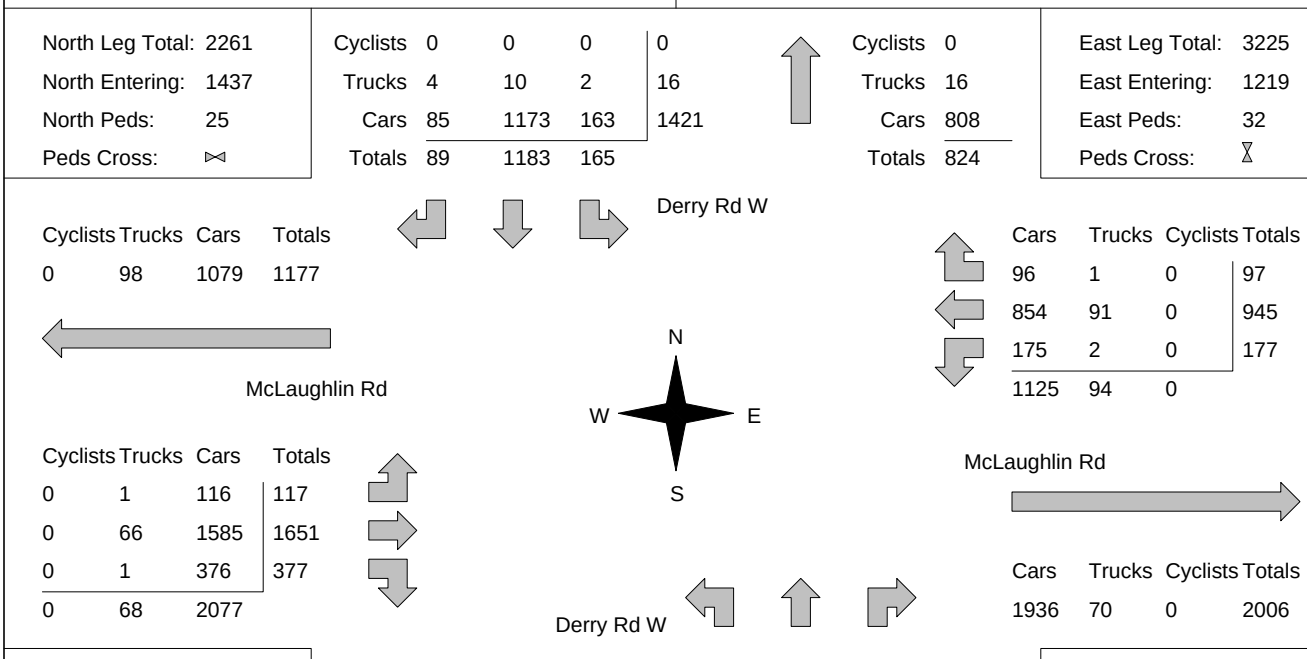
Municipality: Mississauga
Site #: 1833100001
Intersection: Derry Rd W & McLaughlin Rd
TFR File #: 1
Count date: 25-Sep-18

Weather conditions:

Person(s) who counted:

**** Signalized Intersection ****

Major Road: Derry Rd W runs N/S



Comments

Ontario Traffic Inc.

Afternoon Peak Diagram

Specified Period
From: 15:00:00
To: 19:00:00

One Hour Peak
From: 17:00:00
To: 18:00:00

Municipality: Mississauga
Site #: 1833100001
Intersection: Derry Rd W & McLaughlin Rd
TFR File #: 1
Count date: 25-Sep-18

Weather conditions:

Person(s) who counted:

**** Signalized Intersection ****

Major Road: Derry Rd W runs N/S

North Leg Total: 2644
North Entering: 986
North Peds: 29
Peds Cross: ⋈

Cyclists	0	0	0	0
Trucks	2	8	4	14
Cars	199	599	174	972
Totals	201	607	178	

Cyclists	0
Trucks	11
Cars	1647
Totals	1658

East Leg Total: 3223
East Entering: 2176
East Peds: 87
Peds Cross: ⧖

Derry Rd W

Cyclists	Trucks	Cars	Totals
0	63	1995	2058

Cars	Trucks	Cyclists	Totals
337	0	0	337
1589	60	0	1649
190	0	0	190
2116	60	0	

McLaughlin Rd

N
W E
S

Cyclists	Trucks	Cars	Totals
0	1	200	201
0	77	719	796
0	1	103	104
0	79	1022	

McLaughlin Rd

Cars	Trucks	Cyclists	Totals
966	81	0	1047

Derry Rd W

Peds Cross: ⧖
West Peds: 50
West Entering: 1101
West Leg Total: 3159

Cars	892
Trucks	9
Cyclists	0
Totals	901

Cars	207	1110	73	1390
Trucks	1	10	0	11
Cyclists	0	0	0	0
Totals	208	1120	73	

Peds Cross: ⋈
South Peds: 53
South Entering: 1401
South Leg Total: 2302

Comments

Ontario Traffic Inc.

Total Count Diagram

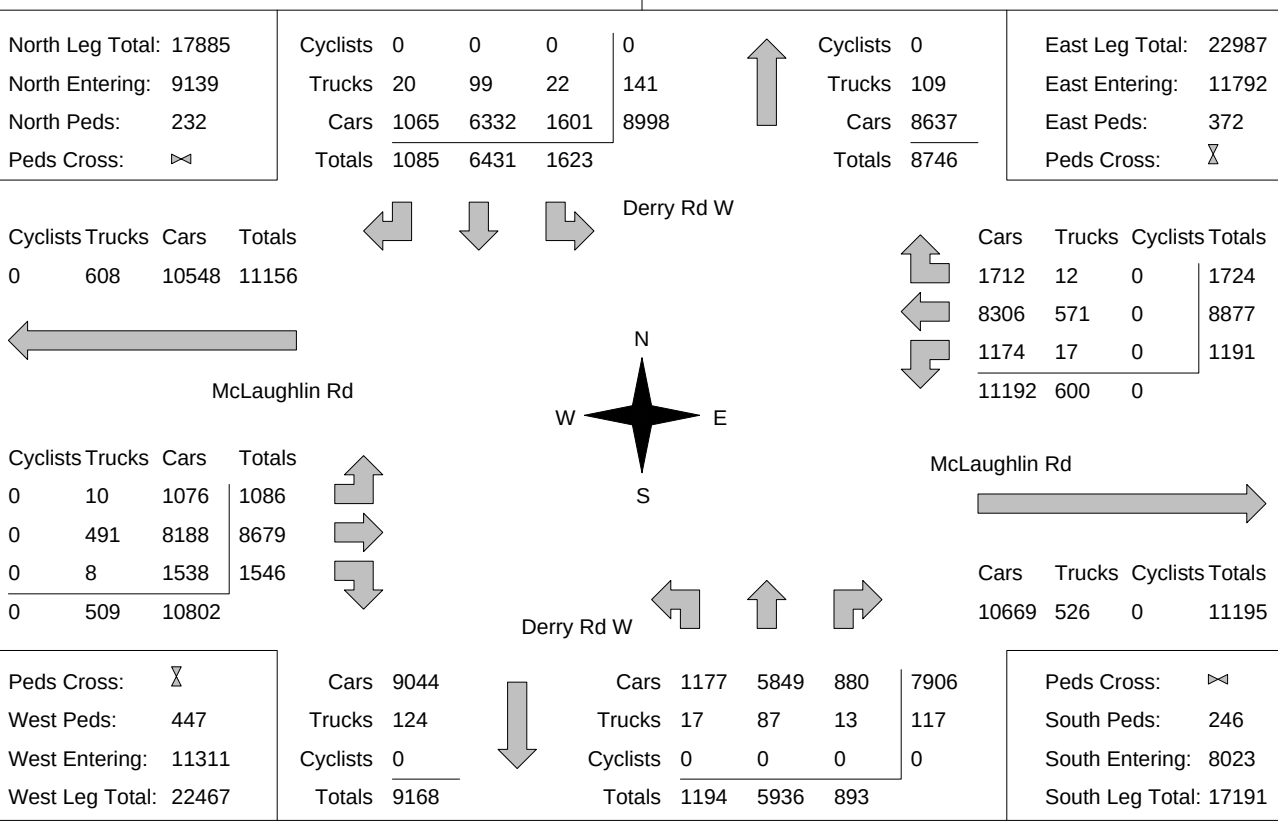
Municipality: Mississauga
Site #: 1833100001
Intersection: Derry Rd W & McLaughlin Rd
TFR File #: 1
Count date: 25-Sep-18

Weather conditions:

Person(s) who counted:

**** Signalized Intersection ****

Major Road: Derry Rd W runs N/S



Comments

Ontario Traffic Inc.
Traffic Count Summary

Intersection: Derry Rd W & McLaughlin Rd | **Count Date:** 25-Sep-18 | **Municipality:** Mississauga

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	North/South Total Approaches
6:00:00	0	0	0	0	0	0
7:00:00	316	897	92	1305	6	1571
8:00:00	167	1128	80	1375	22	2067
9:00:00	189	1226	91	1506	27	2444
10:00:00	229	785	91	1105	23	1697
15:00:00	0	0	0	0	0	0
16:00:00	175	557	177	909	45	2202
17:00:00	165	647	184	996	42	2454
18:00:00	178	607	201	986	29	2387
19:00:00	204	584	169	957	38	2340
Totals:	1623	6431	1085	9139	232	17162

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
6:00:00	0	0	0	0	0
7:00:00	28	147	91	266	11
8:00:00	89	466	137	692	25
9:00:00	131	603	204	938	18
10:00:00	75	365	152	592	15
15:00:00	0	0	0	0	0
16:00:00	215	996	82	1293	49
17:00:00	233	1155	70	1458	37
18:00:00	208	1120	73	1401	53
19:00:00	215	1084	84	1383	38
Totals:	1194	5936	893	8023	246

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	East/West Total Approaches
6:00:00	0	0	0	0	0	0
7:00:00	54	319	74	447	8	2201
8:00:00	120	770	103	993	37	3001
9:00:00	164	930	78	1172	28	3208
10:00:00	116	662	86	864	15	2365
15:00:00	0	0	0	0	0	0
16:00:00	188	1501	290	1979	67	2921
17:00:00	172	1492	386	2050	57	3072
18:00:00	190	1649	337	2176	87	3277
19:00:00	187	1554	370	2111	73	3058
Totals:	1191	8877	1724	11792	372	23103

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
6:00:00	0	0	0	0	0
7:00:00	55	1485	214	1754	58
8:00:00	99	1574	335	2008	57
9:00:00	124	1554	358	2036	65
10:00:00	108	1134	259	1501	44
15:00:00	0	0	0	0	0
16:00:00	152	697	93	942	71
17:00:00	166	753	103	1022	53
18:00:00	201	796	104	1101	50
19:00:00	181	686	80	947	49
Totals:	1086	8679	1546	11311	447

Calculated Values for Traffic Crossing Major Street

Hours Ending:	7:00	8:00	9:00	10:00	16:00	17:00	18:00	19:00
Crossing Values:	1611	1840	1887	1396	1935	1909	2122	1998

Ontario Traffic Inc.

Count Date: 25-Sep-18 Site #: 1833100001

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Cyclists - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
6:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15:00	74	74	136	136	19	19	1	1	0	0	0	0	0	0	0	0	0	0	0	0
6:30:00	162	88	356	220	38	19	1	0	1	1	0	0	0	0	0	0	0	0	4	4
6:45:00	243	81	576	220	66	28	1	0	6	5	1	1	0	0	0	0	0	0	4	0
7:00:00	315	72	887	311	91	25	1	0	10	4	1	0	0	0	0	0	0	0	6	2
7:15:00	380	65	1133	246	114	23	1	0	11	1	3	2	0	0	0	0	0	0	10	4
7:30:00	411	31	1419	286	139	25	2	1	16	5	3	0	0	0	0	0	0	0	19	9
7:45:00	450	39	1717	298	150	11	2	0	27	11	3	0	0	0	0	0	0	0	25	6
8:00:00	481	31	1995	278	167	17	2	0	30	3	5	2	0	0	0	0	0	0	28	3
8:15:00	513	32	2313	318	183	16	2	0	34	4	5	0	0	0	0	0	0	0	34	6
8:30:00	566	53	2612	299	207	24	3	1	35	1	6	1	0	0	0	0	0	0	43	9
8:45:00	613	47	2890	278	235	28	4	1	37	2	7	1	0	0	0	0	0	0	50	7
9:00:00	668	55	3212	322	256	21	4	0	39	2	7	0	0	0	0	0	0	0	55	5
9:15:00	739	71	3467	255	286	30	5	1	44	5	7	0	0	0	0	0	0	0	59	4
9:30:00	791	52	3621	154	302	16	7	2	46	2	7	0	0	0	0	0	0	0	65	6
9:45:00	837	46	3832	211	325	23	7	0	53	7	8	1	0	0	0	0	0	0	70	5
10:00:00	894	57	3981	149	345	20	7	0	55	2	9	1	0	0	0	0	0	0	78	8
10:02:03	894	0	3981	0	345	0	7	0	55	0	9	0	0	0	0	0	0	0	78	0
15:00:00	894	0	3981	0	345	0	7	0	55	0	9	0	0	0	0	0	0	0	78	0
15:15:00	937	43	4120	139	385	40	10	3	60	5	10	1	0	0	0	0	0	0	89	11
15:30:00	978	41	4245	125	430	45	10	0	64	4	12	2	0	0	0	0	0	0	96	7
15:45:00	1027	49	4391	146	472	42	12	2	69	5	14	2	0	0	0	0	0	0	106	10
16:00:00	1064	37	4521	130	515	43	12	0	72	3	16	2	0	0	0	0	0	0	123	17
16:15:00	1112	48	4676	155	566	51	12	0	74	2	17	1	0	0	0	0	0	0	136	13
16:30:00	1161	49	4833	157	603	37	12	0	76	2	17	0	0	0	0	0	0	0	147	11
16:45:00	1191	30	4988	155	648	45	12	0	81	5	17	0	0	0	0	0	0	0	154	7
17:00:00	1229	38	5157	169	697	49	12	0	83	2	18	1	0	0	0	0	0	0	165	11
17:15:00	1273	44	5312	155	754	57	14	2	84	1	18	0	0	0	0	0	0	0	171	6
17:30:00	1305	32	5448	136	808	54	15	1	85	1	18	0	0	0	0	0	0	0	178	7
17:45:00	1353	48	5628	180	857	49	16	1	89	4	19	1	0	0	0	0	0	0	185	7
18:00:00	1403	50	5756	128	896	39	16	0	91	2	20	1	0	0	0	0	0	0	194	9
18:15:00	1444	41	5899	143	938	42	17	1	92	1	20	0	0	0	0	0	0	0	207	13
18:30:00	1495	51	6045	146	982	44	17	0	94	2	20	0	0	0	0	0	0	0	221	14
18:45:00	1542	47	6184	139	1016	34	20	3	95	1	20	0	0	0	0	0	0	0	229	8
19:00:00	1601	59	6332	148	1065	49	22	2	99	4	20	0	0	0	0	0	0	0	232	3
19:15:00	1601	0	6332	0	1065	0	22	0	99	0	20	0	0	0	0	0	0	0	232	0
19:16:24	1601	0	6332	0	1065	0	22	0	99	0	20	0	0	0	0	0	0	0	232	0

Ontario Traffic Inc.

Count Date: 25-Sep-18 Site #: 1833100001

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Cyclists - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
6:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15:00	22	22	49	49	16	16	0	0	9	9	0	0	0	0	0	0	0	0	1	1
6:30:00	29	7	103	54	35	19	1	1	17	8	2	2	0	0	0	0	0	0	2	1
6:45:00	41	12	184	81	57	22	1	0	29	12	2	0	0	0	0	0	0	0	4	2
7:00:00	52	11	276	92	71	14	2	1	43	14	3	1	0	0	0	0	0	0	8	4
7:15:00	64	12	402	126	98	27	2	0	59	16	3	0	0	0	0	0	0	0	11	3
7:30:00	87	23	552	150	122	24	3	1	81	22	3	0	0	0	0	0	0	0	29	18
7:45:00	116	29	742	190	138	16	4	1	106	25	3	0	0	0	0	0	0	0	38	9
8:00:00	170	54	956	214	174	36	4	0	133	27	3	0	0	0	0	0	0	0	45	7
8:15:00	216	46	1147	191	192	18	4	0	149	16	3	0	0	0	0	0	0	0	53	8
8:30:00	258	42	1367	220	218	26	6	2	169	20	4	1	0	0	0	0	0	0	66	13
8:45:00	291	33	1596	229	234	16	6	0	197	28	4	0	0	0	0	0	0	0	70	4
9:00:00	332	41	1803	207	251	17	6	0	216	19	4	0	0	0	0	0	0	0	73	3
9:15:00	368	36	1989	186	274	23	6	0	240	24	4	0	0	0	0	0	0	0	74	1
9:30:00	395	27	2139	150	296	22	6	0	261	21	5	1	0	0	0	0	0	0	81	7
9:45:00	423	28	2261	122	310	14	7	1	275	14	5	0	0	0	0	0	0	0	82	1
10:00:00	446	23	2380	119	336	26	8	1	301	26	5	0	0	0	0	0	0	0	88	6
10:02:03	446	0	2380	0	336	0	8	0	301	0	5	0	0	0	0	0	0	0	88	0
15:00:00	446	0	2380	0	336	0	8	0	301	0	5	0	0	0	0	0	0	0	88	0
15:15:00	485	39	2735	355	409	73	9	1	327	26	5	0	0	0	0	0	0	0	108	20
15:30:00	538	53	3070	335	481	72	9	0	347	20	6	1	0	0	0	0	0	0	115	7
15:45:00	587	49	3403	333	541	60	11	2	371	24	6	0	0	0	0	0	0	0	134	19
16:00:00	628	41	3789	386	624	83	14	3	393	22	7	1	0	0	0	0	0	0	155	21
16:15:00	670	42	4168	379	772	148	15	1	406	13	8	1	0	0	0	0	0	0	167	12
16:30:00	708	38	4552	384	886	114	15	0	423	17	9	1	0	0	0	0	0	0	185	18
16:45:00	752	44	4918	366	934	48	15	0	444	21	11	2	0	0	0	0	0	0	202	17
17:00:00	799	47	5218	300	1006	72	15	0	456	12	11	0	0	0	0	0	0	0	212	10
17:15:00	849	50	5624	406	1066	60	15	0	478	22	11	0	0	0	0	0	0	0	243	31
17:30:00	901	52	6024	400	1130	64	15	0	490	12	11	0	0	0	0	0	0	0	253	10
17:45:00	943	42	6381	357	1233	103	15	0	504	14	11	0	0	0	0	0	0	0	276	23
18:00:00	989	46	6807	426	1343	110	15	0	516	12	11	0	0	0	0	0	0	0	299	23
18:15:00	1035	46	7181	374	1427	84	15	0	527	11	11	0	0	0	0	0	0	0	334	35
18:30:00	1080	45	7583	402	1511	84	15	0	544	17	11	0	0	0	0	0	0	0	351	17
18:45:00	1127	47	8013	430	1610	99	15	0	566	22	11	0	0	0	0	0	0	0	363	12
19:00:00	1174	47	8306	293	1712	102	17	2	571	5	12	1	0	0	0	0	0	0	372	9
19:15:00	1174	0	8306	0	1712	0	17	0	571	0	12	0	0	0	0	0	0	0	372	0
19:16:24	1174	0	8306	0	1712	0	17	0	571	0	12	0	0	0	0	0	0	0	372	0

Ontario Traffic Inc.

Count Date: 25-Sep-18 Site #: 1833100001

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Cyclists - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
6:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15:00	2	2	24	24	24	24	1	1	0	0	0	0	0	0	0	0	0	0	2	2
6:30:00	11	9	55	31	45	21	1	0	1	1	0	0	0	0	0	0	0	0	6	4
6:45:00	18	7	90	35	68	23	1	0	4	3	1	1	0	0	0	0	0	0	8	2
7:00:00	26	8	139	49	90	22	2	1	8	4	1	0	0	0	0	0	0	0	11	3
7:15:00	41	15	213	74	122	32	4	2	10	2	2	1	0	0	0	0	0	0	11	0
7:30:00	55	14	300	87	151	29	4	0	14	4	3	1	0	0	0	0	0	0	21	10
7:45:00	73	18	454	154	181	30	6	2	16	2	4	1	0	0	0	0	0	0	27	6
8:00:00	109	36	593	139	223	42	8	2	20	4	5	1	0	0	0	0	0	0	36	9
8:15:00	144	35	764	171	272	49	9	1	25	5	5	0	0	0	0	0	0	0	39	3
8:30:00	183	39	913	149	330	58	9	0	29	4	5	0	0	0	0	0	0	0	44	5
8:45:00	213	30	1050	137	369	39	9	0	30	1	6	1	0	0	0	0	0	0	52	8
9:00:00	238	25	1183	133	425	56	10	1	33	3	7	1	0	0	0	0	0	0	54	2
9:15:00	255	17	1286	103	470	45	11	1	34	1	7	0	0	0	0	0	0	0	57	3
9:30:00	274	19	1382	96	516	46	11	0	41	7	7	0	0	0	0	0	0	0	64	7
9:45:00	290	16	1478	96	541	25	12	1	42	1	7	0	0	0	0	0	0	0	66	2
10:00:00	311	21	1537	59	577	36	12	0	44	2	7	0	0	0	0	0	0	0	69	3
10:02:03	311	0	1537	0	577	0	12	0	44	0	7	0	0	0	0	0	0	0	69	0
15:00:00	311	0	1537	0	577	0	12	0	44	0	7	0	0	0	0	0	0	0	69	0
15:15:00	364	53	1747	210	602	25	12	0	51	7	7	0	0	0	0	0	0	0	89	20
15:30:00	413	49	1979	232	618	16	14	2	53	2	9	2	0	0	0	0	0	0	98	9
15:45:00	463	50	2254	275	644	26	16	2	57	4	9	0	0	0	0	0	0	0	111	13
16:00:00	522	59	2518	264	657	13	16	0	59	2	9	0	0	0	0	0	0	0	118	7
16:15:00	582	60	2821	303	679	22	16	0	62	3	10	1	0	0	0	0	0	0	127	9
16:30:00	655	73	3100	279	702	23	16	0	66	4	12	2	0	0	0	0	0	0	135	8
16:45:00	712	57	3383	283	713	11	16	0	67	1	12	0	0	0	0	0	0	0	150	15
17:00:00	755	43	3664	281	724	11	16	0	68	1	12	0	0	0	0	0	0	0	155	5
17:15:00	811	56	3937	273	738	14	16	0	72	4	12	0	0	0	0	0	0	0	164	9
17:30:00	855	44	4213	276	759	21	16	0	74	2	12	0	0	0	0	0	0	0	179	15
17:45:00	912	57	4510	297	778	19	17	1	76	2	12	0	0	0	0	0	0	0	185	6
18:00:00	962	50	4774	264	797	19	17	0	78	2	12	0	0	0	0	0	0	0	208	23
18:15:00	1024	62	5038	264	823	26	17	0	80	2	12	0	0	0	0	0	0	0	216	8
18:30:00	1083	59	5308	270	839	16	17	0	83	3	12	0	0	0	0	0	0	0	229	13
18:45:00	1131	48	5552	244	853	14	17	0	86	3	12	0	0	0	0	0	0	0	240	11
19:00:00	1177	46	5849	297	880	27	17	0	87	1	13	1	0	0	0	0	0	0	246	6
19:15:00	1177	0	5849	0	880	0	17	0	87	0	13	0	0	0	0	0	0	0	246	0
19:16:24	1177	0	5849	0	880	0	17	0	87	0	13	0	0	0	0	0	0	0	246	0

Ontario Traffic Inc.

Count Date: 25-Sep-18 Site #: 1833100001

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Cyclists - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
6:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15:00	10	10	266	266	39	39	0	0	9	9	0	0	0	0	0	0	0	0	3	3
6:30:00	12	2	642	376	78	39	0	0	16	7	0	0	0	0	0	0	0	0	22	19
6:45:00	33	21	1092	450	145	67	1	1	19	3	0	0	0	0	0	0	0	0	35	13
7:00:00	52	19	1459	367	214	69	3	2	26	7	0	0	0	0	0	0	0	0	58	23
7:15:00	62	10	1802	343	274	60	3	0	34	8	0	0	0	0	0	0	0	0	73	15
7:30:00	82	20	2207	405	341	67	4	1	44	10	0	0	0	0	0	0	0	0	89	16
7:45:00	115	33	2591	384	437	96	4	0	53	9	1	1	0	0	0	0	0	0	97	8
8:00:00	150	35	2993	402	548	111	4	0	66	13	1	0	0	0	0	0	0	0	115	18
8:15:00	175	25	3364	371	646	98	4	0	85	19	2	1	0	0	0	0	0	0	127	12
8:30:00	199	24	3758	394	725	79	5	1	102	17	2	0	0	0	0	0	0	0	138	11
8:45:00	231	32	4176	418	813	88	5	0	119	17	2	0	0	0	0	0	0	0	159	21
9:00:00	273	42	4480	304	903	90	5	0	133	14	4	2	0	0	0	0	0	0	180	21
9:15:00	298	25	4806	326	990	87	5	0	155	22	4	0	0	0	0	0	0	0	190	10
9:30:00	323	25	5093	287	1060	70	7	2	183	28	4	0	0	0	0	0	0	0	204	14
9:45:00	358	35	5328	235	1119	59	7	0	197	14	4	0	0	0	0	0	0	0	216	12
10:00:00	379	21	5528	200	1162	43	7	0	219	22	4	0	0	0	0	0	0	0	224	8
10:02:03	379	0	5528	0	1162	0	7	0	219	0	4	0	0	0	0	0	0	0	224	0
15:00:00	379	0	5528	0	1162	0	7	0	219	0	4	0	0	0	0	0	0	0	224	0
15:15:00	405	26	5691	163	1183	21	8	1	239	20	5	1	0	0	0	0	0	0	244	20
15:30:00	448	43	5842	151	1207	24	8	0	262	23	6	1	0	0	0	0	0	0	262	18
15:45:00	487	39	5999	157	1234	27	8	0	277	15	6	0	0	0	0	0	0	0	282	20
16:00:00	530	43	6147	148	1252	18	8	0	297	20	7	1	0	0	0	0	0	0	295	13
16:15:00	572	42	6314	167	1275	23	8	0	311	14	7	0	0	0	0	0	0	0	305	10
16:30:00	611	39	6487	173	1297	22	8	0	333	22	7	0	0	0	0	0	0	0	320	15
16:45:00	654	43	6667	180	1325	28	8	0	352	19	7	0	0	0	0	0	0	0	330	10
17:00:00	696	42	6830	163	1355	30	8	0	367	15	7	0	0	0	0	0	0	0	348	18
17:15:00	744	48	7003	173	1378	23	8	0	381	14	8	1	0	0	0	0	0	0	356	8
17:30:00	794	50	7185	182	1401	23	8	0	411	30	8	0	0	0	0	0	0	0	369	13
17:45:00	841	47	7358	173	1430	29	9	1	429	18	8	0	0	0	0	0	0	0	382	13
18:00:00	896	55	7549	191	1458	28	9	0	444	15	8	0	0	0	0	0	0	0	398	16
18:15:00	947	51	7723	174	1479	21	9	0	456	12	8	0	0	0	0	0	0	0	406	8
18:30:00	992	45	7897	174	1505	26	9	0	468	12	8	0	0	0	0	0	0	0	421	15
18:45:00	1032	40	8063	166	1522	17	9	0	478	10	8	0	0	0	0	0	0	0	438	17
19:00:00	1076	44	8188	125	1538	16	10	1	491	13	8	0	0	0	0	0	0	0	447	9
19:15:00	1076	0	8188	0	1538	0	10	0	491	0	8	0	0	0	0	0	0	0	447	0
19:16:24	1076	0	8188	0	1538	0	10	0	491	0	8	0	0	0	0	0	0	0	447	0

Ontario Traffic Inc.

Morning Peak Diagram

Specified Period
From: 6:00:00
To: 10:00:00

One Hour Peak
From: 7:30:00
To: 8:30:00

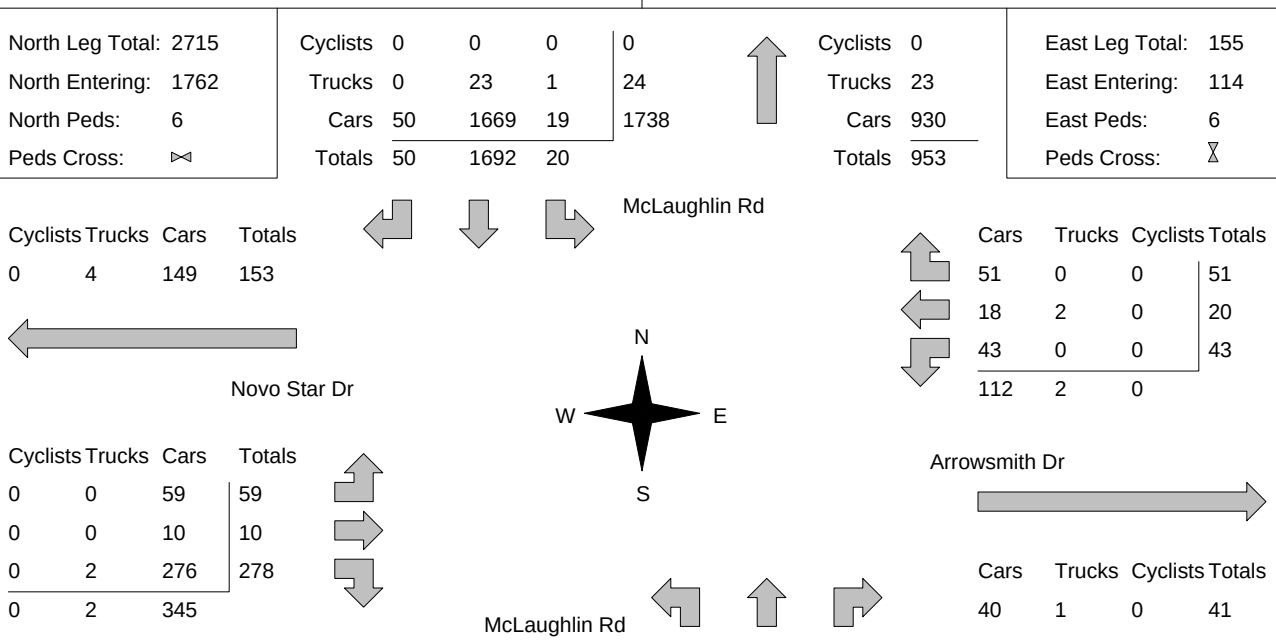
Municipality: Mississauga
Site #: 1833100002
Intersection: McLaughlin Rd & Novo Star Dr-Arr
TFR File #: 1
Count date: 25-Sep-18

Weather conditions:

Person(s) who counted:

**** Signalized Intersection ****

Major Road: McLaughlin Rd runs N/S



Comments

Ontario Traffic Inc.

Afternoon Peak Diagram

Specified Period
From: 15:00:00
To: 19:00:00

One Hour Peak
From: 16:45:00
To: 17:45:00

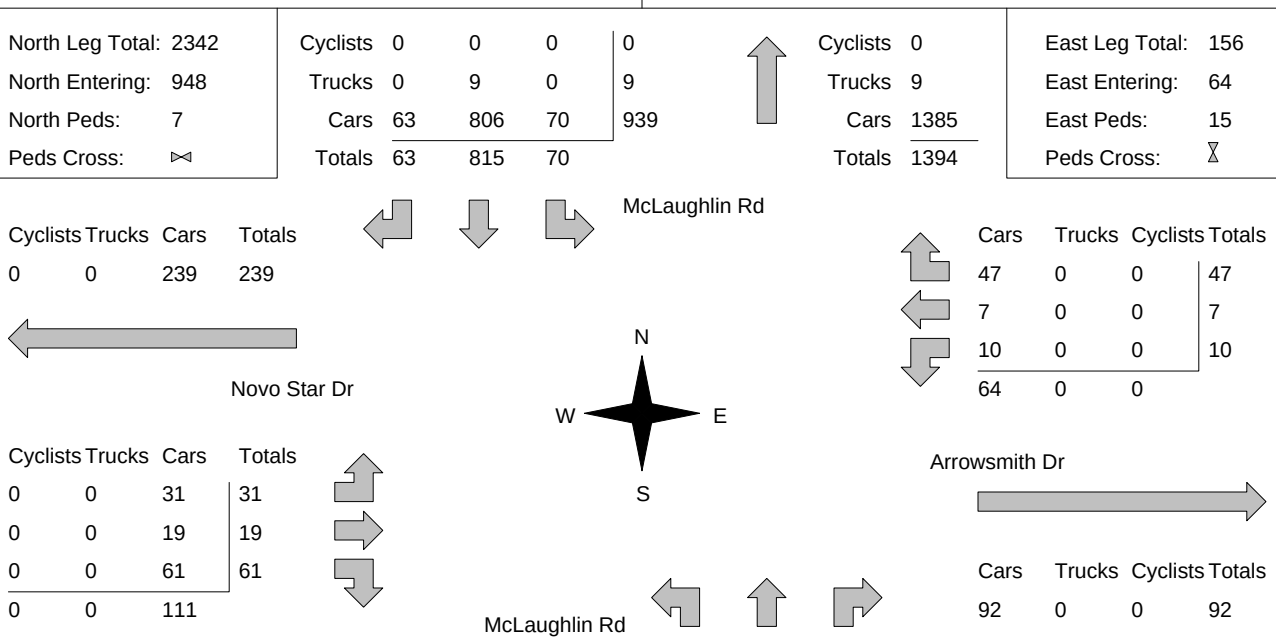
Municipality: Mississauga
Site #: 1833100002
Intersection: McLaughlin Rd & Novo Star Dr-Arr
TFR File #: 1
Count date: 25-Sep-18

Weather conditions:

Person(s) who counted:

**** Signalized Intersection ****

Major Road: McLaughlin Rd runs N/S



Comments

Ontario Traffic Inc.

Total Count Diagram

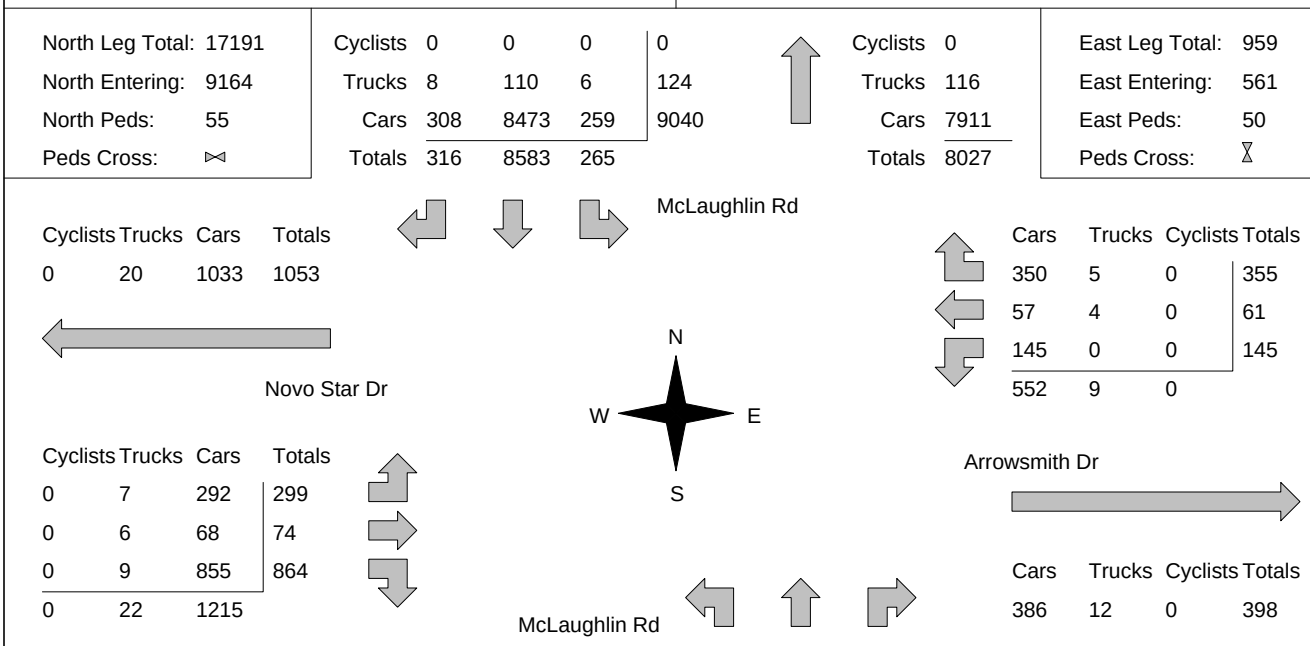
Municipality: Mississauga
Site #: 1833100002
Intersection: McLaughlin Rd & Novo Star Dr-Arr
TFR File #: 1
Count date: 25-Sep-18

Weather conditions:

Person(s) who counted:

**** Signalized Intersection ****

Major Road: McLaughlin Rd runs N/S



Comments

Ontario Traffic Inc.
Traffic Count Summary

Intersection: McLaughlin Rd & Novo Star Dr-Ar | **Count Date:** 25-Sep-18 | **Municipality:** Mississauga

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	North/South Total Approaches
6:00:00	0	0	0	0	0	0
7:00:00	7	1146	9	1162	4	1391
8:00:00	14	1544	24	1582	7	2231
9:00:00	25	1664	52	1741	5	2650
10:00:00	27	1107	27	1161	8	1693
15:00:00	0	0	0	0	0	0
16:00:00	32	767	41	840	12	2178
17:00:00	46	834	46	926	1	2430
18:00:00	69	770	64	903	7	2409
19:00:00	45	751	53	849	11	2290
Totals:	265	8583	316	9164	55	17272

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
6:00:00	0	0	0	0	0
7:00:00	8	220	1	229	1
8:00:00	35	612	2	649	2
9:00:00	78	815	16	909	1
10:00:00	21	505	6	532	1
15:00:00	0	0	0	0	0
16:00:00	103	1217	18	1338	14
17:00:00	134	1366	4	1504	6
18:00:00	175	1330	1	1506	7
19:00:00	122	1308	11	1441	4
Totals:	676	7373	59	8108	36

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	East/West Total Approaches
6:00:00	0	0	0	0	0	0
7:00:00	15	1	35	51	6	145
8:00:00	33	5	58	96	4	327
9:00:00	34	21	50	105	4	440
10:00:00	21	4	42	67	3	205
15:00:00	0	0	0	0	0	0
16:00:00	7	5	37	49	10	178
17:00:00	11	11	36	58	6	168
18:00:00	10	10	53	73	13	175
19:00:00	14	4	44	62	4	160
Totals:	145	61	355	561	50	1798

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
6:00:00	0	0	0	0	0
7:00:00	12	3	79	94	2
8:00:00	28	6	197	231	12
9:00:00	73	13	249	335	3
10:00:00	45	6	87	138	4
15:00:00	0	0	0	0	0
16:00:00	42	18	69	129	18
17:00:00	43	9	58	110	8
18:00:00	26	14	62	102	11
19:00:00	30	5	63	98	5
Totals:	299	74	864	1237	63

Calculated Values for Traffic Crossing Major Street

Hours Ending:	7:00	8:00	9:00	10:00	16:00	17:00	18:00	19:00
Crossing Values:	35	76	134	81	93	72	64	64

Ontario Traffic Inc.

Count Date: 25-Sep-18 Site #: 1833100002

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Cyclists - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
6:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15:00	1	1	195	195	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30:00	2	1	455	260	4	4	1	1	1	1	0	0	0	0	0	0	0	0	0	0
6:45:00	5	3	750	295	5	1	2	1	5	4	0	0	0	0	0	0	0	0	3	3
7:00:00	5	0	1137	387	8	3	2	0	9	4	1	1	0	0	0	0	0	0	4	1
7:15:00	11	6	1447	310	10	2	2	0	10	1	1	0	0	0	0	0	0	0	6	2
7:30:00	13	2	1816	369	15	5	3	1	15	5	1	0	0	0	0	0	0	0	9	3
7:45:00	16	3	2227	411	22	7	3	0	28	13	1	0	0	0	0	0	0	0	10	1
8:00:00	18	2	2659	432	32	10	3	0	31	3	1	0	0	0	0	0	0	0	11	1
8:15:00	26	8	3098	439	47	15	4	1	35	4	1	0	0	0	0	0	0	0	12	1
8:30:00	32	6	3485	387	65	18	4	0	38	3	1	0	0	0	0	0	0	0	15	3
8:45:00	40	8	3871	386	71	6	4	0	40	2	1	0	0	0	0	0	0	0	16	1
9:00:00	42	2	4310	439	84	13	4	0	44	4	1	0	0	0	0	0	0	0	16	0
9:15:00	47	5	4679	369	93	9	4	0	46	2	4	3	0	0	0	0	0	0	18	2
9:30:00	55	8	4919	240	97	4	4	0	48	2	4	0	0	0	0	0	0	0	21	3
9:45:00	61	6	5199	280	104	7	4	0	56	8	4	0	0	0	0	0	0	0	21	0
10:00:00	69	8	5402	203	108	4	4	0	59	3	4	0	0	0	0	0	0	0	24	3
10:01:43	69	0	5402	0	108	0	4	0	59	0	4	0	0	0	0	0	0	0	24	0
15:00:00	69	0	5402	0	108	0	4	0	59	0	4	0	0	0	0	0	0	0	24	0
15:15:00	79	10	5587	185	112	4	4	0	64	5	6	2	0	0	0	0	0	0	30	6
15:30:00	86	7	5774	187	121	9	4	0	69	5	6	0	0	0	0	0	0	0	31	1
15:45:00	93	7	5972	198	139	18	4	0	76	7	6	0	0	0	0	0	0	0	34	3
16:00:00	100	7	6147	175	146	7	5	1	81	5	7	1	0	0	0	0	0	0	36	2
16:15:00	111	11	6353	206	150	4	5	0	83	2	8	1	0	0	0	0	0	0	37	1
16:30:00	125	14	6542	189	165	15	5	0	85	2	8	0	0	0	0	0	0	0	37	0
16:45:00	134	9	6747	205	179	14	5	0	90	5	8	0	0	0	0	0	0	0	37	0
17:00:00	146	12	6970	223	191	12	5	0	92	2	8	0	0	0	0	0	0	0	37	0
17:15:00	158	12	7171	201	208	17	5	0	94	2	8	0	0	0	0	0	0	0	40	3
17:30:00	178	20	7342	171	228	20	5	0	95	1	8	0	0	0	0	0	0	0	41	1
17:45:00	204	26	7553	211	242	14	5	0	99	4	8	0	0	0	0	0	0	0	44	3
18:00:00	215	11	7731	178	255	13	5	0	101	2	8	0	0	0	0	0	0	0	44	0
18:15:00	228	13	7908	177	275	20	5	0	102	1	8	0	0	0	0	0	0	0	45	1
18:30:00	243	15	8099	191	286	11	5	0	104	2	8	0	0	0	0	0	0	0	50	5
18:45:00	251	8	8284	185	294	8	5	0	105	1	8	0	0	0	0	0	0	0	55	5
19:00:00	259	8	8473	189	308	14	6	1	110	5	8	0	0	0	0	0	0	0	55	0
19:15:00	259	0	8473	0	308	0	6	0	110	0	8	0	0	0	0	0	0	0	55	0
19:15:50	259	0	8473	0	308	0	6	0	110	0	8	0	0	0	0	0	0	0	55	0

Ontario Traffic Inc.

Count Date: 25-Sep-18 Site #: 1833100002

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Cyclists - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
6:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15:00	3	3	0	0	9	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30:00	8	5	0	0	19	10	0	0	0	0	0	0	0	0	0	0	0	0	2	2
6:45:00	11	3	1	1	27	8	0	0	0	0	0	0	0	0	0	0	0	0	4	2
7:00:00	15	4	1	0	34	7	0	0	0	0	1	1	0	0	0	0	0	0	6	2
7:15:00	20	5	1	0	49	15	0	0	0	0	2	1	0	0	0	0	0	0	7	1
7:30:00	25	5	2	1	63	14	0	0	1	1	2	0	0	0	0	0	0	0	8	1
7:45:00	34	9	2	0	76	13	0	0	1	0	2	0	0	0	0	0	0	0	8	0
8:00:00	48	14	4	2	91	15	0	0	2	1	2	0	0	0	0	0	0	0	10	2
8:15:00	56	8	9	5	102	11	0	0	2	0	2	0	0	0	0	0	0	0	11	1
8:30:00	68	12	20	11	114	12	0	0	3	1	2	0	0	0	0	0	0	0	14	3
8:45:00	78	10	22	2	121	7	0	0	3	0	2	0	0	0	0	0	0	0	14	0
9:00:00	82	4	24	2	141	20	0	0	3	0	2	0	0	0	0	0	0	0	14	0
9:15:00	86	4	26	2	151	10	0	0	3	0	2	0	0	0	0	0	0	0	15	1
9:30:00	92	6	26	0	157	6	0	0	3	0	2	0	0	0	0	0	0	0	15	0
9:45:00	101	9	27	1	171	14	0	0	3	0	2	0	0	0	0	0	0	0	16	1
10:00:00	103	2	28	1	183	12	0	0	3	0	2	0	0	0	0	0	0	0	17	1
10:01:43	103	0	28	0	183	0	0	0	3	0	2	0	0	0	0	0	0	0	17	0
15:00:00	103	0	28	0	183	0	0	0	3	0	2	0	0	0	0	0	0	0	17	0
15:15:00	104	1	28	0	192	9	0	0	4	1	2	0	0	0	0	0	0	0	23	6
15:30:00	107	3	29	1	197	5	0	0	4	0	3	1	0	0	0	0	0	0	23	0
15:45:00	110	3	31	2	210	13	0	0	4	0	3	0	0	0	0	0	0	0	25	2
16:00:00	110	0	32	1	218	8	0	0	4	0	4	1	0	0	0	0	0	0	27	2
16:15:00	113	3	35	3	227	9	0	0	4	0	4	0	0	0	0	0	0	0	28	1
16:30:00	114	1	37	2	234	7	0	0	4	0	4	0	0	0	0	0	0	0	29	1
16:45:00	118	4	41	4	244	10	0	0	4	0	4	0	0	0	0	0	0	0	29	0
17:00:00	121	3	43	2	254	10	0	0	4	0	4	0	0	0	0	0	0	0	33	4
17:15:00	123	2	45	2	265	11	0	0	4	0	4	0	0	0	0	0	0	0	40	7
17:30:00	126	3	46	1	278	13	0	0	4	0	4	0	0	0	0	0	0	0	41	1
17:45:00	128	2	48	2	291	13	0	0	4	0	4	0	0	0	0	0	0	0	44	3
18:00:00	131	3	53	5	307	16	0	0	4	0	4	0	0	0	0	0	0	0	46	2
18:15:00	133	2	53	0	320	13	0	0	4	0	5	1	0	0	0	0	0	0	47	1
18:30:00	137	4	54	1	331	11	0	0	4	0	5	0	0	0	0	0	0	0	48	1
18:45:00	141	4	57	3	341	10	0	0	4	0	5	0	0	0	0	0	0	0	48	0
19:00:00	145	4	57	0	350	9	0	0	4	0	5	0	0	0	0	0	0	0	50	2
19:15:00	145	0	57	0	350	0	0	0	4	0	5	0	0	0	0	0	0	0	50	0
19:15:50	145	0	57	0	350	0	0	0	4	0	5	0	0	0	0	0	0	0	50	0

Ontario Traffic Inc.

Count Date: 25-Sep-18 Site #: 1833100002

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Cyclists - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
6:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15:00	1	1	39	39	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
6:30:00	4	3	88	49	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0
6:45:00	6	2	142	54	1	1	0	0	5	3	0	0	0	0	0	0	0	0	0	0
7:00:00	8	2	211	69	1	0	0	0	9	4	0	0	0	0	0	0	0	0	1	1
7:15:00	11	3	312	101	2	1	0	0	13	4	0	0	0	0	0	0	0	0	1	0
7:30:00	18	7	424	112	2	0	0	0	16	3	0	0	0	0	0	0	0	0	2	1
7:45:00	31	13	602	178	2	0	1	1	21	5	0	0	0	0	0	0	0	0	2	0
8:00:00	42	11	802	200	3	1	1	0	30	9	0	0	0	0	0	0	0	0	3	1
8:15:00	67	25	1036	234	6	3	1	0	35	5	0	0	0	0	0	0	0	0	4	1
8:30:00	99	32	1244	208	13	7	2	1	39	4	0	0	0	0	0	0	0	0	4	0
8:45:00	115	16	1418	174	15	2	2	0	40	1	0	0	0	0	0	0	0	0	4	0
9:00:00	119	4	1602	184	19	4	2	0	45	5	0	0	0	0	0	0	0	0	4	0
9:15:00	129	10	1741	139	21	2	2	0	47	2	0	0	0	0	0	0	0	0	4	0
9:30:00	133	4	1882	141	22	1	2	0	54	7	0	0	0	0	0	0	0	0	5	1
9:45:00	137	4	2000	118	24	2	2	0	57	3	0	0	0	0	0	0	0	0	5	0
10:00:00	140	3	2093	93	25	1	2	0	59	2	0	0	0	0	0	0	0	0	5	0
10:01:43	140	0	2093	0	25	0	2	0	59	0	0	0	0	0	0	0	0	0	5	0
15:00:00	140	0	2093	0	25	0	2	0	59	0	0	0	0	0	0	0	0	0	5	0
15:15:00	164	24	2357	264	30	5	2	0	65	6	0	0	0	0	0	0	0	0	14	9
15:30:00	182	18	2639	282	35	5	4	2	70	5	0	0	0	0	0	0	0	0	15	1
15:45:00	205	23	2974	335	41	6	5	1	74	4	0	0	0	0	0	0	0	0	18	3
16:00:00	240	35	3293	319	43	2	5	0	76	2	0	0	0	0	0	0	0	0	19	1
16:15:00	264	24	3649	356	45	2	6	1	78	2	0	0	0	0	0	0	0	0	21	2
16:30:00	294	30	4014	365	45	0	7	1	84	6	0	0	0	0	0	0	0	0	23	2
16:45:00	341	47	4341	327	45	0	7	0	86	2	0	0	0	0	0	0	0	0	25	2
17:00:00	372	31	4648	307	47	2	7	0	87	1	0	0	0	0	0	0	0	0	25	0
17:15:00	422	50	4977	329	47	0	7	0	90	3	0	0	0	0	0	0	0	0	25	0
17:30:00	461	39	5305	328	48	1	7	0	93	3	0	0	0	0	0	0	0	0	28	3
17:45:00	510	49	5648	343	48	0	7	0	95	2	0	0	0	0	0	0	0	0	28	0
18:00:00	547	37	5968	320	48	0	7	0	97	2	0	0	0	0	0	0	0	0	32	4
18:15:00	580	33	6293	325	49	1	7	0	98	1	0	0	0	0	0	0	0	0	33	1
18:30:00	610	30	6622	329	50	1	7	0	103	5	0	0	0	0	0	0	0	0	34	1
18:45:00	642	32	6914	292	53	3	7	0	103	0	0	0	0	0	0	0	0	0	36	2
19:00:00	668	26	7269	355	59	6	8	1	104	1	0	0	0	0	0	0	0	0	36	0
19:15:00	668	0	7269	0	59	0	8	0	104	0	0	0	0	0	0	0	0	0	36	0
19:15:50	668	0	7269	0	59	0	8	0	104	0	0	0	0	0	0	0	0	0	36	0

Ontario Traffic Inc.

Count Date: 25-Sep-18 Site #: 1833100002

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Cyclists - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
6:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15:00	2	2	0	0	12	12	0	0	0	0	0	0	0	0	0	0	0	0	1	1
6:30:00	3	1	0	0	34	22	0	0	0	0	0	0	0	0	0	0	0	0	2	1
6:45:00	8	5	3	3	63	29	1	1	0	0	0	0	0	0	0	0	0	0	2	0
7:00:00	11	3	3	0	79	16	1	0	0	0	0	0	0	0	0	0	0	0	2	0
7:15:00	15	4	3	0	96	17	1	0	0	0	1	1	0	0	0	0	0	0	3	1
7:30:00	17	2	5	2	130	34	2	1	1	1	1	0	0	0	0	0	0	0	7	4
7:45:00	31	14	7	2	190	60	2	0	1	0	2	1	0	0	0	0	0	0	12	5
8:00:00	38	7	8	1	274	84	2	0	1	0	2	0	0	0	0	0	0	0	14	2
8:15:00	48	10	9	1	328	54	2	0	1	0	2	0	0	0	0	0	0	0	16	2
8:30:00	76	28	15	6	406	78	2	0	1	0	3	1	0	0	0	0	0	0	16	0
8:45:00	100	24	21	6	477	71	3	1	1	0	3	0	0	0	0	0	0	0	16	0
9:00:00	110	10	21	0	520	43	3	0	1	0	5	2	0	0	0	0	0	0	17	1
9:15:00	126	16	24	3	552	32	3	0	1	0	6	1	0	0	0	0	0	0	19	2
9:30:00	139	13	26	2	573	21	3	0	1	0	7	1	0	0	0	0	0	0	19	0
9:45:00	146	7	26	0	591	18	3	0	1	0	7	0	0	0	0	0	0	0	21	2
10:00:00	155	9	27	1	605	14	3	0	1	0	7	0	0	0	0	0	0	0	21	0
10:01:43	155	0	27	0	605	0	3	0	1	0	7	0	0	0	0	0	0	0	21	0
15:00:00	155	0	27	0	605	0	3	0	1	0	7	0	0	0	0	0	0	0	21	0
15:15:00	169	14	37	10	625	20	4	1	3	2	8	1	0	0	0	0	0	0	35	14
15:30:00	176	7	39	2	638	13	4	0	5	2	8	0	0	0	0	0	0	0	35	0
15:45:00	182	6	40	1	652	14	5	1	5	0	8	0	0	0	0	0	0	0	37	2
16:00:00	195	13	40	0	672	20	5	0	6	1	9	1	0	0	0	0	0	0	39	2
16:15:00	203	8	41	1	685	13	7	2	6	0	9	0	0	0	0	0	0	0	40	1
16:30:00	210	7	42	1	693	8	7	0	6	0	9	0	0	0	0	0	0	0	44	4
16:45:00	227	17	44	2	715	22	7	0	6	0	9	0	0	0	0	0	0	0	44	0
17:00:00	236	9	49	5	730	15	7	0	6	0	9	0	0	0	0	0	0	0	47	3
17:15:00	245	9	55	6	745	15	7	0	6	0	9	0	0	0	0	0	0	0	50	3
17:30:00	253	8	61	6	757	12	7	0	6	0	9	0	0	0	0	0	0	0	51	1
17:45:00	258	5	63	2	776	19	7	0	6	0	9	0	0	0	0	0	0	0	55	4
18:00:00	262	4	63	0	792	16	7	0	6	0	9	0	0	0	0	0	0	0	58	3
18:15:00	275	13	63	0	799	7	7	0	6	0	9	0	0	0	0	0	0	0	58	0
18:30:00	282	7	64	1	812	13	7	0	6	0	9	0	0	0	0	0	0	0	61	3
18:45:00	286	4	67	3	833	21	7	0	6	0	9	0	0	0	0	0	0	0	63	2
19:00:00	292	6	68	1	855	22	7	0	6	0	9	0	0	0	0	0	0	0	63	0
19:15:00	292	0	68	0	855	0	7	0	6	0	9	0	0	0	0	0	0	0	63	0
19:15:50	292	0	68	0	855	0	7	0	6	0	9	0	0	0	0	0	0	0	63	0

Ontario Traffic Inc.

Morning Peak Diagram

Specified Period
From: 6:00:00
To: 10:00:00

One Hour Peak
From: 7:30:00
To: 8:30:00

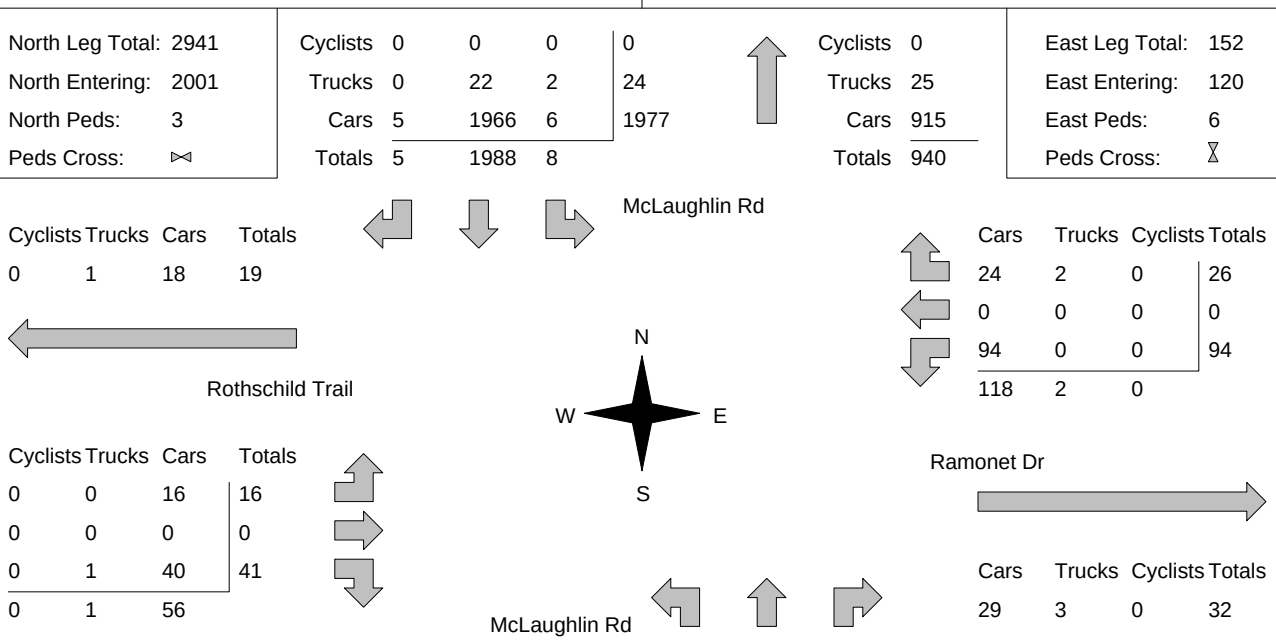
Municipality: Mississauga
Site #: 1833100003
Intersection: McLaughlin Rd & Rothschild Trail-R
TFR File #: 1
Count date: 25-Sep-18

Weather conditions:

Person(s) who counted:

**** Signalized Intersection ****

Major Road: McLaughlin Rd runs N/S



Comments

Ontario Traffic Inc.

Afternoon Peak Diagram

Specified Period
From: 15:00:00
To: 19:00:00

One Hour Peak
From: 15:45:00
To: 16:45:00

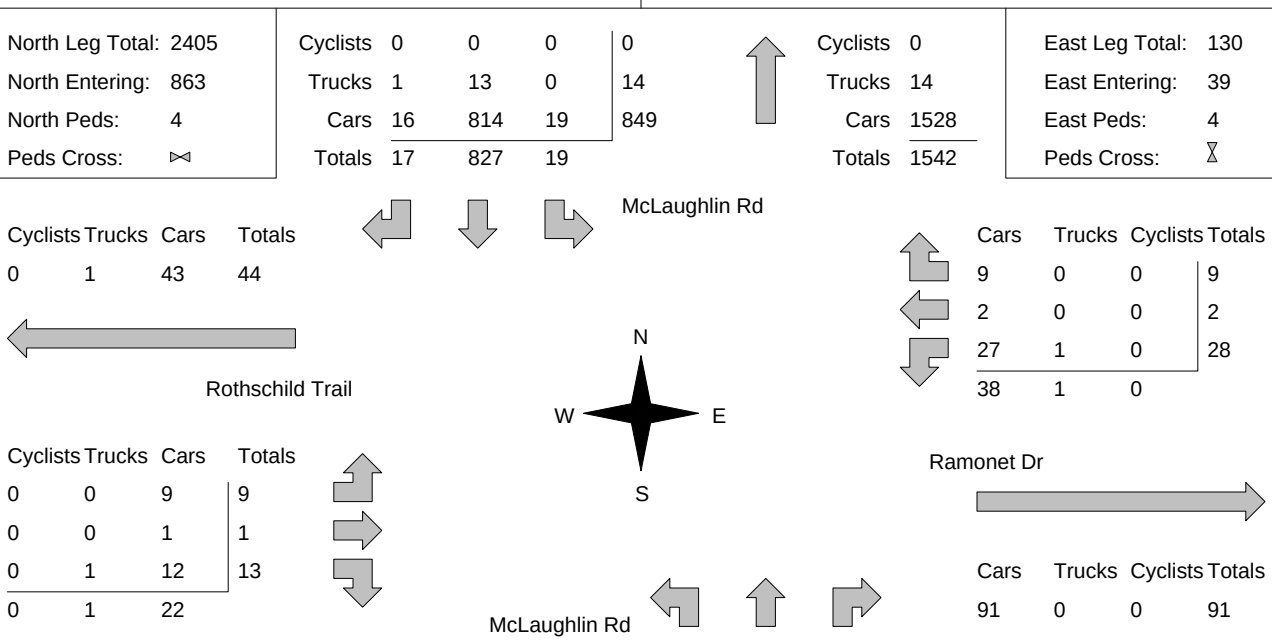
Municipality: Mississauga
Site #: 1833100003
Intersection: McLaughlin Rd & Rothschild Trail-R
TFR File #: 1
Count date: 25-Sep-18

Weather conditions:

Person(s) who counted:

**** Signalized Intersection ****

Major Road: McLaughlin Rd runs N/S



Comments

Ontario Traffic Inc.

Total Count Diagram

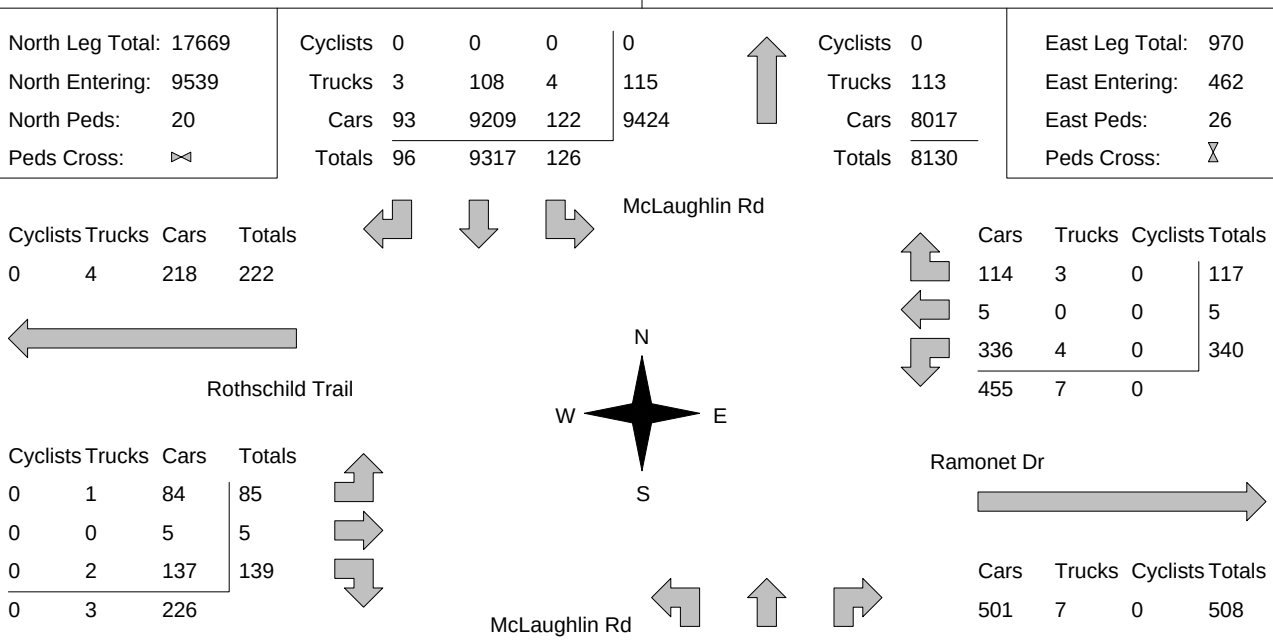
Municipality: Mississauga
Site #: 1833100003
Intersection: McLaughlin Rd & Rothschild Trail-R
TFR File #: 1
Count date: 25-Sep-18

Weather conditions:

Person(s) who counted:

**** Signalized Intersection ****

Major Road: McLaughlin Rd runs N/S



Comments

Ontario Traffic Inc.
Traffic Count Summary

Intersection: McLaughlin Rd & Rothschild Trail-F | **Count Date:** 25-Sep-18 | **Municipality:** Mississauga

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	North/South Total Approaches
6:00:00	0	0	0	0	0	0
7:00:00	2	1220	0	1222	0	1442
8:00:00	10	1725	6	1741	2	2385
9:00:00	10	1950	4	1964	2	2868
10:00:00	6	1183	13	1202	3	1739
15:00:00	0	0	0	0	0	0
16:00:00	29	796	18	843	5	2259
17:00:00	19	865	15	899	4	2484
18:00:00	22	799	20	841	4	2432
19:00:00	28	779	20	827	0	2356
Totals:	126	9317	96	9539	20	17965

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
6:00:00	0	0	0	0	0
7:00:00	1	217	2	220	0
8:00:00	6	624	14	644	1
9:00:00	21	859	24	904	1
10:00:00	10	510	17	537	1
15:00:00	0	0	0	0	0
16:00:00	22	1331	63	1416	1
17:00:00	24	1496	65	1585	2
18:00:00	20	1483	88	1591	5
19:00:00	17	1408	104	1529	0
Totals:	121	7928	377	8426	11

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	East/West Total Approaches
6:00:00	0	0	0	0	0	0
7:00:00	31	0	12	43	1	58
8:00:00	76	1	19	96	4	125
9:00:00	63	0	26	89	2	147
10:00:00	36	1	14	51	1	82
15:00:00	0	0	0	0	0	0
16:00:00	32	0	10	42	9	57
17:00:00	25	2	9	36	4	59
18:00:00	34	0	12	46	4	76
19:00:00	43	1	15	59	1	87
Totals:	340	5	117	462	26	691

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
6:00:00	0	0	0	0	0
7:00:00	2	0	13	15	1
8:00:00	9	2	18	29	11
9:00:00	20	0	38	58	3
10:00:00	10	0	21	31	0
15:00:00	0	0	0	0	0
16:00:00	7	0	8	15	15
17:00:00	10	1	12	23	5
18:00:00	16	1	13	30	7
19:00:00	11	1	16	28	5
Totals:	85	5	139	229	47

Calculated Values for Traffic Crossing Major Street

Hours Ending:	7:00	8:00	9:00	10:00	16:00	17:00	18:00	19:00
Crossing Values:	33	90	86	51	45	43	60	55

Ontario Traffic Inc.

Count Date: 25-Sep-18 Site #: 1833100003

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Cyclists - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
6:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15:00	0	0	207	207	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30:00	0	0	491	284	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
6:45:00	0	0	815	324	0	0	0	0	5	4	0	0	0	0	0	0	0	0	0	0
7:00:00	2	2	1211	396	0	0	0	0	9	4	0	0	0	0	0	0	0	0	0	0
7:15:00	4	2	1533	322	1	1	1	1	10	1	0	0	0	0	0	0	0	0	1	1
7:30:00	6	2	1934	401	2	1	2	1	13	3	0	0	0	0	0	0	0	0	1	0
7:45:00	8	2	2402	468	4	2	4	2	24	11	0	0	0	0	0	0	0	0	2	1
8:00:00	8	0	2918	516	6	2	4	0	27	3	0	0	0	0	0	0	0	0	2	0
8:15:00	8	0	3423	505	7	1	4	0	31	4	0	0	0	0	0	0	0	0	2	0
8:30:00	12	4	3900	477	7	0	4	0	35	4	0	0	0	0	0	0	0	0	4	2
8:45:00	16	4	4363	463	10	3	4	0	37	2	0	0	0	0	0	0	0	0	4	0
9:00:00	18	2	4852	489	10	0	4	0	43	6	0	0	0	0	0	0	0	0	4	0
9:15:00	20	2	5244	392	14	4	4	0	45	2	1	1	0	0	0	0	0	0	5	1
9:30:00	21	1	5512	268	14	0	4	0	47	2	1	0	0	0	0	0	0	0	6	1
9:45:00	21	0	5804	292	20	6	4	0	54	7	2	1	0	0	0	0	0	0	7	1
10:00:00	24	3	6021	217	21	1	4	0	57	3	2	0	0	0	0	0	0	0	7	0
10:02:01	24	0	6021	0	21	0	4	0	57	0	2	0	0	0	0	0	0	0	7	0
15:00:00	24	0	6021	0	21	0	4	0	57	0	2	0	0	0	0	0	0	0	7	0
15:15:00	33	9	6216	195	26	5	4	0	63	6	2	0	0	0	0	0	0	0	11	4
15:30:00	38	5	6414	198	28	2	4	0	68	5	2	0	0	0	0	0	0	0	11	0
15:45:00	47	9	6611	197	32	4	4	0	75	7	2	0	0	0	0	0	0	0	11	0
16:00:00	53	6	6795	184	38	6	4	0	79	4	3	1	0	0	0	0	0	0	12	1
16:15:00	56	3	7008	213	40	2	4	0	81	2	3	0	0	0	0	0	0	0	13	1
16:30:00	60	4	7204	196	43	3	4	0	83	2	3	0	0	0	0	0	0	0	14	1
16:45:00	66	6	7425	221	48	5	4	0	88	5	3	0	0	0	0	0	0	0	15	1
17:00:00	72	6	7649	224	53	5	4	0	90	2	3	0	0	0	0	0	0	0	16	1
17:15:00	78	6	7855	206	60	7	4	0	92	2	3	0	0	0	0	0	0	0	16	0
17:30:00	83	5	8031	176	65	5	4	0	93	1	3	0	0	0	0	0	0	0	18	2
17:45:00	91	8	8247	216	68	3	4	0	97	4	3	0	0	0	0	0	0	0	19	1
18:00:00	94	3	8439	192	73	5	4	0	99	2	3	0	0	0	0	0	0	0	20	1
18:15:00	102	8	8615	176	77	4	4	0	100	1	3	0	0	0	0	0	0	0	20	0
18:30:00	111	9	8807	192	84	7	4	0	102	2	3	0	0	0	0	0	0	0	20	0
18:45:00	116	5	9008	201	88	4	4	0	103	1	3	0	0	0	0	0	0	0	20	0
19:00:00	122	6	9209	201	93	5	4	0	108	5	3	0	0	0	0	0	0	0	20	0
19:15:00	122	0	9209	0	93	0	4	0	108	0	3	0	0	0	0	0	0	0	20	0
19:15:32	122	0	9209	0	93	0	4	0	108	0	3	0	0	0	0	0	0	0	20	0

Ontario Traffic Inc.

Count Date: 25-Sep-18 Site #: 1833100003

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Cyclists - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
6:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15:00	3	3	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30:00	12	9	0	0	5	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45:00	23	11	0	0	10	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00:00	31	8	0	0	12	2	0	0	0	0	0	0	0	0	0	0	0	0	1	1
7:15:00	36	5	1	1	16	4	0	0	0	0	0	0	0	0	0	0	0	0	1	0
7:30:00	52	16	1	0	24	8	1	1	0	0	0	0	0	0	0	0	0	0	1	0
7:45:00	74	22	1	0	27	3	1	0	0	0	1	1	0	0	0	0	0	0	3	2
8:00:00	106	32	1	0	30	3	1	0	0	0	1	0	0	0	0	0	0	0	5	2
8:15:00	122	16	1	0	36	6	1	0	0	0	1	0	0	0	0	0	0	0	6	1
8:30:00	146	24	1	0	48	12	1	0	0	0	2	1	0	0	0	0	0	0	7	1
8:45:00	158	12	1	0	51	3	1	0	0	0	2	0	0	0	0	0	0	0	7	0
9:00:00	169	11	1	0	55	4	1	0	0	0	2	0	0	0	0	0	0	0	7	0
9:15:00	179	10	1	0	57	2	1	0	0	0	2	0	0	0	0	0	0	0	8	1
9:30:00	186	7	1	0	61	4	1	0	0	0	2	0	0	0	0	0	0	0	8	0
9:45:00	199	13	2	1	65	4	1	0	0	0	2	0	0	0	0	0	0	0	8	0
10:00:00	205	6	2	0	69	4	1	0	0	0	2	0	0	0	0	0	0	0	8	0
10:02:01	205	0	2	0	69	0	1	0	0	0	2	0	0	0	0	0	0	0	8	0
15:00:00	205	0	2	0	69	0	1	0	0	0	2	0	0	0	0	0	0	0	8	0
15:15:00	207	2	2	0	72	3	2	1	0	0	3	1	0	0	0	0	0	0	14	6
15:30:00	220	13	2	0	74	2	3	1	0	0	3	0	0	0	0	0	0	0	15	1
15:45:00	228	8	2	0	77	3	3	0	0	0	3	0	0	0	0	0	0	0	17	2
16:00:00	234	6	2	0	78	1	4	1	0	0	3	0	0	0	0	0	0	0	17	0
16:15:00	244	10	2	0	81	3	4	0	0	0	3	0	0	0	0	0	0	0	21	4
16:30:00	247	3	4	2	82	1	4	0	0	0	3	0	0	0	0	0	0	0	21	0
16:45:00	255	8	4	0	86	4	4	0	0	0	3	0	0	0	0	0	0	0	21	0
17:00:00	259	4	4	0	87	1	4	0	0	0	3	0	0	0	0	0	0	0	21	0
17:15:00	265	6	4	0	89	2	4	0	0	0	3	0	0	0	0	0	0	0	22	1
17:30:00	270	5	4	0	92	3	4	0	0	0	3	0	0	0	0	0	0	0	22	0
17:45:00	284	14	4	0	94	2	4	0	0	0	3	0	0	0	0	0	0	0	23	1
18:00:00	293	9	4	0	99	5	4	0	0	0	3	0	0	0	0	0	0	0	25	2
18:15:00	299	6	4	0	102	3	4	0	0	0	3	0	0	0	0	0	0	0	25	0
18:30:00	310	11	4	0	105	3	4	0	0	0	3	0	0	0	0	0	0	0	26	1
18:45:00	327	17	5	1	109	4	4	0	0	0	3	0	0	0	0	0	0	0	26	0
19:00:00	336	9	5	0	114	5	4	0	0	0	3	0	0	0	0	0	0	0	26	0
19:15:00	336	0	5	0	114	0	4	0	0	0	3	0	0	0	0	0	0	0	26	0
19:15:32	336	0	5	0	114	0	4	0	0	0	3	0	0	0	0	0	0	0	26	0

Ontario Traffic Inc.

Count Date: 25-Sep-18 Site #: 1833100003

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Cyclists - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
6:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15:00	0	0	40	40	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
6:30:00	0	0	88	48	2	2	0	0	2	1	0	0	0	0	0	0	0	0	0	0
6:45:00	0	0	139	51	2	0	0	0	5	3	0	0	0	0	0	0	0	0	0	0
7:00:00	1	1	208	69	2	0	0	0	9	4	0	0	0	0	0	0	0	0	0	0
7:15:00	1	0	308	100	6	4	0	0	13	4	0	0	0	0	0	0	0	0	0	0
7:30:00	3	2	419	111	8	2	0	0	16	3	0	0	0	0	0	0	0	0	0	0
7:45:00	5	2	602	183	10	2	0	0	21	5	0	0	0	0	0	0	0	0	1	1
8:00:00	6	1	811	209	16	6	1	1	30	9	0	0	0	0	0	0	0	0	1	0
8:15:00	11	5	1064	253	27	11	1	0	35	5	1	1	0	0	0	0	0	0	2	1
8:30:00	16	5	1294	230	31	4	1	0	39	4	1	0	0	0	0	0	0	0	2	0
8:45:00	22	6	1477	183	36	5	1	0	40	1	1	0	0	0	0	0	0	0	2	0
9:00:00	27	5	1655	178	39	3	1	0	45	5	1	0	0	0	0	0	0	0	2	0
9:15:00	30	3	1804	149	42	3	1	0	46	1	1	0	0	0	0	0	0	0	3	1
9:30:00	32	2	1941	137	46	4	1	0	53	7	1	0	0	0	0	0	0	0	3	0
9:45:00	34	2	2059	118	51	5	1	0	56	3	1	0	0	0	0	0	0	0	3	0
10:00:00	37	3	2152	93	56	5	1	0	58	2	1	0	0	0	0	0	0	0	3	0
10:02:01	37	0	2152	0	56	0	1	0	58	0	1	0	0	0	0	0	0	0	3	0
15:00:00	37	0	2152	0	56	0	1	0	58	0	1	0	0	0	0	0	0	0	3	0
15:15:00	41	4	2438	286	67	11	1	0	63	5	2	1	0	0	0	0	0	0	3	0
15:30:00	45	4	2747	309	84	17	1	0	70	7	2	0	0	0	0	0	0	0	4	1
15:45:00	54	9	3107	360	95	11	1	0	75	5	2	0	0	0	0	0	0	0	4	0
16:00:00	59	5	3464	357	118	23	1	0	77	2	2	0	0	0	0	0	0	0	4	0
16:15:00	67	8	3840	376	133	15	1	0	80	3	2	0	0	0	0	0	0	0	4	0
16:30:00	72	5	4246	406	149	16	1	0	87	7	2	0	0	0	0	0	0	0	6	2
16:45:00	79	7	4617	371	166	17	1	0	89	2	2	0	0	0	0	0	0	0	6	0
17:00:00	83	4	4947	330	183	17	1	0	90	1	2	0	0	0	0	0	0	0	6	0
17:15:00	89	6	5317	370	204	21	1	0	93	3	2	0	0	0	0	0	0	0	10	4
17:30:00	92	3	5681	364	223	19	1	0	96	3	2	0	0	0	0	0	0	0	10	0
17:45:00	97	5	6068	387	245	22	1	0	98	2	2	0	0	0	0	0	0	0	10	0
18:00:00	103	6	6420	352	271	26	1	0	100	2	2	0	0	0	0	0	0	0	11	1
18:15:00	108	5	6768	348	307	36	1	0	101	1	3	1	0	0	0	0	0	0	11	0
18:30:00	111	3	7125	357	333	26	1	0	106	5	3	0	0	0	0	0	0	0	11	0
18:45:00	117	6	7443	318	366	33	1	0	107	1	3	0	0	0	0	0	0	0	11	0
19:00:00	120	3	7819	376	374	8	1	0	109	2	3	0	0	0	0	0	0	0	11	0
19:15:00	120	0	7819	0	374	0	1	0	109	0	3	0	0	0	0	0	0	0	11	0
19:15:32	120	0	7819	0	374	0	1	0	109	0	3	0	0	0	0	0	0	0	11	0

Ontario Traffic Inc.

Count Date: 25-Sep-18 Site #: 1833100003

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Cyclists - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
6:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15:00	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30:00	0	0	0	0	7	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45:00	1	1	0	0	9	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00:00	2	1	0	0	13	4	0	0	0	0	0	0	0	0	0	0	0	0	1	1
7:15:00	2	0	1	1	13	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1
7:30:00	5	3	2	1	16	3	0	0	0	0	0	0	0	0	0	0	0	0	3	1
7:45:00	7	2	2	0	20	4	0	0	0	0	0	0	0	0	0	0	0	0	8	5
8:00:00	11	4	2	0	31	11	0	0	0	0	0	0	0	0	0	0	0	0	12	4
8:15:00	17	6	2	0	46	15	0	0	0	0	1	1	0	0	0	0	0	0	13	1
8:30:00	21	4	2	0	56	10	0	0	0	0	1	0	0	0	0	0	0	0	15	2
8:45:00	27	6	2	0	63	7	0	0	0	0	1	0	0	0	0	0	0	0	15	0
9:00:00	31	4	2	0	68	5	0	0	0	0	1	0	0	0	0	0	0	0	15	0
9:15:00	32	1	2	0	76	8	1	1	0	0	1	0	0	0	0	0	0	0	15	0
9:30:00	37	5	2	0	83	7	1	0	0	0	1	0	0	0	0	0	0	0	15	0
9:45:00	39	2	2	0	87	4	1	0	0	0	1	0	0	0	0	0	0	0	15	0
10:00:00	40	1	2	0	89	2	1	0	0	0	1	0	0	0	0	0	0	0	15	0
10:02:01	40	0	2	0	89	0	1	0	0	0	1	0	0	0	0	0	0	0	15	0
15:00:00	40	0	2	0	89	0	1	0	0	0	1	0	0	0	0	0	0	0	15	0
15:15:00	43	3	2	0	91	2	1	0	0	0	1	0	0	0	0	0	0	0	26	11
15:30:00	43	0	2	0	93	2	1	0	0	0	1	0	0	0	0	0	0	0	26	0
15:45:00	44	1	2	0	95	2	1	0	0	0	1	0	0	0	0	0	0	0	27	1
16:00:00	47	3	2	0	96	1	1	0	0	0	2	1	0	0	0	0	0	0	30	3
16:15:00	48	1	3	1	99	3	1	0	0	0	2	0	0	0	0	0	0	0	33	3
16:30:00	50	2	3	0	105	6	1	0	0	0	2	0	0	0	0	0	0	0	35	2
16:45:00	53	3	3	0	107	2	1	0	0	0	2	0	0	0	0	0	0	0	35	0
17:00:00	57	4	3	0	108	1	1	0	0	0	2	0	0	0	0	0	0	0	35	0
17:15:00	63	6	4	1	111	3	1	0	0	0	2	0	0	0	0	0	0	0	39	4
17:30:00	67	4	4	0	117	6	1	0	0	0	2	0	0	0	0	0	0	0	40	1
17:45:00	69	2	4	0	118	1	1	0	0	0	2	0	0	0	0	0	0	0	42	2
18:00:00	73	4	4	0	121	3	1	0	0	0	2	0	0	0	0	0	0	0	42	0
18:15:00	78	5	4	0	127	6	1	0	0	0	2	0	0	0	0	0	0	0	43	1
18:30:00	80	2	5	1	129	2	1	0	0	0	2	0	0	0	0	0	0	0	43	0
18:45:00	81	1	5	0	131	2	1	0	0	0	2	0	0	0	0	0	0	0	46	3
19:00:00	84	3	5	0	137	6	1	0	0	0	2	0	0	0	0	0	0	0	47	1
19:15:00	84	0	5	0	137	0	1	0	0	0	2	0	0	0	0	0	0	0	47	0
19:15:32	84	0	5	0	137	0	1	0	0	0	2	0	0	0	0	0	0	0	47	0

Signal Timing Report

Runtime: 11/02/2018 14:40:21

Device: 4401

Region: Mississauga **Signal ID:** 4401 **Location:** DERRY ROAD E at McLaughlin Road

Phase	Units	1	2	3	4	5		7	8
Walk	Sec	0	12	0	13	0	12	0	13
Ped Clear	Sec	0	18	0	20	0	18	0	20
Min Green	Sec	8	12	8	12	8	12	8	12
Passage	Sec	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Maximum 1	Sec	10	40	10	45	10	40	10	45
Maximum 2	Sec	10	40	10	45	10	40	10	45
Yellow Change	Sec	3.0	4.6	3.0	4.0	3.0	4.6	3.0	4.0
Red Clearance	Sec	0.0	2.2	2.0	3.1	0.0	2.2	2.0	3.1
Red Revert	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Added Initial	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Initial	Sec	0	0	0	0	0	0	0	0
Time Before	Sec	0	0	0	0	0	0	0	0
Cars Before	Veh	0	0	0	0	0	0	0	0
Time To Reduce	Sec	0	0	0	0	0	0	0	0
Reduce By	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min Gap	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dynamic Max Limit	Sec	0	0	0	0	0	0	0	0
Dynamic Max Step	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
[P2] Start Up	Enum	phaseNotOn	redClear	phaseNotOn	phaseNotOn	phaseNotOn	redClear	phaseNotOn	phaseNotOn
[P2] Options	Bit	Enabled Non Lock Det	Enabled Non-Actuated 1 Non Lock Det Min Veh Recall Dual Entry	Enabled Non Lock Det	Enabled Non Lock Det Dual Entry	Enabled Non Lock Det	Enabled Non-Actuated 1 Non Lock Det Min Veh Recall Dual Entry	Enabled Non Lock Det	Enabled Non Lock Det Dual Entry
[P2] Ring	Ring	1	1	1	1	2	2	2	2
[P2] Concurrency	Phase (,)	(5,6)	(5,6)	(7,8)	(7,8)	(1,2)	(1,2)	(3,4)	(3,4)

Coord Pattern	Units	1	2	3	4	5		7	8
Cycle Time	Sec	160	160	160	0	0	0	0	0
Offset	Sec	14	150	18	0	0	0	0	0
Split	Split	1	2	3	4	5	6	7	8
Sequence	Sequence	1	1	1	1	1	1	1	1

Coord Split	Units	1	2	3	4	5		7	8
Split 1 - Mode	Enum	none	other	none	none	none	other	none	none
Split 1 - Time	Sec	14	60	25	61	14	60	14	72
Split 1 - Coord	Enum	false	true	false	false	false	true	false	false
Split 2 - Mode	Enum	none	other	none	none	none	other	none	none
Split 2 - Time	Sec	16	66	19	59	16	66	19	59
Split 2 - Coord	Enum	false	true	false	false	false	true	false	false
Split 3 - Mode	Enum	none	other	none	none	none	other	none	none
Split 3 - Time	Sec	13	60	15	72	15	58	15	72
Split 3 - Coord	Enum	false	true	false	false	false	true	false	false

TB Schedule	Units	1	2	3	4	5		7	8
Month	Bit	JFMAMJJASOND	JFMAMJJASOND	JFMAMJJASOND	J----------	-F----------	--M---------	----M-------	------J-----
Day of Week	Bit	-MTWTF-	S------	------S	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS
Day of Month	Bit	123456789012345678901234567890 1	123456789012345678901234567890 1	123456789012345678901234567890 1	1---------- ----	---------9------ ----	---------- ----0-	----------1----- ----	-2---------- ----
Day Plan	Number	1	3	2	3	3	3	3	3

TB Schedule	Units	9	10	11	12	13		15	16
Month	Bit	-------A----	--------S---	---------O--	----------D	----------D	----------D	0	0
Day of Week	Bit	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS
Day of Month	Bit	-----6---------- ----	--3---------- ----	-------8------- ----	----------5- ----	----------6 ----	----------4 ------	0	0
Day Plan	Number	3	3	3	3	3	3	0	0

TB Dayplan	Units	1	2	3	4	5		7	8
Plan 1 Hour	Hour	0	6	9	15	19	0	0	0
Plan 1 Minute	Min	0	0	30	0	30	0	0	0
Plan 1 Action	Number	8	1	2	3	2	0	0	0
Plan 2 Hour	Hour	0	7	0	0	0	0	0	0
Plan 2 Minute	Min	0	0	0	0	0	0	0	0
Plan 2 Action	Number	8	2	0	0	0	0	0	0
Plan 3 Hour	Hour	0	8	23	0	0	0	0	0
Plan 3 Minute	Min	0	0	0	0	0	0	0	0
Plan 3 Action	Number	8	2	8	0	0	0	0	0

TB Action	Units	1	2	3	4	5		7	8
Pattern	Enum	Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5	Pattern 6	Pattern 7	Free
Aux. Functions	Bit	0	0	0	0	0	0	0	0
Spec. Functions	Bit	0	0	0	0	0	0	0	0

Signal Timing Report

Runtime: 11/02/2018 14:42:41

Device: 4412

Region: Mississauga **Signal ID:** 4412 **Location:** MCLAUGHLIN ROAD N at Nova Star Drive/Arrowsmith Drive

Phase	**Units**	**1**	**2**	**3**	**4**	**5**		**7**	**8**
Walk	Sec	0	8	0	10	0	8	0	10
Ped Clear	Sec	0	15	0	20	0	15	0	20
Min Green	Sec	5	8	0	8	0	8	0	8
Passage	Sec	2.0	3.0	0.0	3.0	0.0	3.0	0.0	3.0
Maximum 1	Sec	10	32	0	30	0	32	0	30
Maximum 2	Sec	10	32	0	30	0	32	0	30
Yellow Change	Sec	3.0	5.0	3.0	4.0	3.0	5.0	3.0	4.0
Red Clearance	Sec	0.0	2.0	0.0	2.5	0.0	2.0	0.0	2.5
Red Revert	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Added Initial	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Initial	Sec	0	0	0	0	0	0	0	0
Time Before	Sec	0	0	0	0	0	0	0	0
Cars Before	Veh	0	0	0	0	0	0	0	0
Time To Reduce	Sec	0	0	0	0	0	0	0	0
Reduce By	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min Gap	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dynamic Max Limit	Sec	0	0	0	0	0	0	0	0
Dynamic Max Step	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
[P2] Start Up	Enum	phaseNotOn	redClear	other	phaseNotOn	other	redClear	other	phaseNotOn
[P2] Options	Bit	Enabled Non Lock Det	Enabled Non-Actuated 1 Max Veh Recall Ped Recall Dual Entry Act Rest In Walk	0	Enabled Non Lock Det Dual Entry	0	Enabled Non-Actuated 1 Max Veh Recall Ped Recall Dual Entry Act Rest In Walk	0	Enabled Non Lock Det Dual Entry
[P2] Ring	Ring	1	1	0	1	0	2	0	2
[P2] Concurrency	Phase (,)	(6)	(6)	()	(8)	()	(1,2)	()	(4)

Coord Pattern	**Units**	**1**	**2**	**3**	**4**	**5**		**7**	**8**
Cycle Time	Sec	160	0	160	0	0	0	0	0
Offset	Sec	109	0	94	0	0	0	0	0
Split	Split	1	2	3	4	5	6	7	8
Sequence	Sequence	1	1	1	1	1	1	1	1

Coord Split	**Units**	**1**	**2**	**3**	**4**	**5**		**7**	**8**
Split 1 - Mode	Enum	none	none	none	none	none	none	none	none
Split 1 - Time	Sec	13	101	0	46	0	114	0	46
Split 1 - Coord	Enum	false	true	false	false	false	true	false	false
Split 2 - Mode	Enum	none	none	none	none	none	none	none	none
Split 2 - Time	Sec	0	0	0	0	0	0	0	0
Split 2 - Coord	Enum	false	true	false	false	false	true	false	false
Split 3 - Mode	Enum	none	none	none	none	none	none	none	none
Split 3 - Time	Sec	13	101	0	46	0	114	0	46
Split 3 - Coord	Enum	false	true	false	false	false	true	false	false

TB Schedule	**Units**	**1**	**2**	**3**	**4**	**5**		**7**	**8**
Month	Bit	JFMAMJJASOND	JFMAMJJASOND	JFMAMJJASOND	J----------	-F----------	--M---------	----M-------	------J-----
Day of Week	Bit	-MTWTF-	S------	------S	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS
Day of Month	Bit	123456789012345678901234567890 1	123456789012345678901234567890 1	123456789012345678901234567890 1	1---------- ----	---------9------ ----	---------- ----0-	----------1----- ----	-2---------- ----
Day Plan	Number	1	3	2	3	3	3	3	3

TB Schedule	**Units**	**9**	**10**	**11**	**12**	**13**		**15**	**16**
Month	Bit	-------A----	--------S---	---------O--	----------D	----------D	----------D	0	0
Day of Week	Bit	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS
Day of Month	Bit	-----6---------- ----	--3---------- ----	-------8---------- ----	----------5- ----	----------6 ----	----------4 ------	0	0
Day Plan	Number	3	3	3	3	3	3	0	0

TB Dayplan	**Units**	**1**	**2**	**3**	**4**	**5**		**7**	**8**
Plan 1 Hour	Hour	0	6	9	15	19	0	0	0
Plan 1 Minute	Min	0	0	30	0	30	0	0	0
Plan 1 Action	Number	8	1	8	3	8	0	0	0
Plan 2 Hour	Hour	0	0	0	0	0	0	0	0
Plan 2 Minute	Min	0	0	0	0	0	0	0	0
Plan 2 Action	Number	8	0	0	0	0	0	0	0
Plan 3 Hour	Hour	0	0	0	0	0	0	0	0
Plan 3 Minute	Min	0	0	0	0	0	0	0	0
Plan 3 Action	Number	8	0	0	0	0	0	0	0

TB Action	**Units**	**1**	**2**	**3**	**4**	**5**		**7**	**8**
Pattern	Enum	Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5	Pattern 6	Pattern 7	Free
Aux. Functions	Bit	0	0	0	0	0	0	0	0
Spec. Functions	Bit	0	0	0	0	0	0	0	0

Signal Timing Report

Runtime: 11/02/2018 14:35:37

Device: 4414

Region: Mississauga **Signal ID:** 4414 **Location:** MCLAUGHLIN ROAD N at Ramonet Drive/Rothchild Trail

Phase	Units	1	2	3	4	5		7	8
Walk	Sec	0	8	0	10	0	0	0	0
Ped Clear	Sec	0	10	0	14	0	0	0	0
Min Green	Sec	0	8	0	8	0	0	0	0
Passage	Sec	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0
Maximum 1	Sec	0	50	0	20	0	0	0	0
Maximum 2	Sec	0	50	0	20	0	0	0	0
Yellow Change	Sec	3.0	5.0	3.0	4.0	3.0	4.0	3.0	4.0
Red Clearance	Sec	0.0	2.0	0.0	2.5	0.0	0.0	0.0	0.0
Red Revert	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Added Initial	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Initial	Sec	0	0	0	0	0	0	0	0
Time Before	Sec	0	0	0	0	0	0	0	0
Cars Before	Veh	0	0	0	0	0	0	0	0
Time To Reduce	Sec	0	0	0	0	0	0	0	0
Reduce By	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min Gap	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dynamic Max Limit	Sec	0	0	0	0	0	0	0	0
Dynamic Max Step	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
[P2] Start Up	Enum	other	redClear	other	phaseNotOn	other	other	other	other
[P2] Options	Bit	0	Enabled Non-Actuated 1 Max Veh Recall Ped Recall Act Rest In Walk	0	Enabled Non Lock Det	0	0	0	0
[P2] Ring	Ring	0	1	0	1	0	0	0	0
[P2] Concurrency	Phase (,)	()	()	()	()	()	()	()	()

Coord Pattern	Units	1	2	3	4	5		7	8
Cycle Time	Sec	160	0	160	0	0	0	0	0
Offset	Sec	122	0	69	0	0	0	0	0
Split	Split	1	2	3	4	5	6	7	8
Sequence	Sequence	1	1	1	1	1	1	1	1

Coord Split	Units	1	2	3	4	5		7	8
Split 1 - Mode	Enum	none	none	none	none	none	none	none	none
Split 1 - Time	Sec	0	120	0	40	0	0	0	0
Split 1 - Coord	Enum	false	true	false	false	false	false	false	false
Split 2 - Mode	Enum	none	none	none	none	none	none	none	none
Split 2 - Time	Sec	0	0	0	0	0	0	0	0
Split 2 - Coord	Enum	false	true	false	false	false	false	false	false
Split 3 - Mode	Enum	none	none	none	none	none	none	none	none
Split 3 - Time	Sec	0	120	0	40	0	0	0	0
Split 3 - Coord	Enum	false	true	false	false	false	false	false	false

TB Schedule	Units	1	2	3	4	5		7	8
Month	Bit	JFMAMJJASOND	JFMAMJJASOND	JFMAMJJASOND	J----------	-F----------	--M---------	----M-------	------J-----
Day of Week	Bit	-MTWTF-	S------	------S	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS
Day of Month	Bit	123456789012345678901234567890 1	123456789012345678901234567890 1	123456789012345678901234567890 1	1---------- ------	----------9---- -------	---------- ------0-	----------1--- -------	-2---------- ------
Day Plan	Number	1	3	2	3	3	3	3	3

TB Schedule	Units	9	10	11	12	13		15	16
Month	Bit	-------A----	--------S---	---------O--	----------D	----------D	----------D	0	0
Day of Week	Bit	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS
Day of Month	Bit	-----6---------- ------	--3---------- ------	-------8---------- -------	---------- 5------	---------- 6-----	---------- 4-------	0	0
Day Plan	Number	3	3	3	3	3	3	0	0

TB Dayplan	Units	1	2	3	4	5		7	8
Plan 1 Hour	Hour	0	6	9	15	19	0	0	0
Plan 1 Minute	Min	0	0	30	0	30	0	0	0
Plan 1 Action	Number	8	1	8	3	8	0	0	0
Plan 2 Hour	Hour	0	0	0	0	0	0	0	0
Plan 2 Minute	Min	0	0	0	0	0	0	0	0
Plan 2 Action	Number	8	0	0	0	0	0	0	0
Plan 3 Hour	Hour	0	0	0	0	0	0	0	0
Plan 3 Minute	Min	0	0	0	0	0	0	0	0
Plan 3 Action	Number	8	0	0	0	0	0	0	0

TB Action	Units	1	2	3	4	5		7	8
Pattern	Enum	Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5	Pattern 6	Pattern 7	Free
Aux. Functions	Bit	0	0	0	0	0	0	0	0
Spec. Functions	Bit	0	0	0	0	0	0	0	0

Appendix C

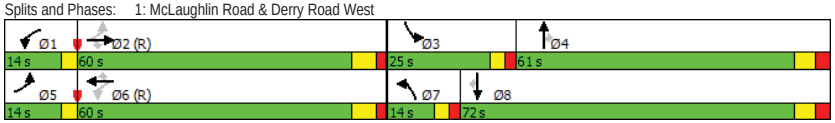
Existing Traffic Operational Conditions

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	117	1651	377	177	945	97	143	610	190	165	1183	89
Future Volume (vph)	117	1651	377	177	945	97	143	610	190	165	1183	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0		50.0	140.0		105.0	40.0		45.0	80.0		75.0
Storage Lanes	1		1	1		1	2		1	2		1
Taper Length (m)	30.0			30.0			30.0			30.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor			0.94			0.89	1.00		0.95	0.99		0.95
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5085	1599	1787	5136	1553	3467	3282	1599	3467	3471	1615
Flt Permitted	0.129			0.075			0.950			0.950		
Satd. Flow (perm)	240	5085	1500	141	5136	1383	3459	3282	1523	3421	3471	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			137			117			133			80
Link Speed (k/h)		70			70			70			70	
Link Distance (m)		323.0			328.3			299.3			289.2	
Travel Time (s)		16.6			16.9			15.4			14.9	
Confl. Peds. (#/hr)	62		32	32		62	25		25	25		25
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	2%	2%	1%	1%	1%	4%	1%	10%	1%	1%	4%	0%
Adj. Flow (vph)	139	1965	449	211	1125	115	170	726	226	196	1408	106
Shared Lane Traffic (%)												
Lane Group Flow (vph)	139	1965	449	211	1125	115	170	726	226	196	1408	106
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6			4			8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	7.0	12.0	12.0	7.0	12.0	12.0	5.0	12.0	12.0	5.0	12.0	12.0
Minimum Split (s)	14.0	60.0	60.0	14.0	60.0	60.0	14.0	61.0	61.0	15.0	72.0	72.0
Total Split (s)	14.0	60.0	60.0	14.0	60.0	60.0	14.0	61.0	61.0	25.0	72.0	72.0
Total Split (%)	8.8%	37.5%	37.5%	8.8%	37.5%	37.5%	8.8%	38.1%	38.1%	15.6%	45.0%	45.0%
Maximum Green (s)	11.0	53.2	53.2	11.0	53.2	53.2	9.0	53.9	53.9	20.0	64.9	64.9
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6	4.6	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.2	2.2	0.0	2.2	2.2	2.0	3.1	3.1	2.0	3.1	3.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.8	6.8	3.0	6.8	6.8	5.0	7.1	7.1	5.0	7.1	7.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		12.0	12.0		12.0	12.0		13.0	13.0		13.0	13.0
Flash Dont Walk (s)		18.0	18.0		18.0	18.0		20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	67.8	53.2	53.2	68.2	53.4	53.4	9.0	59.6	59.6	14.3	64.9	64.9
Actuated g/C Ratio	0.42	0.33	0.33	0.43	0.33	0.33	0.06	0.37	0.37	0.09	0.41	0.41
v/c Ratio	0.68	1.16	0.76	1.22	0.66	0.21	0.87	0.59	0.35	0.63	1.00	0.16
Control Delay	44.5	126.9	42.1	174.3	47.7	6.6	106.6	52.1	26.6	79.3	71.1	9.8
Queue Delay	0.0	0.0	1.0	2.9	0.0	0.0	0.0	0.0	0.0	0.0	38.2	0.0
Total Delay	44.5	126.9	43.1	177.2	47.7	6.6	106.6	52.1	26.6	79.3	109.3	9.8
LOS	D	F	D	F	D	A	F	D	C	E	F	A
Approach Delay		107.6			63.3			55.3			99.7	
Approach LOS		F			E			E			F	

Intersection Summary		
Area Type:	Other	
Cycle Length: 160		
Actuated Cycle Length: 160		
Offset: 14 (9%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green		
Natural Cycle: 160		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.22		
Intersection Signal Delay: 87.6	Intersection LOS: F	
Intersection Capacity Utilization 97.7%	ICU Level of Service F	
Analysis Period (min) 15		

Splits and Phases: 1: McLaughlin Road & Derry Road West



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	139	1965	449	211	1125	115	170	726	226	196	1408	106
v/c Ratio	0.68	1.16	0.76	1.22	0.66	0.21	0.87	0.59	0.35	0.63	1.00	0.16
Control Delay	44.5	126.9	42.1	174.3	47.7	6.6	106.6	52.1	26.6	79.3	71.1	9.8
Queue Delay	0.0	0.0	1.0	2.9	0.0	0.0	0.0	0.0	0.0	0.0	38.2	0.0
Total Delay	44.5	126.9	43.1	177.2	47.7	6.6	106.6	52.1	26.6	79.3	109.3	9.8
Queue Length 50th (m)	27.8	~284.4	97.3	~68.8	118.1	0.0	31.0	90.8	27.9	33.2	~247.1	5.2
Queue Length 95th (m)	40.2	#278.3	126.7	#111.6	123.6	11.6	#47.6	124.7	44.0	42.9	#264.6	15.8
Internal Link Dist (m)		299.0			304.3			275.3			265.2	
Turn Bay Length (m)	70.0		50.0	140.0		105.0	40.0		45.0	80.0		75.0
Base Capacity (vph)	207	1690	590	173	1713	539	195	1221	650	433	1407	671
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	32	26	0	0	0	0	0	0	616	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	1.16	0.80	1.44	0.66	0.21	0.87	0.59	0.35	0.45	1.78	0.16

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	117	1651	377	177	945	97	143	610	190	165	1183	89
Future Volume (vph)	117	1651	377	177	945	97	143	610	190	165	1183	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.8	6.8	3.0	6.8	6.8	5.0	7.1	7.1	5.0	7.1	7.1
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.94	1.00	1.00	0.89	1.00	1.00	0.95	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1768	5085	1500	1787	5136	1383	3467	3282	1523	3467	3471	1538
Flt Permitted	0.13	1.00	1.00	0.07	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	240	5085	1500	141	5136	1383	3467	3282	1523	3467	3471	1538
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	139	1965	449	211	1125	115	170	726	226	196	1408	106
RTOR Reduction (vph)	0	0	91	0	0	77	0	0	83	0	0	48
Lane Group Flow (vph)	139	1965	358	211	1125	38	170	726	143	196	1408	58
Confl. Peds. (#/hr)	62		32	32		62	25		25	25		25
Heavy Vehicles (%)	2%	2%	1%	1%	1%	4%	1%	10%	1%	1%	4%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6			4			8
Actuated Green, G (s)	64.0	53.2	53.2	64.4	53.4	53.4	9.0	59.6	59.6	14.3	64.9	64.9
Effective Green, g (s)	64.0	53.2	53.2	64.4	53.4	53.4	9.0	59.6	59.6	14.3	64.9	64.9
Actuated g/C Ratio	0.40	0.33	0.33	0.40	0.33	0.33	0.06	0.37	0.37	0.09	0.41	0.41
Clearance Time (s)	3.0	6.8	6.8	3.0	6.8	6.8	5.0	7.1	7.1	5.0	7.1	7.1
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	199	1690	498	169	1714	461	195	1222	567	309	1407	623
v/s Ratio Prot	0.05	0.39		c0.09	0.22		c0.05	0.22		0.06	c0.41	
v/s Ratio Perm	0.23		0.24	c0.41		0.03			0.09			0.04
v/c Ratio	0.70	1.16	0.72	1.25	0.66	0.08	0.87	0.59	0.25	0.63	1.00	0.09
Uniform Delay, d1	34.0	53.4	46.8	45.8	45.5	36.5	74.9	40.5	34.8	70.3	47.5	29.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.98	1.22	1.70	1.00	1.00	1.00
Incremental Delay, d2	10.2	80.2	8.6	151.4	2.0	0.4	28.7	0.7	0.2	4.2	24.2	0.1
Delay (s)	44.2	133.6	55.4	197.1	47.5	36.9	102.3	50.0	59.3	74.5	71.7	29.4
Level of Service	D	F	E	F	D	D	F	D	E	E	E	C
Approach Delay (s)		115.0			68.4			59.8			69.4	
Approach LOS		F			E			E			E	

Intersection Summary

HCM 2000 Control Delay	84.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	21.9
Intersection Capacity Utilization	97.7%	ICU Level of Service	F
Analysis Period (min)	15		

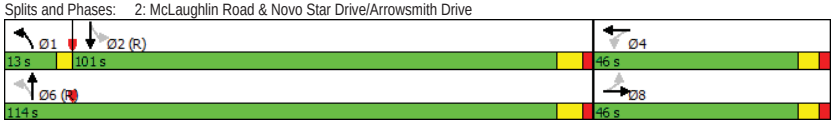
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	10	278	43	20	51	83	843	11	20	1692	50
Future Volume (vph)	59	10	278	43	20	51	83	843	11	20	1692	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	15.0		0.0	35.0		0.0	55.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	20.0			20.0			30.0			30.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.99	0.99			0.98			1.00		1.00	1.00	
Frt		0.855			0.892			0.998			0.996	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1585	0	1805	1623	0	1770	3497	0	1719	3556	0
Flt Permitted	0.669			0.101			0.041			0.185		
Satd. Flow (perm)	1261	1585	0	192	1623	0	76	3497	0	334	3556	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		107			77			2			3	
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		133.1			152.5			363.0			299.3	
Travel Time (s)		9.6			11.0			18.7			15.4	
Confl. Peds. (#/hr)	6		2	2		6	9		6	6		9
Peak Hour Factor	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66
Heavy Vehicles (%)	0%	0%	1%	0%	10%	0%	2%	3%	0%	5%	1%	0%
Adj. Flow (vph)	89	15	421	65	30	77	126	1277	17	30	2564	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	89	436	0	65	107	0	126	1294	0	30	2640	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		8			4		1	6			2	
Permitted Phases	8			4			6			2		
Detector Phase	8	8		4	4		1	6		2	2	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		5.0	8.0		8.0	8.0	
Minimum Split (s)	46.0	46.0		46.0	46.0		13.0	114.0		101.0	101.0	
Total Split (s)	46.0	46.0		46.0	46.0		13.0	114.0		101.0	101.0	
Total Split (%)	28.8%	28.8%		28.8%	28.8%		8.1%	71.3%		63.1%	63.1%	
Maximum Green (s)	39.5	39.5		39.5	39.5		10.0	107.0		94.0	94.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	5.0		5.0	5.0	
All-Red Time (s)	2.5	2.5		2.5	2.5		0.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		3.0	7.0		7.0	7.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	
Walk Time (s)	10.0	10.0		10.0	10.0			8.0		8.0	8.0	
Flash Dont Walk (s)	20.0	20.0		20.0	20.0			15.0		15.0	15.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)	39.5	39.5		39.5	39.5		111.0	107.0		94.4	94.4	
Actuated g/C Ratio	0.25	0.25		0.25	0.25		0.69	0.67		0.59	0.59	
v/c Ratio	0.29	0.93		1.38	0.23		0.82	0.55		0.15	1.26	
Control Delay	51.9	70.4		305.9	17.5		77.4	12.2		11.0	144.6	
Queue Delay	0.0	6.5		0.0	0.0		0.0	0.0		0.0	1.4	
Total Delay	51.9	76.9		305.9	17.5		77.4	12.2		11.0	146.0	
LOS	D	E		F	B		E	B		B	F	
Approach Delay		72.7			126.5			18.0			144.4	
Approach LOS		E			F			B			F	

Intersection Summary			
Area Type:	Other		
Cycle Length: 160			
Actuated Cycle Length: 160			
Offset: 109 (68%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green			
Natural Cycle: 160			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.38			
Intersection Signal Delay: 98.4		Intersection LOS: F	
Intersection Capacity Utilization 98.0%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 2: McLaughlin Road & Novo Star Drive/Arrowsmith Drive



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	89	436	65	107	126	1294	30	2640
v/c Ratio	0.29	0.93	1.38	0.23	0.82	0.55	0.15	1.26
Control Delay	51.9	70.4	305.9	17.5	77.4	12.2	11.0	144.6
Queue Delay	0.0	6.5	0.0	0.0	0.0	0.0	0.0	1.4
Total Delay	51.9	76.9	305.9	17.5	77.4	12.2	11.0	146.0
Queue Length 50th (m)	24.4	113.6	~28.7	7.8	30.7	79.4	2.5	~586.9
Queue Length 95th (m)	30.1	95.7	#41.8	12.3	36.7	61.7	m3.2	351.2
Internal Link Dist (m)		109.1		128.5		339.0		275.3
Turn Bay Length (m)	15.0		15.0		35.0		55.0	
Base Capacity (vph)	311	471	47	458	158	2339	197	2098
Starvation Cap Reductn	0	0	0	0	0	0	0	233
Spillback Cap Reductn	0	22	0	0	0	0	0	750
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.97	1.38	0.23	0.80	0.55	0.15	1.96

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	10	278	43	20	51	83	843	11	20	1692	50
Future Volume (vph)	59	10	278	43	20	51	83	843	11	20	1692	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5		3.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.86		1.00	0.89		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1790	1586		1805	1623		1770	3497		1715	3555	
Flt Permitted	0.67	1.00		0.10	1.00		0.04	1.00		0.18	1.00	
Satd. Flow (perm)	1260	1586		192	1623		76	3497		334	3555	
Peak-hour factor, PHF	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66
Adj. Flow (vph)	89	15	421	65	30	77	126	1277	17	30	2564	76
RTOR Reduction (vph)	0	81	0	0	58	0	0	1	0	0	1	0
Lane Group Flow (vph)	89	355	0	65	49	0	126	1293	0	30	2639	0
Confl. Peds. (#/hr)	6		2	2		6	9		6	6		9
Heavy Vehicles (%)	0%	0%	1%	0%	10%	0%	2%	3%	0%	5%	1%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		8			4		1	6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	39.5	39.5		39.5	39.5		107.0	107.0		94.4	94.4	
Effective Green, g (s)	39.5	39.5		39.5	39.5		107.0	107.0		94.4	94.4	
Actuated g/C Ratio	0.25	0.25		0.25	0.25		0.67	0.67		0.59	0.59	
Clearance Time (s)	6.5	6.5		6.5	6.5		3.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	311	391		47	400		152	2338		197	2097	
v/s Ratio Prot		0.22			0.03		c0.05	0.37			c0.74	
v/s Ratio Perm	0.07			c0.34			0.50			0.09		
v/c Ratio	0.29	0.91		1.38	0.12		0.83	0.55		0.15	1.26	
Uniform Delay, d1	48.8	58.5		60.2	46.8		52.4	13.9		14.8	32.8	
Progression Factor	1.00	1.00		1.00	1.00		1.37	0.82		0.63	0.78	
Incremental Delay, d2	0.5	24.3		263.0	0.1		24.1	0.7		1.0	118.9	
Delay (s)	49.3	82.8		323.2	46.9		95.7	12.1		10.3	144.3	
Level of Service	D	F		F	D		F	B		B	F	
Approach Delay (s)		77.1			151.3			19.5			142.8	
Approach LOS		E			F			B			F	

Intersection Summary

HCM 2000 Control Delay	99.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.26		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	98.0%	ICU Level of Service	F
Analysis Period (min)	15		

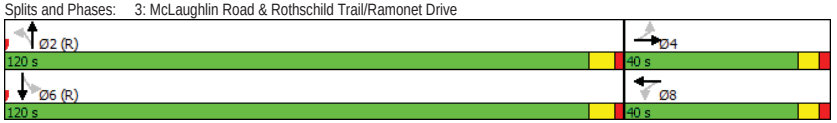
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	0	41	94	0	26	14	898	24	8	1988	5
Future Volume (vph)	16	0	41	94	0	26	14	898	24	8	1988	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	0.0		0.0	30.0		0.0	35.0		0.0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (m)	10.0			7.5			20.0			20.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00	0.98			0.99			1.00			1.00	
Frt		0.850			0.971			0.996				
Flt Protected	0.950				0.962		0.950			0.950		
Satd. Flow (prot)	1805	1558	0	0	1738	0	1687	3486	0	1444	3574	0
Flt Permitted	0.717				0.724		0.034			0.110		
Satd. Flow (perm)	1358	1558	0	0	1304	0	60	3486	0	167	3574	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		27			27			4				
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		120.7			123.6			410.1			363.0	
Travel Time (s)		8.7			8.9			21.1			18.7	
Confl. Peds. (#/hr)	3		2	2		3	12		6	6		12
Peak Hour Factor	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56
Heavy Vehicles (%)	0%	0%	2%	0%	0%	8%	7%	3%	4%	25%	1%	0%
Adj. Flow (vph)	29	0	73	168	0	46	25	1604	43	14	3550	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	29	73	0	0	214	0	25	1647	0	14	3559	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	1.0	1.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	40.0	40.0		40.0	40.0		120.0	120.0		120.0	120.0	
Total Split (s)	40.0	40.0		40.0	40.0		120.0	120.0		120.0	120.0	
Total Split (%)	25.0%	25.0%		25.0%	25.0%		75.0%	75.0%		75.0%	75.0%	
Maximum Green (s)	33.5	33.5		33.5	33.5		113.0	113.0		113.0	113.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.5	2.5		2.5	2.5		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5			6.5		7.0	7.0		7.0	7.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	10.0	10.0		10.0	10.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	27.6	27.6			27.6		118.9	118.9		118.9	118.9	
Actuated g/C Ratio	0.17	0.17			0.17		0.74	0.74		0.74	0.74	
v/c Ratio	0.12	0.25			0.87		0.57	0.64		0.11	1.34	
Control Delay	54.4	37.0			86.8		64.3	12.1		4.4	171.0	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.2	
Total Delay	54.4	37.0			86.8		64.3	12.1		4.4	171.1	
LOS	D	D			F		E	B		A	F	
Approach Delay		42.0			86.8			12.8			170.5	
Approach LOS		D			F			B			F	

Intersection Summary		
Area Type:	Other	
Cycle Length: 160		
Actuated Cycle Length: 160		
Offset: 122 (76%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		
Natural Cycle: 160		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.34		
Intersection Signal Delay: 117.5	Intersection LOS: F	
Intersection Capacity Utilization 80.5%	ICU Level of Service D	
Analysis Period (min) 15		

Splits and Phases: 3: McLaughlin Road & Rothschild Trail/Ramonet Drive



Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	29	73	214	25	1647	14	3559
v/c Ratio	0.12	0.25	0.87	0.57	0.64	0.11	1.34
Control Delay	54.4	37.0	86.8	64.3	12.1	4.4	171.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay	54.4	37.0	86.8	64.3	12.1	4.4	171.1
Queue Length 50th (m)	8.2	13.2	61.8	3.5	132.6	0.6	~830.6
Queue Length 95th (m)	11.0	14.1	48.5	8.2	76.7	m0.7	169.1
Internal Link Dist (m)		96.7	99.6		386.1		339.0
Turn Bay Length (m)	20.0			30.0		35.0	
Base Capacity (vph)	284	347	294	44	2591	124	2655
Starvation Cap Reductn	0	0	0	0	0	0	184
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.21	0.73	0.57	0.64	0.11	1.44

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	0	41	94	0	26	14	898	24	8	1988	5
Future Volume (vph)	16	0	41	94	0	26	14	898	24	8	1988	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5			6.5		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.98			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.85			0.97		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00			0.96		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1800	1558			1734		1687	3486		1444	3572	
Flt Permitted	0.72	1.00			0.72		0.03	1.00		0.11	1.00	
Satd. Flow (perm)	1359	1558			1304		60	3486		167	3572	
Peak-hour factor, PHF	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56
Adj. Flow (vph)	29	0	73	168	0	46	25	1604	43	14	3550	9
RTOR Reduction (vph)	0	22	0	0	22	0	0	1	0	0	0	0
Lane Group Flow (vph)	29	51	0	0	192	0	25	1646	0	14	3559	0
Confl. Peds. (#/hr)	3		2	2		3	12		6	6		12
Heavy Vehicles (%)	0%	0%	2%	0%	0%	8%	7%	3%	4%	25%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	27.6	27.6			27.6		118.9	118.9		118.9	118.9	
Effective Green, g (s)	27.6	27.6			27.6		118.9	118.9		118.9	118.9	
Actuated g/C Ratio	0.17	0.17			0.17		0.74	0.74		0.74	0.74	
Clearance Time (s)	6.5	6.5			6.5		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	234	268			224		44	2590		124	2654	
v/s Ratio Prot		0.03						0.47			c1.00	
v/s Ratio Perm	0.02				c0.15		0.42			0.08		
v/c Ratio	0.12	0.19			0.86		0.57	0.64		0.11	1.34	
Uniform Delay, d1	56.0	56.6			64.3		9.1	10.0		5.8	20.5	
Progression Factor	1.00	1.00			1.00		1.00	1.00		0.54	0.55	
Incremental Delay, d2	0.2	0.3			25.9		43.9	1.2		0.2	153.7	
Delay (s)	56.2	57.0			90.1		53.0	11.2		3.3	165.0	
Level of Service	E	E			F		D	B		A	F	
Approach Delay (s)		56.8			90.1			11.8			164.4	
Approach LOS		E			F			B			F	

Intersection Summary					
HCM 2000 Control Delay	113.7	HCM 2000 Level of Service	F		
HCM 2000 Volume to Capacity ratio	1.25				
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	13.5		
Intersection Capacity Utilization	80.5%	ICU Level of Service	D		
Analysis Period (min)	15				

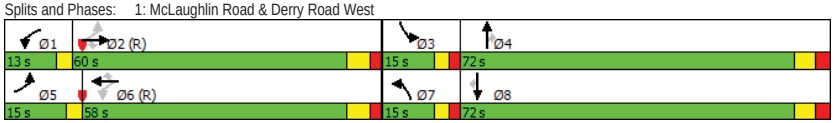
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	201	796	104	190	1649	337	208	1120	73	178	607	201
Future Volume (vph)	201	796	104	190	1649	337	208	1120	73	178	607	201
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0		50.0	140.0		105.0	40.0		45.0	80.0		75.0
Storage Lanes	1		1	1		1	2		1	2		1
Taper Length (m)	30.0			30.0			30.0			30.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	0.98		0.85	0.97		0.91	0.98		0.95	0.99		0.91
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	5136	1615	1770	5136	1599	3502	3471	1615	3502	3282	1599
Flt Permitted	0.074			0.217			0.950			0.950		
Satd. Flow (perm)	137	5136	1375	392	5136	1454	3424	3471	1529	3476	3282	1459
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			87			145			80			154
Link Speed (k/h)		70			70			70			70	
Link Distance (m)		323.0			328.3			299.3			289.2	
Travel Time (s)		16.6			16.9			15.4			14.9	
Confl. Peds. (#/hr)	50		87	87		50	53		29	29		53
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	1%	0%	2%	1%	1%	0%	4%	0%	0%	10%	1%
Adj. Flow (vph)	226	894	117	213	1853	379	234	1258	82	200	682	226
Shared Lane Traffic (%)												
Lane Group Flow (vph)	226	894	117	213	1853	379	234	1258	82	200	682	226
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6			4			8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	7.0	12.0	12.0	7.0	12.0	12.0	5.0	12.0	12.0	5.0	12.0	12.0
Minimum Split (s)	15.0	60.0	60.0	13.0	58.0	58.0	15.0	72.0	72.0	15.0	72.0	72.0
Total Split (s)	15.0	60.0	60.0	13.0	58.0	58.0	15.0	72.0	72.0	15.0	72.0	72.0
Total Split (%)	9.4%	37.5%	37.5%	8.1%	36.3%	36.3%	9.4%	45.0%	45.0%	9.4%	45.0%	45.0%
Maximum Green (s)	12.0	53.2	53.2	10.0	51.2	51.2	10.0	64.9	64.9	10.0	64.9	64.9
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6	4.6	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.2	2.2	0.0	2.2	2.2	2.0	3.1	3.1	2.0	3.1	3.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.8	6.8	3.0	6.8	6.8	5.0	7.1	7.1	5.0	7.1	7.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		12.0	12.0		12.0	12.0		13.0	13.0		13.0	13.0
Flash Dont Walk (s)		18.0	18.0		18.0	18.0		20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	70.5	54.1	54.1	67.9	52.8	52.8	10.0	62.7	62.7	10.0	62.7	62.7
Actuated g/C Ratio	0.44	0.34	0.34	0.42	0.33	0.33	0.06	0.39	0.39	0.06	0.39	0.39
v/c Ratio	1.18	0.51	0.22	0.81	1.09	0.66	1.07	0.93	0.13	0.92	0.53	0.34
Control Delay	159.3	43.9	13.0	55.9	100.9	34.1	150.6	51.6	4.9	115.8	38.9	11.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	159.3	43.9	13.0	55.9	100.9	34.1	150.6	51.6	4.9	115.8	38.9	11.9
LOS	F	D	B	E	F	C	F	D	A	F	D	B
Approach Delay		62.1			86.6			63.8			47.2	
Approach LOS		E			F			E			D	

Intersection Summary		
Area Type:	Other	
Cycle Length: 160		
Actuated Cycle Length: 160		
Offset: 18 (11%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green		
Natural Cycle: 160		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.18		
Intersection Signal Delay: 69.3		Intersection LOS: E
Intersection Capacity Utilization 98.1%		ICU Level of Service F
Analysis Period (min) 15		

Splits and Phases: 1: McLaughlin Road & Derry Road West



Queues
1: McLaughlin Road & Derry Road West

Existing PM
180231

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	226	894	117	213	1853	379	234	1258	82	200	682	226
v/c Ratio	1.18	0.51	0.22	0.81	1.09	0.66	1.07	0.93	0.13	0.92	0.53	0.34
Control Delay	159.3	43.9	13.0	55.9	100.9	34.1	150.6	51.6	4.9	115.8	38.9	11.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	159.3	43.9	13.0	55.9	100.9	34.1	150.6	51.6	4.9	115.8	38.9	11.9
Queue Length 50th (m)	~75.9	88.9	6.9	45.2	~261.9	69.7	~44.3	208.1	0.3	34.9	89.6	15.0
Queue Length 95th (m)	#131.4	102.3	22.4	#83.1	#286.1	108.2	#75.1	226.9	m7.4	#59.5	108.2	35.2
Internal Link Dist (m)		299.0			304.3			275.3			265.2	
Turn Bay Length (m)	70.0		50.0	140.0		105.0	40.0		45.0	80.0		75.0
Base Capacity (vph)	191	1737	523	263	1696	576	218	1407	667	218	1331	683
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.18	0.51	0.22	0.81	1.09	0.66	1.07	0.89	0.12	0.92	0.51	0.33

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

HCM Signalized Intersection Capacity Analysis
1: McLaughlin Road & Derry Road West

Existing PM
180231

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	201	796	104	190	1649	337	208	1120	73	178	607	201
Future Volume (vph)	201	796	104	190	1649	337	208	1120	73	178	607	201
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.8	6.8	3.0	6.8	6.8	5.0	7.1	7.1	5.0	7.1	7.1
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.85	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.91
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1805	5136	1375	1760	5136	1454	3502	3471	1529	3502	3282	1459
Flt Permitted	0.07	1.00	1.00	0.22	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	140	5136	1375	401	5136	1454	3502	3471	1529	3502	3282	1459
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	226	894	117	213	1853	379	234	1258	82	200	682	226
RTOR Reduction (vph)	0	0	58	0	0	97	0	0	49	0	0	94
Lane Group Flow (vph)	226	894	59	213	1853	282	234	1258	33	200	682	132
Confl. Peds. (#/hr)	50		87	87		50	53		29	29		53
Heavy Vehicles (%)	0%	1%	0%	2%	1%	1%	0%	4%	0%	0%	10%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6			4			8
Actuated Green, G (s)	66.7	54.1	54.1	64.1	52.8	52.8	10.0	62.7	62.7	10.0	62.7	62.7
Effective Green, g (s)	66.7	54.1	54.1	64.1	52.8	52.8	10.0	62.7	62.7	10.0	62.7	62.7
Actuated g/C Ratio	0.42	0.34	0.34	0.40	0.33	0.33	0.06	0.39	0.39	0.06	0.39	0.39
Clearance Time (s)	3.0	6.8	6.8	3.0	6.8	6.8	5.0	7.1	7.1	5.0	7.1	7.1
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	189	1736	464	256	1694	479	218	1360	599	218	1286	571
v/s Ratio Prot	c0.09	0.17		0.06	0.36		c0.07	c0.36		0.06	0.21	
v/s Ratio Perm	c0.40		0.04	0.27		0.19			0.02			0.09
v/c Ratio	1.20	0.51	0.13	0.83	1.09	0.59	1.07	0.93	0.06	0.92	0.53	0.23
Uniform Delay, d1	48.1	42.4	36.6	36.3	53.6	44.6	75.0	46.4	30.2	74.6	37.3	32.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.13	0.89	0.76	1.00	1.00	1.00
Incremental Delay, d2	128.1	1.1	0.6	20.0	52.2	5.2	75.8	9.1	0.0	38.5	0.4	0.2
Delay (s)	176.2	43.5	37.2	56.3	105.8	49.8	160.2	50.4	23.1	113.1	37.8	32.8
Level of Service	F	D	D	E	F	D	F	D	C	F	D	C
Approach Delay (s)		67.2			92.8			65.3			50.3	
Approach LOS		E			F			E			D	

Intersection Summary				
HCM 2000 Control Delay	73.6	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	1.07			
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	21.9	
Intersection Capacity Utilization	98.1%	ICU Level of Service	F	
Analysis Period (min)	15			

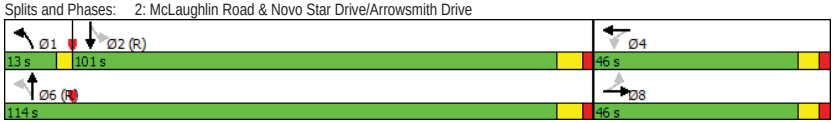
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	19	61	10	7	47	169	1316	3	70	815	63
Future Volume (vph)	31	19	61	10	7	47	169	1316	3	70	815	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	15.0		0.0	35.0		0.0	55.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	20.0			20.0			30.0			30.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.99	0.99		1.00	0.98			1.00			1.00	
Frt		0.886			0.870						0.989	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1662	0	1805	1620	0	1787	3574	0	1805	3523	0
Flt Permitted	0.704			0.472			0.193			0.112		
Satd. Flow (perm)	1324	1662	0	893	1620	0	363	3574	0	213	3523	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		86			24						9	
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		133.1			152.5			363.0			299.3	
Travel Time (s)		9.6			11.0			18.7			15.4	
Confl. Peds. (#/hr)	7		3	3		7	11		15	15		11
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%	1%	0%
Adj. Flow (vph)	44	27	86	14	10	66	238	1854	4	99	1148	89
Shared Lane Traffic (%)												
Lane Group Flow (vph)	44	113	0	14	76	0	238	1858	0	99	1237	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		8			4		1	6			2	
Permitted Phases	8			4			6			2		
Detector Phase	8	8		4	4		1	6		2	2	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		5.0	8.0		8.0	8.0	
Minimum Split (s)	46.0	46.0		46.0	46.0		13.0	114.0		101.0	101.0	
Total Split (s)	46.0	46.0		46.0	46.0		13.0	114.0		101.0	101.0	
Total Split (%)	28.8%	28.8%		28.8%	28.8%		8.1%	71.3%		63.1%	63.1%	
Maximum Green (s)	39.5	39.5		39.5	39.5		10.0	107.0		94.0	94.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	5.0		5.0	5.0	
All-Red Time (s)	2.5	2.5		2.5	2.5		0.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		3.0	7.0		7.0	7.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	
Walk Time (s)	10.0	10.0		10.0	10.0			8.0		8.0	8.0	
Flash Dont Walk (s)	20.0	20.0		20.0	20.0			15.0		15.0	15.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)	11.2	11.2		11.2	11.2		139.3	135.3		120.8	120.8	
Actuated g/C Ratio	0.07	0.07		0.07	0.07		0.87	0.85		0.76	0.76	
v/c Ratio	0.48	0.58		0.23	0.56		0.57	0.61		0.62	0.46	
Control Delay	87.5	33.1		77.3	64.5		7.7	2.5		25.9	4.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.1		0.0	0.0	
Total Delay	87.5	33.1		77.3	64.5		7.7	2.6		25.9	4.7	
LOS	F	C		E	E		A	A		C	A	
Approach Delay		48.4			66.5			3.2			6.3	
Approach LOS		D			E			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 160			
Actuated Cycle Length: 160			
Offset: 94 (59%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green			
Natural Cycle: 160			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 7.8		Intersection LOS: A	
Intersection Capacity Utilization 71.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: McLaughlin Road & Novo Star Drive/Arrowsmith Drive



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	44	113	14	76	238	1858	99	1237
v/c Ratio	0.48	0.58	0.23	0.56	0.57	0.61	0.62	0.46
Control Delay	87.5	33.1	77.3	64.5	7.7	2.5	25.9	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	87.5	33.1	77.3	64.5	7.7	2.6	25.9	4.7
Queue Length 50th (m)	14.5	8.8	4.5	17.1	4.7	28.0	6.0	35.9
Queue Length 95th (m)	22.0	16.8	9.9	25.2	5.0	23.5	m11.5	44.2
Internal Link Dist (m)		109.1		128.5		339.0		275.3
Turn Bay Length (m)	15.0		15.0		35.0		55.0	
Base Capacity (vph)	326	475	220	418	423	3022	160	2662
Starvation Cap Reductn	0	0	0	0	0	273	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.24	0.06	0.18	0.56	0.68	0.62	0.46

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	19	61	10	7	47	169	1316	3	70	815	63
Future Volume (vph)	31	19	61	10	7	47	169	1316	3	70	815	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5		3.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.89		1.00	0.87		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	1662		1798	1620		1786	3573		1799	3524	
Flt Permitted	0.70	1.00		0.47	1.00		0.19	1.00		0.11	1.00	
Satd. Flow (perm)	1324	1662		894	1620		363	3573		213	3524	
Peak-hour factor, PHF	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Adj. Flow (vph)	44	27	86	14	10	66	238	1854	4	99	1148	89
RTOR Reduction (vph)	0	80	0	0	22	0	0	0	0	0	2	0
Lane Group Flow (vph)	44	33	0	14	54	0	238	1858	0	99	1235	0
Confl. Peds. (#/hr)	7		3	3		7	11		15	15		11
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		8			4		1	6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	11.2	11.2		11.2	11.2		135.3	135.3		120.8	120.8	
Effective Green, g (s)	11.2	11.2		11.2	11.2		135.3	135.3		120.8	120.8	
Actuated g/C Ratio	0.07	0.07		0.07	0.07		0.85	0.85		0.75	0.75	
Clearance Time (s)	6.5	6.5		6.5	6.5		3.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	92	116		62	113		409	3021		160	2660	
v/s Ratio Prot		0.02			0.03		0.04	c0.52			0.35	
v/s Ratio Perm	c0.03			0.02			0.45			0.47		
v/c Ratio	0.48	0.28		0.23	0.48		0.58	0.62		0.62	0.46	
Uniform Delay, d1	71.6	70.6		70.3	71.6		4.6	4.0		9.0	7.4	
Progression Factor	1.00	1.00		1.00	1.00		2.52	0.46		0.66	0.52	
Incremental Delay, d2	3.9	1.4		1.9	3.1		1.3	0.6		15.6	0.5	
Delay (s)	75.5	72.0		72.2	74.7		12.7	2.4		21.5	4.4	
Level of Service	E	E		E	E		B	A		C	A	
Approach Delay (s)		72.9			74.3			3.5			5.7	
Approach LOS		E			E			A			A	

Intersection Summary					
HCM 2000 Control Delay	9.0	HCM 2000 Level of Service	A		
HCM 2000 Volume to Capacity ratio	0.62				
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	16.5		
Intersection Capacity Utilization	71.1%	ICU Level of Service	C		
Analysis Period (min)	15				

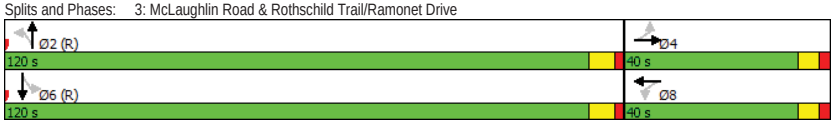
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	1	13	28	2	9	25	1524	71	19	827	17
Future Volume (vph)	9	1	13	28	2	9	25	1524	71	19	827	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	0.0		0.0	30.0		0.0	35.0		0.0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (m)	10.0			7.5			20.0			20.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.99	0.99			0.99			1.00			1.00	
Frt		0.864			0.968			0.993			0.997	
Flt Protected	0.950				0.965		0.950			0.950		
Satd. Flow (prot)	1805	1508	0	0	1717	0	1805	3545	0	1805	3522	0
Flt Permitted	0.752				0.774		0.201			0.040		
Satd. Flow (perm)	1419	1508	0	0	1374	0	382	3545	0	76	3522	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		20			9			7			3	
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		120.7			123.6			410.1			363.0	
Travel Time (s)		8.7			8.9			21.1			18.7	
Confl. Peds. (#/hr)	4		2	2		4	8		4	4		8
Peak Hour Factor	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Heavy Vehicles (%)	0%	0%	8%	4%	0%	0%	0%	1%	0%	0%	2%	6%
Adj. Flow (vph)	14	2	20	43	3	14	38	2345	109	29	1272	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	14	22	0	0	60	0	38	2454	0	29	1298	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	1.0	1.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	40.0	40.0		40.0	40.0		120.0	120.0		120.0	120.0	
Total Split (s)	40.0	40.0		40.0	40.0		120.0	120.0		120.0	120.0	
Total Split (%)	25.0%	25.0%		25.0%	25.0%		75.0%	75.0%		75.0%	75.0%	
Maximum Green (s)	33.5	33.5		33.5	33.5		113.0	113.0		113.0	113.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.5	2.5		2.5	2.5		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5			6.5		7.0	7.0		7.0	7.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	10.0	10.0		10.0	10.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	11.2	11.2			11.2		139.1	139.1		139.1	139.1	
Actuated g/C Ratio	0.07	0.07			0.07		0.87	0.87		0.87	0.87	
v/c Ratio	0.14	0.18			0.58		0.11	0.80		0.44	0.42	
Control Delay	70.7	29.9			81.1		3.4	8.9		30.1	2.5	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	70.7	29.9			81.1		3.4	8.9		30.1	2.5	
LOS	E	C			F		A	A		C	A	
Approach Delay		45.7			81.1			8.8			3.1	
Approach LOS		D			F			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 160			
Actuated Cycle Length: 160			
Offset: 69 (43%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 160			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 8.3		Intersection LOS: A	
Intersection Capacity Utilization 66.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: McLaughlin Road & Rothschild Trail/Ramonet Drive



Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	14	22	60	38	2454	29	1298
v/c Ratio	0.14	0.18	0.58	0.11	0.80	0.44	0.42
Control Delay	70.7	29.9	81.1	3.4	8.9	30.1	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.7	29.9	81.1	3.4	8.9	30.1	2.5
Queue Length 50th (m)	4.5	0.6	16.8	1.8	173.8	1.6	36.6
Queue Length 95th (m)	8.7	5.6	22.2	3.5	108.5	3.0	26.3
Internal Link Dist (m)		96.7	99.6		386.1		339.0
Turn Bay Length (m)	20.0			30.0		35.0	
Base Capacity (vph)	297	331	294	332	3083	66	3063
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.07	0.20	0.11	0.80	0.44	0.42

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	1	13	28	2	9	25	1524	71	19	827	17
Future Volume (vph)	9	1	13	28	2	9	25	1524	71	19	827	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5			6.5		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00			1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.86			0.97		1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1793	1508			1714		1797	3546		1805	3522	
Flt Permitted	0.75	1.00			0.77		0.20	1.00		0.04	1.00	
Satd. Flow (perm)	1419	1508			1374		380	3546		75	3522	
Peak-hour factor, PHF	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Adj. Flow (vph)	14	2	20	43	3	14	38	2345	109	29	1272	26
RTOR Reduction (vph)	0	19	0	0	8	0	0	1	0	0	0	0
Lane Group Flow (vph)	14	3	0	0	52	0	38	2453	0	29	1298	0
Confl. Peds. (#/hr)	4		2	2		4	8		4	4		8
Heavy Vehicles (%)	0%	0%	8%	4%	0%	0%	0%	1%	0%	0%	2%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	10.1	10.1			10.1		136.4	136.4		136.4	136.4	
Effective Green, g (s)	10.1	10.1			10.1		136.4	136.4		136.4	136.4	
Actuated g/C Ratio	0.06	0.06			0.06		0.85	0.85		0.85	0.85	
Clearance Time (s)	6.5	6.5			6.5		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	89	95			86		323	3022		63	3002	
v/s Ratio Prot		0.00						c0.69			0.37	
v/s Ratio Perm	0.01				c0.04		0.10			0.39		
v/c Ratio	0.16	0.03			0.60		0.12	0.81		0.46	0.43	
Uniform Delay, d1	70.9	70.4			73.0		1.9	5.7		2.9	2.8	
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.36	0.69	
Incremental Delay, d2	0.8	0.1			10.8		0.7	2.5		20.8	0.4	
Delay (s)	71.8	70.5			83.7		2.7	8.1		24.7	2.3	
Level of Service	E	E			F		A	A		C	A	
Approach Delay (s)		71.0			83.7			8.1			2.8	
Approach LOS		E			F			A			A	

Intersection Summary					
HCM 2000 Control Delay	8.0	HCM 2000 Level of Service	A		
HCM 2000 Volume to Capacity ratio	0.80				
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	13.5		
Intersection Capacity Utilization	66.0%	ICU Level of Service	C		
Analysis Period (min)	15				

c Critical Lane Group

Appendix D

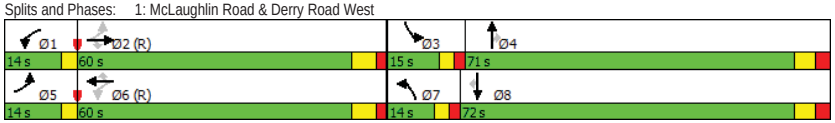
Background Traffic Operational Conditions

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	1704	387	222	978	113	147	625	244	180	1213	91
Future Volume (vph)	120	1704	387	222	978	113	147	625	244	180	1213	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0		50.0	140.0		105.0	40.0		45.0	80.0		75.0
Storage Lanes	1		1	1		1	2		1	2		1
Taper Length (m)	30.0			30.0			30.0			30.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	0.99		0.94			0.89	1.00		0.95	0.99		0.95
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5085	1599	1787	5136	1553	3467	3282	1599	3467	3471	1615
Flt Permitted	0.118			0.075			0.950			0.950		
Satd. Flow (perm)	217	5085	1500	141	5136	1383	3450	3282	1523	3422	3471	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			126			135			165			80
Link Speed (k/h)		70			70			70			70	
Link Distance (m)		323.0			328.3			299.3			289.2	
Travel Time (s)		16.6			16.9			15.4			14.9	
Confl. Peds. (#/hr)	62		32	32		62	25		25	25		25
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	2%	2%	1%	1%	1%	4%	1%	10%	1%	1%	4%	0%
Adj. Flow (vph)	143	2029	461	264	1164	135	175	744	290	214	1444	108
Shared Lane Traffic (%)												
Lane Group Flow (vph)	143	2029	461	264	1164	135	175	744	290	214	1444	108
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6			4			8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	7.0	12.0	12.0	7.0	12.0	12.0	5.0	12.0	12.0	5.0	12.0	12.0
Minimum Split (s)	14.0	60.0	60.0	14.0	60.0	60.0	14.0	61.0	61.0	15.0	72.0	72.0
Total Split (s)	14.0	60.0	60.0	14.0	60.0	60.0	14.0	71.0	71.0	15.0	72.0	72.0
Total Split (%)	8.8%	37.5%	37.5%	8.8%	37.5%	37.5%	8.8%	44.4%	44.4%	9.4%	45.0%	45.0%
Maximum Green (s)	11.0	53.2	53.2	11.0	53.2	53.2	9.0	63.9	63.9	10.0	64.9	64.9
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6	4.6	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.2	2.2	0.0	2.2	2.2	2.0	3.1	3.1	2.0	3.1	3.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.8	6.8	3.0	6.8	6.8	5.0	7.1	7.1	5.0	7.1	7.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		12.0	12.0		12.0	12.0		13.0	13.0		13.0	13.0
Flash Dont Walk (s)		18.0	18.0		18.0	18.0		20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	67.7	53.2	53.2	68.3	53.5	53.5	9.0	63.9	63.9	10.0	64.9	64.9
Actuated g/C Ratio	0.42	0.33	0.33	0.43	0.33	0.33	0.06	0.40	0.40	0.06	0.41	0.41
v/c Ratio	0.73	1.20	0.79	1.53	0.68	0.25	0.90	0.57	0.41	0.99	1.03	0.16
Control Delay	49.8	141.6	45.8	293.1	48.3	6.6	108.8	47.7	25.7	131.8	77.1	10.1
Queue Delay	0.0	0.0	1.3	2.9	0.0	0.0	0.0	0.0	0.0	0.0	31.5	0.0
Total Delay	49.8	141.6	47.1	296.0	48.3	6.6	108.8	47.7	25.7	131.8	108.5	10.1
LOS	D	F	D	F	D	A	F	D	C	F	F	B
Approach Delay		120.1			86.5			51.3			105.3	
Approach LOS		F			F			D			F	

Intersection Summary		
Area Type:	Other	
Cycle Length: 160		
Actuated Cycle Length: 160		
Offset: 14 (9%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green		
Natural Cycle: 160		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.53		
Intersection Signal Delay: 97.5		Intersection LOS: F
Intersection Capacity Utilization 102.0%		ICU Level of Service G
Analysis Period (min) 15		

Splits and Phases: 1: McLaughlin Road & Derry Road West



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	143	2029	461	264	1164	135	175	744	290	214	1444	108
v/c Ratio	0.73	1.20	0.79	1.53	0.68	0.25	0.90	0.57	0.41	0.99	1.03	0.16
Control Delay	49.8	141.6	45.8	293.1	48.3	6.6	108.8	47.7	25.7	131.8	77.1	10.1
Queue Delay	0.0	0.0	1.3	2.9	0.0	0.0	0.0	0.0	0.0	0.0	31.5	0.0
Total Delay	49.8	141.6	47.1	296.0	48.3	6.6	108.8	47.7	25.7	131.8	108.5	10.1
Queue Length 50th (m)	28.7	~300.6	106.0	~106.0	123.5	0.0	31.8	94.4	38.1	37.6	~270.1	5.7
Queue Length 95th (m)	41.2	#293.0	136.4	#151.0	128.6	12.9	#49.6	101.7	52.6	#59.9	#276.7	16.5
Internal Link Dist (m)		299.0			304.3			275.3			265.2	
Turn Bay Length (m)	70.0		50.0	140.0		105.0	40.0		45.0	80.0		75.0
Base Capacity (vph)	198	1690	582	173	1717	551	195	1310	707	216	1407	671
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	31	26	0	0	0	0	0	0	668	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.72	1.20	0.84	1.80	0.68	0.25	0.90	0.57	0.41	0.99	1.95	0.16

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	1704	387	222	978	113	147	625	244	180	1213	91
Future Volume (vph)	120	1704	387	222	978	113	147	625	244	180	1213	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.8	6.8	3.0	6.8	6.8	5.0	7.1	7.1	5.0	7.1	7.1
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.94	1.00	1.00	0.89	1.00	1.00	0.95	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1768	5085	1500	1787	5136	1383	3467	3282	1523	3467	3471	1538
Flt Permitted	0.12	1.00	1.00	0.07	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	220	5085	1500	141	5136	1383	3467	3282	1523	3467	3471	1538
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	143	2029	461	264	1164	135	175	744	290	214	1444	108
RTOR Reduction (vph)	0	0	84	0	0	90	0	0	99	0	0	48
Lane Group Flow (vph)	143	2029	377	264	1164	45	175	744	191	214	1444	60
Confl. Peds. (#/hr)	62		32	32		62	25		25	25		25
Heavy Vehicles (%)	2%	2%	1%	1%	1%	4%	1%	10%	1%	1%	4%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6			4			8
Actuated Green, G (s)	63.9	53.2	53.2	64.5	53.5	53.5	9.0	63.9	63.9	10.0	64.9	64.9
Effective Green, g (s)	63.9	53.2	53.2	64.5	53.5	53.5	9.0	63.9	63.9	10.0	64.9	64.9
Actuated g/C Ratio	0.40	0.33	0.33	0.40	0.33	0.33	0.06	0.40	0.40	0.06	0.41	0.41
Clearance Time (s)	3.0	6.8	6.8	3.0	6.8	6.8	5.0	7.1	7.1	5.0	7.1	7.1
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	191	1690	498	170	1717	462	195	1310	608	216	1407	623
v/s Ratio Prot	0.05	0.40		c0.11	0.23		0.05	0.23		c0.06	c0.42	
v/s Ratio Perm	0.25		0.25	c0.52		0.03			0.13			0.04
v/c Ratio	0.75	1.20	0.76	1.55	0.68	0.10	0.90	0.57	0.31	0.99	1.03	0.10
Uniform Delay, d1	34.6	53.4	47.6	46.0	45.8	36.6	75.0	37.3	33.0	75.0	47.5	29.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	1.23	1.71	1.00	1.00	1.00
Incremental Delay, d2	14.8	96.2	10.3	275.7	2.2	0.4	32.5	0.5	0.2	58.4	30.9	0.1
Delay (s)	49.4	149.6	57.9	321.7	48.0	37.1	105.3	46.3	56.5	133.4	78.5	29.5
Level of Service	D	F	E	F	D	D	F	D	E	F	E	C
Approach Delay (s)		128.1			93.3			57.3			82.1	
Approach LOS		F			F			E			F	

Intersection Summary				
HCM 2000 Control Delay	97.3	HCM 2000 Level of Service	F	
HCM 2000 Volume to Capacity ratio	1.28			
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	21.9	
Intersection Capacity Utilization	102.0%	ICU Level of Service	G	
Analysis Period (min)	15			

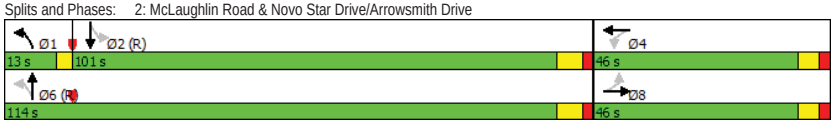
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	10	285	44	21	52	85	913	11	21	1776	51
Future Volume (vph)	60	10	285	44	21	52	85	913	11	21	1776	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	15.0		0.0	35.0		0.0	55.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	20.0			20.0			30.0			30.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.99	0.99			0.98			1.00		1.00	1.00	
Frt		0.855			0.893			0.998			0.996	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1585	0	1805	1624	0	1770	3497	0	1719	3556	0
Flt Permitted	0.661			0.101			0.041			0.157		
Satd. Flow (perm)	1246	1585	0	192	1624	0	76	3497	0	284	3556	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		106			67			2			3	
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		133.1			152.5			363.0			299.3	
Travel Time (s)		9.6			11.0			18.7			15.4	
Confl. Peds. (#/hr)	6		2	2		6	9		6	6		9
Peak Hour Factor	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66
Heavy Vehicles (%)	0%	0%	1%	0%	10%	0%	2%	3%	0%	5%	1%	0%
Adj. Flow (vph)	91	15	432	67	32	79	129	1383	17	32	2691	77
Shared Lane Traffic (%)												
Lane Group Flow (vph)	91	447	0	67	111	0	129	1400	0	32	2768	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		8			4		1	6			2	
Permitted Phases	8			4			6			2		
Detector Phase	8	8		4	4		1	6		2	2	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		5.0	8.0		8.0	8.0	
Minimum Split (s)	46.0	46.0		46.0	46.0		13.0	114.0		101.0	101.0	
Total Split (s)	46.0	46.0		46.0	46.0		13.0	114.0		101.0	101.0	
Total Split (%)	28.8%	28.8%		28.8%	28.8%		8.1%	71.3%		63.1%	63.1%	
Maximum Green (s)	39.5	39.5		39.5	39.5		10.0	107.0		94.0	94.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	5.0		5.0	5.0	
All-Red Time (s)	2.5	2.5		2.5	2.5		0.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		3.0	7.0		7.0	7.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	
Walk Time (s)	10.0	10.0		10.0	10.0			8.0		8.0	8.0	
Flash Dont Walk (s)	20.0	20.0		20.0	20.0			15.0		15.0	15.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)	39.5	39.5		39.5	39.5		111.0	107.0		94.3	94.3	
Actuated g/C Ratio	0.25	0.25		0.25	0.25		0.69	0.67		0.59	0.59	
v/c Ratio	0.30	0.95		1.43	0.25		0.83	0.60		0.19	1.32	
Control Delay	52.2	75.1		321.2	22.0		77.8	12.8		11.8	171.5	
Queue Delay	0.0	9.9		0.0	0.0		0.0	0.0		0.0	1.6	
Total Delay	52.2	84.9		321.2	22.0		77.8	12.8		11.8	173.1	
LOS	D	F		F	C		E	B		B	F	
Approach Delay		79.4			134.6			18.3			171.2	
Approach LOS		E			F			B			F	

Intersection Summary			
Area Type:	Other		
Cycle Length: 160			
Actuated Cycle Length: 160			
Offset: 109 (68%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green			
Natural Cycle: 160			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.43			
Intersection Signal Delay: 113.8		Intersection LOS: F	
Intersection Capacity Utilization 100.9%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 2: McLaughlin Road & Novo Star Drive/Arrowsmith Drive



Queues

Background AM

2: McLaughlin Road & Novo Star Drive/Arrowsmith Drive

180231

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	91	447	67	111	129	1400	32	2768
v/c Ratio	0.30	0.95	1.43	0.25	0.83	0.60	0.19	1.32
Control Delay	52.2	75.1	321.2	22.0	77.8	12.8	11.8	171.5
Queue Delay	0.0	9.9	0.0	0.0	0.0	0.0	0.0	1.6
Total Delay	52.2	84.9	321.2	22.0	77.8	12.8	11.8	173.1
Queue Length 50th (m)	25.0	119.0	~30.0	11.5	32.1	86.2	2.6	~634.5
Queue Length 95th (m)	30.4	99.9	#43.2	15.9	37.9	70.2	m3.3	m367.1
Internal Link Dist (m)		109.1		128.5		339.0		275.3
Turn Bay Length (m)	15.0		15.0		35.0		55.0	
Base Capacity (vph)	307	471	47	451	158	2339	167	2097
Starvation Cap Reductn	0	0	0	0	0	0	0	229
Spillback Cap Reductn	0	24	0	0	0	0	0	819
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	1.00	1.43	0.25	0.82	0.60	0.19	2.17

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

HCM Signalized Intersection Capacity Analysis

Background AM

2: McLaughlin Road & Novo Star Drive/Arrowsmith Drive

180231

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	10	285	44	21	52	85	913	11	21	1776	51
Future Volume (vph)	60	10	285	44	21	52	85	913	11	21	1776	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5		3.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.86		1.00	0.89		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1790	1585		1805	1624		1770	3498		1716	3555	
Flt Permitted	0.66	1.00		0.10	1.00		0.04	1.00		0.16	1.00	
Satd. Flow (perm)	1245	1585		192	1624		77	3498		284	3555	
Peak-hour factor, PHF	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66
Adj. Flow (vph)	91	15	432	67	32	79	129	1383	17	32	2691	77
RTOR Reduction (vph)	0	80	0	0	50	0	0	1	0	0	1	0
Lane Group Flow (vph)	91	367	0	67	61	0	129	1399	0	32	2767	0
Confl. Peds. (#/hr)	6		2	2		6	9		6	6		9
Heavy Vehicles (%)	0%	0%	1%	0%	10%	0%	2%	3%	0%	5%	1%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		8			4		1	6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	39.5	39.5		39.5	39.5		107.0	107.0		94.3	94.3	
Effective Green, g (s)	39.5	39.5		39.5	39.5		107.0	107.0		94.3	94.3	
Actuated g/C Ratio	0.25	0.25		0.25	0.25		0.67	0.67		0.59	0.59	
Clearance Time (s)	6.5	6.5		6.5	6.5		3.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	307	391		47	400		154	2339		167	2095	
v/s Ratio Prot		0.23			0.04		c0.05	0.40			c0.78	
v/s Ratio Perm	0.07			c0.35			0.51			0.11		
v/c Ratio	0.30	0.94		1.43	0.15		0.84	0.60		0.19	1.32	
Uniform Delay, d1	49.0	59.1		60.2	47.1		52.8	14.6		15.2	32.9	
Progression Factor	1.00	1.00		1.00	1.00		1.35	0.81		0.63	0.77	
Incremental Delay, d2	0.5	30.1		279.4	0.2		23.9	0.8		1.4	146.3	
Delay (s)	49.5	89.1		339.7	47.3		95.0	12.7		11.0	171.6	
Level of Service	D	F		F	D		F	B		B	F	
Approach Delay (s)		82.4			157.4			19.6			169.7	
Approach LOS		F			F			B			F	

Intersection Summary

HCM 2000 Control Delay	114.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.31		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	100.9%	ICU Level of Service	G
Analysis Period (min)	15		

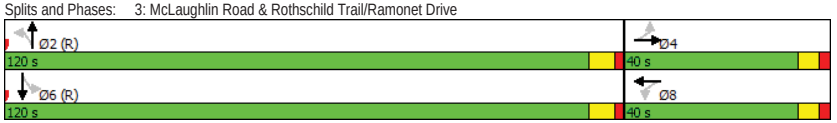
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	0	42	96	0	27	14	970	25	8	2079	5
Future Volume (vph)	16	0	42	96	0	27	14	970	25	8	2079	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	0.0		0.0	30.0		0.0	35.0		0.0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (m)	10.0			7.5			20.0			20.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00	0.98			0.99			1.00			1.00	
Frt		0.850			0.970			0.996				
Flt Protected	0.950				0.962		0.950			0.950		
Satd. Flow (prot)	1805	1558	0	0	1736	0	1687	3486	0	1444	3574	0
Flt Permitted	0.714				0.723		0.034			0.089		
Satd. Flow (perm)	1353	1558	0	0	1301	0	60	3486	0	135	3574	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		27			27			4				
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		120.7			123.6			410.1			363.0	
Travel Time (s)		8.7			8.9			21.1			18.7	
Confl. Peds. (#/hr)	3		2	2		3	12		6	6		12
Peak Hour Factor	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56
Heavy Vehicles (%)	0%	0%	2%	0%	0%	8%	7%	3%	4%	25%	1%	0%
Adj. Flow (vph)	29	0	75	171	0	48	25	1732	45	14	3713	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	29	75	0	0	219	0	25	1777	0	14	3722	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	1.0	1.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	40.0	40.0		40.0	40.0		120.0	120.0		120.0	120.0	
Total Split (s)	40.0	40.0		40.0	40.0		120.0	120.0		120.0	120.0	
Total Split (%)	25.0%	25.0%		25.0%	25.0%		75.0%	75.0%		75.0%	75.0%	
Maximum Green (s)	33.5	33.5		33.5	33.5		113.0	113.0		113.0	113.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.5	2.5		2.5	2.5		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5			6.5		7.0	7.0		7.0	7.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	10.0	10.0		10.0	10.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	28.1	28.1			28.1		118.4	118.4		118.4	118.4	
Actuated g/C Ratio	0.18	0.18			0.18		0.74	0.74		0.74	0.74	
v/c Ratio	0.12	0.25			0.88		0.57	0.69		0.14	1.41	
Control Delay	54.1	37.3			87.5		65.5	13.5		4.5	201.6	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.2	
Total Delay	54.1	37.3			87.5		65.5	13.5		4.5	201.8	
LOS	D	D			F		E	B		A	F	
Approach Delay		42.0			87.5			14.2			201.1	
Approach LOS		D			F			B			F	

Intersection Summary		
Area Type:	Other	
Cycle Length: 160		
Actuated Cycle Length: 160		
Offset: 122 (76%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		
Natural Cycle: 160		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.41		
Intersection Signal Delay: 136.6	Intersection LOS: F	
Intersection Capacity Utilization 83.2%	ICU Level of Service E	
Analysis Period (min) 15		

Splits and Phases: 3: McLaughlin Road & Rothschild Trail/Ramonet Drive



Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	29	75	219	25	1777	14	3722
v/c Ratio	0.12	0.25	0.88	0.57	0.69	0.14	1.41
Control Delay	54.1	37.3	87.5	65.5	13.5	4.5	201.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay	54.1	37.3	87.5	65.5	13.5	4.5	201.8
Queue Length 50th (m)	8.2	13.7	63.4	3.6	157.4	0.7	~894.7
Queue Length 95th (m)	11.0	14.7	49.6	8.2	85.2	m0.6	250.3
Internal Link Dist (m)		96.7	99.6		386.1		339.0
Turn Bay Length (m)	20.0			30.0		35.0	
Base Capacity (vph)	283	347	293	44	2580	99	2644
Starvation Cap Reductn	0	0	0	0	0	0	182
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.22	0.75	0.57	0.69	0.14	1.51

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	0	42	96	0	27	14	970	25	8	2079	5
Future Volume (vph)	16	0	42	96	0	27	14	970	25	8	2079	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5			6.5		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.98			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.85			0.97		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00			0.96		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1800	1558			1732		1687	3487		1444	3572	
Flt Permitted	0.71	1.00			0.72		0.03	1.00		0.09	1.00	
Satd. Flow (perm)	1352	1558			1302		60	3487		135	3572	
Peak-hour factor, PHF	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56
Adj. Flow (vph)	29	0	75	171	0	48	25	1732	45	14	3712	9
RTOR Reduction (vph)	0	22	0	0	22	0	0	1	0	0	0	0
Lane Group Flow (vph)	29	53	0	0	197	0	25	1776	0	14	3722	0
Confl. Peds. (#/hr)	3		2	2		3	12		6	6		12
Heavy Vehicles (%)	0%	0%	2%	0%	0%	8%	7%	3%	4%	25%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	28.1	28.1			28.1		118.4	118.4		118.4	118.4	
Effective Green, g (s)	28.1	28.1			28.1		118.4	118.4		118.4	118.4	
Actuated g/C Ratio	0.18	0.18			0.18		0.74	0.74		0.74	0.74	
Clearance Time (s)	6.5	6.5			6.5		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	237	273			228		44	2580		99	2643	
v/s Ratio Prot		0.03						0.51			c1.04	
v/s Ratio Perm	0.02				c0.15		0.42			0.10		
v/c Ratio	0.12	0.19			0.86		0.57	0.69		0.14	1.41	
Uniform Delay, d1	55.6	56.3			64.1		9.3	11.0		6.0	20.8	
Progression Factor	1.00	1.00			1.00		1.00	1.00		0.51	0.55	
Incremental Delay, d2	0.2	0.3			26.9		43.9	1.5		0.3	183.9	
Delay (s)	55.8	56.6			90.9		53.2	12.5		3.4	195.3	
Level of Service	E	E			F		D	B		A	F	
Approach Delay (s)		56.4			90.9			13.1			194.6	
Approach LOS		E			F			B			F	

Intersection Summary					
HCM 2000 Control Delay	132.5	HCM 2000 Level of Service	F		
HCM 2000 Volume to Capacity ratio	1.30				
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	13.5		
Intersection Capacity Utilization	83.2%	ICU Level of Service	E		
Analysis Period (min)	15				

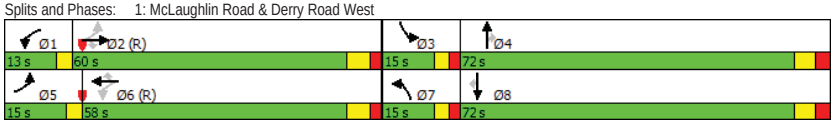
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	206	824	107	226	1697	356	213	1148	110	190	622	206
Future Volume (vph)	206	824	107	226	1697	356	213	1148	110	190	622	206
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0		50.0	140.0		105.0	40.0		45.0	80.0		75.0
Storage Lanes	1		1	1		1	2		1	2		1
Taper Length (m)	30.0			30.0			30.0			30.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	0.98		0.85	0.97		0.91	0.98		0.95	0.99		0.91
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	5136	1615	1770	5136	1599	3502	3471	1615	3502	3282	1599
Flt Permitted	0.075			0.199			0.950			0.950		
Satd. Flow (perm)	139	5136	1375	360	5136	1454	3426	3471	1529	3477	3282	1459
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			87			143			80			154
Link Speed (k/h)		70			70			70			70	
Link Distance (m)		323.0			328.3			299.3			289.2	
Travel Time (s)		16.6			16.9			15.4			14.9	
Confl. Peds. (#/hr)	50		87	87		50	53		29	29		53
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	1%	0%	2%	1%	1%	0%	4%	0%	0%	10%	1%
Adj. Flow (vph)	231	926	120	254	1907	400	239	1290	124	213	699	231
Shared Lane Traffic (%)												
Lane Group Flow (vph)	231	926	120	254	1907	400	239	1290	124	213	699	231
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6			4			8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	7.0	12.0	12.0	7.0	12.0	12.0	5.0	12.0	12.0	5.0	12.0	12.0
Minimum Split (s)	15.0	60.0	60.0	13.0	58.0	58.0	15.0	72.0	72.0	15.0	72.0	72.0
Total Split (s)	15.0	60.0	60.0	13.0	58.0	58.0	15.0	72.0	72.0	15.0	72.0	72.0
Total Split (%)	9.4%	37.5%	37.5%	8.1%	36.3%	36.3%	9.4%	45.0%	45.0%	9.4%	45.0%	45.0%
Maximum Green (s)	12.0	53.2	53.2	10.0	51.2	51.2	10.0	64.9	64.9	10.0	64.9	64.9
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6	4.6	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.2	2.2	0.0	2.2	2.2	2.0	3.1	3.1	2.0	3.1	3.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.8	6.8	3.0	6.8	6.8	5.0	7.1	7.1	5.0	7.1	7.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		12.0	12.0		12.0	12.0		13.0	13.0		13.0	13.0
Flash Dont Walk (s)		18.0	18.0		18.0	18.0		20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	69.4	53.2	53.2	67.6	52.4	52.4	10.0	63.3	63.3	10.0	63.3	63.3
Actuated g/C Ratio	0.43	0.33	0.33	0.42	0.33	0.33	0.06	0.40	0.40	0.06	0.40	0.40
v/c Ratio	1.23	0.54	0.23	1.00	1.13	0.70	1.10	0.94	0.19	0.98	0.54	0.34
Control Delay	175.4	44.9	13.6	92.7	115.7	37.2	154.5	53.2	10.1	128.2	38.8	12.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	175.4	44.9	13.6	92.7	115.7	37.2	154.5	53.2	10.1	128.2	38.8	12.3
LOS	F	D	B	F	F	D	F	D	B	F	D	B
Approach Delay		65.6			101.2			64.6			50.1	
Approach LOS		E			F			E			D	

Intersection Summary		
Area Type:	Other	
Cycle Length: 160		
Actuated Cycle Length: 160		
Offset: 18 (11%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green		
Natural Cycle: 160		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.23		
Intersection Signal Delay: 76.4		Intersection LOS: E
Intersection Capacity Utilization 100.4%		ICU Level of Service G
Analysis Period (min) 15		

Splits and Phases: 1: McLaughlin Road & Derry Road West

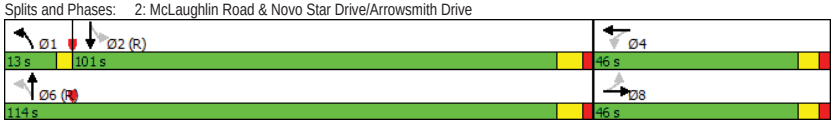


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	10	285	44	21	52	85	913	11	21	1776	51
Future Volume (vph)	60	10	285	44	21	52	85	913	11	21	1776	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	15.0		0.0	35.0		0.0	55.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	20.0			20.0			30.0			30.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.99	0.99			0.98			1.00		1.00	1.00	
Frt		0.855			0.893			0.998			0.996	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1585	0	1805	1624	0	1770	3497	0	1719	3556	0
Flt Permitted	0.661			0.101			0.041			0.157		
Satd. Flow (perm)	1246	1585	0	192	1624	0	76	3497	0	284	3556	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		106			67			2			3	
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		133.1			152.5			363.0			299.3	
Travel Time (s)		9.6			11.0			18.7			15.4	
Confl. Peds. (#/hr)	6		2	2		6	9		6	6		9
Peak Hour Factor	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66
Heavy Vehicles (%)	0%	0%	1%	0%	10%	0%	2%	3%	0%	5%	1%	0%
Adj. Flow (vph)	91	15	432	67	32	79	129	1383	17	32	2691	77
Shared Lane Traffic (%)												
Lane Group Flow (vph)	91	447	0	67	111	0	129	1400	0	32	2768	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		8			4		1	6			2	
Permitted Phases	8			4			6			2		
Detector Phase	8	8		4	4		1	6		2	2	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		5.0	8.0		8.0	8.0	
Minimum Split (s)	46.0	46.0		46.0	46.0		13.0	114.0		101.0	101.0	
Total Split (s)	46.0	46.0		46.0	46.0		13.0	114.0		101.0	101.0	
Total Split (%)	28.8%	28.8%		28.8%	28.8%		8.1%	71.3%		63.1%	63.1%	
Maximum Green (s)	39.5	39.5		39.5	39.5		10.0	107.0		94.0	94.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	5.0		5.0	5.0	
All-Red Time (s)	2.5	2.5		2.5	2.5		0.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		3.0	7.0		7.0	7.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	
Walk Time (s)	10.0	10.0		10.0	10.0			8.0		8.0	8.0	
Flash Dont Walk (s)	20.0	20.0		20.0	20.0			15.0		15.0	15.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)	39.5	39.5		39.5	39.5		111.0	107.0		94.3	94.3	
Actuated g/C Ratio	0.25	0.25		0.25	0.25		0.69	0.67		0.59	0.59	
v/c Ratio	0.30	0.95		1.43	0.25		0.83	0.60		0.19	1.32	
Control Delay	52.2	74.9		321.2	19.8		78.6	12.1		5.1	157.8	
Queue Delay	0.0	9.9		0.0	0.0		0.0	0.0		0.0	1.5	
Total Delay	52.2	84.8		321.2	19.8		78.6	12.1		5.1	159.3	
LOS	D	F		F	B		E	B		A	F	
Approach Delay		79.3			133.2			17.7			157.5	
Approach LOS		E			F			B			F	

Intersection Summary		
Area Type:	Other	
Cycle Length: 160		
Actuated Cycle Length: 160		
Offset: 109 (68%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green		
Natural Cycle: 160		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.43		
Intersection Signal Delay: 105.9		Intersection LOS: F
Intersection Capacity Utilization 100.9%		ICU Level of Service G
Analysis Period (min) 15		

Splits and Phases: 2: McLaughlin Road & Novo Star Drive/Arrowsmith Drive



Queues
2: McLaughlin Road & Novo Star Drive/Arrowsmith Drive

Background PM
180231

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	91	447	67	111	129	1400	32	2768
v/c Ratio	0.30	0.95	1.43	0.25	0.83	0.60	0.19	1.32
Control Delay	52.2	74.9	321.2	19.8	78.6	12.1	5.1	157.8
Queue Delay	0.0	9.9	0.0	0.0	0.0	0.0	0.0	1.5
Total Delay	52.2	84.8	321.2	19.8	78.6	12.1	5.1	159.3
Queue Length 50th (m)	25.0	119.0	~30.0	11.5	32.1	86.2	2.6	~634.5
Queue Length 95th (m)	30.4	99.9	#43.2	15.9	37.9	70.2	m3.3	m367.1
Internal Link Dist (m)		109.1		128.5		339.0		275.3
Turn Bay Length (m)	15.0		15.0		35.0		55.0	
Base Capacity (vph)	307	471	47	451	158	2339	167	2097
Starvation Cap Reductn	0	0	0	0	0	0	0	229
Spillback Cap Reductn	0	24	0	0	0	0	0	819
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	1.00	1.43	0.25	0.82	0.60	0.19	2.17

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

HCM Signalized Intersection Capacity Analysis
2: McLaughlin Road & Novo Star Drive/Arrowsmith Drive

Background PM
180231

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	10	285	44	21	52	85	913	11	21	1776	51
Future Volume (vph)	60	10	285	44	21	52	85	913	11	21	1776	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5		3.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.86		1.00	0.89		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1790	1585		1805	1624		1770	3498		1716	3555	
Flt Permitted	0.66	1.00		0.10	1.00		0.04	1.00		0.16	1.00	
Satd. Flow (perm)	1245	1585		192	1624		77	3498		284	3555	
Peak-hour factor, PHF	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66
Adj. Flow (vph)	91	15	432	67	32	79	129	1383	17	32	2691	77
RTOR Reduction (vph)	0	80	0	0	50	0	0	1	0	0	1	0
Lane Group Flow (vph)	91	367	0	67	61	0	129	1399	0	32	2767	0
Confl. Peds. (#/hr)	6		2	2		6	9		6	6		9
Heavy Vehicles (%)	0%	0%	1%	0%	10%	0%	2%	3%	0%	5%	1%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		8			4		1	6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	39.5	39.5		39.5	39.5		107.0	107.0		94.3	94.3	
Effective Green, g (s)	39.5	39.5		39.5	39.5		107.0	107.0		94.3	94.3	
Actuated g/C Ratio	0.25	0.25		0.25	0.25		0.67	0.67		0.59	0.59	
Clearance Time (s)	6.5	6.5		6.5	6.5		3.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	307	391		47	400		154	2339		167	2095	
v/s Ratio Prot		0.23			0.04		c0.05	0.40			c0.78	
v/s Ratio Perm	0.07			c0.35			0.51			0.11		
v/c Ratio	0.30	0.94		1.43	0.15		0.84	0.60		0.19	1.32	
Uniform Delay, d1	49.0	59.1		60.2	47.1		52.8	14.6		15.2	32.9	
Progression Factor	1.00	1.00		1.00	1.00		1.35	0.81		0.63	0.77	
Incremental Delay, d2	0.5	30.1		279.4	0.2		23.9	0.8		1.4	146.3	
Delay (s)	49.5	89.1		339.7	47.3		95.0	12.7		11.0	171.6	
Level of Service	D	F		F	D		F	B		B	F	
Approach Delay (s)		82.4			157.4			19.6			169.7	
Approach LOS		F			F			B			F	

Intersection Summary					
HCM 2000 Control Delay	114.5	HCM 2000 Level of Service	F		
HCM 2000 Volume to Capacity ratio	1.31				
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	16.5		
Intersection Capacity Utilization	100.9%	ICU Level of Service	G		
Analysis Period (min)	15				

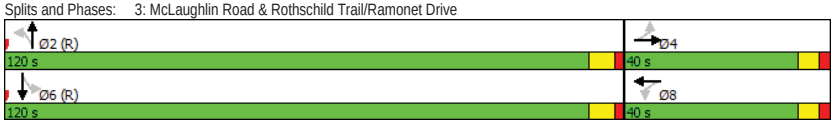
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	0	42	96	0	27	14	970	25	8	2079	5
Future Volume (vph)	16	0	42	96	0	27	14	970	25	8	2079	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	0.0		0.0	30.0		0.0	35.0		0.0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (m)	10.0			7.5			20.0			20.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00	0.98			0.99			1.00			1.00	
Frt		0.850			0.970			0.996				
Flt Protected	0.950				0.962		0.950			0.950		
Satd. Flow (prot)	1805	1558	0	0	1736	0	1687	3486	0	1444	3574	0
Flt Permitted	0.714				0.723		0.034			0.089		
Satd. Flow (perm)	1353	1558	0	0	1301	0	60	3486	0	135	3574	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		27			27			4				
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		120.7			123.6			410.1			363.0	
Travel Time (s)		8.7			8.9			21.1			18.7	
Confl. Peds. (#/hr)	3		2	2		3	12		6	6		12
Peak Hour Factor	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56
Heavy Vehicles (%)	0%	0%	2%	0%	0%	8%	7%	3%	4%	25%	1%	0%
Adj. Flow (vph)	29	0	75	171	0	48	25	1732	45	14	3713	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	29	75	0	0	219	0	25	1777	0	14	3722	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	1.0	1.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	40.0	40.0		40.0	40.0		120.0	120.0		120.0	120.0	
Total Split (s)	40.0	40.0		40.0	40.0		120.0	120.0		120.0	120.0	
Total Split (%)	25.0%	25.0%		25.0%	25.0%		75.0%	75.0%		75.0%	75.0%	
Maximum Green (s)	33.5	33.5		33.5	33.5		113.0	113.0		113.0	113.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.5	2.5		2.5	2.5		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5			6.5		7.0	7.0		7.0	7.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	10.0	10.0		10.0	10.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	28.1	28.1			28.1		118.4	118.4		118.4	118.4	
Actuated g/C Ratio	0.18	0.18			0.18		0.74	0.74		0.74	0.74	
v/c Ratio	0.12	0.25			0.88		0.57	0.69		0.14	1.41	
Control Delay	54.1	37.3			87.5		65.5	12.7		4.5	192.3	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.1	
Total Delay	54.1	37.3			87.5		65.5	12.7		4.5	192.5	
LOS	D	D			F		E	B		A	F	
Approach Delay		42.0			87.5			13.4			191.8	
Approach LOS		D			F			B			F	

Intersection Summary			
Area Type:	Other		
Cycle Length: 160			
Actuated Cycle Length: 160			
Offset: 122 (76%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 160			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.41			
Intersection Signal Delay: 130.4		Intersection LOS: F	
Intersection Capacity Utilization 83.2%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 3: McLaughlin Road & Rothschild Trail/Ramonet Drive



Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	29	75	219	25	1777	14	3722
v/c Ratio	0.12	0.25	0.88	0.57	0.69	0.14	1.41
Control Delay	54.1	37.3	87.5	65.5	12.7	4.5	192.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay	54.1	37.3	87.5	65.5	12.7	4.5	192.5
Queue Length 50th (m)	8.2	13.7	63.4	3.6	157.4	0.7	~894.7
Queue Length 95th (m)	11.0	14.7	49.6	8.2	85.2	m0.6	250.3
Internal Link Dist (m)		96.7	99.6		386.1		339.0
Turn Bay Length (m)	20.0			30.0		35.0	
Base Capacity (vph)	283	347	293	44	2580	99	2644
Starvation Cap Reductn	0	0	0	0	0	0	182
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.22	0.75	0.57	0.69	0.14	1.51

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	0	42	96	0	27	14	970	25	8	2079	5
Future Volume (vph)	16	0	42	96	0	27	14	970	25	8	2079	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5			6.5		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.98			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.85			0.97		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00			0.96		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1800	1558			1732		1687	3487		1444	3572	
Flt Permitted	0.71	1.00			0.72		0.03	1.00		0.09	1.00	
Satd. Flow (perm)	1352	1558			1302		60	3487		135	3572	
Peak-hour factor, PHF	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56
Adj. Flow (vph)	29	0	75	171	0	48	25	1732	45	14	3712	9
RTOR Reduction (vph)	0	22	0	0	22	0	0	1	0	0	0	0
Lane Group Flow (vph)	29	53	0	0	197	0	25	1776	0	14	3722	0
Confl. Peds. (#/hr)	3		2	2		3	12		6	6		12
Heavy Vehicles (%)	0%	0%	2%	0%	0%	8%	7%	3%	4%	25%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	28.1	28.1			28.1		118.4	118.4		118.4	118.4	
Effective Green, g (s)	28.1	28.1			28.1		118.4	118.4		118.4	118.4	
Actuated g/C Ratio	0.18	0.18			0.18		0.74	0.74		0.74	0.74	
Clearance Time (s)	6.5	6.5			6.5		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	237	273			228		44	2580		99	2643	
v/s Ratio Prot		0.03						0.51			c1.04	
v/s Ratio Perm	0.02				c0.15		0.42			0.10		
v/c Ratio	0.12	0.19			0.86		0.57	0.69		0.14	1.41	
Uniform Delay, d1	55.6	56.3			64.1		9.3	11.0		6.0	20.8	
Progression Factor	1.00	1.00			1.00		1.00	1.00		0.51	0.55	
Incremental Delay, d2	0.2	0.3			26.9		43.9	1.5		0.3	183.9	
Delay (s)	55.8	56.6			90.9		53.2	12.5		3.4	195.3	
Level of Service	E	E			F		D	B		A	F	
Approach Delay (s)		56.4			90.9			13.1			194.6	
Approach LOS		E			F			B			F	

Intersection Summary			
HCM 2000 Control Delay	132.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.30		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	83.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Appendix E

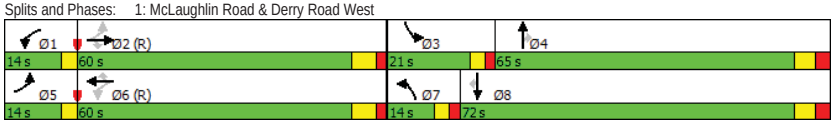
Total Traffic Operational Conditions

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	1704	387	223	978	113	148	626	247	180	1213	91
Future Volume (vph)	120	1704	387	223	978	113	148	626	247	180	1213	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0		50.0	140.0		105.0	40.0		45.0	80.0		75.0
Storage Lanes	1		1	1		1	2		1	2		1
Taper Length (m)	30.0			30.0			30.0			30.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	0.99		0.94			0.89	1.00		0.95	0.99		0.95
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5085	1599	1787	5136	1553	3467	3282	1599	3467	3471	1615
Flt Permitted	0.118			0.075			0.950			0.950		
Satd. Flow (perm)	217	5085	1500	141	5136	1383	3450	3282	1523	3422	3471	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			132			135			169			80
Link Speed (k/h)		70			70			70			70	
Link Distance (m)		323.0			328.3			299.3			289.2	
Travel Time (s)		16.6			16.9			15.4			14.9	
Confl. Peds. (#/hr)	62		32	32		62	25		25	25		25
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	2%	2%	1%	1%	1%	4%	1%	10%	1%	1%	4%	0%
Adj. Flow (vph)	143	2029	461	265	1164	135	176	745	294	214	1444	108
Shared Lane Traffic (%)												
Lane Group Flow (vph)	143	2029	461	265	1164	135	176	745	294	214	1444	108
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6			4			8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	7.0	12.0	12.0	7.0	12.0	12.0	5.0	12.0	12.0	5.0	12.0	12.0
Minimum Split (s)	14.0	60.0	60.0	14.0	60.0	60.0	14.0	61.0	61.0	15.0	72.0	72.0
Total Split (s)	14.0	60.0	60.0	14.0	60.0	60.0	14.0	65.0	65.0	21.0	72.0	72.0
Total Split (%)	8.8%	37.5%	37.5%	8.8%	37.5%	37.5%	8.8%	40.6%	40.6%	13.1%	45.0%	45.0%
Maximum Green (s)	11.0	53.2	53.2	11.0	53.2	53.2	9.0	57.9	57.9	16.0	64.9	64.9
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6	4.6	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.2	2.2	0.0	2.2	2.2	2.0	3.1	3.1	2.0	3.1	3.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.8	6.8	3.0	6.8	6.8	5.0	7.1	7.1	5.0	7.1	7.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		12.0	12.0		12.0	12.0		13.0	13.0		13.0	13.0
Flash Dont Walk (s)		18.0	18.0		18.0	18.0		20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	67.7	53.2	53.2	68.3	53.5	53.5	9.0	59.6	59.6	14.3	64.9	64.9
Actuated g/C Ratio	0.42	0.33	0.33	0.43	0.33	0.33	0.06	0.37	0.37	0.09	0.41	0.41
v/c Ratio	0.73	1.20	0.79	1.53	0.68	0.25	0.90	0.61	0.44	0.69	1.03	0.16
Control Delay	49.8	141.6	44.7	295.4	48.3	6.6	109.6	51.9	27.1	82.4	77.1	10.1
Queue Delay	0.0	0.0	1.3	2.9	0.0	0.0	0.0	0.0	0.0	0.0	31.5	0.0
Total Delay	49.8	141.6	46.0	298.4	48.3	6.6	109.6	51.9	27.1	82.4	108.5	10.1
LOS	D	F	D	F	D	A	F	D	C	F	F	B
Approach Delay		119.9			87.1			54.2			99.3	
Approach LOS		F			F			D			F	

Intersection Summary		
Area Type:	Other	
Cycle Length: 160		
Actuated Cycle Length: 160		
Offset: 14 (9%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green		
Natural Cycle: 160		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 1.53		
Intersection Signal Delay: 96.6		Intersection LOS: F
Intersection Capacity Utilization 102.1%		ICU Level of Service G
Analysis Period (min) 15		

Splits and Phases: 1: McLaughlin Road & Derry Road West



Queues
1: McLaughlin Road & Derry Road West

Total AM
180231

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	143	2029	461	265	1164	135	176	745	294	214	1444	108
v/c Ratio	0.73	1.20	0.79	1.53	0.68	0.25	0.90	0.61	0.44	0.69	1.03	0.16
Control Delay	49.8	141.6	44.7	295.4	48.3	6.6	109.6	51.9	27.1	82.4	77.1	10.1
Queue Delay	0.0	0.0	1.3	2.9	0.0	0.0	0.0	0.0	0.0	0.0	31.5	0.0
Total Delay	49.8	141.6	46.0	298.4	48.3	6.6	109.6	51.9	27.1	82.4	108.5	10.1
Queue Length 50th (m)	28.7	~300.6	104.0	~106.7	123.5	0.0	32.0	100.3	38.3	36.2	~270.1	5.7
Queue Length 95th (m)	41.2	#293.0	134.3	#151.7	128.6	12.9	#50.1	115.2	52.6	47.4	#276.7	16.5
Internal Link Dist (m)		299.0			304.3			275.3			265.2	
Turn Bay Length (m)	70.0		50.0	140.0		105.0	40.0		45.0	80.0		75.0
Base Capacity (vph)	198	1690	586	173	1717	551	195	1221	672	346	1407	671
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	33	26	0	0	0	0	0	0	666	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.72	1.20	0.83	1.80	0.68	0.25	0.90	0.61	0.44	0.62	1.95	0.16

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
1: McLaughlin Road & Derry Road West

Total AM
180231

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	1704	387	223	978	113	148	626	247	180	1213	91
Future Volume (vph)	120	1704	387	223	978	113	148	626	247	180	1213	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.8	6.8	3.0	6.8	6.8	5.0	7.1	7.1	5.0	7.1	7.1
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.94	1.00	1.00	0.89	1.00	1.00	0.95	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1768	5085	1500	1787	5136	1383	3467	3282	1523	3467	3471	1538
Flt Permitted	0.12	1.00	1.00	0.07	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	220	5085	1500	141	5136	1383	3467	3282	1523	3467	3471	1538
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	143	2029	461	265	1164	135	176	745	294	214	1444	108
RTOR Reduction (vph)	0	0	88	0	0	90	0	0	106	0	0	48
Lane Group Flow (vph)	143	2029	373	265	1164	45	176	745	188	214	1444	60
Confl. Peds. (#/hr)	62		32	32		62	25		25	25		25
Heavy Vehicles (%)	2%	2%	1%	1%	1%	4%	1%	10%	1%	1%	4%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6			4			8
Actuated Green, G (s)	63.9	53.2	53.2	64.5	53.5	53.5	9.0	59.6	59.6	14.3	64.9	64.9
Effective Green, g (s)	63.9	53.2	53.2	64.5	53.5	53.5	9.0	59.6	59.6	14.3	64.9	64.9
Actuated g/C Ratio	0.40	0.33	0.33	0.40	0.33	0.33	0.06	0.37	0.37	0.09	0.41	0.41
Clearance Time (s)	3.0	6.8	6.8	3.0	6.8	6.8	5.0	7.1	7.1	5.0	7.1	7.1
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	191	1690	498	170	1717	462	195	1222	567	309	1407	623
v/s Ratio Prot	0.05	0.40		c0.11	0.23		c0.05	0.23		0.06	c0.42	
v/s Ratio Perm	0.25		0.25	c0.52		0.03			0.12			0.04
v/c Ratio	0.75	1.20	0.75	1.56	0.68	0.10	0.90	0.61	0.33	0.69	1.03	0.10
Uniform Delay, d1	34.6	53.4	47.5	46.0	45.8	36.6	75.1	40.8	35.9	70.7	47.5	29.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	1.21	1.63	1.00	1.00	1.00
Incremental Delay, d2	14.8	96.2	9.9	278.2	2.2	0.4	33.7	0.7	0.3	6.6	30.9	0.1
Delay (s)	49.4	149.6	57.4	324.2	48.0	37.1	106.6	49.9	58.7	77.3	78.5	29.5
Level of Service	D	F	E	F	D	D	F	D	E	E	E	C
Approach Delay (s)		128.0			93.9			60.2			75.3	
Approach LOS		F			F			E			E	

Intersection Summary				
HCM 2000 Control Delay	96.1	HCM 2000 Level of Service	F	
HCM 2000 Volume to Capacity ratio	1.27			
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	21.9	
Intersection Capacity Utilization	102.1%	ICU Level of Service	G	
Analysis Period (min)	15			

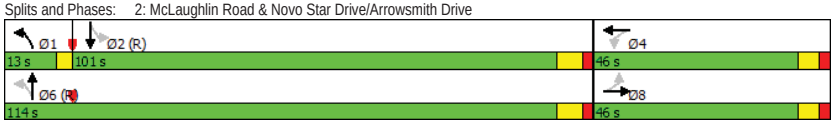
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	10	285	44	21	52	85	918	11	21	1777	51
Future Volume (vph)	60	10	285	44	21	52	85	918	11	21	1777	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	15.0		0.0	35.0		0.0	55.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	20.0			20.0			30.0			30.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.99	0.99			0.98			1.00		1.00	1.00	
Frt		0.855			0.893			0.998			0.996	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1585	0	1805	1624	0	1770	3497	0	1719	3556	0
Flt Permitted	0.661			0.101			0.041			0.155		
Satd. Flow (perm)	1246	1585	0	192	1624	0	76	3497	0	280	3556	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		106			66			2			3	
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		133.1			152.5			363.0			299.3	
Travel Time (s)		9.6			11.0			18.7			15.4	
Confl. Peds. (#/hr)	6		2	2		6	9		6	6		9
Peak Hour Factor	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66
Heavy Vehicles (%)	0%	0%	1%	0%	10%	0%	2%	3%	0%	5%	1%	0%
Adj. Flow (vph)	91	15	432	67	32	79	129	1391	17	32	2692	77
Shared Lane Traffic (%)												
Lane Group Flow (vph)	91	447	0	67	111	0	129	1408	0	32	2769	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		8			4		1	6			2	
Permitted Phases	8			4			6			2		
Detector Phase	8	8		4	4		1	6		2	2	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		5.0	8.0		8.0	8.0	
Minimum Split (s)	46.0	46.0		46.0	46.0		13.0	114.0		101.0	101.0	
Total Split (s)	46.0	46.0		46.0	46.0		13.0	114.0		101.0	101.0	
Total Split (%)	28.8%	28.8%		28.8%	28.8%		8.1%	71.3%		63.1%	63.1%	
Maximum Green (s)	39.5	39.5		39.5	39.5		10.0	107.0		94.0	94.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	5.0		5.0	5.0	
All-Red Time (s)	2.5	2.5		2.5	2.5		0.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		3.0	7.0		7.0	7.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	
Walk Time (s)	10.0	10.0		10.0	10.0			8.0		8.0	8.0	
Flash Dont Walk (s)	20.0	20.0		20.0	20.0			15.0		15.0	15.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)	39.5	39.5		39.5	39.5		111.0	107.0		94.3	94.3	
Actuated g/C Ratio	0.25	0.25		0.25	0.25		0.69	0.67		0.59	0.59	
v/c Ratio	0.30	0.95		1.43	0.25		0.83	0.60		0.19	1.32	
Control Delay	52.2	75.1		321.2	22.3		77.5	12.9		11.9	171.6	
Queue Delay	0.0	9.9		0.0	0.0		0.0	0.0		0.0	1.6	
Total Delay	52.2	84.9		321.2	22.3		77.5	12.9		11.9	173.2	
LOS	D	F		F	C		E	B		B	F	
Approach Delay		79.4			134.8			18.3			171.4	
Approach LOS		E			F			B			F	

Intersection Summary			
Area Type:	Other		
Cycle Length: 160			
Actuated Cycle Length: 160			
Offset: 109 (68%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green			
Natural Cycle: 160			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.43			
Intersection Signal Delay: 113.7		Intersection LOS: F	
Intersection Capacity Utilization 100.9%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 2: McLaughlin Road & Novo Star Drive/Arrowsmith Drive



Queues
2: McLaughlin Road & Novo Star Drive/Arrowsmith Drive

Total AM
180231

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	91	447	67	111	129	1408	32	2769
v/c Ratio	0.30	0.95	1.43	0.25	0.83	0.60	0.19	1.32
Control Delay	52.2	75.1	321.2	22.3	77.5	12.9	11.9	171.6
Queue Delay	0.0	9.9	0.0	0.0	0.0	0.0	0.0	1.6
Total Delay	52.2	84.9	321.2	22.3	77.5	12.9	11.9	173.2
Queue Length 50th (m)	25.0	119.0	~30.0	11.8	31.9	87.5	2.6	~635.0
Queue Length 95th (m)	30.4	99.9	#43.2	16.1	37.5	70.7	m3.4	m367.2
Internal Link Dist (m)		109.1		128.5		339.0		275.3
Turn Bay Length (m)	15.0		15.0		35.0		55.0	
Base Capacity (vph)	307	471	47	450	158	2339	165	2097
Starvation Cap Reductn	0	0	0	0	0	0	0	228
Spillback Cap Reductn	0	24	0	0	0	0	0	821
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	1.00	1.43	0.25	0.82	0.60	0.19	2.17

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

HCM Signalized Intersection Capacity Analysis
2: McLaughlin Road & Novo Star Drive/Arrowsmith Drive

Total AM
180231

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	10	285	44	21	52	85	918	11	21	1777	51
Future Volume (vph)	60	10	285	44	21	52	85	918	11	21	1777	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5		3.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.86		1.00	0.89		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1790	1585		1805	1624		1770	3498		1716	3555	
Flt Permitted	0.66	1.00		0.10	1.00		0.04	1.00		0.16	1.00	
Satd. Flow (perm)	1245	1585		192	1624		77	3498		280	3555	
Peak-hour factor, PHF	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66
Adj. Flow (vph)	91	15	432	67	32	79	129	1391	17	32	2692	77
RTOR Reduction (vph)	0	80	0	0	50	0	0	1	0	0	1	0
Lane Group Flow (vph)	91	367	0	67	61	0	129	1407	0	32	2768	0
Confl. Peds. (#/hr)	6		2	2		6	9		6	6		9
Heavy Vehicles (%)	0%	0%	1%	0%	10%	0%	2%	3%	0%	5%	1%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		8			4		1	6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	39.5	39.5		39.5	39.5		107.0	107.0		94.3	94.3	
Effective Green, g (s)	39.5	39.5		39.5	39.5		107.0	107.0		94.3	94.3	
Actuated g/C Ratio	0.25	0.25		0.25	0.25		0.67	0.67		0.59	0.59	
Clearance Time (s)	6.5	6.5		6.5	6.5		3.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	307	391		47	400		154	2339		165	2095	
v/s Ratio Prot		0.23			0.04		c0.05	0.40			c0.78	
v/s Ratio Perm	0.07			c0.35			0.51			0.11		
v/c Ratio	0.30	0.94		1.43	0.15		0.84	0.60		0.19	1.32	
Uniform Delay, d1	49.0	59.1		60.2	47.2		52.8	14.7		15.2	32.9	
Progression Factor	1.00	1.00		1.00	1.00		1.34	0.81		0.63	0.77	
Incremental Delay, d2	0.5	30.1		279.4	0.2		24.0	0.8		1.5	146.5	
Delay (s)	49.5	89.1		339.7	47.3		94.6	12.7		11.1	171.7	
Level of Service	D	F		F	D		F	B		B	F	
Approach Delay (s)		82.4			157.4			19.6			169.8	
Approach LOS		F			F			B			F	

Intersection Summary				
HCM 2000 Control Delay	114.4	HCM 2000 Level of Service	F	
HCM 2000 Volume to Capacity ratio	1.31			
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	16.5	
Intersection Capacity Utilization	100.9%	ICU Level of Service	G	
Analysis Period (min)	15			

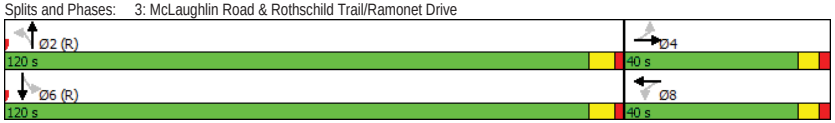
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	0	46	96	0	27	16	970	25	8	2079	6
Future Volume (vph)	21	0	46	96	0	27	16	970	25	8	2079	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	0.0		0.0	30.0		0.0	35.0		0.0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (m)	10.0			7.5			20.0			20.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00	0.98			0.99			1.00			1.00	
Frt		0.850			0.970			0.996				
Flt Protected	0.950				0.962		0.950			0.950		
Satd. Flow (prot)	1805	1558	0	0	1736	0	1687	3486	0	1444	3574	0
Flt Permitted	0.713				0.719		0.034			0.089		
Satd. Flow (perm)	1351	1558	0	0	1294	0	60	3486	0	135	3574	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		27			27			4				
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		120.7			123.6			410.1			363.0	
Travel Time (s)		8.7			8.9			21.1			18.7	
Confl. Peds. (#/hr)	3		2	2		3	12		6	6		12
Peak Hour Factor	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56
Heavy Vehicles (%)	0%	0%	2%	0%	0%	8%	7%	3%	4%	25%	1%	0%
Adj. Flow (vph)	38	0	82	171	0	48	29	1732	45	14	3713	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	82	0	0	219	0	29	1777	0	14	3724	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	1.0	1.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	40.0	40.0		40.0	40.0		120.0	120.0		120.0	120.0	
Total Split (s)	40.0	40.0		40.0	40.0		120.0	120.0		120.0	120.0	
Total Split (%)	25.0%	25.0%		25.0%	25.0%		75.0%	75.0%		75.0%	75.0%	
Maximum Green (s)	33.5	33.5		33.5	33.5		113.0	113.0		113.0	113.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.5	2.5		2.5	2.5		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5			6.5		7.0	7.0		7.0	7.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	10.0	10.0		10.0	10.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	28.2	28.2			28.2		118.3	118.3		118.3	118.3	
Actuated g/C Ratio	0.18	0.18			0.18		0.74	0.74		0.74	0.74	
v/c Ratio	0.16	0.28			0.88		0.66	0.69		0.14	1.41	
Control Delay	55.0	38.6			87.6		82.1	13.5		4.5	202.5	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.2	
Total Delay	55.0	38.6			87.6		82.1	13.5		4.5	202.7	
LOS	D	D			F		F	B		A	F	
Approach Delay		43.8			87.6			14.6			201.9	
Approach LOS		D			F			B			F	

Intersection Summary			
Area Type:	Other		
Cycle Length: 160			
Actuated Cycle Length: 160			
Offset: 122 (76%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 160			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.41			
Intersection Signal Delay: 137.0		Intersection LOS: F	
Intersection Capacity Utilization 83.2%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 3: McLaughlin Road & Rothschild Trail/Ramonet Drive



Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	38	82	219	29	1777	14	3724
v/c Ratio	0.16	0.28	0.88	0.66	0.69	0.14	1.41
Control Delay	55.0	38.6	87.6	82.1	13.5	4.5	202.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay	55.0	38.6	87.6	82.1	13.5	4.5	202.7
Queue Length 50th (m)	10.8	15.7	63.3	4.7	158.2	0.7	~896.5
Queue Length 95th (m)	13.3	16.4	49.7	11.0	85.2	m0.6	253.2
Internal Link Dist (m)		96.7	99.6		386.1		339.0
Turn Bay Length (m)	20.0			30.0		35.0	
Base Capacity (vph)	282	347	292	44	2578	99	2642
Starvation Cap Reductn	0	0	0	0	0	0	181
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.24	0.75	0.66	0.69	0.14	1.51

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	0	46	96	0	27	16	970	25	8	2079	6
Future Volume (vph)	21	0	46	96	0	27	16	970	25	8	2079	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5			6.5		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.98			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.85			0.97		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00			0.96		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1800	1558			1732		1687	3487		1444	3572	
Flt Permitted	0.71	1.00			0.72		0.03	1.00		0.09	1.00	
Satd. Flow (perm)	1352	1558			1294		60	3487		135	3572	
Peak-hour factor, PHF	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56
Adj. Flow (vph)	38	0	82	171	0	48	29	1732	45	14	3712	11
RTOR Reduction (vph)	0	22	0	0	22	0	0	1	0	0	0	0
Lane Group Flow (vph)	38	60	0	0	197	0	29	1776	0	14	3724	0
Confl. Peds. (#/hr)	3		2	2		3	12		6	6		12
Heavy Vehicles (%)	0%	0%	2%	0%	0%	8%	7%	3%	4%	25%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	28.2	28.2			28.2		118.3	118.3		118.3	118.3	
Effective Green, g (s)	28.2	28.2			28.2		118.3	118.3		118.3	118.3	
Actuated g/C Ratio	0.18	0.18			0.18		0.74	0.74		0.74	0.74	
Clearance Time (s)	6.5	6.5			6.5		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	238	274			228		44	2578		99	2641	
v/s Ratio Prot		0.04						0.51			c1.04	
v/s Ratio Perm	0.03				c0.15		0.48			0.10		
v/c Ratio	0.16	0.22			0.86		0.66	0.69		0.14	1.41	
Uniform Delay, d1	55.9	56.5			64.0		10.6	11.1		6.1	20.9	
Progression Factor	1.00	1.00			1.00		1.00	1.00		0.51	0.55	
Incremental Delay, d2	0.3	0.4			26.9		57.5	1.5		0.3	184.7	
Delay (s)	56.2	56.9			90.9		68.1	12.6		3.4	196.2	
Level of Service	E	E			F		E	B		A	F	
Approach Delay (s)		56.6			90.9			13.5			195.4	
Approach LOS		E			F			B			F	

Intersection Summary					
HCM 2000 Control Delay	132.9	HCM 2000 Level of Service	F		
HCM 2000 Volume to Capacity ratio	1.30				
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	13.5		
Intersection Capacity Utilization	83.2%	ICU Level of Service	E		
Analysis Period (min)	15				

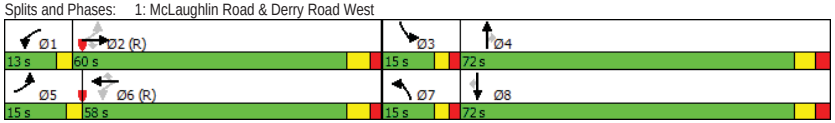
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	206	824	108	230	1697	356	214	1149	112	190	623	206
Future Volume (vph)	206	824	108	230	1697	356	214	1149	112	190	623	206
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	70.0		50.0	140.0		105.0	40.0		45.0	80.0		75.0
Storage Lanes	1		1	1		1	2		1	2		1
Taper Length (m)	30.0			30.0			30.0			30.0		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor			0.85	0.97		0.91	0.97		0.95	0.99		0.91
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	5136	1615	1770	5136	1599	3502	3471	1615	3502	3282	1599
Flt Permitted	0.075			0.204			0.950			0.950		
Satd. Flow (perm)	142	5136	1375	369	5136	1454	3400	3471	1529	3477	3282	1459
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			87			143			80			154
Link Speed (k/h)		70			70			70			70	
Link Distance (m)		323.0			328.3			299.3			289.2	
Travel Time (s)		16.6			16.9			15.4			14.9	
Confl. Peds. (#/hr)	50		87	87		50	53		29	29		53
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	1%	0%	2%	1%	1%	0%	4%	0%	0%	10%	1%
Adj. Flow (vph)	231	926	121	258	1907	400	240	1291	126	213	700	231
Shared Lane Traffic (%)												
Lane Group Flow (vph)	231	926	121	258	1907	400	240	1291	126	213	700	231
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6			4			8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	7.0	12.0	12.0	7.0	12.0	12.0	5.0	12.0	12.0	5.0	12.0	12.0
Minimum Split (s)	15.0	60.0	60.0	13.0	58.0	58.0	15.0	72.0	72.0	15.0	72.0	72.0
Total Split (s)	15.0	60.0	60.0	13.0	58.0	58.0	15.0	72.0	72.0	15.0	72.0	72.0
Total Split (%)	9.4%	37.5%	37.5%	8.1%	36.3%	36.3%	9.4%	45.0%	45.0%	9.4%	45.0%	45.0%
Maximum Green (s)	12.0	53.2	53.2	10.0	51.2	51.2	10.0	64.9	64.9	10.0	64.9	64.9
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6	4.6	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	2.2	2.2	0.0	2.2	2.2	2.0	3.1	3.1	2.0	3.1	3.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.8	6.8	3.0	6.8	6.8	5.0	7.1	7.1	5.0	7.1	7.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		12.0	12.0		12.0	12.0		13.0	13.0		13.0	13.0
Flash Dont Walk (s)		18.0	18.0		18.0	18.0		20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	70.6	53.2	53.2	66.6	51.2	51.2	10.0	63.3	63.3	10.0	63.3	63.3
Actuated g/C Ratio	0.44	0.33	0.33	0.42	0.32	0.32	0.06	0.40	0.40	0.06	0.40	0.40
v/c Ratio	1.14	0.54	0.23	1.01	1.16	0.71	1.10	0.94	0.19	0.98	0.54	0.34
Control Delay	142.0	44.9	13.8	95.7	127.0	38.0	155.4	53.3	10.3	128.2	38.8	12.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	142.0	44.9	13.8	95.7	127.0	38.0	155.4	53.3	10.3	128.2	38.8	12.3
LOS	F	D	B	F	F	D	F	D	B	F	D	B
Approach Delay		59.5			110.0			64.8			50.1	
Approach LOS		E			F			E			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 160			
Actuated Cycle Length: 160			
Offset: 18 (11%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 160			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.16			
Intersection Signal Delay: 78.7		Intersection LOS: E	
Intersection Capacity Utilization 100.5%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 1: McLaughlin Road & Derry Road West



Queues
1: McLaughlin Road & Derry Road West

Total PM
180231

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	231	926	121	258	1907	400	240	1291	126	213	700	231
v/c Ratio	1.14	0.54	0.23	1.01	1.16	0.71	1.10	0.94	0.19	0.98	0.54	0.34
Control Delay	142.0	44.9	13.8	95.7	127.0	38.0	155.4	53.3	10.3	128.2	38.8	12.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	142.0	44.9	13.8	95.7	127.0	38.0	155.4	53.3	10.3	128.2	38.8	12.3
Queue Length 50th (m)	~78.1	92.6	7.8	~64.4	~275.7	78.4	~46.4	207.5	3.8	37.4	92.7	16.1
Queue Length 95th (m)	#135.0	106.3	23.7	#121.4	#299.5	119.1	#76.8	238.7	15.0	#64.8	111.3	37.2
Internal Link Dist (m)		299.0			304.3			275.3			265.2	
Turn Bay Length (m)	70.0		50.0	140.0		105.0	40.0		45.0	80.0		75.0
Base Capacity (vph)	203	1707	515	255	1643	562	218	1407	667	218	1331	683
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.14	0.54	0.23	1.01	1.16	0.71	1.10	0.92	0.19	0.98	0.53	0.34

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis
1: McLaughlin Road & Derry Road West

Total PM
180231

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	206	824	108	230	1697	356	214	1149	112	190	623	206
Future Volume (vph)	206	824	108	230	1697	356	214	1149	112	190	623	206
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.8	6.8	3.0	6.8	6.8	5.0	7.1	7.1	5.0	7.1	7.1
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.85	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.91
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1805	5136	1375	1762	5136	1454	3502	3471	1529	3502	3282	1459
Flt Permitted	0.08	1.00	1.00	0.20	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	143	5136	1375	378	5136	1454	3502	3471	1529	3502	3282	1459
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	231	926	121	258	1907	400	240	1291	126	213	700	231
RTOR Reduction (vph)	0	0	58	0	0	97	0	0	48	0	0	93
Lane Group Flow (vph)	231	926	63	258	1907	303	240	1291	78	213	700	138
Confl. Peds. (#/hr)	50		87	87		50	53		29	29		53
Heavy Vehicles (%)	0%	1%	0%	2%	1%	1%	0%	4%	0%	0%	10%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6			4			8
Actuated Green, G (s)	66.8	53.2	53.2	62.8	51.2	51.2	10.0	63.3	63.3	10.0	63.3	63.3
Effective Green, g (s)	66.8	53.2	53.2	62.8	51.2	51.2	10.0	63.3	63.3	10.0	63.3	63.3
Actuated g/C Ratio	0.42	0.33	0.33	0.39	0.32	0.32	0.06	0.40	0.40	0.06	0.40	0.40
Clearance Time (s)	3.0	6.8	6.8	3.0	6.8	6.8	5.0	7.1	7.1	5.0	7.1	7.1
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	200	1707	457	248	1643	465	218	1373	604	218	1298	577
v/s Ratio Prot	c0.10	0.18		0.08	0.37		c0.07	c0.37		0.06	0.21	
v/s Ratio Perm	c0.38		0.05	0.33		0.21			0.05			0.09
v/c Ratio	1.16	0.54	0.14	1.04	1.16	0.65	1.10	0.94	0.13	0.98	0.54	0.24
Uniform Delay, d1	48.9	43.5	37.4	42.1	54.4	46.7	75.0	46.5	30.8	74.9	37.1	32.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.11	0.90	0.81	1.00	1.00	1.00
Incremental Delay, d2	111.6	1.2	0.6	68.1	79.5	6.9	83.6	10.5	0.1	53.9	0.4	0.2
Delay (s)	160.6	44.7	38.0	110.1	133.9	53.6	166.9	52.4	25.0	128.7	37.6	32.5
Level of Service	F	D	D	F	F	D	F	D	C	F	D	C
Approach Delay (s)		65.0			119.0			66.9			53.5	
Approach LOS		E			F			E			D	

Intersection Summary

HCM 2000 Control Delay	84.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	21.9
Intersection Capacity Utilization	100.5%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

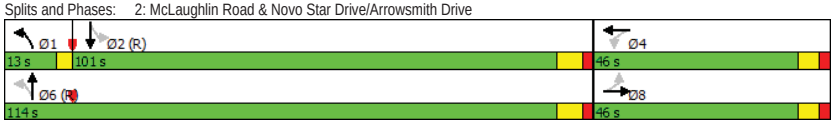
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	19	63	10	7	48	173	1388	3	72	873	65
Future Volume (vph)	32	19	63	10	7	48	173	1388	3	72	873	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	15.0		0.0	35.0		0.0	55.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	20.0			20.0			30.0			30.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.99	0.99		1.00	0.98			1.00			1.00	
Frt		0.885			0.869						0.990	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1660	0	1805	1618	0	1787	3574	0	1805	3527	0
Flt Permitted	0.693			0.466			0.168			0.100		
Satd. Flow (perm)	1303	1660	0	882	1618	0	316	3574	0	190	3527	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		89			19						8	
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		133.1			152.5			363.0			299.3	
Travel Time (s)		9.6			11.0			18.7			15.4	
Confl. Peds. (#/hr)	7		3	3		7	11		15	15		11
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%	1%	0%
Adj. Flow (vph)	45	27	89	14	10	68	244	1955	4	101	1230	92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	45	116	0	14	78	0	244	1959	0	101	1322	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		8			4		1	6			2	
Permitted Phases	8			4			6			2		
Detector Phase	8	8		4	4		1	6		2	2	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		5.0	8.0		8.0	8.0	
Minimum Split (s)	46.0	46.0		46.0	46.0		13.0	114.0		101.0	101.0	
Total Split (s)	46.0	46.0		46.0	46.0		13.0	114.0		101.0	101.0	
Total Split (%)	28.8%	28.8%		28.8%	28.8%		8.1%	71.3%		63.1%	63.1%	
Maximum Green (s)	39.5	39.5		39.5	39.5		10.0	107.0		94.0	94.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	5.0		5.0	5.0	
All-Red Time (s)	2.5	2.5		2.5	2.5		0.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		3.0	7.0		7.0	7.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	
Walk Time (s)	10.0	10.0		10.0	10.0			8.0		8.0	8.0	
Flash Dont Walk (s)	20.0	20.0		20.0	20.0			15.0		15.0	15.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)	11.7	11.7		11.7	11.7		138.8	134.8		116.9	116.9	
Actuated g/C Ratio	0.07	0.07		0.07	0.07		0.87	0.84		0.73	0.73	
v/c Ratio	0.47	0.57		0.22	0.58		0.59	0.65		0.73	0.51	
Control Delay	86.2	31.7		76.0	70.0		12.2	2.8		40.9	6.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.2		0.0	0.1	
Total Delay	86.2	31.7		76.0	70.0		12.2	2.9		40.9	6.1	
LOS	F	C		E	E		B	A		D	A	
Approach Delay		46.9			70.9			4.0			8.6	
Approach LOS		D			E			A			A	

Intersection Summary

Area Type: Other
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 94 (59%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
Natural Cycle: 160
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 9.0 — Intersection LOS: A
Intersection Capacity Utilization 73.1% — ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 2: McLaughlin Road & Novo Star Drive/Arrowsmith Drive



Queues
2: McLaughlin Road & Novo Star Drive/Arrowsmith Drive

Total PM
180231

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	45	116	14	78	244	1959	101	1322
v/c Ratio	0.47	0.57	0.22	0.58	0.59	0.65	0.73	0.51
Control Delay	86.2	31.7	76.0	70.0	12.2	2.8	40.9	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.1
Total Delay	86.2	31.7	76.0	70.0	12.2	2.9	40.9	6.1
Queue Length 50th (m)	14.8	8.7	4.5	19.4	4.8	29.6	7.9	47.2
Queue Length 95th (m)	22.2	16.7	9.8	27.4	7.6	30.4	m36.8	53.0
Internal Link Dist (m)		109.1		128.5		339.0		275.3
Turn Bay Length (m)	15.0		15.0		35.0		55.0	
Base Capacity (vph)	321	476	217	413	411	3010	138	2578
Starvation Cap Reductn	0	0	0	0	0	264	0	261
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.24	0.06	0.19	0.59	0.71	0.73	0.57

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
2: McLaughlin Road & Novo Star Drive/Arrowsmith Drive

Total PM
180231

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	19	63	10	7	48	173	1388	3	72	873	65
Future Volume (vph)	32	19	63	10	7	48	173	1388	3	72	873	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5		3.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.88		1.00	0.87		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	1660		1798	1618		1787	3573		1800	3525	
Flt Permitted	0.69	1.00		0.47	1.00		0.17	1.00		0.10	1.00	
Satd. Flow (perm)	1304	1660		881	1618		315	3573		190	3525	
Peak-hour factor, PHF	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Adj. Flow (vph)	45	27	89	14	10	68	244	1955	4	101	1230	92
RTOR Reduction (vph)	0	82	0	0	18	0	0	0	0	0	2	0
Lane Group Flow (vph)	45	34	0	14	60	0	244	1959	0	101	1320	0
Confl. Peds. (#/hr)	7		3	3		7	11		15	15		11
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		8			4		1	6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	11.7	11.7		11.7	11.7		134.8	134.8		116.9	116.9	
Effective Green, g (s)	11.7	11.7		11.7	11.7		134.8	134.8		116.9	116.9	
Actuated g/C Ratio	0.07	0.07		0.07	0.07		0.84	0.84		0.73	0.73	
Clearance Time (s)	6.5	6.5		6.5	6.5		3.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	95	121		64	118		402	3010		138	2575	
v/s Ratio Prot		0.02			c0.04		0.06	c0.55			0.37	
v/s Ratio Perm	0.03			0.02			0.45			c0.53		
v/c Ratio	0.47	0.28		0.22	0.51		0.61	0.65		0.73	0.51	
Uniform Delay, d1	71.2	70.1		69.8	71.4		6.8	4.4		12.5	9.3	
Progression Factor	1.00	1.00		1.00	1.00		2.89	0.45		0.69	0.53	
Incremental Delay, d2	3.7	1.2		1.7	3.7		1.4	0.6		26.4	0.7	
Delay (s)	74.9	71.4		71.6	75.1		21.0	2.6		34.9	5.6	
Level of Service	E	E		E	E		C	A		C	A	
Approach Delay (s)		72.4			74.6			4.6			7.7	
Approach LOS		E			E			A			A	

Intersection Summary				
HCM 2000 Control Delay	10.2	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.70			
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	16.5	
Intersection Capacity Utilization	73.1%	ICU Level of Service	D	
Analysis Period (min)	15			

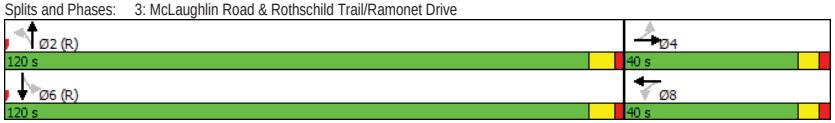
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	1	16	29	2	9	31	1597	73	19	879	23
Future Volume (vph)	13	1	16	29	2	9	31	1597	73	19	879	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	0.0		0.0	30.0		0.0	35.0		0.0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (m)	10.0			7.5			20.0			20.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.99	0.99			0.99			1.00			1.00	
Frt		0.861			0.970			0.993			0.996	
Flt Protected	0.950				0.965		0.950			0.950		
Satd. Flow (prot)	1805	1501	0	0	1721	0	1805	3545	0	1805	3517	0
Flt Permitted	0.748				0.768		0.181			0.030		
Satd. Flow (perm)	1411	1501	0	0	1365	0	344	3545	0	57	3517	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25			8			7			4	
Link Speed (k/h)		50			50			70			70	
Link Distance (m)		120.7			123.6			410.1			363.0	
Travel Time (s)		8.7			8.9			21.1			18.7	
Confl. Peds. (#/hr)	4		2	2		4	8		4	4		8
Peak Hour Factor	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Heavy Vehicles (%)	0%	0%	8%	4%	0%	0%	0%	1%	0%	0%	2%	6%
Adj. Flow (vph)	20	2	25	45	3	14	48	2457	112	29	1352	35
Shared Lane Traffic (%)												
Lane Group Flow (vph)	20	27	0	0	62	0	48	2569	0	29	1387	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	1.0	1.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	40.0	40.0		40.0	40.0		120.0	120.0		120.0	120.0	
Total Split (s)	40.0	40.0		40.0	40.0		120.0	120.0		120.0	120.0	
Total Split (%)	25.0%	25.0%		25.0%	25.0%		75.0%	75.0%		75.0%	75.0%	
Maximum Green (s)	33.5	33.5		33.5	33.5		113.0	113.0		113.0	113.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.5	2.5		2.5	2.5		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5			6.5		7.0	7.0		7.0	7.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	10.0	10.0		10.0	10.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	11.5	11.5			11.6		138.8	138.8		138.8	138.8	
Actuated g/C Ratio	0.07	0.07			0.07		0.87	0.87		0.87	0.87	
v/c Ratio	0.20	0.21			0.58		0.16	0.84		0.59	0.45	
Control Delay	72.2	27.6			83.0		4.1	10.8		58.5	2.7	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	72.2	27.6			83.0		4.1	10.8		58.5	2.7	
LOS	E	C			F		A	B		E	A	
Approach Delay		46.6			83.0			10.6			3.8	
Approach LOS		D			F			B			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 160			
Actuated Cycle Length: 160			
Offset: 69 (43%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 160			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 9.8		Intersection LOS: A	
Intersection Capacity Utilization 68.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: McLaughlin Road & Rothschild Trail/Ramonet Drive



Queues
Total PM

3: McLaughlin Road & Rothschild Trail/Ramonet Drive
180231

Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	20	27	62	48	2569	29	1387
v/c Ratio	0.20	0.21	0.58	0.16	0.84	0.59	0.45
Control Delay	72.2	27.6	83.0	4.1	10.8	58.5	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.2	27.6	83.0	4.1	10.8	58.5	2.7
Queue Length 50th (m)	6.4	0.6	17.8	2.4	208.1	1.6	39.8
Queue Length 95th (m)	11.2	5.9	23.2	4.5	121.1	12.8	30.8
Internal Link Dist (m)		96.7	99.6		386.1		339.0
Turn Bay Length (m)	20.0			30.0		35.0	
Base Capacity (vph)	295	334	292	298	3076	49	3052
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.08	0.21	0.16	0.84	0.59	0.45

Intersection Summary

HCM Signalized Intersection Capacity Analysis
Total PM

3: McLaughlin Road & Rothschild Trail/Ramonet Drive
180231

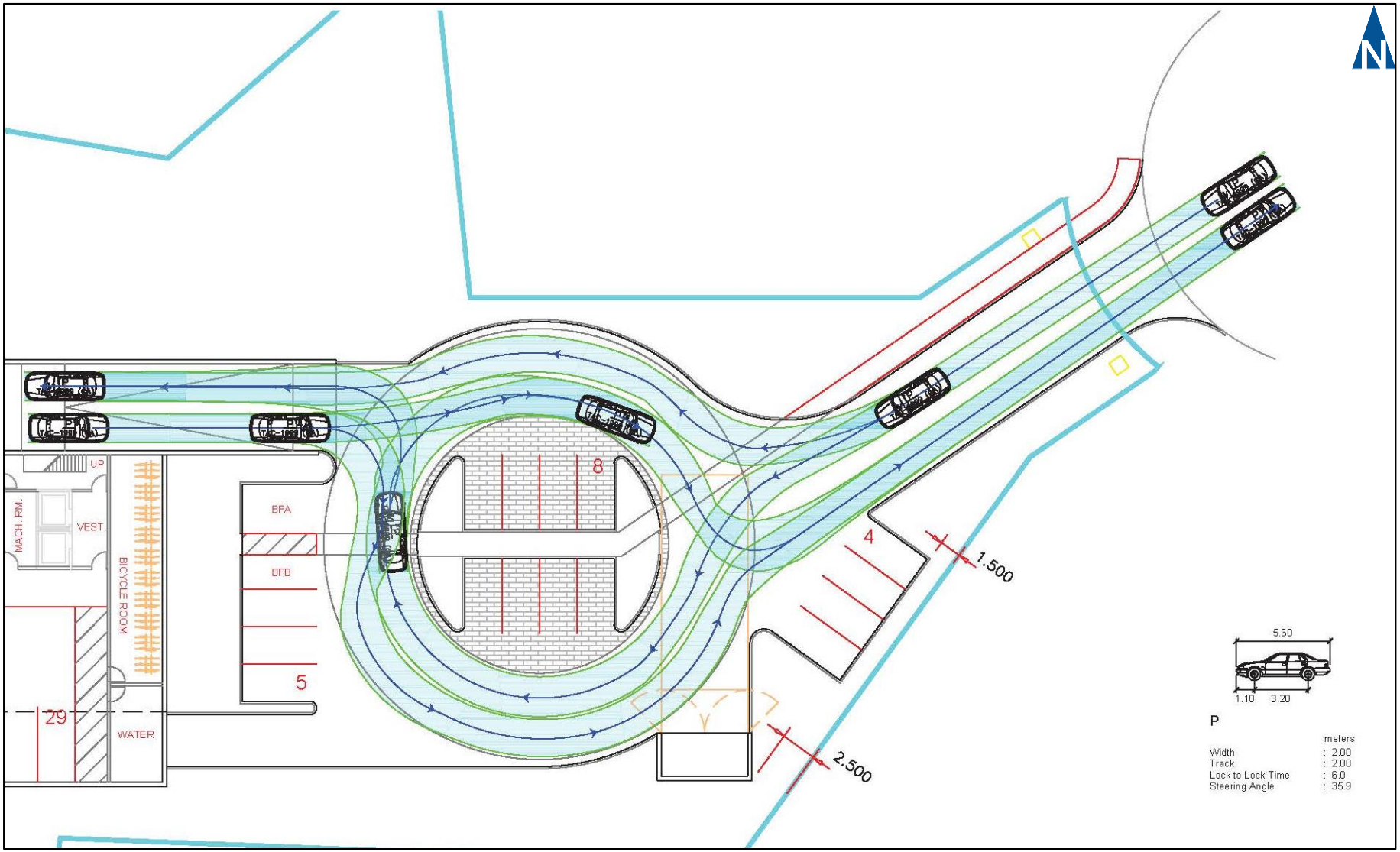
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	1	16	29	2	9	31	1597	73	19	879	23
Future Volume (vph)	13	1	16	29	2	9	31	1597	73	19	879	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5			6.5		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00			1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.86			0.97		1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00			0.96		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1793	1501			1715		1798	3547		1805	3517	
Flt Permitted	0.75	1.00			0.77		0.18	1.00		0.03	1.00	
Satd. Flow (perm)	1412	1501			1365		343	3547		57	3517	
Peak-hour factor, PHF	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Adj. Flow (vph)	20	2	25	45	3	14	48	2457	112	29	1352	35
RTOR Reduction (vph)	0	23	0	0	7	0	0	1	0	0	1	0
Lane Group Flow (vph)	20	4	0	0	55	0	48	2568	0	29	1386	0
Confl. Peds. (#/hr)	4		2	2		4	8		4	4		8
Heavy Vehicles (%)	0%	0%	8%	4%	0%	0%	0%	1%	0%	0%	2%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	10.4	10.4			10.4		136.1	136.1		136.1	136.1	
Effective Green, g (s)	10.4	10.4			10.4		136.1	136.1		136.1	136.1	
Actuated g/C Ratio	0.07	0.07			0.07		0.85	0.85		0.85	0.85	
Clearance Time (s)	6.5	6.5			6.5		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	91	97			88		291	3017		48	2991	
v/s Ratio Prot		0.00						c0.72			0.39	
v/s Ratio Perm	0.01				c0.04		0.14			0.51		
v/c Ratio	0.22	0.04			0.62		0.16	0.85		0.60	0.46	
Uniform Delay, d1	71.0	70.1			72.9		2.1	6.5		3.7	2.9	
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.61	0.70	
Incremental Delay, d2	1.2	0.2			12.3		1.2	3.3		41.8	0.5	
Delay (s)	72.2	70.3			85.2		3.3	9.7		47.7	2.5	
Level of Service	E	E			F		A	A		D	A	
Approach Delay (s)		71.1			85.2			9.6			3.4	
Approach LOS		E			F			A			A	

Intersection Summary					
HCM 2000 Control Delay	9.3	HCM 2000 Level of Service	A		
HCM 2000 Volume to Capacity ratio	0.83				
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	13.5		
Intersection Capacity Utilization	68.1%	ICU Level of Service	C		
Analysis Period (min)	15				

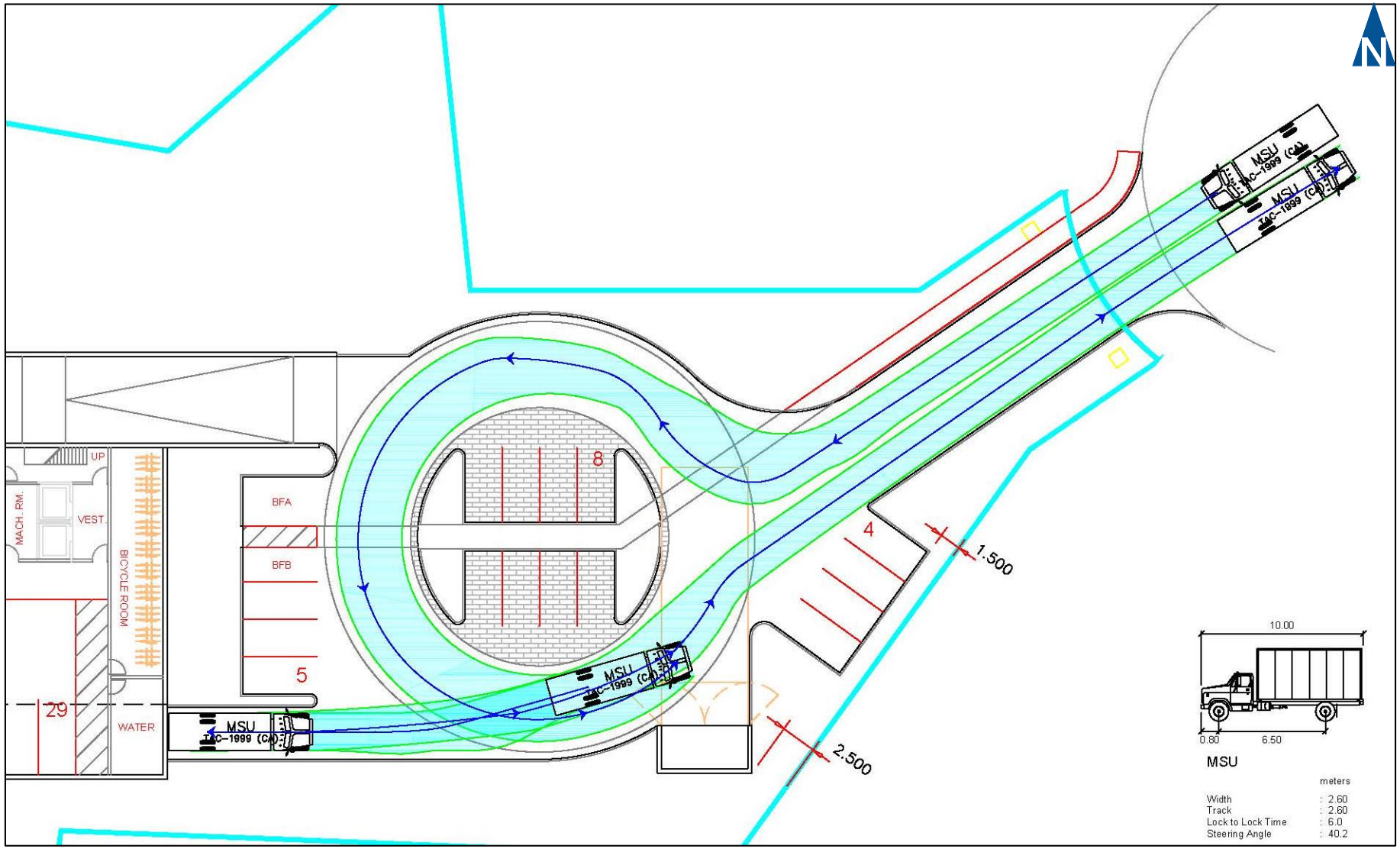
c Critical Lane Group

Appendix F

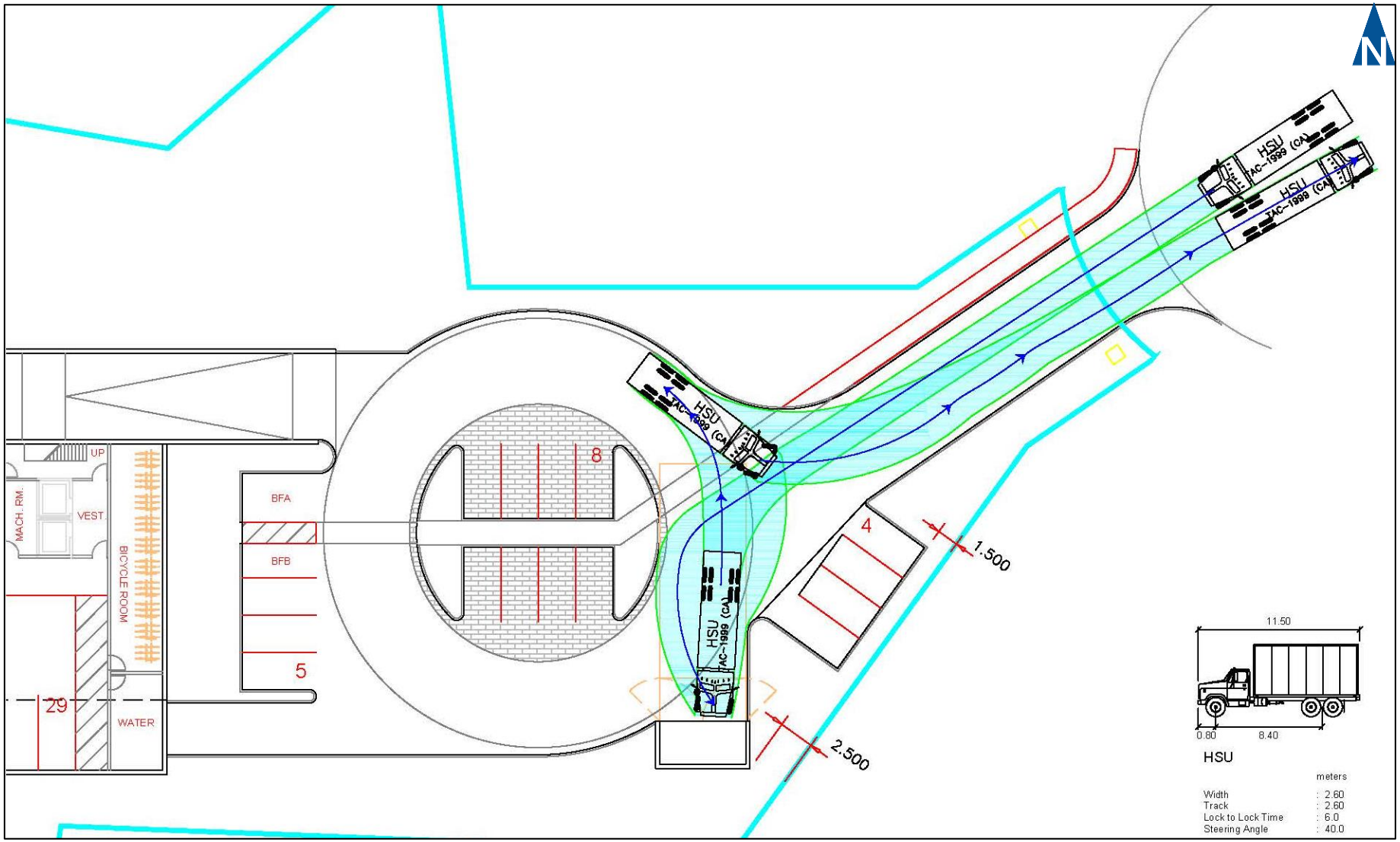
Reduced Scale AutoTURN Plots



AutoTURN Analysis
Passenger Car



AutoTURN Analysis
Medium Single Unit



AutoTURN Analysis
Heavy Single Unit